

MANAGING THE UNIVERSITY COMMUNITY

**The Challenges of Research Management:
*Developing a research strategy and funding it***

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Research Funding at RWTH Aachen University

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Abstract: Within this presentation, RWTH Aachen University is shown as a case study for good-practice in research funding. Emphasis is put on strategic aspects like interdisciplinarity, internationality and their application in the academic work of research.

Keywords: case study, instruments, interdisciplinary, international, research, technology transfer, third-party funding, university-industry relation, university management.

1. Introduction**1.1 RWTH Aachen University within the Euregio**

RWTH Aachen University is a technical university, founded in 1870. It is located in the very west of Germany, close to the borders with The Netherlands and Belgium. During the past decades, this has turned out to be a strategic advantage for the university. Certainly, structural funds as ESF and its Interreg Programmes have strongly supported this adhesion of transnational regions towards the Euregio Maas-Rhine in which RWTH Aachen University plays a key-role in terms of research, technology and education.

The potential in aspect of available expertise resulting from the quality of engineering and science at RWTH Aachen University was the deciding factor for international research institutions such as Microsoft, Ford, Ericsson or Philips to settle down in the Aachen region. Thus, mutual benefit for both, industry and RWTH Aachen University, can therefore be achieved.

1.2 Facts & figures

Around 30.000 students are enrolled at RWTH Aachen University in over 80 degree courses. The most popular fields of study are Engineering (40 %) and Natural Sciences (24 %), whilst the faculties of Humanities, Economics and Medicine boast about 10 % each (fig. 1).

About 400 professors, 1.800 academic and 2.200 non-academic staff are practicing within 260 institutes, chairs, teaching and research fields as well as central units. The overall budget, now exceeding 430 Mio € is comparable to that of a medium-sized city.

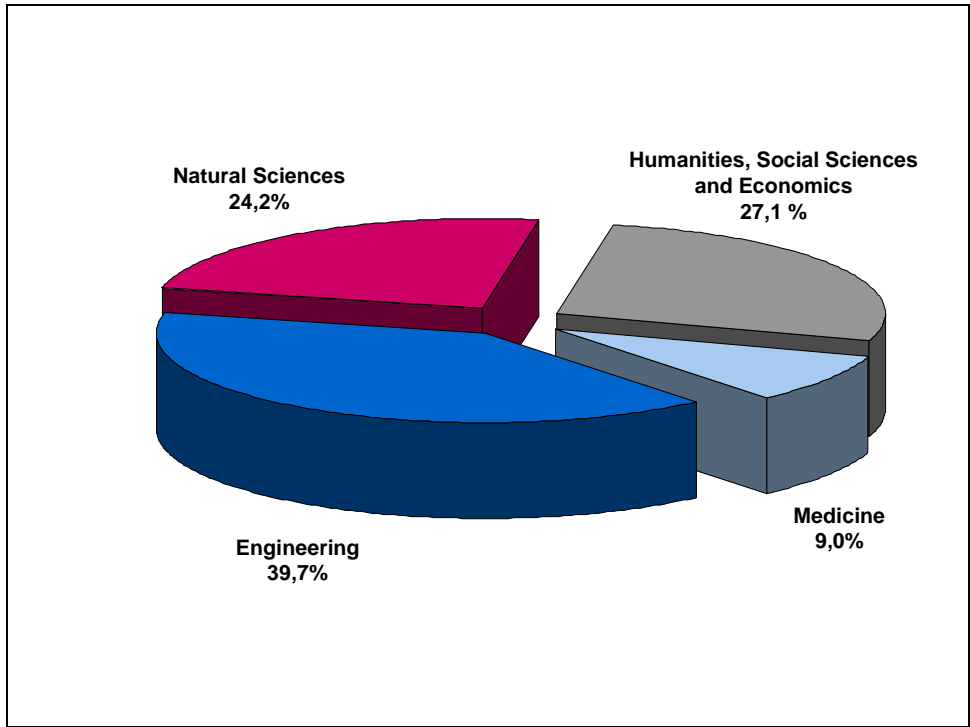


Figure 1: Students (2003/2004) at RWTH Aachen University by discipline

1.3 Current situation of extra budget funding

RWTH Aachen University has a leading position amongst German universities in attracting third-party funding, approximately 140 Mio € in 2003 coming from third-parties, both public and private. It has by far the highest success on research fund acquisition of universities in North-Rhine Westphalia in the 6th European Framework Programme (MWF 2004): 44% of the money flow towards NRW universities are dedicated to RWTH Aachen University, which is equivalent to 21 Mio € (fig. 2).

