Call: HORIZON-WIDERA-2021-ACCESS-03/Twinning

Project SustDesignTex (GA No. 101079009), title: „Sustainable Industrial Design of Textile Structures for Composites" funded by the European Union

Deliverable D.6.1: Guidelines on Research Management and Administration for TUL

SUSTainable industrial DESIGN of TEXtile structures for composites (SustDesignTex)

Grant Agreement number: 101079009

Project acronym: SustDesignTex

Project title: Sustainable Industrial Design of Textile Structures for Composites

Funding Scheme: HORIZON-WIDERA-2021-ACCESS-03

Start date of the project: 01.10.2022

Duration: 36 months

Project coordinator name, title, and organization: Marcin Barburski, DSc, prof. TUL, Lodz University of Technology

Project coordinator e-mail: marcin.barburski@p.lodz.pl

Project e-mail: sustdesigntex@info.p.lodz.pl

Document History (Revisions – Amendments)		
Version	**Date**	**Changes**
V 1.0	01.10.2024	Rebecca Emmerich
V 1.1	30.10.2024	Christoph Greb

Main Author of the Deliverable, Consortium Beneficiary	Other Contributors, Consortium Beneficiary
ITA	-

Project's office:
Lodz University of Technology, Faculty of Material Technologies and Textile Design, Institute of Architecture of Textiles
116 Zeromskiego Street, 90-543 Lodz, Poland
Tel: +48(42)-631 33 99; e-mail: sustdesigntex@info.p.lodz.pl

Consortium Beneficiaries:
Politechnika Lodzka, TUL, PIC 999886671, Poland
Universidad de Zaragoza, UNIZAR, PIC 999898214, Spain
Rheinisch-Westfaelische Technische Hochschule Aachen, ITA, PIC 999983962, Germany
Hoegskolan I Boras, HB, PIC 999887447, Sweden
Wademekum sp. z o.o., WAD, PIC 917348304, Poland

Call: HORIZON-WIDERA-2021-ACCESS-03/Twinning

Project SustDesignTex (GA No. 101079009), title: „Sustainable Industrial Design of Textile Structures for Composites" funded by the European Union

Deliverable Title	**Guidelines on Research Management and Administration for TUL**
Milestone Lead:	TUL
Related Work Package:	WP6: Strengthening TUL research management, administrative skills and building the necessary capacity to allow successful participation in R&I projects
Author(s):	Rebecca Emmerich, Christoph Greb
Due Submission Date:	31/10/2024
Actual Submission:	31/10/2024
Abstract:	-

Table of content

1 General introduction

The SustDesignTex-Project ("Sustainable Industrial Design of Textile Structures for Composites" is funded under the HORIZON-WIDERA-2021-ACCESS-03/Twinning Call by the European Union. Within this project besides research activities in the field of natural fibre reinforced composites for applications in firefighting drones, soft skills and general management activities are transmitted to Lodz University of Technology (TUL). The aim of the document is to elucidate the guidelines for research management and administration at TUL. The document contains a short introduction into the topic of research management and administration, the organizational structure at RWTH Aachen University, the internal structure at the Institut für Textiltechnik für RWTH Aachen University (ITA), a use case description and finally a summary of the content into guidelines that can be used by TUL.

Research Management and Administration (RMA) refers to the organisational, administrative and strategic support of research projects and institutions. It encompasses a wide range of activities aimed at supporting researchers and scientific institutions in all phases of the research process - from the development of project ideas to the publication of results. RMA is particularly important at universities, research institutes and other organisations involved in research.

The most important components:

- Identification of funding sources
- Acquisition of funding
- Project management
- Compliance and ethical guidelines
- Technology transfer and innovation
- Science communication and dissemination
- Strategic planning and policy

Main objectives:

- Relieving researchers of administrative and organisational tasks
- Quality assurance in research
- Efficient, compliant and successful processing of research projects

2 Organisational structure at RWTH Aachen University and the incorporation of ITA

RWTH Aachen has approximately 47,000 students enrolled in 170 different programs. It boasts 260 institutes and 553 professorships along with around 10,250 staff members, 61 % of whom are scientists. The budget of the university amounts to approximately €1.108 billion, with about €422 million coming from external funds. The funds include public fonds from different founding agencies, such as the regional state, the German government or the European Union. RWTH is an excellence university with high rankings in the field of mechanical engineering compared to other technical universities in Europe and internationally. The universities organization can be described as a hierarchy with three different levels. On the first level the centralized university administration is allocated, on the second level, the faculties can be found while on the third level, institutes such as ITA are allocated. (See Fig. 2.1) These research and teaching facilities are mostly autonomous in some areas such as funding acquisition besides a small budget allocated from the university itself.

