... is the motto of FIZ Karlsruhe – Leibniz Institute for Information Infrastructure. It expresses our mission to further scientific knowledge. Our strategic goal is to support the scientific value-adding process by integrating content, technology and services into an information infrastructure.
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Advancing Science — with an integrated information infrastructure

Dear reader,

The pressing issues of the future pose completely new challenges to scientists and researchers. It is expected that the economic, technical, and social changes caused by these issues will lead to a paradigm shift similar to that of the Renaissance. The form of this “New Renaissance” is still uncertain, but we can already see that new ways of thinking, approaches to research, and scientific methodology will be essential.

More than ever, innovative and powerful information infrastructures will be needed to underpin successful advances in science and research. Information technologies and new system networks are the main drivers of changes confronting the economy, science, and service providers such as FIZ Karlsruhe.

We recognized these developments and their challenges at an early stage and adapted our strategy accordingly. This process was finalized in 2009. Our strategic goal is to support the entire scientific value-adding process by integrating content, technology and services into a cohesive information infrastructure. One result of this is the decision to add a suffix to our company name FIZ Karlsruhe – Leibniz Institute for Information Infrastructure. With this addition, we clearly emphasizes our membership of the Leibniz Association. At the same time, it clarifies our tasks, where our company is heading, and how we can continue to successfully fulfill our public mission.

1 The Gottfried Wilhelm Leibniz Scientific Community ("Leibniz Association") is the umbrella organization for 87 institutes with more than 16,100 employees in total, more than 7,100 of whom are scientists. The total annual budget of the member institutes amounted to over 1.3 billion euro in 2009. The Leibniz institutes strategically work on topics and issues of public concern, following Leibniz’s maxim “theoria cum praxi” – science for the benefit of mankind. The Leibniz institutes are jointly funded by the German Federal Government and the Federal States.
Our customer benefits, customer relationships, core competencies, and international partnerships are the pillars on which our strategy is built. This strategy is implemented in the following three business areas:

- STN International (online service and full-text service FIZ AutoDoc)
- Databases and information services (database production, science portals)
- KnowEsis (eScience solutions)

Our business units STN International and Databases and Information Services perform our traditional function as a provider of information services. The products and services provided by these units facilitate comprehensive searches for and evaluation and processing of scientific information and thus greatly strengthen science and business in Germany. STN International offers a vast range of services for researchers in industry and is our core business.

KnowEsis is a new business unit set up to develop eScience solutions to support the scientific value-adding process across all disciplines. What does this mean? New technological developments have opened up new networking opportunities that in turn have yielded new modes of collaborative and interdisciplinary research and consequently different and broader user requirements. Researchers need innovative and secure infrastructures throughout the entire research process, for example, for communicating, obtaining information, publishing, and sustainable data management. KnowEsis reflects our new strategic orientation particularly well. Our commitment to eScience is an expansion of our mission to take us into the future.

We both develop and maintain the high quality of our services by carrying out applied research in the fields of data management, information mining, and information retrieval. Our applied research involves close collaborations with academic institutions and research organizations, mostly as part of third-party funded projects.

A quick look back over the 2009 business year: FIZ Karlsruhe has to finance about 75% of its total budget (€35.5 million in 2009) from its own revenues. Due to the poor economic conditions, 2009 was a difficult year for us, which makes us all the more pleased with our positive year-end closing for 2009. The results were stable, and revenues slightly increased. At 78.4% our self-financing rate was the highest since our foundation in 1977.
An important reason for our success in 2009 is that we continuously strive to maintain and enhance the benefit our customers receive from our services. The central issues in this regard are quality and innovation, benefits and value for our customers, cooperation and networking, and service and security. The following chapters will place these issues in the context of our business units and reveal the various prospects for our work.

Our motto Advancing Science underlies all our products and services. It expresses our objective of supporting the future development of the sciences and to help scientists cope with the challenges of the future.

Our employees are deeply committed to our objective, a commitment that has substantially contributed to our success in 2009 and I would like to take this opportunity to thank them all. I would also like to thank our boards for their support, particularly the Supervisory Board and the Scientific Advisory Board of FIZ Karlsruhe. And, last but not least, my thanks go to our partners and customers for our many fruitful collaborations and for their trust and loyalty.

Sincerely,

Sabine Brünger-Weilandt
President & CEO

Sabine Brünger-Weilandt has been President & CEO of FIZ Karlsruhe since 2003. She is the Information Infrastructure Representative of the Executive Board of the Leibniz Association (Präsidiumsbeauftragte). In this function she has been commissioned to lead the scientific information infrastructure working group (Fachinformationsinfrastruktur) which in 2009 presented the “Framework concept for a scientific information infrastructure for Germany” (Rahmenkonzept für die Fachinformationsinfrastruktur in Deutschland) to the GWK – Joint Science Conference (Gemeinsame Wissenschaftskonferenz des Bundes und der Länder). Mrs Brünger-Weilandt is currently the chairwoman of the committee “The future of the information infrastructure” (Kommission Zukunft der Informationsinfrastruktur) which is developing an overall concept for an information infrastructure for Germany on behalf of the GWK.