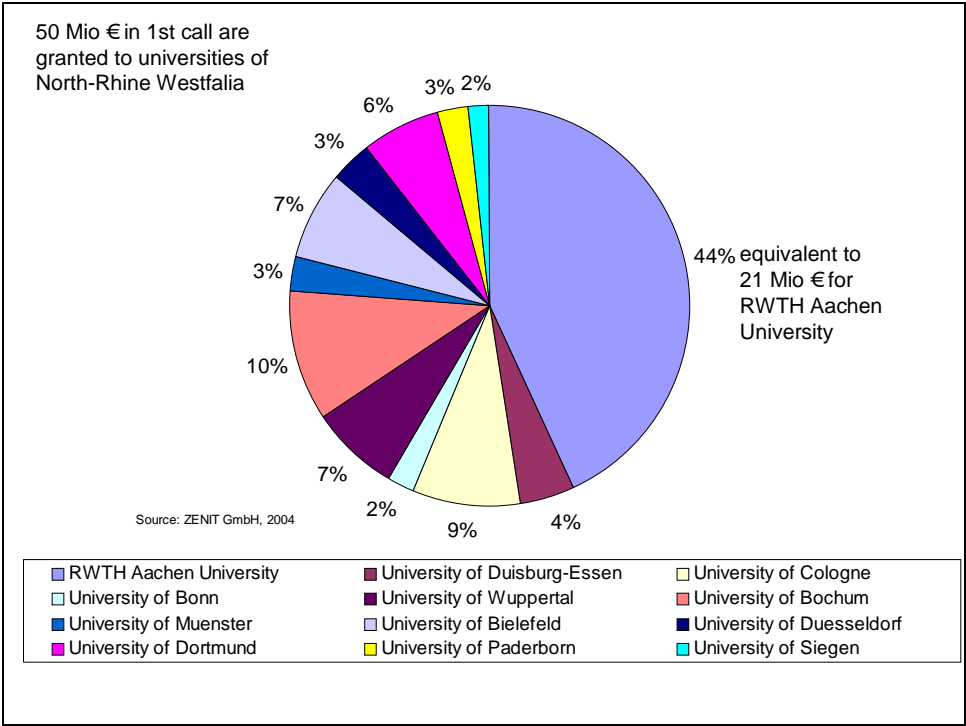


Figure 2: Acquired grants to NRW universities in FP6, 1st call

The financial basis of the university budget is coming from government. At RWTH Aachen University it can be increased by further funds by approximately 50 %. The researchers are benefiting from different funding sources, like Industry, EU, government and Deutsche Forschungsgemeinschaft (fig. 3).

