Service Innovation in Education and Research
Innovations in education and research hold great potential. They aim towards global growth markets and in turn, offer the basis for social growth and prosperity. It is therefore astonishing, that innovation in education and research was long distinguished by its absence in Germany. Recently, however, a fresh breeze has swept through educational institutions at all levels, and innovations in education and research are proving to be increasingly strong motors for the economic, social, and academic sectors.

Young people thirsting for education are no longer prepared to have educational speed, content, and development opportunities dictated by state institutions. The willingness to pay for education, but at the same time to demand quality standards, is a visible characteristic of this change. In a similar manner, the field of research has been transformed into an arena of competition. Rankings have entered the scene, where, until recently reputation was the defining factor. The Excellence Initiative in Germany, which has gone through three rounds of award, has stimulated higher education into action, encouraging, and supporting innovative university research.

At the same time, education and research is being carried out in more places, including business organizations. Companies pressed by the demands of increasing competition have clear ideas about the additional skills workers need. Some are becoming more active in education as a contribution to society, that extends beyond their own workers. Individuals taking greater responsibility for their own careers, are more willing to make independent decisions about the source of needed training, and are turning to these providers as well as to universities.

Today, the educational and research landscape in all its diversity and complexity, has taken a central role in innovation activity. More specifically, education and research provide an excellent breeding ground for service innovations: the range of opportunity is being extended as new concepts are generated and made feasible. In this short report, it is unfortunately possible to cover only a few aspects of this development. We describe two exemplary institutions in some detail – the Technische Universität München (TUM) and the HHL – Leipzig Graduate School of Management – then provide a flavor of other innovative programs in a variety of settings.

**Important for Business**

- Universities, created for the discovery and development of new ideas, have recently emphasized service innovations with support from the German government.
- This support has allowed the best educational organizations to design new research platforms for the future.
- Business organizations also play a growing role in this landscape, carrying out research and education projects that create additional innovations.

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Service Innovation in Education and Research

“Twelve years of service research and support for service development through the Federal Ministry of Education and Research (BMBF) have achieved a great deal in Germany. They have focused awareness on services as the motor of innovation. The support for education and research provided by BMBF has also created service excellence in the academic and economic world. Both of these developments have great significance for the future of Germany as a location of high-tech economic activity. It is therefore appropriate, that innovation in services, the new service support program, is embedded in Germany’s High-Tech Strategy.”

Prof. Dr. Prof. h.c. Dr. h.c. Ralf Reichwald

The Technische Universität München (TUM) – describing itself as ‘The Entrepreneurial University’, was one of the winners in the first round of the Excellence Initiative in Germany in 2006. In 2008, it was nominated as the best German research university by the Center for Higher Educational Development (CHE) in their research ranking.

The HHL – Leipzig Graduate School of Management is a second innovative education and research center. This university-level institution in private ownership is not only the historical cradle of German business economics, but also sets benchmarks for excellence in academic study and the supervision of students. In 2007, HHL was one of five prizewinners in a competition for “Exchange Processes”, jointly organized by the German Stifterverband and the Federal Ministry of Education and Research. In 2008 they were celebrating the 110th anniversary of its founding.

In part, because they differ in many respects, and thus have different strengths, the two schools have joined together in a strategic partnership with numerous joint projects and initiatives. For example, both institutions are exploring new paths through a new Executive Program in Innovation and Business Creation. Inaugurated in 2008, the EMBA program is organized by TUM with UnternehmerTUM, the Center for Innovation and Start-ups, and HHL. The degree focuses on the development of new business ideas by independent entrepreneurs and leaders of innovative projects in larger organizations.

This publication first describes HHL, with its historical roots, its strategic concept for the future, and its award-winning HHL Open School Initiative. This is followed by a presentation of the TUM highlights and its concept for the future, ‘The Entrepreneurial University’. These descriptions can be compared with information in the third section of the report, which more briefly describes further education and research innovations in Germany.