The GWK – Joint Science Conference was established in 2007 and deals with all questions of research funding, science and research policy strategies and the science system which jointly affect the Federal Government and the Federal States. (www.gwk-bonn.de)
Innovations are needed to solve the world’s most urgent problems – climate change, the energy crisis, famine, epidemics, and aging. They require the investment of a huge amount of research and development and have a large economic potential. But time is a critical, as is the correctness and reliability of the information used.

Innovations strengthen a company’s position in an internationally competitive environment and help secure jobs.

Every innovation starts with a vision. Reliable, evaluated research and patent information — comprehensive, topical, and of the highest quality — underpin risk assessments and feasibility studies and help to translate visions into innovations.

Patent information plays an important role in this context. About 70–90% of the scientific and technical information contained in patent literature is not published anywhere else. In order to minimize the financial risks and to justify the high investment costs required by innovation, companies need reliable information about the state of the art, their competitors, and their markets. Scientific databases containing evaluated and thoroughly edited patent and research information from reliable sources are perfectly suited to this purpose. They are essential to avoid costly duplicate research, protect valuable company know-how, and prevent patent lawsuits.

The costs for duplicate inventions, that is, inventions that have already been patented by others, amount to about €20 billion every year in Europe. A large proportion of such losses could be avoided by carrying out professional information searches at an early stage.

Large sums are also at stake in cases of patent litigation, which are not only initiated by businesses but also by research organizations. For example, the Max Planck Society earned more than €150 million in patent royalties for the FLASH method which MRI scanners use to take pictures of the organs in the body in the shortest possible time. First, however, the Max Planck Society had to endure protracted and expensive patent lawsuits against various enterprises.

Regularly monitoring the patent landscape is essential to protect a company’s expertise, to secure any competitive advantages gained, and to safeguard the innovative power of a company. The need for information is not exhausted once a patent has been granted — searches in the relevant databases remain essential.

Free information costs too much

Information obtained via free internet search engines is useful as an introduction to a subject and to gain an overview. To base business-critical decisions on this information is, however, risky. There is a lack of transparency in terms of scientific, geographic and time coverage as well as a lack of completeness, correctness and topicality. Subject-specific indexing for targeted searching is also unavailable, which impedes thorough examinations and assessments of results and potential risks.

Another problem is the lack of confidentiality: some search engine owners generate revenues by analyzing user data and search queries, using them for targeted advertising campaigns, or by making them available to third parties, which means that competitors may also gain access to these data.

Publishing houses and patent offices offer reliable information on the internet. However, to obtain comprehensive results, a large number of retrieval systems must be accessed and answer sets compiled from many different sources before analysis can start — a very time-consuming procedure which still does not guarantee the best possible search results.

Using information provided by professional online services such as STN International (www.stn-international.de) is much more efficient. STN is the world’s leading provider of science and technology research and patent information. Heterogeneous sources of information can be searched at the same time, using the same search language. In a subsequent step, results can be analyzed using special tools, and the full text of relevant documents can be ordered online (see section on FIZ AutoDoc).

The online service STN International has been jointly developed and operated by FIZ Karlsruhe and CAS (Chemical Abstracts Service, Columbus/Ohio) since 1984.

Valuable value adding

A significant advantage over free information services is the added value generated by human experts: the primary information extracted from a scientific journal article or patent, for example, is upgraded step by step with additional, more useful information and features.

This is particularly important for patent searches. Patents are legal documents which in a competitive environment only reveal as much of the technical novelty required to successfully file a patent application and to protect the invention. The original language of the document may present an additional barrier to accessing the content, especially in the case of patents filed in Asia, which are becoming increasingly important.

“STN has proven to be a fair and reliable partner for the information needs of industry and academic research. STN offers major databases in the areas of science and technology which are indispensable for advancing innovation and for successful patenting activities.”

Minoo Philipp, Senior Patent Information Manager, Henkel AG & Co. KGaA
The first to generate such added value is the database producer. The process of adding value includes

- writing descriptive English-language titles and abstracts
- scientific indexing and classification
- standardizing bibliographical references
- grouping patent publications from all over the world into patent families and creating one representative database record per invention

Even more value is added by offering a variety of databases of different provenance in a standardized environment on a neutral platform. A homogeneous database design with standardized search fields and formats (patent numbers, classifications, company names, etc.) generates significant synergistic effects for a search. The sophisticated, entirely transparent retrieval system yields accurate, relevant, and reproducible results for precise search queries. Analysis and visualization tools support the evaluation of search results. Without such tools, this would be a time-consuming and therefore costly procedure.

