

Transfer Strategy of the GFZ

Development of Knowledge and
Technology Transfer 2021–2025

GFZ CONTRIBUTION TO THE HELMHOLTZ TRANSFER STRATEGY
November 2021



Dear colleagues,

The current transfer strategy of the GFZ comprises the principal measures taken by the GFZ to promote and realize the effective transfer of key geoscience knowledge and technology into the relevant dimensions of society and the economy. It was developed in a coordinated process during 2020/2021 as part of the overarching Helmholtz Transfer Strategy.

In the new Helmholtz Transfer Strategy, the term *transfer* is defined broadly in the sense of science-based know-how that finds practical application outside of science. Strengthening this knowledge and technology transfer has been of particular interest to politicians and funding agencies for some time. The development of a comprehensive transfer strategy is, therefore, also closely linked to the Helmholtz Association's voluntary commitments within the framework of the Pact for Research and Innovation.

The structure of introductory strategic points, concrete goals, instruments and measures as well as key figures is identical for all Helmholtz Centres. At the GFZ, a strategy for knowledge and technology transfer was developed in close consultation with a working group of the Directors' Meeting on the basis of the guidelines and existing technology transfer concepts. Particular focus was placed on the goals and measures as well as on the selection of GFZ-specific indicators to measure success in the categories of open science products, knowledge transfer and technology transfer.

The strategy of the GFZ as well as of the entire Helmholtz Association will be evaluated on the basis of various indicators up to the target year 2025. At the same time, both documents are deliberately designed as "living documents" so that adjustments will also be made during the coming years, for example, after measures have been implemented or as a result of modifications to the general conditions. The transfer strategy will, thus, serve as a flexible orientation framework for the further development of transfer at the GFZ.

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Scientific Executive Board

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Link to the Helmholtz Transfer Strategy:

<https://helmholtz.tubcloud.tu-berlin.de/s/fcfHn5bAffiDR4Y>

Transfer goals of the GFZ – at a glance

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■ Transfer mission of the center

In line with the Helmholtz mission, the GFZ also makes “contributions to solving major and pressing issues facing society, science and industry” in its research field.

In the research field Earth and Environment, the focus is on investigating the causes and effects of global change, the development towards sustainable resource use, and research into the causes and risks of natural hazards and the changes in various ecosystems. Through their increased commitment to knowledge and technology transfer, the participating centers of the Helmholtz Association will, in the future, contribute even more strongly to evidence-based political and societal decision-making processes related to the complex of topics of Earth and Environment (see also Helmholtz Strategy 2018: p. 13). Providing system analyses, knowledge, data and technologies is also a central motivation of the new program “Changing Earth–Sustaining our Future” of the Research Field (PoF IV program application p. 3).

The GFZ contributes to solving the “Grand Challenges” especially in application-oriented fields of Earth system research such as geohazards and climate change, geoennergies and drilling technologies, geodata and remote sensing. Accordingly, the main transfer contributions to society, politics and the economy concern the following topics:

- **Provision of socially relevant geodata from terrestrial and satellite-based Earth observation**
- **Reduction of risks from natural hazards including early warning**
- **Securing natural and energy resources**
- **Coping with the consequences of global change in the human habitat.**

For the GFZ, according to the “Principles for Technology Transfer at the GFZ” adopted in 2015, “transfer of knowledge, results and technologies to society, politics and industry [...] is an integral part of the GFZ’s strategy, through which the center performs an important function in social and political information and consultation as well as in the innovation process”. This is in line with the statutory purpose of the GFZ: “The research results are to be published and, in particular, within the scope of the knowledge and technology transfer to be communicated to society and industry”.

The Center’s transfer strategy is based on a common mission and strategy for knowledge and technology transfer (see section 3) and is related to all three missions of the Helmholtz Association in accordance with the Pact IV self-commitments. Central elements are the further improvement of the innovation climate and the dialogic transfer culture, accompanied by the expansion of resources and a better presentation of transfer activities and successes, for example via “story-telling”, especially in knowledge transfer and for impact analysis.

■ Transfer strategy of the center

The GFZ's transfer strategy builds on the adopted documents cited in the section on the transfer mission. In addition to the existing definitions of fields of action and prioritized measures based on benchmarking and a SWOT analysis of the operational technology transfer concept developed in 2020, the strategic priorities in knowledge transfer were added in a further discussion process in 2021.