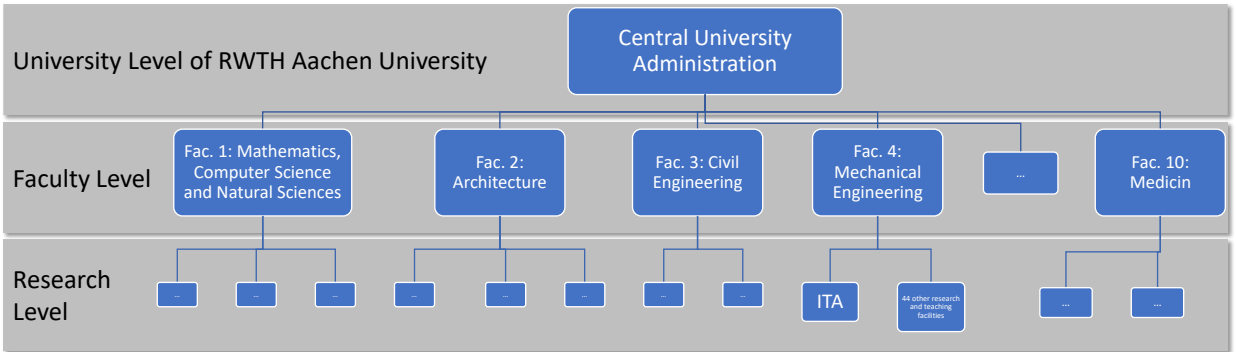

Fig. 2.1: University organization in different levels

The process map of the management structures at RWTH Aachen University are illustrated in Fig. 2.2. Here, both core activities and supporting processes are demonstrated. Core activities include strategic management, studies and teaching, as well as research and transfer & innovation. Studies and teaching activities include four steps. Here, the activities are planned, fulfilled, evaluated and improved in consequence. The core activities are influenced by the requirements from different stakeholders, such as students, teachers and stuff. The goal of the core activities is a competence-orientated, research-led and practice-oriented training for the development of highly qualified and responsible graduates. The supporting processes contribute to the achievement of this goal. Here, ten separated processes can be distinguished: Research and Service activities, Stuff, Services for students, staff, organisation, finances, law, communications, marketing, fundraising and alumni, as well as IT and reporting besides infrastructures and housing. The overarching activity is the strategic management. Here, the activities are oriented towards sustainability, equality and integration, internationalization, quality management as well as corporate governance.

