| CESAER Task Force Human Resources |

Report Working Group Career Development

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Objectives of the working group and the way of working

The objective of the CESAER HR working group “Career development” was to exchange nationally established career structures, promotion mechanisms and personnel development programs in order to inspire and learn from each other. The results of the working group are summarized in the present report. It contains ideas from the fruitful meetings of the HR Taskforce and was inspired by discussions during the CESAER HR Conference in Delft in May 2014, and in particular by a workshop organized by the authors of this report on “Career Development in Academia” with participants representing HR and faculty members from several European engineering universities. Furthermore, it is based in part on responses to a questionnaire on career development in academia answered by nine of the participating universities in October 2013 (Aalto University, Chalmers University of Technology, Delft University of Technology, ETH Zurich, FEUP Porto, INSA Lyon, KU Leuven, RWTH Aachen University and TU Wien) and will also refer to other relevant publications.

The purpose of the present report is three-fold:

First, we provide an overview of current issues of career development in academia. We will address academic career paths and their relevance against the background of increasing international and intersectoral mobility. Moreover, criteria that are set for career advancement will be considered and the ways universities handle and support the career planning and development of their scientists will be presented.

Second, we want to communicate best practices with respect to career paths, career advancement and career support in European engineering universities.

Finally, based on our results and insights we discuss implications for policy-makers, university leaders and funding organizations.

Results of the working group

In the following, we will present and discuss various academic career paths as well as the required skill sets. The advantages and challenges of implementing intersectoral mobility programmes will also be taken into account. Another topic will be career support structures and schemes, their effectiveness, and the responsibility and role of supervisors and organisations.

Career paths

In a traditional sense, career was conceptualized as advancing through professional and organizational hierarchies within an organization or profession. Today, a career is considered to be a sequence of employment-related positions, roles, activities and experiences during the course of one's lifetime (Arnold, 1997). Accordingly, for a long time, career in academia meant becoming a professor by passing through a doctoral and postdoctoral stage. Nowadays, academic careers have become more flexible and individualized and careers in addition to the traditional track have emerged.

Traditional academic career path

Across Europe, universities have a traditional academic career track which distinguishes three stages:

- Doctoral stage: limited research and teaching responsibility beyond doctoral work
- Postdoctoral stage: increasing personnel responsibility as well as with respect to research and teaching tasks
- Professorship: different grades of seniority and responsibility; in contrast to the previous stages, professorships are usually characterized by full tenure (sometimes only after completing a tenure procedure)

Please note that for the present purpose we have chosen this simplified illustration of career stages. The European Commission proposes to differentiate between four stages R1 (first stage researcher) to R4 (leading researcher) (for more information see European Commission, 2011) – a distinction which we regard as very helpful against the background of increasing international mobility.

Although there is most concordance with respect to this track, appointment procedures for professors, and in particular tenure track are handled rather diversely and universities are still in the process of finding their best individual way. Tenure track initiatives are regarded as an important source of international competitive advantage by offering attractive career prospects to talented young scientists. However, in contrast to the United States, Europe lacks a common tenure track career system. According to a survey of tenure practices in 2014 at 21 LERU universities, France, Spain and the UK do not have a tenure model, whereas Belgium, Finland, Germany, Italy, The Netherlands, Sweden and Switzerland have started to establish tenure track procedures (see Schiewer, Jehle, & Maes, 2014). Experience and evaluations with regards to the various systems are still missing.

Alternative academic career paths

Competing with profit-oriented organisations and other research institutions in the war for talent, universities are facing significant challenges in terms of redesigning career paths and providing attractive development opportunities in addition to the traditional academic track. Although the need for alternative academic career paths is widely acknowledged, only few universities have developed and implemented alternative career path models so far. For example, within the universities participating in the CESAER HR Taskforce the position of "senior scientist" was identified. However, their tasks as well as the career perspectives are often not clearly defined and lack transparency. The positions which are often permanent usually require a doctoral degree as well as special expertise of research work connected essentially to e.g. the use and development of large-scale research infrastructures and complex research equipment. For others, the main task is teaching and other assignments associated with education, the professional maintenance of research infrastructures and respective research services or the assistance of professors in the management of finances and personnel.