A result of the strategic discussion is that technology and knowledge transfer, including contributions to the synthesis and communication platform of the research field Earth and Environment "SynCom", and outreach activities of the GFZ will be regarded in a more integrated way. The strategic further development has taken into account both joint determinations in the research field for the PoF IV period and the recommendations made in 2018 as part of the scientific review of program-oriented research at the GFZ.

Transfer is rethought here, neither as unidirectional communication nor as an appendage to excellent research. Rather, researchers should view transfer as a central task to integrate dialog with stakeholders outside the scientific community as an integral part of their tasks. In the future, this approach should also be applied to appointments and to the acquisition of third-party funding. Accordingly, a modern, recursive and broad understanding of transfer will be taken as a basis, which not only includes transfer to the economy but also to all parts of society. Transfer also requires new methods, mechanisms and incentive systems, since the science and innovation system is increasingly open (from open science to open source to open innovation).

The current integrated transfer strategy has been newly developed in a discussion process at the GFZ during 2021. The implementation and proactive adaptation of the transfer strategy is also a communication and discussion process with all relevant actors at the center. Accordingly, the transfer strategy will be further developed on an ongoing basis.

The following focal points have been identified as central goals: Transfer culture and incentive systems, raising awareness of transfer and entrepreneurship, optimizing transfer support, exploiting software, models and data in the context of open science/open source, establishing knowledge transfer beacons and application platforms such as the Helmholtz Innovation Labs, and strategically strengthening knowledge transfer and developing new transfer models.

These goals will be operationalized through instruments and measures with concrete time frames. Implementation will be supported by an expansion of resources, active innovation and transfer management, and suitable evaluation and monitoring systems. This will strengthen the center's internal transfer culture permanently and sustainably.

I Goals, instruments and measures

GOAL 1

Improvement of the transfer culture

Instrument: Increasing of awareness and appreciation

→ **Measures:** Appreciation at management level, consistent use of relevant parameters (individual, center, organization) to strengthen recognition and reputation, consideration in the section evaluation system QUIBS and budget relevance, integration of transfer activities in target agreements and consideration of transfer aspects in the case of fix-term contracts and new hires incl. appointment procedures, presentation and communication of transfer successes and role models

Instrument: Increasing of financial incentives

→ **Measures:** Increase returns flow from contract research, software and licenses through new revenue sharing models between GFZ, section and, if applicable, scientists, enabling transfers (e. g. covering of material costs)

Instrument: Internal bonus system to reward transfer successes of the previous year

→ **Measures:** Establishment and further upgrading of the team bonus from the GFZ Innovation Fund as a “GFZ Innovation Award”, possibly completed by individual special payments

GOAL 2

Increase of awareness for transfer and entrepreneurship

Instrument: Stronger integration of transfer and research

→ **Measures:** Integration of knowledge and technology transfer requirements in research planning, discussion processes and information formats on the interplay between open science/ open source and transfer/utilization mandate to reduce conflict of objectives, increase stakeholder/target group orientation through workshops

Instrument: Expansion of entrepreneurship

→ **Measures:** Entrepreneurship education for young scientists in graduate programs as well as for managers, cooperation with regional partners for entrepreneurship education, use of role models of successful GFZ spin-offs (see also Goal 4)

Instrument: Raising awareness of career alternatives

→ **Measures:** Concept sharpening and implementation with Career Center, events involving GFZ alumnae, establishment of alumni network

Instrument: Establishment of a transfer advisory board

→ **Measures:** Advice on strategic processes, transfer-relevant Executive Board decisions and on selection processes (innovation projects, innovation award)

GOAL 3

Expansion and optimization of transfer activities

Instrument: Establishment of an integrated knowledge and technology transfer unit

→ **Measures:** Coordination of transfer activities in one unit, expansion of the transfer office's personal resources, interfaces with SynCom and outreach activities (school lab, events, brochures, teaching materials, etc.)

Instrument: Strengthening of innovation management

→ **Measures:** annual technology and knowledge transfer screening, increase in the number of internal innovation projects, professional selection and monitoring, establishment of innovation scouts in the sections

Instrument: Optimization of internal processes

→ **Measures:** Revision of workflows and guidelines, optimized intersection management (inventions, contract research, start-ups, licensing, software)

Instrument: Strengthening business development and technology marketing

→ **Measures:** Setup of expertise in the area of exploitation/business models for software and data, expand digital technology offerings and other marketing activities (e. g. via social networks such as LinkedIn), transfer of best practices from the Innovation Labs, setup software portal

GOAL 4

High level of spin-offs

Instrument: Awareness raising and consulting

→ **Measures:** Entrepreneurship workshops with Career Center, start-up events, training network (Start-up Academy, etc.) Consultations with transfer office (funding, business models, etc.)

