

Research Strategy of TU Dortmund University 2023–2027

1. Profile of TU Dortmund University

TU Dortmund University is a young and dynamic university with a special, internationally visible **profile** thanks to its lively combination of strong natural sciences and engineering as well as social sciences and humanities. It offers an **outstanding environment** for cutting-edge research in basic and applied fields as well as excellent conditions for successful studies. Its close ties to a region undergoing structural change make TU Dortmund University an expert in accompanying and shaping economic, social and political **transformation processes** and finding answers to the big questions of the future.

Five strong **profile areas** currently shape research at TU Dortmund University: (1) From Elementary Particles to Products Along Value Added Networks, (2) Innovations for sustainability and health, (3) Data, Models and Simulations to Shape Our Future, (4) Educational and Labor Worlds of Tomorrow and (5) Society and Transformational Processes in the 21st Century. In line with its educational **mission** across the board and for the region, the university offers over 30,000 students from Germany and abroad a diverse range of subjects, including comprehensive teacher training. As a **campus university**, TU Dortmund University also develops its special character in the social interaction of students, staff and researchers from over 120 nations.

The location **in the metropolitan and scientific region of the Ruhr Area** opens up access to an exceptionally attractive research, teaching and transfer area. This includes cooperation opportunities within the University Alliance Ruhr (UA Ruhr) including the Research Alliance Ruhr, the proximity to around 20 other universities, universities of applied sciences and non-university research institutions as well as the proximity to the *TechnologieZentrumDortmund*. Thanks to a modern understanding of research, an effective intertwining of fundamentals, application and transfer takes place, making TU Dortmund University a decisive **driver of innovation** for the region and a synergy generator for a strong start-up scene.

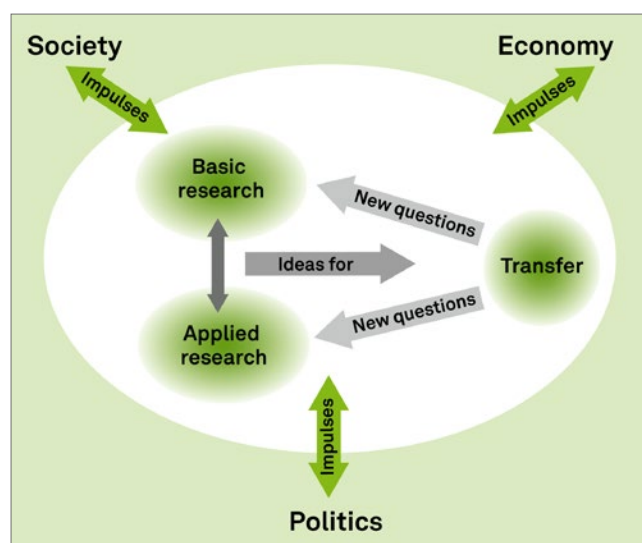
2. Research at TU Dortmund University

With its diverse range of subjects and its intensive interaction between basic and applied research, TU Dortmund University provides answers to relevant questions of the future and stands for a forward-looking and trend-setting type of technical university. The different research focuses of the departments contribute to the strength of the university with their individual perspectives as well as in multidisciplinary exchange and interdisciplinary cooperation. Through their excellent and innovative research, the scientists at TU Dortmund University shape the further development of the scientific communities of their subjects and face up to national and international competition in accordance with the quality criteria defined in the according subject area. In addition to the outstanding individual research, they are also open to initiating and participating in collaborative research networks. The research mission statement (*Leitbild Forschung*)¹, the five profile areas, in which the particularly outstanding research fields are bundled², as well as the current university development plan (*Hochschulentwicklungsplan, HEP*) provide the framework for research at TU Dortmund University.

Research at TU Dortmund University provides scientifically sound findings and impulses for technological and social innovation and transformation of the economy, politics and society and shapes information for and exchange with the public. This puts TU Dortmund University in an excellent position to transfer ideas and findings from science into application on the basis of basic research and the applied research that builds on it, and in this way to initiate and support regional, national and international transformation processes.