In contrast, an example for a well-designed and transparent alternative career path is the path of a lecturer career as established at Chalmers University of Technology. However, the lecturer career path is also discussed controversially as research and education are mostly seen as intertwined with their combination being essential for ensuring excellent, high quality teaching. In addition to teaching and responsibilities in the development of curricula and pedagogical leadership, universities therefore intend to enable lecturers to still conduct their own research to a certain extent.

Across the map the necessity of opening up further academic career paths besides lecturer careers is recognized and in particular a non-scientific career path exclusively focusing on science management is regarded as an added value. These developments do not only require adaptations in structures but also imply a change in mind-sets. Most importantly, the significance and status of alternative career paths in e.g. science management need to be enhanced. Leaving the traditional track and pursuing another track inside but also outside academia may not be seen as a failure.

When establishing new career paths the following aspects, which should also hold for traditional academic career paths must be taken into account. Academic career paths should …

- … consider all competencies needed to perform research, education and valorization
- … systematically encourage and reward preferred achievements and behaviors
- … attract potential as well as existing employees
- … be non-discriminative with regards to gender
- … be based on transparent and comprehensible assessment criteria
- … be internationally comparable.

Given increasing international mobility of academics at different stages in their career, transparency in the existing academic career systems is required. However, integrated and coherent academic career systems which are displayed in clearly structured figures to communicate them to staff and potential candidates are still the exception. Careers like "senior scientists" require more transparency in particular with respect to tasks, requirements, criteria for performance assessment, and promotion opportunities. This is essential for making such paths also attractive to researchers and applicants from abroad, who are not familiar with the national systems. Furthermore, of course, this clarity is also necessary for the job owners themselves who should know the career options associated with certain positions.

Best practice example

Aalto University, Chalmers University of Technology, ETH Zurich as well as TU Wien have developed a transparent structure for different career paths that are clearly displayed and communicated.

In the examples below we have displayed development opportunities for scientists at Aalto University and Chalmers University of Technology.

