Deutsche
Forschungsgemeinschaft

**Scientific
Library Services and
Information Systems**

**Funding Priorities
Through 2015**

DFG Position Paper

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1. Introduction

Changing Expectations. The increasing use of networked digital information systems, the changing framework for scholarly and scientific publishing and communication, and the structural reorientation and specialisation of universities and research institutes are among the primary factors involved in restructuring research and higher education in Germany. In order to improve the effectiveness of universities and research institutes, centres for information services (libraries, archives, museums, computer and media centres) will also need to reposition themselves in a variety of ways: scientists and academics expect capable support in accessing digital publications, a qualified method for online resource discovery, and the professional management and networking of research data and e-learning modules. In this position paper, the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) presents its analyses and proposals for the future development of Germany's information infrastructure.

Differentiated Provision. In the future, the range of information provision provided at individual universities and research institutions will increasingly be determined by that institution's profile and the priorities it sets for itself in research and teaching. As a prerequisite, integrated national digital information environments must be in place to provide access to a wide range of current research literature, digitised primary sources, e-learning materials and virtual research networks, independent of time and space. At the same time, specialised research libraries and archives will come to play an even greater role as physical (i.e., non-virtual) settings for research for advanced and graduate research, especially in the humanities. Due to their comprehensive collections of contemporary research literature and the excellent access to historical sources they provide, these specialised libraries and research archives will remain indispensable, even in the digital age.

Integrated Systems. Today's libraries, archives and other specialised information services operate largely independently of one another. These different institutions must integrate into a coherent nationwide network for the provision of digital information for science and the humanities. By creating a digital environment within universities and research institutes in which digital channels become the standard medium for accessing, analysing and publishing research data and scientific results, libraries can become the cornerstone of e-science. The initiative launched by the Federal-State Commission for Educational Planning and the Promotion of Research (Bund-Länder-Kommission) to integrate specialised information services and national subject libraries represents an important first step in this direction.

Political Leadership. Achieving these goals requires a coordinated policy at a national level, one that engages the various sources of funding in these fields. As the central, self-governing research funding organisation, the DFG will actively participate in moving this agenda forward. In the coming years, the DFG will merge the system of nationwide library services and special subject collections into an integrated digital information environment; it will develop further its commitment to a national provision system for current digital publications; and it will provide its independent expertise in developing the new structures in cooperation with the federal and state governments.

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Open Access. The DFG is committed to promoting unhindered access to all published research results (open access). Freedom of information for research and education should not be impaired by copyright legislation, technical barriers or prohibitive fees. At the same time, proper protection of intellectual property must be guaranteed, for example by the use of Creative Commons licences for electronic forms of publication.

2. Analyses and Proposals

Nationwide Library Services. The aim of this DFG-funded programme is to guarantee all researchers and academics in Germany access to a consistent and comprehensive system of specialised subject literature. In the future, this system will include digital publications, accessible from the workplace via data transfer networks, for a fee if necessary.

Specialist literature is available in conventional printed form through online interlibrary loan and document delivery, compensating, in principle, the growing deficit in basic provision and varying quality of local collections. However, the demand for consistent, comprehensive provision in the field of digital media has led to a set of very different challenges. The nationwide provision of scientifically relevant literature in digital form requires new solutions in which the traditional differentiation between basic and specialised provision can no longer be maintained. The financial basis required for such an effort greatly exceeds the DFG's existing funding framework, which is why the system can only be implemented by integrating the full range of the appropriate financial backers.

Supplying Germany's academic and research communities with digital media thus represents a new, additional task on a financial scale that can only be surmounted in a coordinated, national effort. Meeting this challenge involves the effective bundling of local, regional and national organisational and financial resources, in addition to considerable extra financial input. The DFG therefore considers it necessary to combine nationwide licensing models with the previously prevalent licensing by individual institutions or consortiums. Licensing models should be discussed and mutually implemented in cooperation with national and international funding organisations, collaborative partners and publishers. A variety of models should be used here, such as open framework agreements, national licences, pay-per-use models or the purchase of usage quotas.