The specialists in our Editorial Metadata and Patents department analyze and interpret data and check them for correctness, thus improving data quality. We focus on the STN patent databases for which we have developed and improved a standardization system for patent applicant names and the different patent numbers. Erroneous data found in the databases are identified and corrected by human experts.
“The quality of the information retrieved depends on the quality of the database. In order to achieve and maintain a high quality standard, thoroughly and efficiently edited data of high quality are essential. When using STN International, you can be sure that the data have been edited by experts and processed using reliable, state-of-the-art software systems.”

Dr. Gerhard Fischer, Head of Patent Information, Syngenta Crop Protection AG

STN content — comprehensive and relevant ...

STN International offers relevant patent, science, and technology databases from the world’s most renowned producers, such as

- Cambridge Scientific Abstracts (CSA)
- Chemical Abstracts Service (CAS)
- German Patent and Trade Mark Office (DPMA)
- Elsevier
- European Patent Office (EPO)
- FIZ Karlsruhe
- Japan Patent Office (JPO)
- Korea Institute of Patent Information (KIPI)
- Springer Science + Business Media
- Thomson Reuters
- U.S. National Library of Medicine (NLM)
- U.S. Patent and Trademark Office (USPTO)
- Wolters Kluwer

About 200 databases with more than 800 million records are available. All databases are entirely transparent in terms of temporal and subject coverage and the sources and document types considered. Most records have been enhanced with value-added information. The search results are reproducible, comprehensive, and precise.

... and exclusive

Only STN offers the CAplus℠ and REGISTRY℠ databases from Chemical Abstracts Service (CAS) and Thomson Reuters’s Derwent World Patents Index (DWPI℠) along with the INPADOCDB/INPAFAMDB files which FIZ Karlsruhe produces using the INPADOC data provided by the European Patent Office.

CAS offers the world’s largest and most prestigious chemistry databases with 55 million chemical structures, detailed structure search options, and coverage extending back more than 100 years.

Patenting gene and protein sequences has become increasingly important for pharmaceutical and biotech companies involved in research. STN offers the largest publicly available collection of sequence data from patent literature and journals published all over the world combined with special sequence search tools.
Highest quality standards

All information published on STN has been subject to several quality control steps prior to its inclusion in STN.

Articles or patent applications received by publishing houses and patent offices are thoroughly checked before they are published. The database producers only include publications from reliable sources into their databases.

STN has three levels of quality:

- **Content:** STN is a neutral platform for a wide array of information from renowned, reliable producers and providers of databases. All products are subject to a quality assurance process before they are offered by STN.

- **Technology:** A standardized environment (homogeneous database design) adds value to the databases. The powerful, transparent retrieval system has been content-optimized and is very efficient. It is complemented by analysis and visualization tools.

- **Support:** Security, or data privacy protection and confidentiality, and expert customer support are indispensable quality criteria for supporting customers, particularly for patent information.

All quality assurance processes are carried out in close cooperation with our STN partner CAS. We are in constant dialog with database producers (such as Thomson Reuters) to ensure impeccable content quality. We continuously strive to ensure that the highest quality standards are met: newly loaded data are regularly checked and the entire data pool is checked for accuracy. Any errors detected are corrected in close collaboration with the database producers.

Searching — finding — analyzing

STN’s content-optimized retrieval system allows for text searches, factual searches, and chemical structure and sequence searches. The producers’ specifications for the granularity of data are optimally implemented, which yields highly precise search results. Efficient, automated alert

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Fig. 2: Patent statistics and research landscape created with the analysis and visualization software STN AnaVist.
services are available to continuously monitor the research and patent landscape, markets, and competitors.

Our analysis and visualization software STN AnaVist supports analysis and visualization of search results. It allows the user to discover new research and patenting trends at an early stage, to identify important market players, or to find new fields of application for existing technologies.⁶

**STN Easy — for non-professional searchers**

Because the R&D budget of small and medium-sized companies is much smaller than that of large enterprises, they usually cannot afford to employ information professionals or patent specialists. For such companies it is particularly important to minimize their financial risk.

Our STN Easy interface has been specifically designed for this group and offers easy “point and click” access to our 100 key databases. This gives our customers initial access to and a good overview of relevant research and patent information. However, before making business-critical decisions or filing a patent, this information should be corroborated by results from a professional search conducted by FIZ Karlsruhe’s search service experts, for example.

**FIZ Search Service**

Our scientific staff searches the STN databases on behalf of customers who cannot carry out searches themselves. The results are edited and then sent to the customers. The main search topics and disciplines are patents, chemistry (including structure searches), biosequences, and toxicology (REACH regulations).⁷

**FIZ AutoDoc — access to full text documents**

FIZ AutoDoc, our web-based full-text service, partners with numerous national and international suppliers (libraries, publishing houses, aggregators). This supplier network enables us to supply almost 100% of the relevant full-text documents referenced in the STN databases and to respond quickly to changes in delivery modalities or framework conditions.⁸ We are continuously enhancing our range of products and services. FIZ AutoDoc is a largely automated, customizable system that allows our customers to integrate their own library holdings and licensed (publisher) content, to customize the service according to their accounting and administration requirements, and to integrate the system into corporate workflows.