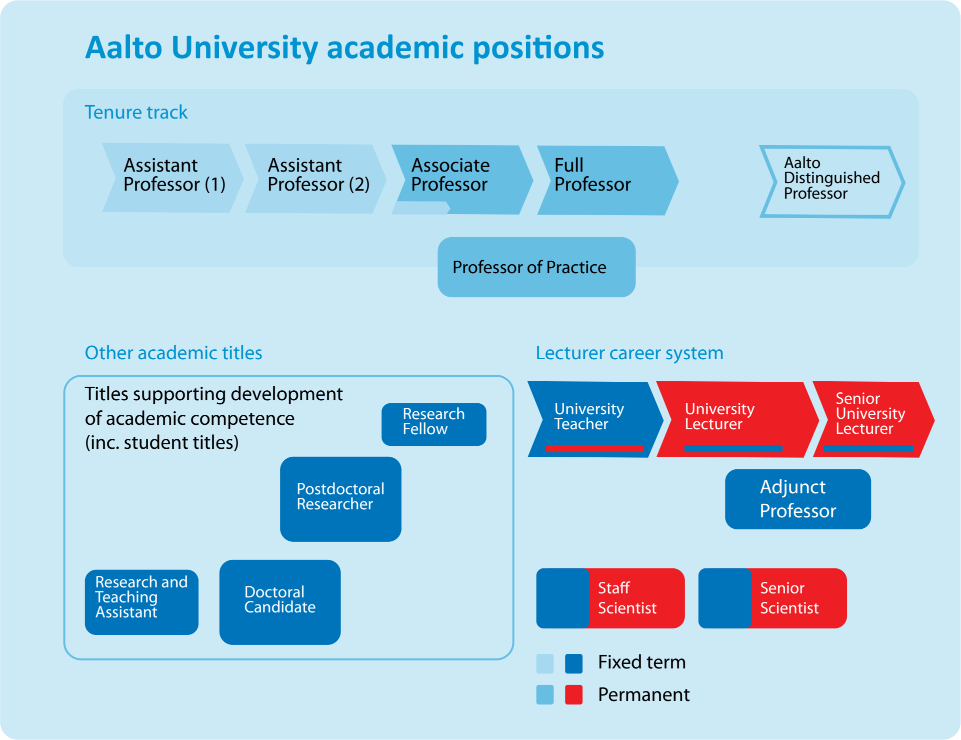

Aalto University academic positions
Tenure track
Assistant Professor (1)
Assistant Professor (2)
Associate Professor
Full Professor
Aalto Distinguished Professor
Professor of Practice
Other academic titles
Titles supporting development of academic competence (inc. student titles)
Research Fellow
Postdoctoral Researcher
Research and Teaching Assistant
Doctoral Candidate
Lecturer career system
University Teacher
University Lecturer
Senior University Lecturer
Adjunct Professor
Staff Scientist
Senior Scientist
Fixed term
Permanent

Figure 1. Aalto University academic positions

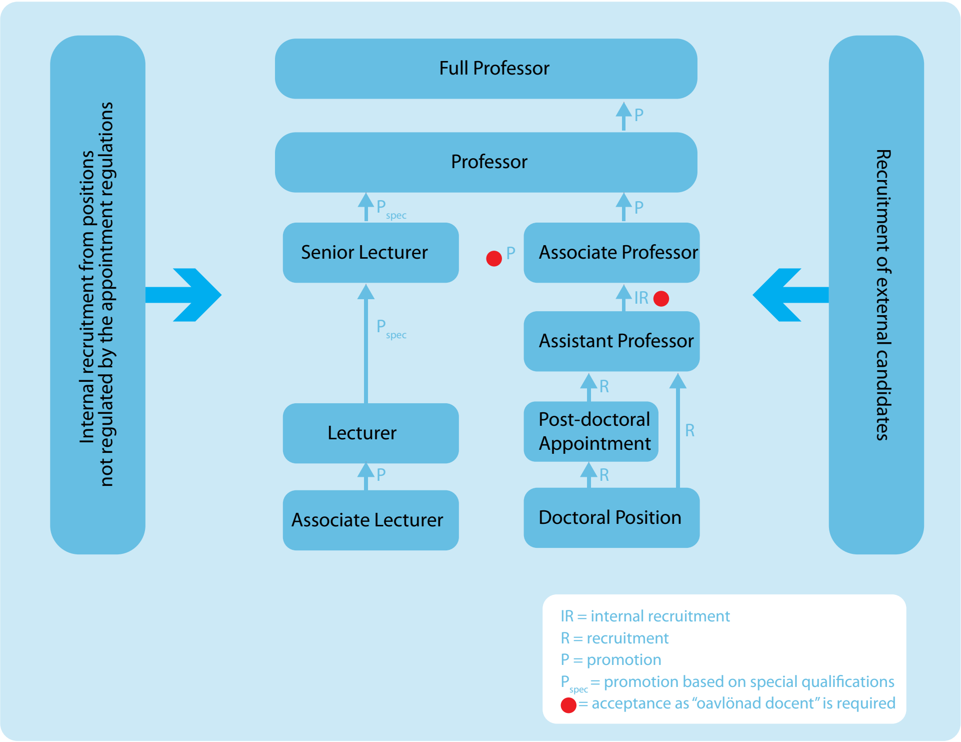

Internal recruitment from positions not regulated by the appointment regulations
Full Professor
P
Professor
P spec
P
Senior Lecturer
P
Associate Professor
IR
P spec
Assistant Professor
R
R
Lecturer
Post-doctoral Appointment
P
R
Associate Lecturer
Doctoral Position
Recruitment of external candidates
IR = internal recruitment
R = recruitment
P = promotion
P spec = promotion based on special qualifications
● = acceptance as "oavlönad docent" is required

Figure 2. Chalmers University of Technology career system

Intersectoral mobility

Intersectoral mobility is defined as “being mobile to a sector outside academia, in the researcher’s own country or abroad. This not only relates to private industry but also to the private not-for-profit sector as well as the public and government sectors” (IDEA Consult, 2013, p.22).