In line with its social responsibility, research at TU Dortmund University makes an important contribution to social development and to successfully overcoming challenges and crises and proactively avoiding them in Germany and worldwide. This is accompanied by continuous adaptation and change in research, not only in terms of its content and methods, but also with regard to its processes, structures and framework conditions. It is also important to make research sustainable, use the opportunities offered by digitalization and act in an agile manner. By implementing this research strategy, TU Dortmund University will continue to meet this requirement fully.

Fig. 1 Research at TU Dortmund University



1 <https://www.tu-dortmund.de/en/partners/collaboration-and-research/research-profile-of-tu-dortmund-university/?tabindex=1&cHash=40f134c67eeec231a7c56b005b485ad7>

2 <https://www.tu-dortmund.de/en/research/research-profile/research-areas/>

3. Overarching Objectives of the Research Strategy at TU Dortmund University

Excellent research for the advancement of knowledge and the transfer of research results to society, business and politics are overarching research-related goals of TU Dortmund University. Against the background of dealing with and overcoming social challenges and issues, the research strategy forms the basis for securing and further expanding the research performance at TU Dortmund University. To this end, TU Dortmund University's research strategy pursues **six overarching objectives**, with the aim of continuing to successfully position itself in a national and international context as a technical university with a special research profile that combines strong natural and engineering sciences with social sciences and humanities:

- Objective 1: Strengthen excellent basic and application-oriented research, their systematic combination and interdisciplinary cooperation**
- Objective 2: Attract, promote and retain excellent established and emerging high-potential scientists**
- Objective 3: Expand internationalization and diversity in research**
- Objective 4: Enable and promote transfer**
- Objective 5: Ensure research-based and research-oriented teaching**
- Objective 6: Further develop science communication**

These six overarching substantive objectives go hand in hand with **three superordinate institutional objectives**:

- Objective 7: Further expand research infrastructures**
- Objective 8: Strengthen quality management**
- Objective 9: Provide systematic monitoring and evaluation on an ongoing basis**

The **continuous acquisition of third-party funding** is of central importance for implementing the objectives of the research strategy, maintaining and further developing the performance as well as ensuring the competitiveness of TU Dortmund University: Research-related third-party funding offers improved resources for research, supports the successful competition for the best minds, supplements the basic resources, also through the associated funds within the framework of the LOM of the federal state, and promotes the possibilities of cooperation and the visibility of research at TU Dortmund University. In addition, they are highly relevant for the training of especially qualified specialists who, following their project work, take up positions in science, but also in many areas of society and the economy.

4. Substantive Overarching Objectives of the Research Strategy at TU Dortmund University

Objective 1: Strengthen excellent basic and application-oriented research, their systematic combination and interdisciplinary cooperation

Securing and further strengthening excellent research is a central objective of TU Dortmund University. The focus lies on enabling and realizing outstanding basic and application-oriented research, their systematic combination and quality assurance. An important goal (here) is to initiate, consolidate and expand cooperative research, especially projects in the spokespersonship of TU Dortmund University, as well as to promote the ability to collaborate based on excellent individual projects. Furthermore, this includes the further optimization of the framework conditions for research at TU Dortmund University, the strengthening through appointments of further excellent researchers, the expansion and

use of research-related networks as well as the relief and support of researchers through a competent, service-oriented administration and a central infrastructure for interdisciplinary requirements.

Objective 2: Attract, promote and retain excellent established and emerging high-potential scientists

Attracting, promoting and retaining excellent established and emerging high-potential scientists from Germany and abroad is an important objective for TU Dortmund University. A higher visibility of TU Dortmund University in the relevant scientific and public contexts also contributes to this goal. The university attaches particular importance to the quality-oriented, transparent and swift organization of all phases of an appointment procedure and the national and international advertising of its positions in relevant academic networks and job portals in order to reach the broadest possible field of applicants. In addition, TU Dortmund University continuously optimizes the framework conditions for successful research. TU Dortmund University also aims to make academic careers more predictable and to retain excellent early career researchers at TU Dortmund University in the long term. In addition to the professional development, key objectives are the interdisciplinary qualification, networking and advising of early career researchers as well as the promotion of early academic independence.