**All inclusive service**

STN customers appreciate the excellent customer support we provide — at no extra cost. Our help desk team has experts from various scientific disciplines and offers assistance in case of search problems. In-depth, up-to-date documentation provides useful search tips and information on the databases. We also offer e-seminars, user meetings, and workshops (prepared and organized by STN experts) for users with any level of knowledge and a monthly newsletter with topical information. Most of our employees are scientists and consider themselves to be consultants for our customers.

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⁶ A recent study by the University of Münster (Germany) has confirmed that STN AnaVist can be successfully employed to forecast converging industries. Curan, C.-S. and Leker, J., Employing STN AnaVist to forecast converging industries. International Journal of Innovation Management, Vol. 13, No. 4, 2009, p. 637-664.


⁸ For example, the implementation of the “Second Act to Regulate Copyright Law in the Information Society” in 2008.
The larger web search engines analyze their users’ search queries. In order to finance their free search service, they provide advertising for products and services that match the user’s search query and the search results. This may lead to data privacy issues, however. Analyzing such searches can reveal the innovative strategy of the enterprise performing the search, and there is a high risk that competitors may gain access to this information. Patent or research information used for business-critical decisions is highly sensitive and has to be handled with the strictest confidence. It should therefore be obtained only from sources and providers who can guarantee this confidentiality.

Data privacy protection, data security, and the confidentiality of your search query are our top priority. We do not store or analyze your queries or your search strategies. Under no circumstances will your data be forwarded to a third party. We will never determine or disclose to your competitors the purpose of the research and patent information retrieved from STN databases. We collect information for you, not about you.
Modern digital infrastructures provide new opportunities for scientific research. New types of collaborative and interdisciplinary research are evolving. Research teams collaborate in virtual working environments, independent of time and place.

In 1989 Tim Berners-Lee invented the World Wide Web at CERN⁹, Geneva, to enable researchers to share and discuss their findings within groups of fellow scientists or between research teams all in real time. Web-based communication has become indispensable — not only for large research projects but also increasingly for small working groups of scientists who collaborate, communicate, collect information, and publish in virtual environments.

eScience — innovative infrastructures for scientists

John Taylor, former Director General of Research Councils, UK, defined eScience as “global collaboration in key areas of science and the next generation of infrastructure that will enable it.”¹⁰ Science enhanced by new digital opportunities is described as eScience or “enhanced science.” Science in this context includes not only the natural sciences but all disciplines.

Suitable application software and an innovative infrastructure that form a secure and reliable basis for scientific work and publishing are essential to connect intellectual and technical research resources in virtual organizations. The flow of data and knowledge must be organized efficiently and sustainably, and the rules of good scientific practice have to be observed.

Supporting the entire work process — from idea to experiment, analysis, data aggregation and publication

Typical scenarios include the storage, modification, dissemination and publication not only of the final results but also of data and material from every intermediate step in the research process such as pilot studies, primary data, experimental data, preprints, and textbooks. There is much more to eScience than simply skillful handling of mass data and optimal networking of computer capacities. The data generated must be structured and integrated into a scientific classification system to ensure that they can be stored to provide a long-term “memory of science” and are permanently available for future use.

⁹ Conseil Européen pour la Recherche Nucléaire. European Organization of Nuclear Research.

FIZ Karlsruhe has long been dedicated to eScience (also eResearch or cyber infrastructure). We develop infrastructure and system concepts as well as platforms for knowledge exchange, discourse, and scientific publishing. We are contributing to the establishment of a national information infrastructure which focuses on virtual research environments, hosting, and long-term archiving.

All these developments are based on eSciDoc (www.escidoc.org), a platform for web-based scientific communication and publishing jointly created by FIZ Karlsruhe and the Max Planck Society (MPG). The entire eSciDoc software is available as open source software under the Common Development and Distribution License (CCDL).

**eSciDoc — the foundation of web-based scientific work**

Our eSciDoc solutions ensure free and long-term access to research results and materials. eSciDoc supports scientific collaboration and optimizes the use of information in a global knowledge network. Research becomes more transparent and research findings more visible.

eSciDoc-based research applications currently in use include:

- PubMan – management and distribution of publication data
- FACES – collaborative work with image data
- VIRR – administration and enhancement of (retro)digitized text resources

**KnowEsis — FIZ Karlsruhe’s eScience solutions**

We develop innovative eScience solutions such as modern digital infrastructures that support and secure the process of scientific value adding across all scientific disciplines under the brand KnowEsis.