According to the DOC-CAREERS project (see Borrell-Damian, 2009), more than 50% of all doctorate holders pursue a career outside the academic sector. Given that many researchers will work in jobs outside academia after completion of their PhD, the promotion of university/business cooperation is considered very positive and beneficial both during the doctoral phase and in later career stages. Promoting intersectoral mobility, e.g. in the form of joint doctorates may help researchers gain insight into non-academic organisations and broaden their employability perspectives. Among the added values of collaborative doctoral research are the acquisition of skills that are required in industry e.g. leadership, teamwork, entrepreneurship, and becoming familiar with issues like budget restrictions or legal frameworks like intellectual property rights. Furthermore, from a rather political perspective intersectoral mobility may be a method to overcome Europe’s incapability to turn research results into globally competitive products (see European Commission, 2006).

The MORE-2 project investigated mobility patterns and career paths of researchers in a European sample of more than 10.000 researchers (IDEA Consult, 2013). 23% of researchers were mobile across sectors during their doctorate (> 3 months), and 30% during postdoctoral career stages from which 13% work in a dual position between academia and non-academia.

The following recommendations are the results of a workshop of Science Europe on intersectoral mobility with experts from the field of research careers (Kohl, 2013).

- Recognise the importance of intersectoral mobility to broaden career opportunities for researchers.
- Support periods of short-term stays (3-6 months) of researchers in an industrial or non-academic context by making it an option in each research project (including doctoral programmes) rather than an obligation.
- Prepare researchers for a labour market outside academia with in-depth technical knowhow and broader transferable skills.
- Raise awareness of opportunities for PhDs and postdocs to interact with companies setting up innovative projects that require specialised skills unavailable elsewhere.
- Include options for arts and humanities’ disciplines and broaden mobility opportunities to the non-academic government or non-government sectors.
- Contribute to the development of regional clusters around academy-industry collaborations in strategically relevant domains, using the strengths of the region and of the actors.
- Compose selection committees carefully in order to be able to assess quality on both sides.
- Ensure scientific quality control in order to avoid funding technology transfer instead of research, to account for tax payers’ money.
- Support data collection on the career paths of PhD holders so as to gain a better understanding of intersectoral mobility on careers.

Career advancement

For both applicants and position holders, transparency with respect to promotion processes is of utmost importance. In most universities the requirements for professors (in particular - if existent - for tenure track positions) are formally and clearly defined. Usually, evaluation criteria include research and teaching skills as well as merits in the academic community with scientific merits being by far the most crucial aspect clearly outweighing other criteria. Taking into account management and leadership skills or achievements in third stream activities is still rather the exception.

To guarantee international competitiveness recruitment processes should be open, transparent and merit-based (for more information see also CESAER, 2014). For example, across universities the appointment of a candidate who has not left the university after completion of his or her PhD is not desired and usually not allowed. The majority of universities report that they are autonomous in the formation of appointment committees and the selection of their professors. Yet, there are still universities that are bound to national regulations when appointing professors.

In contrast to the appointment of professors, there is less consistency with respect to staffing doctoral and postdoctoral positions or positions outside of the traditional track. However, the demand for transparent recruitment (and promotion) processes is not restricted to the appointment of professors but also applies to all other vacancies. The minority of universities report using a requirement profile with criteria for all positions prior to promotion or advertising the position. In addition to requirement profiles that clarify all components of the recruitment process and serve as a tool for evaluation and follow-up, posting vacancies on international job databases (e.g. Euraxess job portal which is used by more than 90% of CESAER member institutions) is another good step in the right direction.

Best practice example

ETH Zurich and Chalmers University of Technology have defined clear criteria for all of their positions. Below you find a description of tasks for doctoral students and postdocs at ETH Zurich.