Objective 3: Expand internationalization and diversity in research

TU Dortmund University will continue to vigorously expand internationalization and diversity in research. The internationalization of research aims to increase both the individual activities of researchers and the institutional activities of TU Dortmund University, such as strategic networks, institutional cooperation, representation on committees and events, in order to further increase the international visibility and competitiveness of TU Dortmund University. The aim of expanding diversity in research is to increase the diversity of researchers and to take greater account of diversity aspects in research in order to do justice to social heterogeneity and the associated participation in research. TU Dortmund University is convinced that adequate solutions for the issues of the future also require multi-perspective and diverse approaches.

Objective 4: Enable and promote transfer

TU Dortmund University has integrated transfer as a third pillar ("third mission"), continuously performs this core task and develops it further. Transfer comprises and refers to any impact-oriented dialogical interaction with business, society and politics. Omnidirectionality and interdisciplinarity characterize the transfer activities. In accordance with the *Transfer Strategy of TU Dortmund University*, the objectives include sensitizing and empowering its members for transfer and cooperation as well as enabling and effectively supporting transfer activities through optimal structures and framework conditions. A further aim of the research strategy is to consider the economic, societal and political transfer of research results as early as during the planning phase of research projects and to make it an integral part of research projects at TU Dortmund University in the long term.

Objective 5: Ensure research-based and research-oriented teaching

TU Dortmund University will ensure and continuously develop research-based and research-oriented teaching. In accordance with its self-image as an educational institution in which excellent research and excellent teaching mutually benefit each other, teaching at TU Dortmund University aims to spark the students' curiosity about science and to provide them with the necessary skills to actively participate in the acquisition, development and production of knowledge. It is therefore consistently research-oriented: Students learn to classify and critically question scientific findings on the basis of the current state of research. Through project-based teaching formats, they are actively involved in research processes and thus in science³. At the same time, potentially outstanding early-ca-

³ https://qm.tu-dortmund.de/storages/qm/r/Leitbild_gute_Lehre/220404_LeitbildguteLehre_engl.pdf

reer researchers receive appropriate support during their studies. In the context of lifelong learning, TU Dortmund University will also assume its responsibility in teaching beyond the studies.

Objective 6: Further develop science communication

TU Dortmund University conducts research embedded in the region and for society. It therefore communicates and informs about its scientific objectives and results in a comprehensible manner and offers formats for exchange to various target groups. Accordingly, it will continue to develop science communication by promoting and supporting quality-oriented and innovative communication formats. The aim is to inform the public about the state of science and research findings by scientists at TU Dortmund University, to promote interest in research topics, to enable exchange in the sense of bidirectional knowledge transfer with society and - where reasonable - to open up opportunities for participation.

5. Superordinate Institutional Objectives of the Research Strategy at TU Dortmund University

Objective 7: Further expand research infrastructures

TU Dortmund University creates the best possible conditions for science through future-oriented research infrastructures. At the same time, it cooperates with the partner universities in the UA Ruhr and thus lays an essential foundation for diverse collaborations. The establishment of the Research Alliance Ruhr, which brings together interdisciplinary cutting-edge research from the three universities, is an important concern within the university network. At TU Dortmund University, the identification, regular review and, if necessary, adjustment of the content of the profile areas form the nucleus of cooperation with strong research infrastructures. TU Dortmund University also establishes interdisciplinary research centers upon application where new research topics are being worked on across departments, also with the aim of acquiring joint projects.

The concept of permanent employment positions at TU Dortmund University gives scientists who are particularly distinguished in research and teaching a long-term perspective in early career phases. At the same time, the departments specifically strengthen teaching and research areas beyond the lifetime professorships. Adequate minimum funding is ensured for junior professorships at TU Dortmund University and junior professors are supported as part of a targeted framework program.