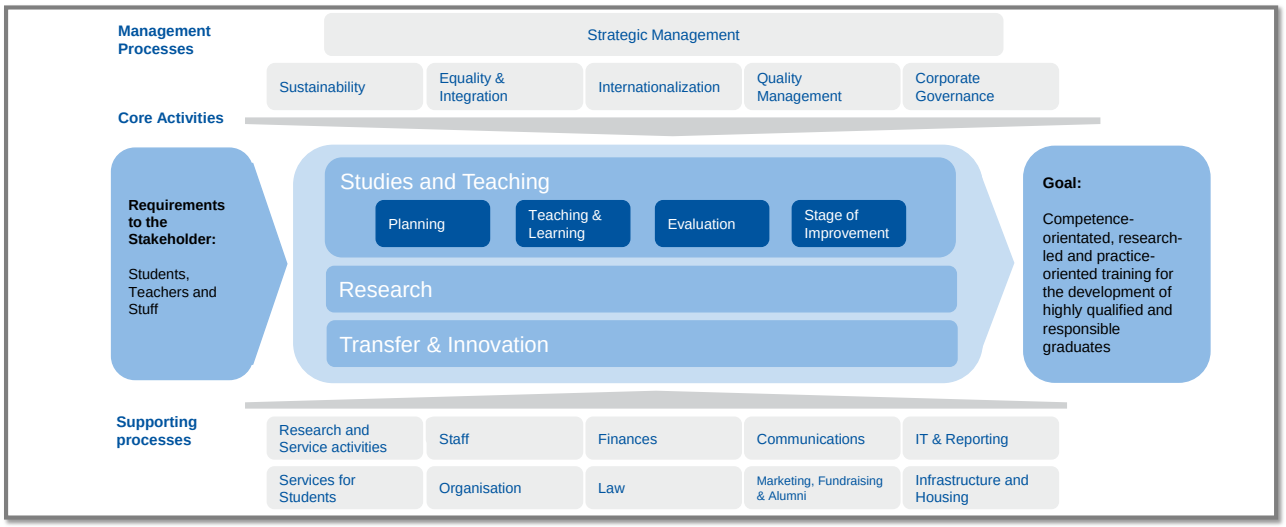

Fig. 2.2: Management processes at RWTH Aachen University

Since most of the funding at the university and especially at the institutes is sourced publicly and organized in projects with restricted time frames and efficient time management is crucial for the success of projects. Thus, the university as well as the institutes themselves have developed processes and structures that support the research management and administrative tasks. To prepare students and researchers to manage research projects efficiently and with high precision, ex-curricular courses are available. Students intending to do a

doctorate can participate in courses organized by the doctoral academy. Here, the courses such as "Research Data Management", "Getting started with GitLab", "Publishing Forum" and "Metadata Basics and Creating Application Profiles for Coscine" are offered. Besides these RWTH overarching courses, the institutes have developed structures to ensure high quality research.

3 Introduction to ITA as an institute at RWTH Aachen University

The research activities at RWTH Aachen University are distributed to the different faculties. These faculties in turn include various institutes which are focused on different research areas. The institutes are mostly sovereign institutions that are responsible for their own budgeting. The Institut für Textiltechnik belongs to the Faculty of Mechanical Engineering. The Faculty of Mechanical Engineering counts currently 60 institutes and chairs in Mechanical Engineering and Chemical Engineering. In winter semester 2023/24 approx. 1,824 new enrolees were listed. The faculty is one of the largest faculties of Mechanical Engineering in Europe. Furthermore, it is very interdisciplinary and offers many qualification possibilities for national and international students. The Faculty of Mechanical Engineering counts 61 professors, approx. 1,564 academic staff, approx. 691 non-academic staff as well as approx. 1,022 student and academic workers (19 hours annual equivalent). The more than 11,024 students enrolled in the different degree programs of the Faculty of Mechanical Engineering in the winter semester 2023/24 are faced with the large number of 250 teachers of the academic non-professorial teaching staff, 5 associate professors, 250 lecturers from the industry, 24 professors as well as 9 honorary professors – on top of the 61 full professors.

Fig. 3.1: The Institut für Textiltechnik of RWTH Aachen University in numbers

Around 110 scientists, 60 technical employees and 190 undergraduate student assistants are employed at ITA. The ITA Group encompasses a wide range of activities, including research and development (R&D) management, strategic sales, the production of medical textiles, and recycling initiatives. The institute spans an area of approximately 4,500 square meters, which includes laboratories, offices, and production facilities. Here, about 250 textile machines from lab scale to industrial scale are located. The annual budget of ITA is around €16 million, with a significant portion coming from external funding sourced through national and international research projects as well as collaborations with industry partners. The basic funding amounts to

less than 5 %. ITA closely cooperates with several legal companies. These companies help bridging the gap between research and application. Within a framework of legal contracts with the university, they help establish cooperation between the institute and industry.

Within the university and the institute, industrial and scientific relations are highlighted through collaborative research groups, competence centres, as well as partnerships with industry associations. Networks like the German Research Foundation or international collaborations play a crucial role. Through the institutes and the university, different stakeholders are connected. In this way relations with associated institutes, transregional collaborative research areas and international networks are held. Excellence initiatives are used to develop the researchers' skills within research management. (See Fig. 3.2)