Our services include consulting as well as the development and implementation of eScience infrastructures. We also host the related systems (for example, Software as a Service, SaaS), which are often based on eSciDoc.
Our aim is to provide a “Framework for eScience,” that is, a neutral and sound organizational and technical basis for a wide variety of scientific and business applications. A good example is the standardized management of heterogeneous research data.

**Innovative collaboration projects**

Since July 2009 FIZ Karlsruhe has been involved in the “BW-eLabs” project together with the universities of Stuttgart and Freiburg and the Stuttgart Media University (Hochschule der Medien (HDM)). It aims to provide remote virtual access to heterogeneous experimental resources (raw data and experimental results) for use in research and training in nanotechnology as a pilot discipline.

In collaboration with the University of Tübingen FIZ Karlsruhe is conducting the “BW-eSci(T)” project to develop an eScience research environment for computer linguistics at the University of Tübingen.

Both projects are funded by the Ministry of Science, Research and the Arts (Ministerium für Wissenschaft, Forschung und Kunst), Baden-Württemberg, Germany.

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Fig. 3: KnowEsis supports the entire scientific value generation process.
Databases and Information Services (I)

Everything is Number

Mathematics not only provides formulae for describing scientific facts and processes, but mathematical models are also indispensable in economics, the insurance industry, finance, and in trend and future research. Pythagoras was right: everything is number!

Mathematics is becoming increasingly important both as a prerequisite and a tool for developing innovations and progress in many areas. Mathematical models are used to describe, calculate and validate systems and processes, such as the development of new pharmaceuticals and therapies, planning of fail-safe power grids, or optimization of logistic processes. All software tools are based on mathematical knowledge and methods. Quick and easy access to this knowledge is an important prerequisite for successful research and development.

The mathematical literature is still the core of mathematical knowledge. The first abstracting journal in mathematics, "Jahrbuch über die Fortschritte der Mathematik" (JFM), was founded as long ago as 1868 to help researchers cope with the huge number of mathematical publications. In 1932, the “Zentralblatt für Mathematik” (ZBMath) followed. Right from the beginning, areas in which mathematics was applied were an integral part of these abstracting services. Today, they are made available worldwide via the ZBMath database. ZBMath is an important tool for mathematicians, giving them access to research findings in theoretical and applied mathematics from the past 150 years. This knowledge will never become outdated.

ZBMath — the world’s most comprehensive abstracting service in mathematics research

ZBMath contains about 3 million records dating back to 1868 and is updated with more than 100,000 records each year. It is remarkable for its completeness and its worldwide coverage (including information from Eastern Europe and China).

FIZ Karlsruhe produces ZBMath in cooperation with the European Mathematical Society (EMS), the Heidelberg Academy of Sciences and Humanities, and Springer Science + Business Media (Heidelberg, Germany). The abstracting system is based on contributions from a community comprising more than 6,000 experts and constitutes a type of “web 2.0 of mathematics”— in fact, it had already done so long before the age of the internet. The ZBMath database is well established and widely used within the mathematical community. As a result, its functionality has been thoroughly adapted to the requirements of mathematicians: author names have been standardized, and even complicated mathematical formulae can be displayed using MathML. References, if available, are also shown.
MathEduc is the only international database to provide an overview of publications in mathematics and computer science didactics throughout the world.

Comprehensive integrated access
We have developed a suite of services that complement ZBMATH to meet a wide range of user interests. The enormous growth of computer science as the key technology of the information age is reflected in the almost 2 million publications compiled in io-port.net — a computer science portal produced by FIZ Karlsruhe together with the University of Trier, the Gesellschaft für Informatik (GI), and the Institute of Electrical and Electronics Engineers (IEEE).

The original documents and direct links to the electronic full-text documents hosted by the publishers can be accessed with the click of a mouse.

In addition to direct links to the publishers’ sites, we offer the mathematical community another central point of access to relevant publications via the Electronic Library of Mathematics (ELibM), currently the world’s largest open access repository of mathematics.

Fig. 4: MathEduc references about 3,700 academic textbooks

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[1] The Gesellschaft für Informatik e.V. (GI) is a non-profit organization involved in teaching and research in the field of informatics. It also deals with business and political topics related to this discipline. (www.gi-ev.de)
A Focus on Mathematics

Knowledge Management in Mathematics – 140 Years of Information on world-wide Literature

Advancing Science

Fig. 5: Brochure “A Focus on Mathematics”. Published by FIZ Karlsruhe on the occasion of the Year of Mathematics 2008. Editor in Chief: Prof. Dr. Bernd Wegner
Databases and Information Services (II)

Energy — Materials — Future

Whether for offshore wind turbines or for ceramic bearings on bicycles, energy technology and materials sciences play a central role both in high tech and in everyday life.