I. The HHL – Leipzig Graduate School of Management as a motor of innovation and value creation

The competition for “Exchange Processes,” which HHL won in 2007, was searching for universities that had significantly contributed to innovation and value creation. The winner was chosen for exemplary contributions to breaking down barriers between the academic and economic worlds, thus improving the exchange of concepts, research findings, personnel, resources, and services. The distinguished jury was impressed by both the history, and the future concept of HHL in this extremely stiff competition.
Historical roots

"HHL offers excellent study facilities for generalist managerial studies on a superior academic level. The institution trains managers ... (to) combine ... judgment and well-founded economic knowledge.... The expression ‘generalist managerial studies on a superior academic level’ is initially related to course content. We view the virtually insoluble conflicts... between theory and practice as a constant source of inspiration and challenge. HHL students receive a broad and well-grounded business education that ranges from modern developments in management, to a more extended view (that)... includes problems and concepts in subject areas such as political economics and economic ethics. We deliberately avoid the illusion, that economic science can offer complete recipes for challenging managerial tasks, and emphasize at HHL that the appropriate utilization of theory demands creativity and power of judgment – in particular when this concerns solving new and far-ranging management problems."

This extract from the founding concept of HHL, which was re-established as a private university in 1992 by the Chamber of Industry and Commerce in Leipzig, reformulates the concept with which the original HHL was created in 1898 by the then Chamber of Commerce. The triggers precipitating the foundation of a private institution were the “disasters in German global trade and mistakes within the area of trade and exchange.” HHL was considered a “necessity” for “those merchants who are destined to be the leaders of large businesses or industrial companies” (Raydt, 1897).

Even at that early date, HHL, the first business school in Germany, was characterized by strong and stable exchange relationships. These strong historical and institutional network structures, are quite unique in Germany. The interlocking of economic sciences and academic research with business practice also lacks historical and institutional roots in many other countries - for example in Great Britain - and is only now being broadly encouraged as a strategy for the future.

Connection between business research and business organizations is a key feature, for example, in the influential Lambert Review (www.lambertreview.org.uk) recently published in the UK.

The HHL tradition is personified by its former student, Eugen Schmalenbach, a revolutionary figure in modern business management. Schmalenbach did not trust purely academic knowledge about economic processes generated at a distance from commercial action. He defined private sector economics as an art, rather than a science, and made a plea for the generation of commercial knowledge from economic science and economic practice acting in concert (Möslein, 2005). HHL remains committed to this challenge today.

Strategic Concept

Exchange processes in the sense of fertile interaction between economic science and economic practice, characterize the methodical approach of HHL in all aspects of teaching and research - or knowledge generation and knowledge transfer. HHL particularly needs this exchange to make a long-term place for itself among top-class business schools. It is therefore important, that the exchanges undertaken actually work, in both directions. The presumption is that the public and private economic institutions, that support HHL, will also benefit from cooperation. In other words, the HHL philosophy necessitates reciprocal relationships that bring sustainable advantages to both partners. Figure 1 illustrates the central strategic and institutional-organizational exchange processes anchored at HHL.

Education and research in interaction - HHL Open School Initiative

The HHL Open School Initiative addresses the global development of business and innovation management in economic practice. One empirically evident change in economic practice is the move from a closed innovation model in a closed company-internal innovation department, to a model of open innovation, that requires reciprocal exchange and productive interaction with external innovators (Chesbrough, 2003). The opening of company innovation processes requires awareness of innovative activity outside the borders of the orga-
Background

Fig. 1: Exchange processes as the basis for the long-term and sustainable establishment of HHL within the market of leading business schools

<table>
<thead>
<tr>
<th>HHL – Leipzig Graduate School of Management</th>
<th>Exchange process</th>
<th>Economic sector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic teaching</strong></td>
<td>Selection process</td>
<td><strong>Target groups</strong></td>
</tr>
<tr>
<td>• Diploma program and Master of Science</td>
<td>Practical projects</td>
<td>• Company founders and micro-companies</td>
</tr>
<tr>
<td>• MBA &amp; part-time MBA</td>
<td>Company presentation</td>
<td>• SMEs</td>
</tr>
<tr>
<td>Research and postgraduate education</td>
<td>Comprehensive program</td>
<td>• Major companies</td>
</tr>
<tr>
<td>• Centers of competence</td>
<td>Interdisciplinary oriented competence centers</td>
<td><strong>Target regions</strong></td>
</tr>
<tr>
<td>• Doctoral programs</td>
<td>Collaborative knowledge generation</td>
<td>• Regional</td>
</tr>
<tr>
<td><strong>Support for company founders</strong></td>
<td>HHL doctorate program</td>
<td>• National</td>
</tr>
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<td>and company partnerships</td>
<td>for active managers</td>
<td>• International</td>
</tr>
<tr>
<td>• Entrepreneurship programs</td>
<td>Company formation programs</td>
<td><strong>Target fields</strong></td>
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<tr>
<td>financing</td>
<td>Partner programs</td>
<td>• Strategy, innovation, marketing, financing &amp; controlling</td>
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<tr>
<td>• Corporate Relations Office</td>
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<td><strong>Fig. 2:</strong></td>
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Source: HHL – Leipzig Graduate School of Management

The HHL Open School Initiative combines Eugen Schmalenbach’s historical vision of knowledge generation from both economic science and economic practice with the most recent thinking open innovation. The school is encouraging innovation by dovetailing university and business practices. It is systematically building on its historical foundations and recognizing institutional and regional opportunities to strengthen both the economic sector, and the larger society.