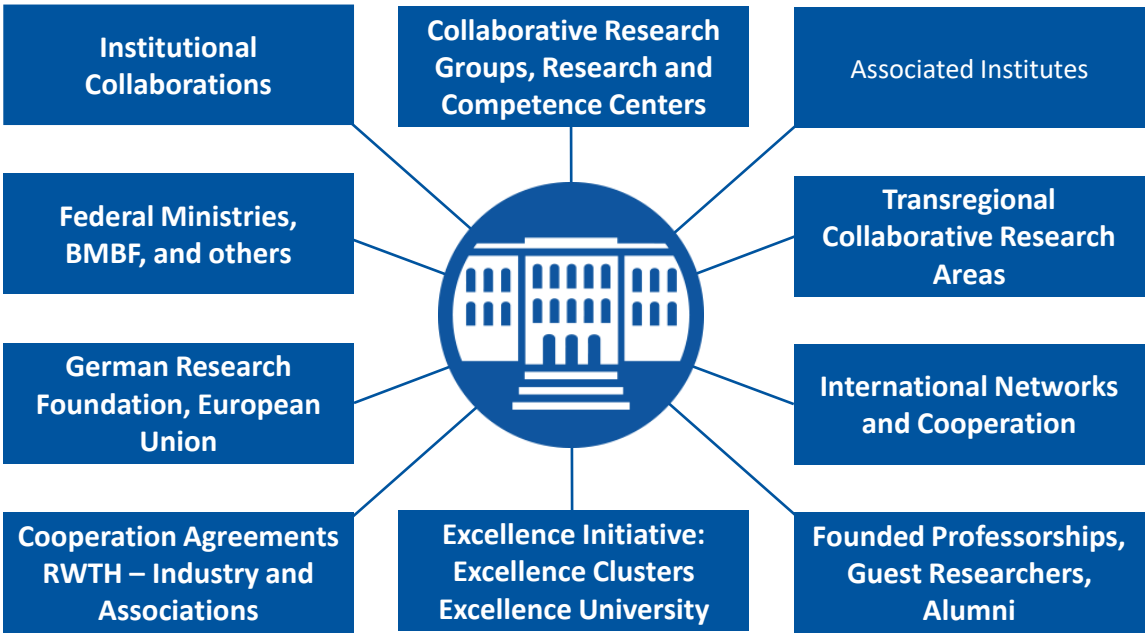

Fig. 3.2: The network of different stakeholders around institutes and the university

4 Established processes and positions at ITA

Specific responsibilities within Research Management and Administration (RMA) at RWTH/ITA are clearly defined to ensure efficient and effective handling of research projects. Different levels of responsibility exist between principal responsible persons and supporting individuals or groups such as managing board members or patent experts. Principal responsible persons take charge of the overall direction and execution of their respective projects. In contrast, supporting individuals provide specialized expertise in areas like strategic oversight or intellectual property management. In Fig. 4.1 the established and structured processes at ITA are presented. To share information about these processes a tool is used to allocate and describe the processes virtually.