Doctoral student /postdoc	
Description	**Requirements/preconditions**
Doctoral student	***University graduate without professional experience***
▪ Scientist aiming for a doctorate ▪ Non-permanent contract	▪ Working on own thesis and the research project on which it is based ▪ Participation in educational activities, namely exercises, colloquia, practicals and seminars ▪ Supporting students ▪ Carrying out infrastructural and administrative tasks
Postdoc	***University graduate with doctorate*** in addition to “Doctoral Student”
▪ Scientist following thesis ▪ Preferable external appointments ▪ Remains approx. 2-3 years ▪ Non-permanent contract	▪ responsible for minor research projects ▪ Preparing and organizing exercises and practicals ▪ Developing methods and apparatus ▪ Introducing new Assistants or Scientific Assistants

Figure 3. Description of requirements of doctoral students and postdocs at ETH Zurich

Qualifications of a Full Professor

- The scientific qualifications of a Full Professor must be very highly rated by the external assessors. They should be among the best internationally in the specific scientific field.
- The pedagogical expertise required in undergraduate and graduate education should be of good quality and well documented.
- Courses completed in pedagogy for higher education (15 ECTS points, ECTS = European Credit Transfer System, equivalent to 10 Swedish credit points in the previous credit system), or other equivalent courses, or proven equivalent pedagogical expertise.
- Proven ability as a successful supervisor. An applicant will normally have been the principal supervisor for at least three PhD students who have completed doctoral degrees.
- The Chalmers course in research supervision, or an equivalent course, should be part of the background.
- Good leadership qualities and the ability to lead high quality teaching and research should have been demonstrated.
- First-rate abilities in networking and cooperation at both national and international levels should be demonstrated.
- A good record of obtaining external funding for research projects should be demonstrated.

Duties of a Full Professor

- Actively lead and develop teaching and research at both the departmental and research group levels.
- Teach courses at all levels.
- Act as the principal supervisor for doctoral students and also be prepared to act as examiner.
- Actively conduct and lead research, either as a member of a large group or as the leader of one's own research group.
- Effectively seek external research funding from multiple sources.
- Participation in and promotion of exchange of knowledge with the international professional community.
- Act as a mentor and provide younger faculty members with support and feedback in teaching, research, research funding and outreach activities.
- Participation in the leadership of the department and of Chalmers, including beneficial innovation, as well as internal and external committee work.
- Active participation in the scientific community by acting as a peer reviewer, assessor or, for example, examiner at doctoral defences.
- Advance interdisciplinary cooperation, both internally and outside Chalmers.

Figure 4. Qualifications and duties of a Full Professor (holding a chair) at Chalmers University of Technology

Career support

Besides providing attractive academic career paths, universities have to make sure that appropriate career support mechanisms are in place.

Supporting individuals in their career should always take into account subjective as well as objective career success criteria. Subjective success is an individual's evaluation of his or her career relative to personal goals or a reference person/group, whereas example criteria for objective, verifiable success are income and its growth, promotions, hierarchical position or number of employees (Abele & Wiese, 2008). In addition, in academia indicators for the latter are publications, patents or third-party funding.

Career planning and management

Along with the above mentioned change in the conception of career, a shift in focus has taken place: In contrast to regarding the organization as responsible for one's career, nowadays an individual is regarded to be able to guide and manage one's career him- or herself (see Hall, 2004). Accordingly, academic staff is expected to be proactive in managing their careers. Career self-management skills involve reflections about one's own career aspirations but also comprise specific actions such as gathering information about career opportunities, asking for feedback about one's achievements, and creating career opportunities through networking or other actions aimed at enhancing one's visibility (see De Vos & Soens, 2008).

However, individuals' career self-exploration process may be facilitated by mechanisms that assist in finding the right career and support the further development of role-specific skills. In addition to recruitment and placement as well as promotion processes that aim to match individuals with the most appropriate roles, organizations may support employees in acquiring the required skills to become aware of and realize their career goals. Besides specific career workshops or counseling opportunities, the majority of universities conduct annual performance reviews, which can be also used as a career management tool. These usually annual talks between employee and direct manager are used to give feedback, to set milestones and agree targets. Furthermore, they are used as an instrument for career planning and to discuss career development. For example, at the Delft University of Technology the appraisal form contains a section dedicated to one's personal development plan. In some universities the annual reviews are not obligatory, depend on the department or faculty and are often not connected with the HR department or are restricted to administrative staff. Only a minority of universities have individual evaluation talks for professors themselves.

Training formats

Many universities offer a wide variety of seminars and workshops (e.g. project management, intellectual property rights, self-management, leadership, teaching methods, or language courses) to support their employees as they advance in their career. Some of them also provide courses that aim at improving "transferable" skills which are helpful for careers outside academia (see also paragraph about inter-sectoral mobility).