The HHL Open School Initiative combines Eugen Schmalenbach’s historical vision of knowledge generation from both economic science and economic practice with the most recent thinking open innovation. Similar innovation processes are affecting all areas of knowledge management and innovation generation in many other kinds of organizations.

The degree to which economic practice can be linked to innovation and knowledge generation among external partners depends upon the degree to which economic activities are dependent on external opportunities. Recognizing interdependencies, new players have already established themselves in numerous technical-scientific knowledge and innovation fields to act as intermediaries between providers and consumers within specific knowledge generation markets. Examples of companies offering innovation and innovative ability as products on the market include: IDEO (www.ideo.com) and innovation europe (www.innovation-europe.de). New markets in which innovation searchers meet innovation providers are being created by InnoCentive (www.innocentive.com) and IdeaCrossing (www.ideacrossing.com). F. Meyer-Krahmer and U. Schmoch describe the mechanisms of information and social knowledge transfer between the knowledge and economy sectors as “linking mechanisms” (Meyer-Krahmer & Schmoch, 1998).

However, a gap between adequate offers and intermediaries has been diagnosed within the area of management knowledge (Birkinshaw et al., 2005; Möstlein, 2005). Business schools worldwide, typically change strategic direction, only as a drop in demand in classical MBA studies is experienced. More timely changes are needed in both teaching and research (Bradley et al., 2004; Ivory et al., 2006).

HHL’s Open School Initiative tries to close this gap between changes in economic events and new knowledge generation, with the establishment of HHL as the location and partner for collaborative knowledge generation between management research and management practice. Within the framework of this initiative, management competences and research capacities are bundled in five central fields: strategy, innovation, marketing, finance, and controlling – as illustrated by Fig. 2. Further information is available at www.hhl.de.

The HHL Open School Initiative combines Eugen Schmalenbach’s historical vision of knowledge generation from both economic science and economic practice with the most recent thinking open innovation.
II. Technische Universität München – The Entrepreneurial University

The Technische Universität München is a research and teaching institution aimed at serving society. The institution views itself as an entrepreneurial university and therefore also a service company with aspirations for global excellence. Its contribution to service excellence within the high-tech city of Munich has many facets. For example, the TUM Business School acts as the bridgehead of knowledge transfer.

MBA programs are available for managers up to the highest levels. The Executive MBA program called ¡communicate! has successfully established itself in the market as a program that helps managers identify organizational strengths and convey them to others. In 2008, TUM launched a further executive program focused on Innovation and Business Creation. The program facilitates the swift development and implementation of new services and new technologies for both high-tech start-ups and innovative businesses. As already noted, the program relies on TUM’s Innovation and Start-up Center, UnternehmerTUM, in partnership with HHL.

Innovation in research – TUM Institute for Advanced Study

At the TUM Institute for Advanced Study (TUM-IAS), top researchers are freed from the typical bureaucratic pressures of everyday university life. The first IAS fellows were welcomed by TUM president Wolfgang A. Herrmann in 2007. These fellows are able to pursue new ideas with the aid of state-of-the-art equipment without distraction from administrative commitments. Modeled on the legendary academic paradise in Princeton, president Wolfgang Herrmann justifies the TUM’s central project with the credo: “Free development of creativity for the brightest minds is the most efficient contribution to scientific progress.”

Freedom for the best academics – the TUM Excellence Initiative takes off

TUM-IAS is a core concept in the design for the future that received one of the first three awards in the Excellence Initiative of the German Research Association (DFG) and the Academic Council in 2006. High risk – high reward, is the academic ideal of the institute that aims to open up new fields and significantly influence academic careers. For this reason, young academics play a central role in TUM-IAS, where special fellowships for particularly gifted young talents are available. Research groups consist of fellows from TUM and top international academics. The profile is always interdisciplinary, including planned integration of humanities and industrial research.