The internationalization of research will be structurally strengthened through the expansion of the Welcome Services and the establishment of an International Research & Entrepreneurship Office. Diversity-sensitive research benefits from the establishment of the new Vice Presidency Diversity and the Female Faculty Club for the networking of female professors. The Guideline for Protection against Discrimination and Sexualized Violence and the establishment of the associated counselling and complaints offices are intended to address and prevent misconduct, particularly in the research and doctoral context, which is sometimes characterized by asymmetrical relationships.

In order to structurally anchor incentives to acquire third-party funding, the departmental budgeting model provides for a third-party funding component. In addition, the departments are provided with success-oriented grants to support and ensure research work (FobaZuz).

Objective 8: Strengthen quality management

The further strengthening and professionalization of quality management at TU Dortmund University is an important university-wide institutional goal in order to continuously improve research in all areas:

To provide an impetus for the further development of research strategy considerations, the Rectorate is assisted by the Strategy and Research Council, which is made up of highly experienced scientists from various disciplines. The establishment of a Section Research Data Management and a research information system are major current steps to support quality criteria for good research. The central Section Research Data Management offers a comprehensive service from the collection to the archiving of research data. Necessary software solutions - if the solution of the federal state is not sufficient – are being implemented; harmonization with the UA Ruhr partners is being sought. The establishment of an ethics committee also contributes to the objective of strengthening quality management, as does the planned UA Ruhr-wide creation of a compliance council for overarching ethical issues. The Principles of Good Scientific Practice and the associated Commission ensure integrity in research. Ombudspersons act as contact persons in cases of possible violations of the Principles of Good Scientific Practice.

TU Dortmund University is also implementing its quality standards by expanding and differentiating its qualification and advisory services. For example, leadership development for university lecturers is in revision and an onboarding program for newly appointed professors is conceptualized. The advisory and support services for researchers in acquiring third-party funding and structuring strategic collaborative projects as well as for academics in early career phases have already been significantly expanded and differentiated. These offers are regularly evaluated and adapted as necessary. Applications and nominations for highly prestigious prizes and awards are professionally prepared and supported at a high level during the submission process.

Objective 9: Provide systematic monitoring and evaluation on an ongoing basis

Systematic monitoring and regular, science-guided evaluations are key instruments for TU Dortmund University to ensure the continuous positive development of its research performance and to be able to make adjustments on a solid basis:

The development of a research information system (*Forschungsinformationssystem*, FIS) and an application and project database as an element of the FIS have been completed in important parts. The core research dataset can be operated on this basis and information on publications, projects, third-party funding and patents, among other things, can be linked and read out. These data are also used by the research controlling system, which is currently being set up to monitor and improve the management of third-party funding activities, among other things. Monthly reports on central research policy developments in Germany and abroad are also part of the monitoring process.

The annual third-party funding report of TU Dortmund University supports monitoring as well as the annual evaluation of the development of central third-party funding formats at TU Dortmund University as a whole and at the level of the individual departments. An annual exchange takes place with the departments in the context of the Department Dialogs on Research between the Vice Presidency Research and the Dean's Offices as well as other department members. Issues relating to research-based and research-oriented teaching are followed up by the Vice Presidency Academic Affairs in the biennial meetings. The offers of the Grants Services and TU Dortmund Graduate Center are evaluated in a standardized manner every semester and further developed on this basis.

APPENDIX

Indicators and measures 2023–2027⁴

Objective 1: Strengthen excellent basic and application-oriented research, their systematic combination and interdisciplinary cooperation

Indicators

- **Increase in (a) acquisition of third-party funds, (b) the applications as well as (c) the applicants in all areas, including**
 - Excellence strategy
 - DFG collaborative projects (spokespersonships and [institutional] participations)
 - EU projects (including ERC grants)
 - Federal and state funding
 - Industry, business and foundation projects
 - DFG grants
 - Strategic (e.g., research buildings, NRW profiles and networks) and specific funding (e.g., Heisenberg, Alexander von Humboldt programs, Emmy Noether Groups)
- **Positive national and international publication comparison (including bibliometric indicators)**
- **Increased visibility of TU scientists and their successes:**
 - Memberships of TU members in academies, DFG review boards and similar bodies
 - Receiving prizes and awards
- **Increase the number of guest researchers at TU Dortmund University**
- **Substantial number of joint projects with UA Ruhr, AUF and other universities in Germany and abroad**
- **Improved performance in research-related indicators at**
 - national rankings
 - international rankings