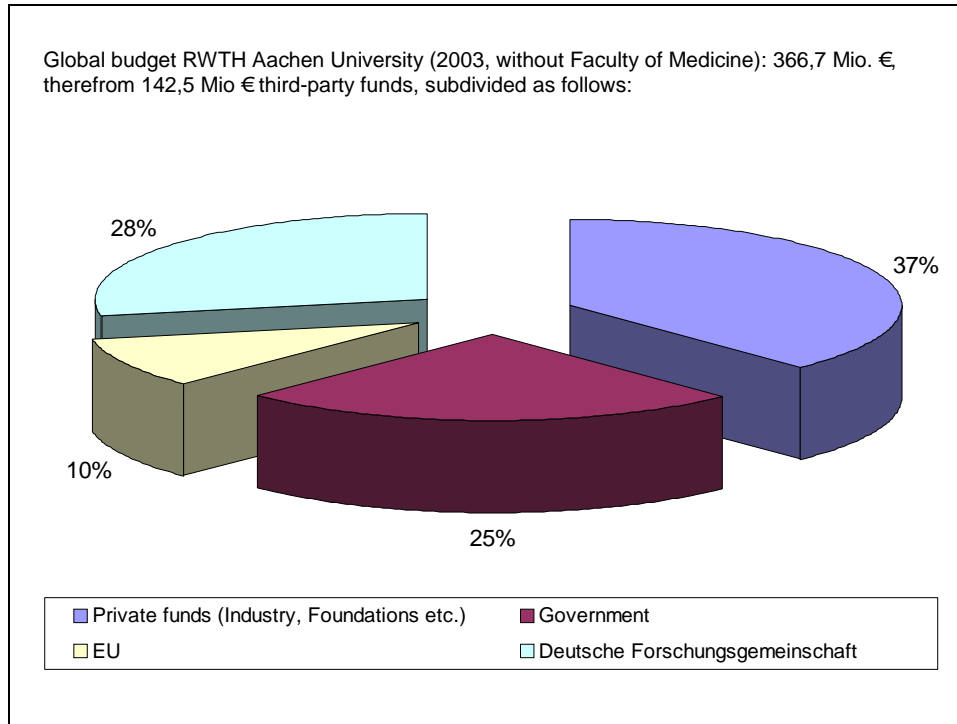


Figure 3: Sources of 3rd party funding at RWTH Aachen University

This diversification of funding sources is supported by the central service unit “Research Funding and Marketing” within the department “Technology Transfer and Research Funding”. In addition, RWTH Aachen University offers a special internal service for research funding in the framework programmes with its European Liaison Office. This office is strongly linked with the unit “Research Funding and Marketing”. The tasks of research funding comprise the following four issues:

- information
- consulting
- acting as brokers
- marketing

All in all, four people are employed in the field of research funding at the central services of the university, two of which half-time.

The university is part of a pilot project of the State of North-Rhine Westphalia and can thus benefit from a flexible budget. This allows the university management a dynamic and customized support of the institutes. Besides distinct support of research projects from regional and national or European research funds, there are budgets from the State for research and education. The dedicated budget for research is dependant on the number of professorships, the number of finished doctorates and the expenditures of third party funds.

Hence, the more third party funds a university is able to acquire, the more money is dedicated to that university.

2. The strategic approach of research funding

2.1 Objectives

RWTH Aachen University has developed strategic statutes, the so called “Leitbild”, where the management pointed out universal guidelines for every entity of the university. Some of those directives with reference to research funding are quoted in the following and explained in the subsequent paragraphs.

„Die RWTH Aachen fördert die Forschung. Forschung ist zentrale Aufgabe einer Universität und Grundlage lebendiger Lehre.“ (RWTH Aachen University encourages research. Research is the core task of the university and the basis for a vital education.) It has been stated in the statutes of the university, that research is the main issue of a university and the basis for a vital education. As a consequence, the direct support of research is becoming more and more important for the university management. Hence, there are central units dealing with research funding to support the research institutes of RWTH Aachen University. This service is free of charge for the institutes, because the central units are financed by the global budget of the university management.

From the scientific side, there is a Deputy Rector for Research as a member of the university’s board. He is chairing the commission for Structure, Research and Academic Trainees. Nevertheless, RWTH Aachen University has a decentralized approach of research with a strong freedom of research for the different university professors and research institutes.

„Die RWTH Aachen fördert Leistung, Qualifikation und Wettbewerb.“ (RWTH Aachen University encourages merit, qualification and competition.)

One example for internal competition in research is the so called “Drittmittelreport”. The university management undertakes this report on the acquisition of third-party funds to analyze both, the benefiting institute and the source of the fund. The flow of third-party funds is used as a key for additional money from the global university budgets: Following the merit principle, actively acquiring institutions are gaining budget twice.

An indicator for external competition are national rankings, where Aachen scores high especially in the fields of engineering and sciences. Those fields are mainly used to do a centralized marketing for the whole university. Nevertheless, the university management expects of the chairing professors to find out the most innovative fields or application for his/her research and apply for specific research funds. This is one module of internal competition.

All legal aspects of research projects, e.g. contracts, are checked and signed within the department Economy at the central services of the university. However, competition within a global research market implicates additional challenges: Specific legal issues (e.g. Intellectual Property Rights in FP6) and international law are increasingly important for research projects and bolstered by this department of the central services. Furthermore, the university is actively creating a professional patenting and commercialization infrastructure.