Information for energy research and its practical application

Climate protection is one of the key goals of the German Federal Government. This requires a sustainable, safe, and efficient supply of energy. An important factor in this process is the development of greenhouse gas-reducing technologies. Redirecting the energy mix for the future, while considering all available sources of energy, can only be achieved using innovative technologies. The development of new technologies for power generation, the design and construction of modern power supply grids, and solutions for energy-optimized construction are more important now than ever before.

On behalf of the German Federal Government, FIZ Karlsruhe produces databases and information services for energy research and its practical application.

The ENERGY and INIS databases are intended for scientists in basic research. These databases contain information relevant for innovation, for example, new material developments for photovoltaic cells or new power plant technologies. On behalf of the Federal Ministry of Education and Research (BMBF), FIZ Karlsruhe represents Germany in international collaborations with the International Atomic Energy Agency (IAEA) and the International Energy Agency (IEA). The INIS database is jointly produced by 122 countries and 24 international organizations.

The Federal Ministry of Economics and Technology (BMWi) sponsors the BINE Information Service (www.bine.info) as well as research portals for energy-optimized construction and energy-efficient urban planning. The goal is to translate research results into practical, innovative applications for everyday life and industrial production as quickly as possible.

Crystallography

Materials science is one of the core sciences and also affects many aspects of everyday life as newly developed or improved materials with specific properties lead to new products or significant improvements in existing products. For example, the development of lighter, more stable and more weather-resistant products are important research goals in materials science, with the focus on the interdependence between the structure of materials and their macroscopic properties.

Our ICSD (Inorganic Crystal Structure Database) database is an important source of information in this field. It contains about 130,000 crystal structures of inorganic compounds published since 1913. ICSD is of great value for materials scientists and provides them with the information required, for example, to predict or manipulate materials properties.
FIZ Karlsruhe — A strong partner in strong partnerships

Collaborative relationships are a strategic factor in success. The information landscape is a particularly fast-changing area. In view of the great challenges involved it is wise to pool skills and resources.

FIZ Karlsruhe has extensive business relationships and partnerships with international information providers, database producers, publishing houses, full-text suppliers and customers involved in industrial R&D.

We also work together with numerous academic institutions, non-academic research organizations, and scientific societies. Below is an introduction to some of our strategically relevant partners.

**Chemical Abstracts Service (CAS)**

Chemical Abstracts Service, a division of the American Chemical Society (ACS), is the world’s leading provider of chemistry information. In a strategic partnership FIZ Karlsruhe and CAS jointly develop, operate, and market the online service STN International and provide customer support. In 2009, our collaboration was extended: FIZ Karlsruhe now provides input for the production of CAS databases along with customer support.

**Thomson Reuters**

Thomson Reuters is a leading provider of scientific, business, and patent information. FIZ Karlsruhe offers Thomson Reuters’s patent databases via STN International, including the prestigious value-add database Derwent World Patents Index (DWPI). FIZ Karlsruhe and Thomson Reuters have jointly developed an implementation of the databases that is tailored to STN and is considered the best by the customers.

**Technische Informationsbibliothek (TIB) Hannover**

TIB Hannover is the German National Library of Science and Technology and covers all areas of engineering as well as architecture, chemistry, information technology, mathematics, and physics. TIB and FIZ Karlsruhe cooperate within the scope of the full-text document delivery system produced by TIB Hannover. Based on the eScidoc infrastructure, FIZ Karlsruhe is developing a full-text document repository for TIB’s electronic content from third-party publishers which will later become part of TIB’s full-text document delivery system.
**Max Planck Society**

As part of the eSciDoc project, FIZ Karlsruhe and the Max Planck Society have developed an integrated information, communication and publishing platform for network-based scientific work. Together with the Max Planck Digital Library (MPDL), we entered into an agreement to govern our joint activities after the BMBF-funded project expired in mid-2009. Our aim is to further develop eSciDoc and to establish an eSciDoc community.

**European Mathematical Society and Springer Publishing House, Heidelberg**

The European Mathematical Society (EMS), Springer Science + Business Media, and the Heidelberg Academy of Science and Humanities publish the the “Zentralblatt für Mathematik” (ZBMATH) and the related ZBMATH database jointly with FIZ Karlsruhe. As a member of the editorial board, the EMS significantly contributes to establishing the firm footing of the “Zentralblatt” within the European mathematical community.

**University of Hildesheim**

Together with the Information and Communication Sciences Faculty of the University of Hildesheim (Germany), we work on application-oriented information science research projects and supervise Master’s theses and dissertations.

**Jugend forscht e. V.**

FIZ Karlsruhe supports “Jugend forscht“, Germany’s best-known contest for young researchers by operating and developing the full-text database JufoBase.

The JufoBase website (www.jufobase.de) offers young researchers and interested members of the public access to full-text documents from award-winning “Jugend forscht” projects from 2005 onwards.
Fig. 6: JufoBase, a full-text database with award-winning projects from the “Jugend forscht” contest.
Staff and Organization

Human Resources Development and Training
At the end of 2009, FIZ Karlsruhe employed 316 people, 30% of whom were working part time. Our human resources capacity was 259 person-years. Of our 316 employees, 178 are women, that is, 56% of the total staff. Of the executives, 47% are women.