The creation of Vascoda, the nucleus of a "German Digital Library," sponsored mutually by libraries and specialised information services, represented an important building block in the development of an integrated system of national information provision. The national system of special subject collections (Sondersammelgebiete - SSG), developed with the aid of the DFG, already provides specialists with access to scientific information of the highest quality. The objective is now to embed the DFG's SSG system into Vascoda, complemented by the addition of digital resources. In addition, SSG collections in the public domain should be digitised within a priority planning exercise, which will require additional financial resources.

For conventional literature, the DFG will continue to fund the SSG system in its present form, though there may be some rationalisation in the way subjects are defined. The DFG will continue to fund the SSG-system with an unrestricted and comprehensive mandate to collect specialised literature, regardless of current demand for the literature, making an evaluation of the system based on frequency use statistics largely irrelevant. The DFG will continue to fund the development of virtual subject libraries (Virtuelle Fachbibliotheken) with the aim of optimising services that integrate print and digital media. The DFG will also focus its funding activities on the integration of digital publications in the funding of nationwide library services and information systems.

Regarding the significant increase in demand these measures make on the personnel capacity of SSG libraries, the ratio of library self-financing to DFG funding in the SSG system must be reassessed closely in terms of an overall appraisal of both financial and personnel resource use. Existing funding guidelines must be re-examined not only in terms of more flexibility, but also in terms of enhanced sustainable support of SSG libraries.

The DFG will promote the process of integrating the special subject collections into the *national portal for research and academia - Vascoda* by implementing priority measures in the following fields:
- bibliographic enrichment through the expansion and improvement of cataloguing data,
- providing data to external systems (search engines, internet catalogues),
- procurement of international metadata,
- introduction of international cataloguing standards.

Cultural Heritage. Academic research in cultural heritage employs both historical primary sources *and* modern digital technologies. The two fields should be viewed holistically so that each can benefit from the other's results.

A line of action designed for the special requirements of the research libraries should be initiated for this purpose. The most important funding objective is the enhanced visibility, both nationally and internationally, of Germany's research libraries. A DFG initiative for promoting research libraries, to be developed in detail by the Subcommittee on Cultural Heritage, will focus on the synergies between book and byte.

The national bibliographical catalogues for German prints of the 16th and 17th centuries should be made complete by digitising the catalogued works in full; the 18th century should also receive equivalent treatment. The digitised books and their metadata should then be transferred into a modern access system.

In order to improve access to handwritten sources and archival material, finding aids in German archives should be digitised and made available for research through a uniform portal.

Digitalisation of materials relevant to science and academia assumes a central role in the European Research Area. For Germany, as a centre of research, the DFG will therefore

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continue to contribute substantially to developing, documenting and making scientifically relevant material pertaining to national cultural heritage available in digital form. In this context, the cataloguing and provision of medieval manuscripts, incunabula, autographs and private collections, archival material and special collections assume a high priority.

In order to complete and integrate the *national bibliographic access systems*, the DFG's funding priorities will include the following areas:
*   medieval and early modern manuscripts and incunabula,
*   autographs and private collections,
*   16th to 18th century printed matter,
*   picture archives and art objects,
*   archival material.

Electronic Publishing. Traditional forms of scientific publishing are changing dramatically due to the use of interactive components, greater access to primary scientific data through digital means, and the establishment of new scientific communication and teaching cultures. Future funding must therefore account for the increasing relevance of more informal scientific communication, which offers particularly good opportunities for devising methods of electronic publishing. In the context of these new forms of publication, ensuring quality assurance plays a major role.

Electronic publications should be freely available without restrictions to academics and scientists via the internet (open access). In order to achieve this objective, the DFG will support both open access journals and the additional, secondary publication of research results. At the same time, a system of networked repositories for the storage and subject-specific distribution of electronic publications must be developed. Its architecture will support its embedding into larger European and international structures and secure the long-term availability of digital publications in such a way that data can be archived and utilised by future generations, closing current gaps in accessibility.

The legal questions involved in electronic publishing play a special role. Any restrictions or commercialisation of access to scientific information could diminish the competitiveness of research in Germany.