„Die RWTH Aachen pflegt und vertieft ihre Kontakte zur Wirtschaft.“ (RWTH Aachen University cultivates and strengthens its bonds to industry.)

A close collaboration with industry is of utmost importance for the success of RWTH Aachen University: It allows a constantly high level of research results and the necessary improvements for an education with a considerable degree of practical relevance. Furthermore, additional research funds from industry imply additional allocation of funds from the State.

The university has developed the culture to expect some years of meaningful industrial experience for an appointment to the position of a university chair. In consequence, the former managers have strong networks with industry which they can use for vital co-operations during their time at the university.

Another key is to involve those managers who graduated at RWTH Aachen University. This could be an exchange of “human capital” through both, invited speakers from industry and research projects for students in industrial settings as a part of their qualification. An improvement of the quality of education for engineers through applied and industry oriented research is an additional advantage.

The active network of RWTH Alumni is definitely a helpful tool to tighten the bonds between the university and its socio-economic environment. The CEO of Porsche, Mr Wiedeking, for example gave recently a speech on automotive issues at RWTH Aachen University, to mention one outstanding bond to a high-level executive who graduated in Aachen.

Moreover, large enterprises founded chairs for applied research within their domain at RWTH Aachen University (e.g. Ericsson, Philips, Grüenthal, Deutsche Post). Through this, they gain closer co-operation with the researchers of the university.

RWTH Aachen University is taking part in several Competence Clusters of the region. Those Competence Clusters are driven by industrial partners. Research collaboration within those clusters strengthen the region’s reputation for top research with a scientific backbone and towering relevance for application.

“Die RWTH Aachen baut ihre interdisziplinären Strukturen aus.“ (RWTH Aachen University expands its interdisciplinary structures.)

Complex problems almost never find their counterparts within just one discipline.

Interdisciplinarity is a prerequisite for problem driven research. Hence, RWTH Aachen University has reacted with the concept of today six Interdisciplinary Forums (fig. 4). Its members are professors throughout the nine faculties of the university. Almost 2/3 of all 400 university professors are at least member of one Interdisciplinary Forum. The university management supports this interdisciplinarity through executives, who act as brokers within their field. They are coordinated at the department of Technology Transfer and Research Funding at the central services of the university.

It turns out that interdisciplinary co-operation, as documented throughout the history of the six Interdisciplinary Forums, are a convincing argument for donators to support RWTH Aachen University.