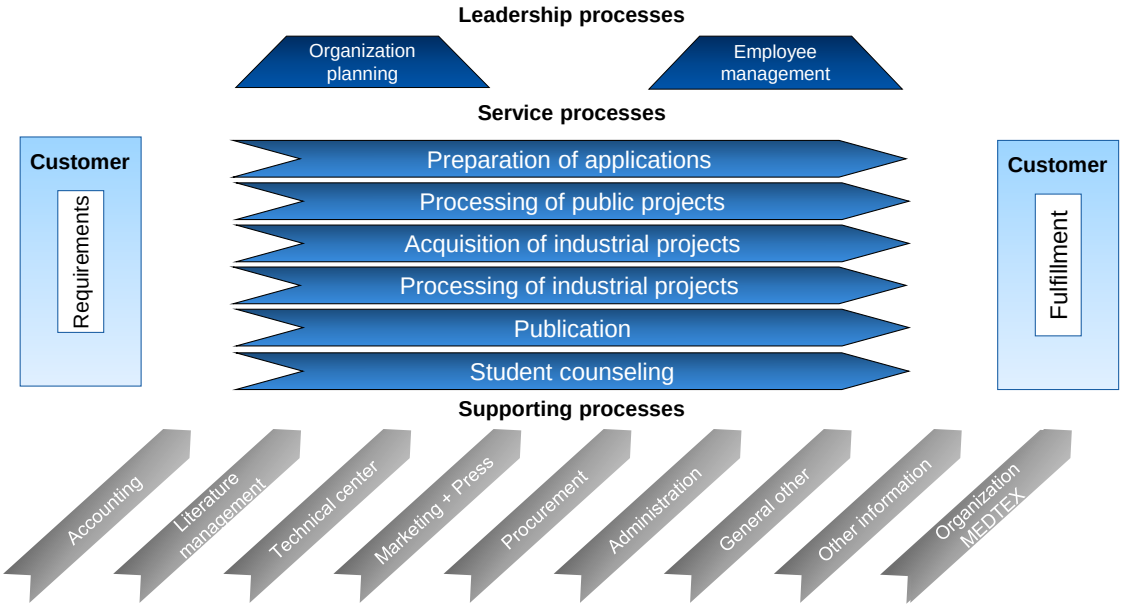

Fig. 4.1: Process overview at ITA

Funding acquisition is a crucial responsibility that falls primarily on researchers or team leaders. Here, regional experts and responsible persons for special funding opportunities support the researchers. They are tasked with identifying potential funding opportunities, preparing and submitting grant proposals, and managing the initial stages of funding negotiations. This process requires a deep understanding of both the scientific aspects of the project and the specific requirements set forth by funding bodies. (See Table 4.1)

Table 4.1: Relations between different Positions and RMA Goals

Measurements	Responsibility or Origin Level		
	RWTH	**ITA**	**External**
ESR Measurements	Staff Development: CDS Courses (Soft Skills, e.g.)	Staff Development: Specialized/ textile related courses	Self-organized seminars
Technology Transfer	Larger Company Key Accounts Innovation Centre Legislative Support	Direct Customer relations	Local associations and companies, e.g., Campus GmbH
Identification of Funding Sources	Newsletter and information events	Managing Board Team-Leader Country Representatives	External Newsletters from funding agencies or associations
Funding acquisition	Large initiatives (Excellence Cluster, etc.)	Researchers	-
Project Management	Supporting Activities (financial support, legislative support, etc.)	Content related management performed by the researchers Financial management performed by the internal financial department at ITA	Monitoring by the project coordinator on behalf of the funding agency
Communication	Marketing team of RWTH	Researchers and the corporation Development department are responsible	-
Strategic planning and politics	Overarching strategy	Managing Board and Team Leader	-

Once projects are granted, the project management is another vital component overseen by the responsible researcher. This role involves detailed planning, resource allocation, timeline management, risk assessment, and regular reporting to stakeholders. The responsible researcher ensures that all project milestones are met within the allocated budget and time frame while maintaining high standards of quality. Here, the researcher is highly supported by an ITA-internal finance department. For each project, one responsible person is assigned. This person is responsible for the internal financial kick-off. Wherein the requirements of the funding call are presented, deadlines for payments discussed and budget allocations checked. If budget has to be re-allocated, the finance department supports the communication with the funding agency. Different funding

agencies have different conditions as to which expenses can be settled. This expertise of the staff helps to reduce the researcher's workload and to allow a focus on the scientific work. Here, a brief introduction into the chain of dependencies between funding agencies and the institutes. (See Fig. 4.2)

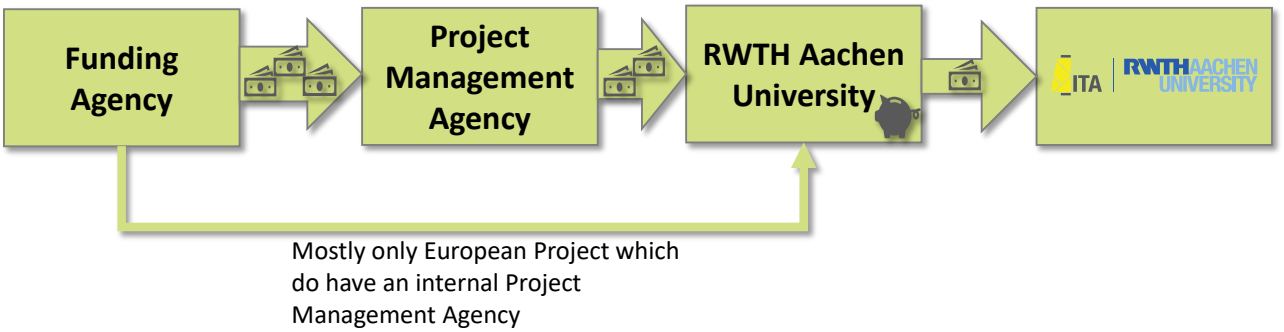

Fig. 4.2: Chain of dependencies

Compliance monitoring is essential to adhere to legal, ethical, and institutional guidelines. Depending on its importance within a project, compliance is monitored by the researchers and the managing board. This includes ensuring that all research activities comply with relevant regulations, obtaining necessary ethical approvals, and maintaining transparency in data management practices. Here, a guideline is given by the university that is adapted to the specific needs of the institute.