Our aim is to maintain and increase our employees’ motivation and to adapt their expertise to present and future needs. We offer targeted ongoing professional training, coaching for executives, and conduct appraisals on a regular basis.

Our training focuses on new methods and technologies (for example, software development and information technology), working methods, and on improving our employees’ personal and social skills. We also offer health promotion programs. In 2009, 32 courses for a total of 180 employees were available.

We conscientiously comply with equal opportunity regulations and offer flexible models for working hours (flextime, part time, telecommuting) to ensure a good balance between work and life. We have been promoting women to executive positions for many years. In 2010 we received the Total E-Quality Award for the third time in recognition of our successful equal opportunities policy.

We offer our employees not only optimal working conditions but also challenging and interesting tasks as well as the opportunity to collaborate with international business partners.

Teaching and training
Our staff with their specific expertise deliver lectures and workshops at universities and other academic institutions.

In cooperation with universities, we assist students in preparing their theses. We also offer internships to trainees and students studying for a career in the documentation and information business.

For many years, we have been training young people in modern, promising professions (media and information specialists, computer specialists). FIZ Karlsruhe has been acknowledged by the Chamber of Industry and Commerce (IHK Karlsruhe) as an excellent training institution. We had 13 trainees at the end of 2009.
From left to right:
Dr. Andreas Barth – Vice President, Dr. Josef Mattes – Vice President Information Technology,
Dr. Rainer Stuike-Prill – Vice President Marketing & Sales, Christina Wolhorn – Vice President Strategic Planning,
Silke Rehme – Vice President Content & Services, Sabine Brünger-Weilandt – President & CEO, Dr. Leni Helmes –
Vice President Development & Applied Research, Dr. Gerhard Kobel – Vice President Finance
## Balance Sheet 2009

### Assets

<table>
<thead>
<tr>
<th>A. Fixed Assets</th>
<th>as of Dec 31, 2009 EUR</th>
<th>as of Dec 31, 2008 K€</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Intangible assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial property rights and similar rights and assets (software)</td>
<td>160,894.53</td>
<td>207</td>
</tr>
<tr>
<td>II. Tangible assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Buildings on third-party land</td>
<td>3,521,675.90</td>
<td>3,750</td>
</tr>
<tr>
<td>2. Plant and technical equipment</td>
<td>2,921,835.60</td>
<td>2,801</td>
</tr>
<tr>
<td>3. Furniture and office equipment</td>
<td>965,430.92</td>
<td>925</td>
</tr>
<tr>
<td>4. Plants under construction</td>
<td>150,646.67</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>7,559,589.09</td>
<td>7,476</td>
</tr>
<tr>
<td>III. Financial assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shares in affiliated companies</td>
<td>1,134.69</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>7,721,618.31</td>
<td>7,684</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Current assets</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Accounts receivable and other assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Trade accounts receivable</td>
<td>3,293,549.80</td>
<td>3,889</td>
</tr>
<tr>
<td>2. Due from funding partners</td>
<td>2,127.16</td>
<td>7</td>
</tr>
<tr>
<td>3. Other assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1. Claims for adjustment due from public sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.1 Current affairs</td>
<td>5,885,853.10</td>
<td>6,192</td>
</tr>
<tr>
<td>3.1.2 Provision for pensions</td>
<td>625,654.00</td>
<td>592</td>
</tr>
<tr>
<td></td>
<td>6,511,507.10</td>
<td>6,784</td>
</tr>
<tr>
<td>3.2 Other assets</td>
<td>193,755.31</td>
<td>273</td>
</tr>
<tr>
<td>II. Cash and cash equivalents</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>796,035.03</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>10,796,974.40</td>
<td>11,553</td>
</tr>
</tbody>
</table>