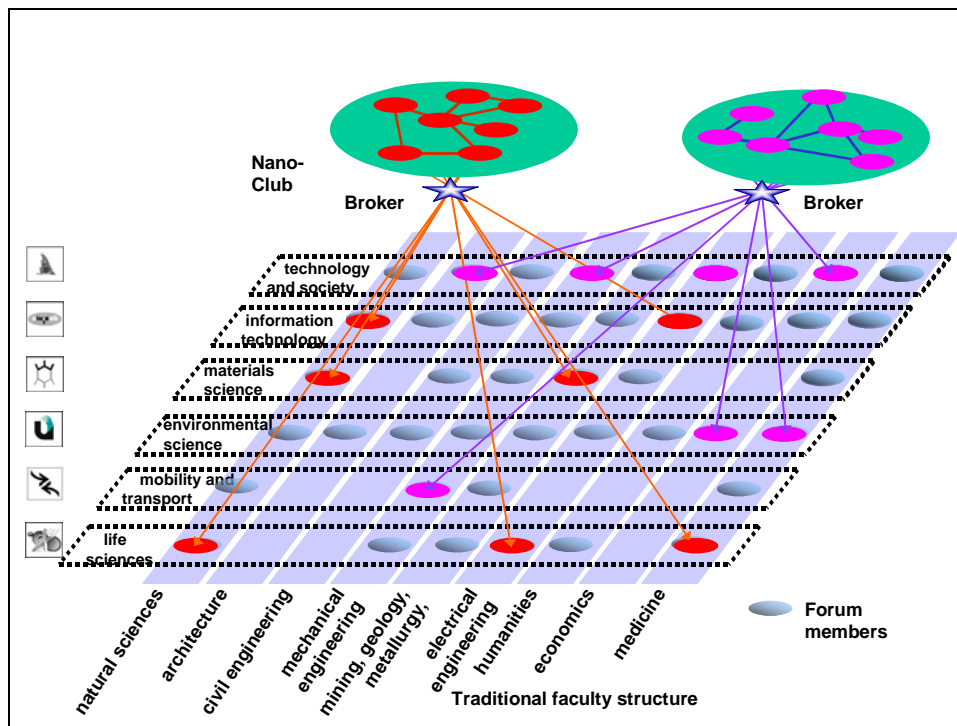


Figure 4: Multi-faculty collaboration through Interdisciplinary Forums

„Die RWTH Aachen erweitert die Internationalität ihrer Lehre und Forschung.“ (RWTH Aachen University amplifies the international orientation of education and research.) Another crucial point of the university’s statutes is the improvement of internationalization in education and research. This is proven by many international co-operations of RWTH Aachen University with industry and the scientific community. The university management supports this mainly through the “Office for International University Relations”. Two foci of this office should be mentioned: The dimension of international co-operation (on the level of organizations), and the dimension of student mobility (European Erasmus-Program). Furthermore, a lot of research institutes are cultivating their international relationships directly.

2.2 Controlling of the success

As shown in the 3rd European Report on S&T Indicators (DG Research 2003), RWTH Aachen University is second in the European competition of specialized universities by the number of co-publications. This is taken as an indicator for active international collaboration. But bibliometric data is not the only indicator for prosperous research (Tijssen et al. 2002), especially in technical universities.

Hence, the number of inventions and patents from technology driven research have been monitored. For this purpose, the university management is closely collaborating with Provendis on the commercialization of scientific and technological inventions for the benefit of the researchers and the university. Provendis is a commercial collecting society with public shareholders.

From March 2002 until April 2004, 128 inventions have been notified Provendis. This is 30 % of the total of 426 registered inventions from all universities in North-Rhine Westphalia. In 39 cases, those inventions became notified patents.

Thus, the success rate for inventions becoming patents is 30 % for applicants from RWTH Aachen University, compared with an average success rate of 24 % for all universities in North-Rhine Westphalia.

In addition, RWTH Aachen University is proud of having hatched many technological start-ups. Since 1995, about 200 start-ups emerged directly from RWTH Aachen University. 68 start-ups have joined a founder course (“gründerkolleg”). 14 of them have been awarded and are now entering the market as spin-offs from the scientific and technological environment of the university. Recently, the chair of entrepreneurship at RWTH Aachen University has been involved to evaluate and support this process of spinning off.

Besides those “countable” quantifiable measures, RWTH Aachen University tries to estimate its reputation amongst the different stakeholders (students, industry, staff, scientific community, investors etc.). Helpful instruments are e.g. a PR department that accurately analyzes press articles and a board of trustees that is anchored in the legal statutes (“Grundordnung”) of the university, corresponding to the “Hochschulgesetz NRW”, the law for universities located at the State of North-Rhine Westphalia.

3. Conclusion and future perspectives

RWTH Aachen University has shown many times its competitiveness in the national concourse. Even on a European scale, it is a leading university in terms of research funding.

The mix of centralized support of the university management and decentralized activities within the institutes has turned out to be successful in the field of research funding.

The main requirements stated in the proceedings of the Commission’s Conference on “The Europe of knowledge 2020” for universities are on good track (e.g. interdisciplinarity, university-industry relation). Thus, RWTH Aachen University maintains its international excellence and could be taken as an example of good practice for universities in Europe.

This is a solid basis to tackle future challenges like:

- an intensified networking of competences within the university and externally,
- to achieve excellence through Euregional and international co-operation in research,
- to improve the research marketing, which is focusing on the marketing of results,
- to enrich the budget by additional external funds for a continuity in high-level research,
- to optimize the quality of education and adopt it to the demands of the labor market, taking the Bologna process as a guideline for continuous improvement.

All those challenges have to be faced within the restrictions of time and money, which are for public organizations getting closer to those for the open market.

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