Instrument: Support for start-up ideas and business field development

→ **Measures:** Idea competition, innovation fund support, internal validation, incubation in GFZ Innovation GmbH/incubator of GFZ if necessary, fast and transparent workflow for licensing and utilization agreements

Instrument: Cooperation with existing start-ups

→ **Measures:** Maintaining contacts with spin-offs, cooperation agreements if necessary, concept for longer-term leasing/settlement in spatial proximity (innovation center)

GOAL 5

Creation of knowledge transfer beacons and application platforms

Instrument: Strategic promotion of transfer beacons

→ **Measures:** Using experience from the tsunami early warning system, bundling of competencies on socially relevant issues, creation and use of a roadmap for the definition, development and implementation of knowledge transfer beacons

Instrument: Establishment of Helmholtz Innovation Labs and expansion of further cooperation platforms on application-relevant topics

→ **Measures:** Establishment of the two Innovation Labs by 2025, application-driven hardware and software development as well as services, optimization of internal processes, business and transfer models and customer relations, transfer to further application-related platforms, if necessary within the framework of pioneer projects

GOAL 6

Professionalization of the transfer of software, data and models

Instrument: Creation of a reporting and support process for software developments

→ **Measures:** Process for software notifications and open source license reviews, review of utilization relevance and copyrights, support for further development and utilization/publication strategies (open source, closed, proprietary), customized professional software development, tracking of user groups and downloads of GFZ research software

Instrument: Use of new utilization models for software, data and models

→ **Measures:** Business model development for open source, e.g. software as a service, dual licensing, use of user platforms for data and models, portal solutions of the GFZ (e.g. software flagship store)

GOAL 7

Strategic strengthening of knowledge transfer

Instrument: Implementation of a GFZ-wide strategy process for knowledge transfer

→ **Measures:** Broad discussion of strategic priorities at the GFZ, linkage with previous technology transfer strategies, integration of knowledge transfer into existing transfer screening activities

Instrument: Expansion of dialog formats as well as information services and consulting services for social actors

→ **Measures:** Derivation of needs through stakeholder interaction (see also Goal 8 SynCom), target group-specific preparation of research results, promotion of committee participation and advisory services (e. g. for politics, administration, DIN), strengthening of the GFZ's honest broker role

Instrument: Expansion of further education offerings for target groups outside academia

→ **Measures:** Clear presentation of existing offers, identification of new topics for further education, use of resources for professional offers, development of business models for new offers

Instrument: Networking of the actors in knowledge transfer

→ **Measures:** Stronger networking at the center, within the research field, in Helmholtz and with other research networks, with the research field of science communication and with impact research (see goal 8)

GOAL 8

Use of new transfer models

Instrument: Cross-center cooperation in knowledge transfer

→ **Measures:** Stakeholder interaction, task forces, foresight, KT trainings, knowledge dialogues, advisory models via the synthesis and communication platform SynCom for the research field Earth and Environment within PoF IV

Instrument: Cross-center cooperation in technology transfer

→ **Measures:** Pilot SynTech analogous to SynCom in order to organize some transfer activities across centers, possibly cooperation in Innovation Labs on climate and environmental topics through pathfinder project

Instrument: Transfer models in the open science context

→ **Measures:** Impact assessment of openly and freely available results (publications, data, software, etc.), storytelling about applications of GFZ developments in industry and society

Instrument: Stronger focus on quality and impact in transfer

→ **Measures:** Strengthening interdisciplinary cooperation with impact research, development of handouts on impact orientation, establishment of evaluation/impact case studies in transfer

Instrument: Transfer GmbH as a complementary model in technology transfer

→ **Measures:** Establishment of a subsidiary for more efficient realization of various business-related services, consulting assignments and niche production, incubation of spin-offs as well as further services as required by the GmbH

Indicators and key figures I – general part

1. Indicator	Number of employees in knowledge and technology transfer offices (budget positions only), compare Pact query (2020)	
Target Figure	2,1	Number of positions (FTE) to be additionally created 2021–2025
Actual Figure	2,7	Number of positions (FTE) on 31.12.2020

2. Indicator	Own funds for transfer (internal: Center and Helmholtz Association, (definition cf. pact query “innovation projects”)	
Target Figure	9,5 Mio €	Total funds to be deployed in the five years 2021–2025
Actual Figure	4,5 Mio €	Total funds used in the comparison period 2016–2020

3. Indicator	Third-party funds (private and public) for transfer (for definition, see Center progress report B.4.1 Utilization balance sheet and B.4.4 Innovation projects)	
Target Figure	9 Mio € p.a.	Total funds planned to be raised in 2021–2025 (p. a.)
Actual Figure	8 Mio € p.a.	Total funds raised in 2020 (p. a.)