Besides associated companies, also patent experts and the managing board support the technology transfer into the industry. Researchers do have a supportive role in this part. Ideas and innovations that have been generated within the projects are in this way brought to the market. Technology transfer is strongly related to dissemination and science communication. Which is combined under the "communication" tile. In this regard, researchers and the team of corporations and development (CD) are working closely together. CD collects content from researcher to publish the on behalf of the institute. The researchers are responsible to present their findings on conferences, fairs and to publish scientific or semi-scientific articles in journals and magazines.

In addition to this direct allocation to the most important components of RMA, different level of support structures can be identified. Here, different organisational levels can be identified between external and ITA internal. All different levels offer support structures to enable research management with high quality. Outside the funding and university sphere, clubs and association are supporting structures especially for dissemination and discussions about the performed research. On an external level, national and international funding agencies send newsletters that inform about possible funding options. This type of information dissemination exists also on university level. Besides that, courses on project management are available for regular students and in the context of the doctoral academy also for PhD students. The university's patent and innovation centre support also starting businesses and patent ideas. The university's general financial department and the ITA internal finance department are working closely together and support each other. The last level is the ITA internal level, which consists mostly of the country and founding format representatives. Here, also staff trainings can be included.

5 RMA at ITA on the example of a funding call

The focus on funding acquisition describes in detail the entire process—from idea generation to proposal approval—with a clear separation between scientific responsibility held by researchers and financial

administration managed by the institute's financial department. Researchers generate ideas based on current scientific trends and societal needs while collaborating with potential partners. Once an idea is approved internally, they proceed with detailed research planning and, if needed, adaption in the requested funding call. This planification includes both scientific objectives and financial planning. (See Fig. 5.1)

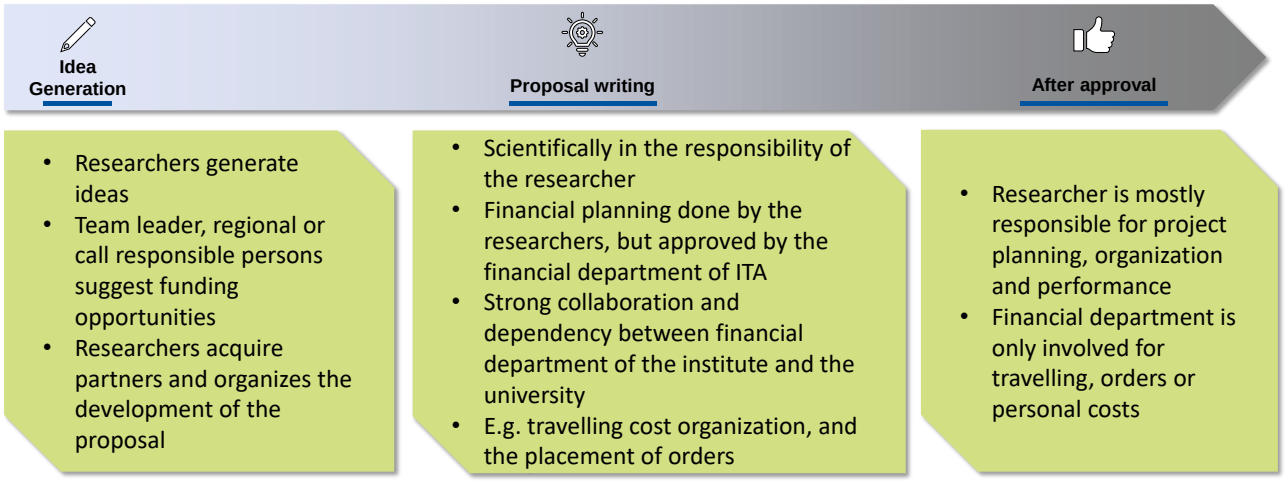

Fig. 5.1: Separation between scientific and financial administration

6 Project management courses at RWTH

Within the RWTH Aachen structure a Centre for Doctoral studies is established. The so-called RWTH Doctoral Academy offers doctoral students a wide range of transversal skills development courses as well as coaching and advising for systematic career planning. In addition to teaching professional skills, the Doctoral Academy also seeks to familiarize you with additional topics with relevance for science and research, such as scientific integrity, research data management, interdisciplinarity, and teaching skills.

