

Excellent research, efficiently organised: position and perspective of the Forschungsverbund Berlin e.V.

Preamble

The Forschungsverbund Berlin e.V. (FVB) is one of the great research institutions in Berlin. It consists of eight independent scientific institutes that make vital contributions of international impact to socially relevant key areas in natural sciences, life sciences, environmental sciences and engineering sciences.

The institutes are all members of the Leibniz Association. A research institute defines excellence as being counted amongst the best 10 % of the world's research institutes in its respective field of work. Excellence is what warrants the existence and the international funding the Leibniz facilities. A facility's scientific excellence in its respective area of activity must be the primary criteria for any funding.

Organised as a group with a joint administrative department the FVB has been able to develop high standards and important synergies in economics, administration and governance. Working as a group also made it possible for the FVB to be a pioneer when it comes to further developing the scientific system and thus strengthen its competitive abilities. The essential prerequisite for this goal is the joint financing from the Bund (the federal republic) and the Länder (the federal states), which ensures that the institutes have the capacity to compete in the medium-term. On the following pages, the board outlines the fundamental strategies and the required framework conditions for the future development of the FVB and its institutes.

1. Mission: Purpose and goals

- *Mission:* Leibniz institutes conduct research in areas that are predefined by the mission contained in the purpose of their statutes. The mission is then formulated by the institute's scientific management, which receives advice from the scientific advisory board. The handling of the mission requires a combination of independent and networked research, with the independent research forming the basis for the scientific excellence of the facility. The institute's management gets to decide on the shape and amount of networked research.
- *Model for the future:* as institutes that work independently from each other in terms of science, the facilities of the FVB pursue an overall strategy that ranges from basic research and the training of young scientists to economic applications and the transfer of knowledge in society and politics. The institutes are both flexible and of manageable size, which provides them with the inbuilt ability to initiate, to a particular extent, new

developments and also implement innovations in a fast and sustainable manner. Thematic and organisational innovation is ensured by means of regular evaluations.

- *Scientific excellence:* The research institutes of the FVB are internationally leading capacities in their respective thematic fields and thus have a significant and determining influence on the scientific development of the relevant area of research. In doing so, they often work at the intersecting points of different disciplines. FVB institute-operated infrastructures, collections and long-term data archives of international rank also serve this purpose.
- *Scientific synergies:* Wherever it is required, the institutes of the Forschungsverbund pursue joint research projects. This includes the joint utilisation and inter-exchange of infrastructures and other resources.
- *Training:* The institutes, together with other institutes of higher education, train up-and-coming specialists with high qualifications for economics and science. Towards this goal, the FVB institutes provide an important pool from which institutes of higher education can draw scientific personnel at all levels of the academic system. Additionally, the FVB is involved in the area of educational and occupational training.

2. Basic research and networking: Contents before structures

- *Innovation through basic research:* Leibniz institutes are able, based on their basic financing, to develop new research topics without being dependent on networking. Prior to undertaking networking projects, they are thus able to not only define new research fields but also develop and demonstrate innovative implementation strategies. This is an obvious advantage compared to models of programme-oriented research. Towards this goal, it is essential to have strong and miscellaneous applicable research.
- *Working with networks and internationalisation:* The FVB institutes are integrated in numerous national and international research networks and economic collaborations, oftentimes in a coordinating function. In this regard, the international mix of scientific personnel in the FVB plays a key role. It is for that reason that the institutes of the FVB have a consistent policy of recruiting the best people from around the globe.
- *Institutional independency:* One particular priority is to cooperate with institutes of higher education in terms of jointly processing promising topics within the framework of new cooperation models. In our experience, synergies will not develop to their fullest potential unless the institutes and the involved universities are institutionally independent.
- *Contents instead of structures:* Scientific networking is absolutely essential for combining complementary competences at the highest national and international level. Content-factual issues are decisive factors, while the organisational form of the partner takes a

back seat. Administrative provisions and structures must not be allowed to hinder scientific innovation capacities. New supervisory structures and reporting obligations need to be minimised. The European Research Council offers a positive example. The institutes of the Forschungsverbund Berlin have been successfully involved in innovative networking forms for a long time; two representative examples can be found in the attachment hereto. This goes to show that there are indeed models for successful networking that go far beyond the concept of a science campus. In terms of quality control, the rules of the international scientific Peer Review apply.

3. Necessary framework conditions

3.1 Evaluations and scientific advisory board

- *Consistent evaluation based on precise criteria:* Any existing procedures for evaluating research performances are to be developed further in terms of quality, e.g. by means of a stronger emphasis on scientific excellence, international competitiveness and visibility as quality factors. This requires evaluation groups with the world's top experts from this country and from abroad. The goal is to establish criteria that compare scientific quality and excellence across the disciplines.
- *The role of scientific advisory boards:* The scientific advisory boards of the respective FVB institutes are top-class as well as internationally constituted and work independently from each other. As part of their continuous activities, they evaluate the research performances and strategic developments of each institute and provide advice to the heads of the respective science departments. Hence, they exercise the most important function, i.e. that of scientific Controlling. In contrast to this, within the context of the programme budget, any Controlling functions should be reduced to a minimum.