Central measures

- **Excellence strategy**
 - Intensive support for the initiatives
 - Implementation of comprehensive measures in the area of non-scientific excellence criteria
- **Appointments**
 - Shortened appointment procedures of strategically relevant professorships
 - Employment of outstanding (international) researchers
- **Exchange and advice**
 - Annual department dialogs on research between the Vice Presidency Research and the department management

⁴ The list can be amended on an ongoing basis. All indicators are compared to the version of 12/2022.

- Organization of “TU Dortmund University in Conversation” and other networking events such as the “Future Dialog” for the networking with local companies
- **Enabling and support**
 - Continuous support for the application, implementation and administration of third-party funded projects by the administration and the Rectorate, including the targeted training and support of early career researchers in applying for and processing externally funded projects
 - Individual advice and support for application processes, comprehensive information formats
 - Proactive support in applying for prizes and awards and encouragement to participate in external bodies such as DFG Review Boards
 - Survey of TU scientists on support needs in the area of research
 - Making use of the decision-making scope regarding temporary reduction of teaching hours by the departments to cushion peak workloads
 - Financial incentives
 - Submission of a DFG proposal as usually integral part of target agreements for new appointments
 - Financial support for strategic research alliances in the outline and application phase

Objective 2: Attract, promote and retain excellent established and emerging high-potential scientists

Indicators

- Number of appointments of outstanding established scientists
- High proportion of successful retention negotiations with excellent scientists
- At least stability in the number of doctorates completed each year while maintaining a high level of academic quality
- Acceptance and positive assessment of the qualification, networking and advisory services by the target groups as part of evaluations
- Increase in the number of excellent junior research groups (e.g., Emmy Noether, ERC StG, NRW returnees, Sofia Kowalewskaja) as well as prizes and awards for early career researchers
- Increase the proportion of early career researchers with independent acquisition of third-party funded projects (e.g., DFG grant)
- Number of appointments of early career researchers to university professorships

Central measures

- Professional and swift appointment procedures by departments and the Staff Unit Appointment Management
- Specific support programs for selected target groups
 - Program for junior professors JProf TU
 - Excellence program for excellent high-potentials on the way to a professorship
 - Leadership development offers for university lecturers
- Promotion of the independence and visibility of early career researchers
 - TU Dortmund Young Academy for project funding and support
 - tu.hosts

- Research prize
- Rudolf Chaudoire Prize
- **Career**
 - Targeted use of assistant professorships with tenure track for early reappointments and thus sustainability
- **General conditions**
 - Introduction of “Principles of Good Doctoral Supervision” and a template for supervision agreements for doctoral candidates
 - Strengthening of supervision and assessment opportunities for doctoral candidates by early career researchers as part of the revision of the framework doctoral regulations
 - Revision of the habilitation framework regulations
- **Statistics: Central recording of doctoral students (doctoral student statistics)**

Objective 3: Expand internationalization and diversity in research

Indicators

The indicators for the objectives in the field of internationalization are set out in the *Internationalization Strategy of TU Dortmund University (2022)* and initially include activities at the level of individual researchers:

- Increasing the proportion of international, outstanding academic staff at all status levels
- Increased international technology transfer into practice
- Increased number of international guest visits by professors and researchers
- Increasing average EU third-party funding per professorship
- Participation of TU members in international committees
- Expansion of international research cooperation in the profile areas

Indicators for the achievement of diversity targets:

- Increased and clear visibility of diversity of researchers according to gender, origin, age and internationality in all career phases
- Increased visibility of diversity-sensitive research within the university
- Consideration of diversity in the formation of research consortia