Besides that, the following topics are addressed.

- Information on starting your doctorate at RWTH
- Family Services
- Teaching Skills Course Offerings
- Mental and Emotional Stress
- Mentoring for Women Doctoral Candidates
- Mailing List for Doctoral Candidates
- Advising on Application Documents for the Business World

Similar support structures are available for post-docs, advanced talents and tenure track attendees. Below some exemplary courses are listed.

- Scientific Integrity
- Field of Action: Promote Capacity for Innovation and Research
- Promote Capacity for Innovation and Research
- Research Data Management - an Overview (RDM I - online)
- Git Scavenger Hunt - eine Schnitzeljagd mit Git
- Offenes FDM-Netzwerktreffen (FDMN - online)

7 Guideline and suggestions

1) Define Clear Objectives and Goals:
    a. Establish specific, measurable, achievable, relevant, and time-bound (SMART) goals for each research project.
    b. Ensure that all team members understand and align with these objectives.
2) Develop a Comprehensive Research Plan:
    a. Outline detailed methodologies, resources required, timelines, and expected outcomes.
    b. Include risk assessment and contingency plans to address potential challenges.
3) Ensure Strong Leadership and Governance:
    a. Appoint experienced project leaders who can provide direction and oversight.
    b. Create a governance structure with defined roles and responsibilities for all team members.
4) Promote Interdisciplinary Collaboration:
    a. Encourage collaboration across different departments and disciplines to leverage diverse expertise.
    b. Facilitate regular communication and meetings among team members to foster synergy.
5) Implement Robust Data Management Practices:
    a. Establish protocols for data collection, storage, analysis, and sharing.
    b. Ensure compliance with ethical standards and data protection regulations. These guidelines should be established on an universitary level.
6) Provide Adequate Training and Resources:
    a. Offer training programs to enhance the skills of researchers in areas such as project management, data analysis, and scientific writing.
    b. Allocate sufficient resources including funding, equipment, and access to relevant literature.
7) Monitor Progress Regularly:
    a. Set up periodic review meetings to assess progress against milestones.
    b. Use performance metrics to evaluate the effectiveness of the research activities.
8) Foster a Culture of Innovation:
    a. Encourage creativity and out-of-the-box thinking within research teams.
    b. Support pilot projects or exploratory studies that may lead to breakthrough discoveries.
9) Engage Stakeholders Effectively:
    a. Identify key stakeholders including funders, industry partners, policymakers, and community groups.
    b. Maintain transparent communication channels with stakeholders throughout the project lifecycle.
10) Disseminate Research Findings Widely:
    a. Develop strategies for publishing results in reputable journals or presenting at conferences.
    b. Utilize digital platforms like websites or social media to share findings with a broader audience.
11) Evaluate Impact Post-Completion:
    a. Conduct post-project evaluations to assess the impact of the research on academia, industry, policy-making, or society at large.
    b. Document lessons learned to improve future research management practices.

By adhering to these guidelines, universities can establish robust frameworks that support high-quality research management in their scientific projects. The conclusion emphasizes multiple approaches to improve acceptance rates for European funding through a bottom-up approach at ITA. This approach encourages researchers to initiate projects based on their expertise and interests rather than top-down directives from higher authorities. Enhancing coordination between departments during calls for proposals is also suggested to avoid overlapping efforts and maximize resource utilization.

At RWTH Aachen, there is a mixture of centralized and decentralized services for RMA. For some subjects, inhouse solutions at Institutes like IT, help making certain project related measures leaner and more efficient. At the same time other topics require professional expertise (e.g., in the field of law) which cannot be covered by individual institutes and need to be centralized.