3.2 Financial and administrative framework conditions

- *Basic financing:* An infrastructure that has competitive capacities and a well-balanced personnel development policy, combining experienced experts and dynamic up-and-coming researchers, will guarantee sustainable innovative strength for the institutes of the FVB. Towards this goal, the facilities require appropriate basic financing that will ensure not only their competitiveness but also their ability to raise third-party funding at a sustainable level. It would be counterproductive to cap the overall expenditures for Leibniz institutes within one country. As a rule, the distribution of means must be effected strictly based on professional quality. The awarding authorities would have to establish clear procedures upon the effected evaluation in order to ensure a swift implementation of budget-efficient evaluation recommendations.
- *Remuneration systems:* The remuneration systems for leading scientific personnel must be competitive at a national and international level. A framework for W salaries would enable the institutes to act more flexibly in terms of recruiting. When applying the respective tariff agreements, extra pay regulations are to be budgeted on a permanent

basis. On principle, the intention is to also make them applicable to administrative and technical personnel. As provided for in the Academic Freedom Act, the ban on betterment ought to be lifted, at least with regard to non-public funding.

- *Administrative framework conditions:* The opportunities provided for by the Academic Freedom Act need to be implemented at state level, too. This particularly refers to the complete carryover funding management with the option of creating reserve assets to facilitate carryover investments and projects. The public procurement law must accommodate the scientific specifics in the procurement management area and enable the research facilities to act faster and more flexibly on the international market. A consistent, commercial accounting system would contribute to a noticeable increase in efficiency within the financial system and facilitate a more economic assignment of assets.

Conclusion

The Forschungsverbund Berlin has more than 20 years of history to look back on and has proven itself as a success story amongst the landscape of German scientific institutions. The joint funding from the Bund and Länder creates important potentialities to further expand the ability to compete internationally. Securing this ability in a sustainable manner is a vital basis for the scientific excellence of the institutes.



MATHEON Research Centre

The MATHEON “Mathematics for Key Technologies” Research Centre is one of the world’s leading centres of excellence. It is located at the TU Berlin and is sponsored by these Berlin universities

- FU Berlin (Mathematics and Informatics Department)
- HU Berlin (Institutes for Mathematics and Informatics)
- TU Berlin (Institute for Mathematics)

as well as these extramural institutes

- **Weierstrass Institute for Applied Analysis and Stochastics (WIAS)**
- Konrad Zuse Centre for Information Technology, Berlin (ZIB)

The MATHEON was sponsored by the DFG with more than €5.5 million per year from 2002 until 2014. Since June 2014, the sponsorship has been provided by the “Einstein Centre for Mathematics” (ECMath), which was founded by the Berlin Einstein Foundation in 2013.

The MATHEON accommodates nearly 200 scientists, approx. 55 of which are professors, who conduct application-driven basic research in close cooperation with partners from the fields of industry, economics and science, particularly in key technologies.

- Life sciences
- Logistics, traffic and telecommunication networks
- Production
- Circuit simulation and optical components
- Finances
- Visualisations

Another focal point of activities is School and Publicity.

Here are some of MATHEON’s “highlights” since 2002:

- More than 150 offers of professorships worldwide to MATHEON scientists since 2002
- 30 postdoctoral qualifications and more than 200 doctoral studies of young scientists
- Countless national and international awards given to MATHEON scientists
- 5 ERC grants and several honorary doctorates

Every year some 8,000-10,000 pupils and grown-ups from across the globe participated in the “Digital Math Advent Calendar” hosted by the MATHEON for pupils in senior high school (form 10 to 13); in 2013 alone, the advent calendar “Math in the Advent season”, which was subsequently designed by the German Association of Mathematicians (DMV) for junior high school classes (form 4-6/7-9), drew more than 150,000 participants.

At the MATHEON, networked collaborations in terms of research, structure and financing between the involved universities and extramural institutes go far beyond the concepts of a Leibniz Science Campus or a Leibniz Research Association. For example, the involved institutes have contractually agreed that if professorships “structurally important” for the MATHEON become available, a large number of such positions shall be re-filled with a tendency towards the MATHEON for as long as the MATHEON exists, and the MATHEON board has been granted a strong say in the selection process.



Berlin-Brandenburg Institute of Advanced Biodiversity Research (BBIB)

In 2013 the “Berlin-Brandenburg Institute of Advanced Biodiversity Research” (BBIB) was founded by four universities and five Leibniz institutes in order to pool their competences in the field of biodiversity within the capital region.

Partners of the BBIB are:

Universities:

- Free University of Berlin
- University of Potsdam
- Technical University of Berlin
- Humboldt University in Berlin

Leibniz institutes:

- Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB)
- Leibniz Institute for Zoo and Wildlife Research (IZW)
- Museum of Natural History – Leibniz Institute for Evolutionary and Biodiversity Research (MfN)
- Potsdam Institute for Climate Impact Research (PIK)
- Leibniz Centre for Agricultural Landscape Research (ZALF)

BBIB is a model for a new form of cooperation; one that focuses on individual topics, works at cross-disciplinary level, forms a cross-institute platform by closely interlocking strong institutions and allows new undertakings by bundling the appointed resources. All partners put their resources into the BBIB. Consequently, instead of being organised towards short-term third-party financing, it rather pursues long-term research undertakings.

One important goal is to create an environment in which a new generation of scientists can think and work at an interdisciplinary level right from the start. That includes the specific, coordinated filling of professorships, establishing a university focus in coordination with the overall development. The BBIB establishes bridges between doctorate and post-doctorate positions and all the way to the opportunity of tenure track positions, giving young scientists the chance to receive an indefinite position after a limited-term probationary period.

The new institute shall come together not only at a virtual level but also in terms of space. A new building is to reflect the dynamic atmosphere. There will be flexible, temporary work stations, allowing creativity and innovation to fully unfold. In addition, there are plans to have work stations for international partner organisations, giving them the opportunity to send their scientists to Berlin for a time. Hence, the BBIB is an excellent platform for an international and continuously developing scientific network.