The DFG will fund priority measures to strengthen *electronic publishing* in the following fields:
*   development and networking of institutional and discipline-specific repositories for open access scientific publications considering subject-specific aspects,
*   initiation of a "Cream of Science" project in Germany to attract outstanding researchers as pioneers of open access publishing,
*   development of a "toolbox" including interoperable authoring tools,
*   implementation of nationwide LOCKSS systems for ensuring the long-term availability of electronic publications,
*   analysis of quality criteria in the field of informal communications.

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Information Management. Electronic services effectively regulate the search, navigation, access and local availability of digitally stored documents, data, and traditional specialist information across national boundaries. These services involve all forms of information services, including libraries, archives and museums.

To integrate the often heterogeneous information sources available requires the development of technically interoperable, nationally and internationally compatible structures, both technically and organisationally. Information services must develop such systems in cooperation with information science experts. In this endeavour, the legal framework must be observed and compatibility with international standards and structures must also play a major role.

The principal funding fields in the coming years include supporting new collaborative forms of work by establishing virtual research environments and the development of research in e-learning. This includes taking communicative elements into consideration. The use of innovative methods should form a focal point here. In addition to the development of new services, assuring the quality of both the information available and the information services centres providing this information is becoming increasingly important. Because there is no continuous monitoring of academic library and information services in Germany, it will be necessary to develop structures that facilitate the analysis of information resources, and can accompany the future developments of those structures in accordance with developments in national and international research in the field of information management.

In the present system of regional union catalogues financed by the states, the same object is catalogued multiple times at great public expense. In order to conserve resources, cataloguing metadata and making it available for searching should be reduced to a single union catalogue. Such a complete union catalogue would allow for the seamless integration of (meta-)data into subject and material-specific databases, as well as making the access to digital texts much easier. The use of new cataloguing techniques should also be examined in this context.

International cooperation will play a central role in driving these developments. Ensuring the mutual transfer of technical skills, knowledge and experience creates massive potential for innovation. This not only applies to new technologies and organisations, but also to the development of international structures.

To support the development of sustainable structures, independent funding instruments should be developed to promote the continued and distributed use of successful tools, modules and other system solutions. In addition, these efforts should take place in cooperation and coordination with international partners, in order to promote a common, compatible European information environment.

The DFG encourages priority measures in the following fields of *information management*:
- the further development of network-based research environments, together with nationally and internationally embedded structures into which these are embedded,
- the development and installation of new methods of e-learning in universities; the development of networked e-learning environments,

- promoting a more rational system of cataloguing data through the use of new, automated cataloguing methods in combination with methods of intelligent retrieval,
- further development of the structures for storage, referencing and availability of primary research data,
- quality assurance of the information services and information centres,
- the use of new techniques for authentication and authorisation.

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3. Action Plan

Vision. The objective is the implementation in Germany of an integrated, digital environment for the provision of scientific information in all disciplines and subjects by 2015. A total of seventeen measures are recommended.

Measures. In the coming years the following topics should be given funding priority:

Nationwide Library Services

1. Licensing of digital content
2. Extension and improvement of the services of virtual subject libraries
3. Development and increasing flexibility of funding opportunities in the SSG system
4. Digitisation of collections in the SSG libraries

Cultural Heritage

5. Network of German research libraries
6. Digitisation of historical literature up to 1800
7. Digitisation of finding aids in German archives
8. Completion and integration of this data into material-specific portals

Electronic Publishing

9. Networked repositories for digital open access publications
10. Open Access: "Cream of Science" for Germany
11. Long-term preservation of digital publications
12. Toolbox for electronic publishing

Information Management

13. Virtual research and learning environments
14. Further development of the structures for provision of primary research data
15. Quality assurance, information science monitoring
16. Ensuring sustainability for successful tools, modules and other system solutions

International Cooperation

17. Network of international funding organisations: Knowledge Exchange

DFG Funding Activities. By conducting analyses and studies, developments can be recognised at an early stage, analysed, and new funding methods and calls for tenders for cooperative project structures initiated. Large funded projects should be given greater flexibility in achieving their aims through the global allocation of funds and programme budgets. In addition, ensuring the sustainability and further development of successful project results should become a greater focal point of funding. The integration of projects into international developments is a primary aim of all funding activities.

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