4. Indicator	Spin-offs with licence, concession and/or participation agreement	
Target Figure	4	Number of spin-offs targeted in the five years 2021–2025
Actual Figure	4	Number of spin-offs carried out in the comparison period 2016–2020

5. Indicator	Executive training courses “Entrepreneurship and Innovation” (e.g. at the Helmholtz Academy)	
Target Figure	10	Number of managers to participate in the period 2021–2025
Actual Figure	n. a.	No specification required

6. Indicator	Applications for validation funding at EU/federal/state level. comparable HVF- Helmholtz Validation Fund (see among others foerderdaten-bank.de)	
Target Figure	4	Number of applications submitted in the five years 2021–2025 (e.g. VIP+ or similar)
Actual Figure	2	Number of applications submitted in the comparative period 2016–2020 (e.g. VIP+ or similar)

7. Indicator	Innovation fund at the Helmholtz-Center	
Target Figure	no	Innovation fund to be newly established by 2025 (Yes?/No?)
Actual Figure	yes	Innovation fund already exists in 2020 (Yes?/No?)

8. Indicator	Innovation fund at the Helmholtz-Center	
Target Figure	1,5 Mio €	Planned amount of Innovation Fund resources for the years 2021–2025 (if already existing at the center)
Actual Figure	1,5 Mio €	Amount of innovation fund resources (if already existing) in the comparison period 2016–2020, otherwise “n/a” (not specified)

9. Indicator	Helmholtz Innovation Labs (e. g. within the framework of an pathfinder project)	
Target Figure	yes	Innovation Lab to be newly established by 2025 (Yes?/No?)
Actual Figure	yes	Innovation Lab already exists in 2020 (Yes?/No?)

10. Indicator	Helmholtz Innovation Labs (e. g. within the framework of an pathfinder project)	
Target Figure	5,8 Mio €	Planned level of Innovation Lab funding for the years 2021–2025 (if already existing at the center)
Actual Figure	1,5 Mio €	Amount of Innovation Lab funding (if already existing) in the comparison period 2016–2020, otherwise “n/a” (not specified)

11. Indicator	New knowledge transfer initiative (for example, as part of a pathfinder project from the Helmholtz IVF). Definition: Reference to Pact IV and pilot projects	
Target Figure	4	Number of newly established KT initiatives 2021–2025
Actual Figure	6	Number of ongoing and completed knowledge transfer initiatives as of 12/31/2020

Indicators and key figures II – center-specific part

1. Indicator	Revenue from contract research and services	
Target Figure 2021–2025 p. a.	3 Mio. €	3 million € Income in € from customers in business and society
Actual Figure 2020	2,6 Mio.	2.6 million € Income in € from customers from industry and society

2. Indicator	Development of spin-offs in terms of employees	
Target Figure 2025	60	Number of spin-offs by employees at the GFZ as of 31.12.
Actual Figure 2020	43	Number of spin-offs by employees at the GFZ as of 31.12.

3. Indicator	Number of open source licensed research software of the GFZ	
Target Figure 2021–2025	50	Number of new GFZ research software reported for publication under open source
Actual Figure 2016–2020	24	Number of new GFZ research software reported for publication under open source

4. Indicator	Provision of data and models that can be used by external parties	
Target Figure 2021–2025 p. a.	6	Number of open access, citable, and reusable data products and models made available with high relevance
Actual Figure 2020	n. a.	Number of open access, citable, and reusable data products and models made available with high relevance

5. Indicator	Participation in socially relevant bodies	
Target Figure 2021–2025 p. a.	20	Number of participants in nationally significant, non-academic bodies (e.g. DIN, advisory boards, federal commissions)
Actual Figure 2016–2020 p. a.	15	Number of participants in nationally significant, non-academic bodies (e.g. DIN, advisory boards, federal commissions)

6. Indicator	Number of further education formats for externals	
Target Figure 2021–2025 p. a.	6	Number of events or series of events (also online) of continuing education for external persons (non-academic target groups incl. pupils)
Actual Figure 2020	5	Number of events or series of events (also online) of continuing education for external persons (non-academic target groups incl. pupils)