Participation is usually optional. In a few universities participating in training programs is part of the curriculum for doctoral students. In general, training programs tend to address these early-stage researchers (doctoral students and postdocs). Few universities provide coaching and training formats that take the needs of senior academics and professors into account. However, there are some universities that have established training programs or special events for newly appointed professors. Moreover, individual career coaching for professors is becoming recognized as a method to support them in their leadership role.

Mentoring has become another method to promote the personal and professional growth of the protégé through a one-to-one mentorship with a more senior individual, most of the times a professor (sometimes an emeritus) within the organization or from another university. This is often seen as an instrument to specifically support the careers of female scientists.

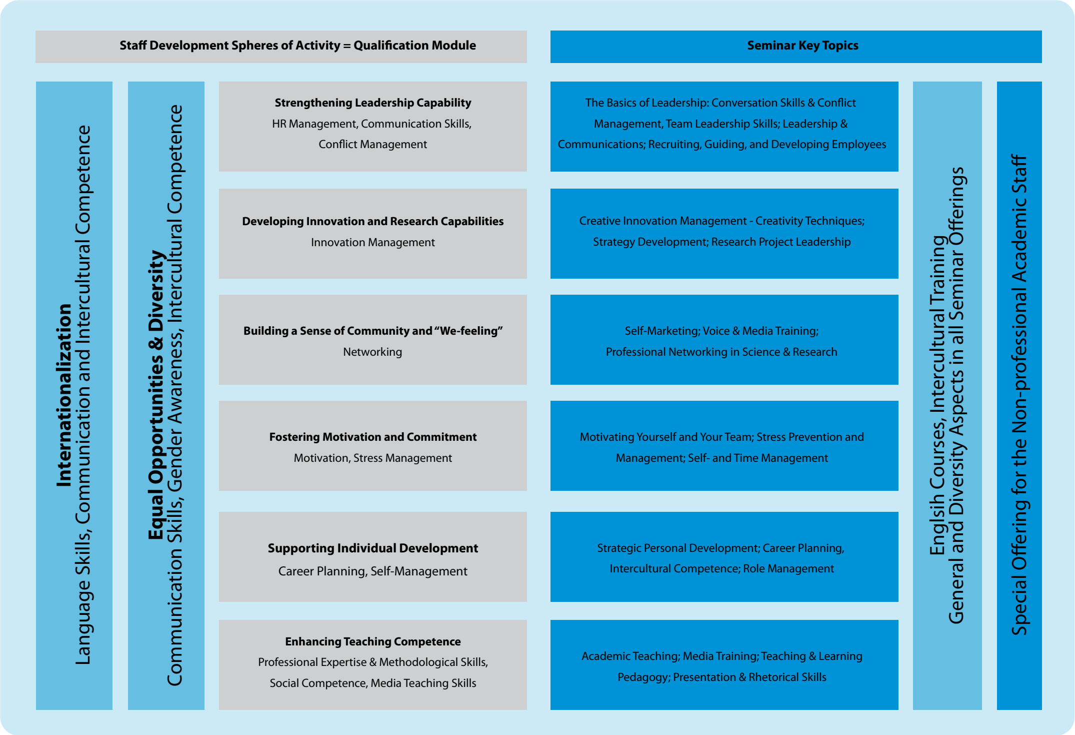
There are several issues which universities and in particular the HR department should address: The range of seminars sometimes seems arbitrary and not always embedded in a broader strategic HR-development program. Furthermore, the trainings are not always tailored to a specific target group like professors or doctoral students and address contents that is not necessarily relevant for the current (and future) positions (e.g. a leadership seminar for an employee without leadership responsibility may not be the optimal course). Sometimes external providers of career services are selected who have little knowledge and experience in academic organizations (although, of course, in some cases insights from other branches can be useful, too). Instead of engaging external training advisers, employee initiatives resulting in peer-to-peer training formats should be better supported. The effectiveness of training formats and methods that are used is often lacking and a quality management that reaches further than feedback questionnaires filled out by participants right after the training is still the exception.