Central measures

Measures in the *Internationalization Strategy of TU Dortmund University (2022)*

- Increased international job advertisements for research assistants
- Increased communication in English and German to TU Dortmund University employees via the website, mailings and notifications
- Joint information events with the Office of Research Support Services and the International Office on EU third-party funding
- New guest house for international scientists

Measures to promote diversity in research

- Expansion of advisory, support and networking services both with regard to (a) the diversity of researchers as well as (b) diversity-sensitive research

- Expansion of diversity monitoring, e.g., in appointment procedures
- Increased involvement of students from diverse backgrounds as student assistants (SHKs) or graduate assistants (WHKs)
- Development of a general concept for the targeted support of first-time graduates at all career levels
- Networking of female professors in the Female Faculty Club
- Advice on diversity-sensitive research and making diversity-sensitive research more visible at TU Dortmund University as part of university communications
- Increase in third-party funding and institutional projects in the area of diversity

Objective 4: Enable and promote transfer

Indicators

- Increase in third-party funding in the areas of transfer, cooperative research (e.g., ZIM projects), contract research
- Increase in the number of patents and start-ups
- Increased number of memberships in expert commissions, advisory boards, etc.
- Realized real laboratories, citizen science formats, co-creation formats, etc.
- Strengthening of the transfer activities, specifically in the social sciences and humanities

Central measures

- Comprehensive range of further training offers and the opportunity to obtain certificates
- Advice for researchers on the topics of transfer, founding/start-ups and intellectual property
- Support for transfer activities at TU Dortmund University
- Establishment and integration of a transfer advisory board (*Transferbeirat*) consisting of members from all departments to support transfer activities
- Optimize (contractual) framework conditions for R&D cooperation (especially together with *TU concept*)
- Simplify access to laboratories for Small and Medium Enterprises (SMEs) (in line with EU Framework Procurement Regulation)
- Active transfer office for arranging contacts and maintaining networks, including business development, chamber of commerce, *TechnologieZentrumDortmund* and non-university research institutions
- Support for the establishment of a center for social innovation
- Close networking and exchange between research funding and transfer counselling in the accompanying of research projects

Objective 5: Ensure research-based and research-oriented teaching

Indicators for the achievement of targets

- University-wide implementation of the Guiding Principles Good Teaching and monitoring via the QM system
- Substantial acquisition of funding for the further development of (research-oriented) innovative teaching
- Continuity and further development of digital and hybrid research- and project-based teaching and learning formats

- Expansion of research-oriented and international Master's degree programs, especially in the profile areas of TU Dortmund University

Central measures

- Introduction and establishment of Guiding Principles Good Teaching, developed jointly by teaching staff and students, which sets out the requirements for a didactically high-quality, research-oriented learning environment
- Establishment of a Digital Teaching Coordination Office at the interface between the central facilities for technology and didactics
- Central monitoring processes: 2-yearly meetings with the departments, annual student council meetings
- Establishment of a nationwide competence center for digital accessibility
- Accessible design of digital and analog learning environments
- Supporting lecturers in acquiring funding for the further development of (research-oriented) innovative teaching (e.g., Hybrid Learning Center)
- Promotion of and participation in tenders to support and further develop (research-oriented) innovative teaching

Objective 6: Further develop science communication

Indicators

- Increased amount of centrally coordinated science communication by the Office of University Communications and the Office of University Marketing (events)
- Numerical scope of individually disseminated scientific communication via articles and interviews by researchers in online and print media (as far as can be recorded via press reviews)
- Number of press articles about TU research in national media
- Number of followers on TU social media channels
- Number of press inquiries to the Office of University Communications
- Regular use of different formats for science communication

Central measures

- Introduction of Guiding Principles for Good Science Communication
- Bundling and, if necessary, expansion of further training courses and support for science communication by researchers
- Pilot project Scientist in Residence for Science Communication at the interface between the Chair of Science Journalism and the Office of University Communications
- Introduction of an annual prize for good science communication