| C. Deferred expenses and accrued income | | |
| | 299,424.55 | 314 |

| D. Fiduciary Receivables | | |
| | 2,239,500.01 | 696 |
## Liabilities

<table>
<thead>
<tr>
<th></th>
<th>Dec 31, 2009 EUR</th>
<th>Dec 31, 2008 K€</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Equity capital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subscribed capital</td>
<td>47,840.00</td>
<td>48</td>
</tr>
<tr>
<td><strong>B. Special accounts for funds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. For fixed assets</td>
<td>7,721,618.31</td>
<td>7,684</td>
</tr>
<tr>
<td>2. For current assets</td>
<td>3,788,856.82</td>
<td>4,483</td>
</tr>
<tr>
<td></td>
<td>11,510,475.13</td>
<td>12,167</td>
</tr>
<tr>
<td><strong>C. Provisions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Provisions for pensions</td>
<td>625,654.00</td>
<td>592</td>
</tr>
<tr>
<td>2. Other provisions</td>
<td>5,247,613.00</td>
<td>4,941</td>
</tr>
<tr>
<td></td>
<td>5,873,267.00</td>
<td>5,533</td>
</tr>
<tr>
<td><strong>D. Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Accounts payable</td>
<td>684,594.22</td>
<td>876</td>
</tr>
<tr>
<td>2. Liabilities to funding partners</td>
<td>151.14</td>
<td>1</td>
</tr>
<tr>
<td>3. Other liabilities</td>
<td>667,323.89</td>
<td>892</td>
</tr>
<tr>
<td>from taxes</td>
<td>0,00 EUR</td>
<td>(</td>
</tr>
<tr>
<td>within the framework of social security</td>
<td>0,00 EUR</td>
<td>(</td>
</tr>
<tr>
<td></td>
<td>1,352,069.25</td>
<td>1,769</td>
</tr>
<tr>
<td><strong>E. Deferred income and accrued expenses</strong></td>
<td>34,365.88</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>18,818,017.26</td>
<td>19,551</td>
</tr>
<tr>
<td><strong>F. Fiduciary Liabilities</strong></td>
<td>2,239,500.01</td>
<td>696</td>
</tr>
</tbody>
</table>
## Profit and Loss Account for Fiscal Year 2009

### 1. Income from funds of

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 the German federal government</td>
<td>EUR 7,386,468.02</td>
<td>K€ 8,532</td>
</tr>
<tr>
<td>1.2 the German federal states</td>
<td>EUR 1,763,218.68</td>
<td>K€ 1,060</td>
</tr>
<tr>
<td>1.3 other funding partners</td>
<td>EUR 0.00</td>
<td>K€ 9,149,686.70</td>
</tr>
</tbody>
</table>

### 2. Revenues and other income

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 sales revenues</td>
<td>EUR 26,311,954.85</td>
<td>EUR 25,126</td>
</tr>
<tr>
<td>2.2 gains on disposal of fixed assets</td>
<td>EUR 8,760.00</td>
<td>EUR 1</td>
</tr>
<tr>
<td>2.3 other operating income</td>
<td>EUR 845,232.49</td>
<td>EUR 1,190</td>
</tr>
<tr>
<td></td>
<td>EUR 36,315,634.04</td>
<td>EUR 35,909</td>
</tr>
</tbody>
</table>

### 3. Allocation to special accounts for funds

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 to fixed assets</td>
<td>EUR -1,498,390.10</td>
<td>EUR -2,069</td>
</tr>
<tr>
<td>3.2 to current assets</td>
<td>EUR -845,232.49</td>
<td>EUR -804,019.70</td>
</tr>
</tbody>
</table>

### 4. Income from funds, revenues and other income available for coverage of expenses

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EUR 35,511,614.34</td>
<td>EUR 35,109</td>
</tr>
</tbody>
</table>

### 5. Raw materials and consumables

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>charges for operating supplies</td>
<td>EUR 72,742.66</td>
<td>EUR 94</td>
</tr>
</tbody>
</table>

### 6. Charges for energy and water

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EUR 395,343.50</td>
<td>EUR 375</td>
</tr>
</tbody>
</table>

### 7. Charges for third party research and development work

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EUR 1,192,611.66</td>
<td>EUR 1,133</td>
</tr>
</tbody>
</table>

### 8. Personnel expenses

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 salaries</td>
<td>EUR 13,449,433.76</td>
<td>EUR 12,981</td>
</tr>
<tr>
<td>8.2 social security</td>
<td>EUR 2,502,351.43</td>
<td>EUR 2,474</td>
</tr>
<tr>
<td>8.3 retirement</td>
<td>EUR 1,275,583.11</td>
<td>EUR 1,257</td>
</tr>
<tr>
<td>8.4 allowances and financial aids</td>
<td>EUR 42,837.60</td>
<td>EUR 16</td>
</tr>
<tr>
<td>8.5 other personnel costs</td>
<td>EUR 2,931.77</td>
<td>EUR 17,273,137.67</td>
</tr>
</tbody>
</table>

### 9. Depreciation of fixed assets

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from release of special accounts for funds to fixed assets</td>
<td>EUR -1,460,171.03</td>
<td>EUR -1,583</td>
</tr>
</tbody>
</table>

### 10. Other operating expenses

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EUR 16,577,777.85</td>
<td>EUR 16,778</td>
</tr>
</tbody>
</table>

### 11. Profit or loss of the financial year

<table>
<thead>
<tr>
<th>Description</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EUR 35,511,614.34</td>
<td>EUR 35,109</td>
</tr>
</tbody>
</table>

**EUR** EUR K€ K€
Governing Bodies

Shareholders

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11 German Federal States

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Deutsche Physikalische Gesellschaft e. V., Bad Honnef
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