Despite these issues, there are also positive developments in this field. For example, some universities have started to put together personalized training packages that are targeted to an individual's needs: KU Leuven has set up a "career center" in which various forms of career guidance are developed and offered to the researchers.

Best practice example

RWTH Aachen University offers three target group-specific training programs (for doctoral students, postdocs and professors). What follows is the development programs for postdocs:

On the left side the strategic fields of action for human resource development are displayed and on the right side the according training contents are aligned.



Staff Development Spheres of Activity = Qualification Module	Seminar Key Topics
Strengthening Leadership Capability HR Management, Communication Skills, Conflict Management	The Basics of Leadership: Conversation Skills & Conflict Management, Team Leadership Skills; Leadership & Communications; Recruiting, Guiding, and Developing Employees
Developing Innovation and Research Capabilities Innovation Management	Creative Innovation Management - Creativity Techniques; Strategy Development; Research Project Leadership
Building a Sense of Community and "We-feeling" Networking	Self-Marketing; Voice & Media Training; Professional Networking in Science & Research
Fostering Motivation and Commitment Motivation, Stress Management	Motivating Yourself and Your Team; Stress Prevention and Management; Self- and Time Management
Supporting Individual Development Career Planning, Self-Management	Strategic Personal Development; Career Planning, Intercultural Competence; Role Management
Enhancing Teaching Competence Professional Expertise & Methodological Skills, Social Competence, Media Teaching Skills	Academic Teaching; Media Training; Teaching & Learning Pedagogy; Presentation & Rhetorical Skills

Internationalization
Language Skills, Communication and Intercultural Competence

Equal Opportunities & Diversity
Communication Skills, Gender Awareness, Intercultural Competence

Englsih Courses, Intercultural Training
General and Diversity Aspects in all Seminar Offerings

Special Offering for the Non-professional Academic Staff

www.rwth-aachen.de/proacad

Figure 5. Development program for postdocs at RWTH Aachen University

Policy recommendations

Why is career development in academia a relevant topic for public policy and also for university strategies? The benefits evolving from individuals choosing careers where they can use their skills to their full potential are of utmost value to a nation but also to Europe as a whole. Furthermore, well-designed career paths with attractive development opportunities are an important source of international competitive advantage and may help to recruit high potentials from inside but also from outside Europe as well as to retain skilled employees in academia.

To attract international scientists and also to increase mobility among scientists, transparency in national career trajectories is an indispensable condition. Promoting the differentiation of R1 to R4 researchers will help researchers from non-European countries to orientate themselves in the European academic systems. To guarantee open, transparent and merit-based selection and promotion processes, universities should be autonomous in this process and not bound to any legal barriers.

Fostering mobility for scientists on all career levels through additional funding is regarded as very beneficial. However, whereas mobility and diversity among scientists is increasing, support staff is still mainly from the home country. Therefore, increasing mobility of support and administrative staff by initiatives like Erasmus + STT and also the Marie Skłodowska-Curie IRSES scheme is very welcomed and should be enhanced.

Summary and future outlook

First of all, well-structured career paths indicate avenues for advancement in- and outside academia. Their establishment aims at a greater and more transparent mobility between universities, research institutes and industry, nationally as well as internationally. The responsibilities and objectives of each position must be set out clearly to provide a firm foundation for the next career step. Besides a transparent promotion process, these criteria are important for the recruitment of professionals as they might serve as attractors as well as define requirements for certain positions. Whereas HR has lately invested much energy in career development and offers broad training and seminar programs, structures to promote systematic support for career planning have been rather neglected.

To summarize, universities are starting to recognize that to create an attractive work environment they have to offer well-defined posts, well-structured career perspectives as well as advice and support for career development as part of their employer branding work.

These developments not only require adaptations in structures but also imply a change in mindsets. Most importantly, the significance and status of alternative career paths in e.g. science management needs to be enhanced. Universities and also funding and ranking organisations could support this mindset change by taking merits and skills like teaching or leadership qualities into account instead of solely focusing on scientific output. Finally, the current developments should not be perceived as a threat but rather as an opportunity to increase attractiveness for high potentials.

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