The first research group began its work in September 2007. Prof. Reiner Rummel from TUM, with Prof. Gerhard Beutler and Dr. Adrian Jäggi from the Astronomical Institute of the University of Bern, are searching for methods to obtain new information on changes in the earth’s gravity field through slight deviations in satellite paths. Identified changes will in turn yield conclusions on changes in ocean currents, polar ice mass, or precipitations as the result of climate change.

“Institutions of learning should be devoted to the cultivation of curiosity.”

Abraham Flexner (1939)
A second research group surrounding Prof. Arthur Konnerth from the TUM, Nobel Prize winner Prof. Bert Sakmann – up until now Max Planck Institute for Medical Research Heidelberg – and Dr. Thomas Misgeld is attempting to map the function of basic elements of the brain in intelligent creatures. This IAS group will be based on the Garching campus of TUM in an institute building being constructed with 10 million Euros funding by BMW. Neurone bundles called cortical pillars, will be analyzed in vivo and simulated in silicio, i.e. in the Garching supercomputer.

Further information on these and other TUM-IAS activities is available at www.ias.tum.de.

UnternehmerTUM GmbH - Center for Innovation and Start-ups

UnternehmerTUM is one of the leading centers for innovation and start-ups in Europe. Its focus is on the development of entrepreneurial teams and opportunities. Every year UnternehmerTUM facilitates and supervises approximate 40 teams in the systematic exploration of prototypes for new products and services; around 20 of the start-up teams form companies. Additionally, over 1,000 individuals from both the university and business environments acquire entrepreneurial knowledge in short courses and programs offered by UnternehmerTUM.

Susanne Klatten, a well-known German entrepreneur, has provided both course content and financial support for Un-
UnternehmerTUM since its establishment in January 2002. She notes that “at UnternehmerTUM, young entrepreneurs are given the opportunity to implement their business concepts. UnternehmerTUM stands for the recognition of opportunities, the testing of concepts in a real environment, and their implementation.”

In 2007, UnternehmerTUM was awarded the German Employer Associations’ Prize for Education in recognition of their convincing projects developing entrepreneurial competence. The TUM-based organization emphasizes, that in order to achieve success, a start-up needs an innovative business opportunity, a capable team, and a strong network of experts, and capital providers. UnternehmerTUM is a competent partner in putting these key elements together: it helps innovators and start-up teams develop entrepreneurial opportunities into sustainable business models. The Center accompanies promising start-up projects through the critical phases of business development, business planning, financing, and organization structuring.

UnternehmerTUM has developed ‘Playtools’ - a series of methods and tools with which teams can develop prototypes of their entrepreneurial idea within a short space of time. Through the systematic testing of a new business concept, it soon becomes clear whether or not a promising idea will develop into a real entrepreneurial opportunity – or not. Prototypes help the team and relevant other actors (for example, potential customers or sources of financial support) visualize the relevant aspects of a new business concept. Functional models, forms, and customer scenarios make relevant aspects of the business concept tangible. For service components of the idea, these are especially important instruments for interacting with potential customers and receiving valid feedback. This process helps reduce insecurity within the innovation processes and generate knowledge. It helps determine to what extent the business concept is in demand, commercially viable and technically feasible, and what competences are required from individual participants and a surrounding team, for the successful implementation of the business concept.

In its broader educational efforts, UnternehmerTUM awakens the interest of young people in entrepreneurship through lectures and seminars. These provide students with fundamental knowledge about how managers involved in decision-making can encourage innovation. After this introduction, participants can learn in teams how to develop business concepts for growth-oriented companies and compile a structured business plan. Further information is available at www.unternehmertum.de.

Innovations in teaching - Executive Program in Innovation & Business Creation
With its Executive Program in Innovation & Business Creation, the TUM Business School, together with the HHL and UnternehmerTUM, is developing a groundbreaking educational innovation. For the first time that we know of, an executive program combines excellent management training with the systematic encouragement and supervision, and innovation and start-up projects by individual participants. Teaching content of the highest quality is provided by lecturers from the Technische Universität München, HHL, the University of California Berkeley, and further international partner universities, along with well-known businesses. In a 60-day course carried out over 12 month period, program participants acquire broadly-based management knowledge with the emphasis on the development of growth-oriented business models, the construction of new business fields for companies, and the successful management of start-ups. In accompaniment to academic modules, program participants receive systematic support from the UnternehmerTUM for their concrete innovation and start-up projects.

UnternehmerTUM has developed an innovation process in which the concept of prototyping is the dominant element. The aim of this method is to reduce economic and technical innovation risk. A prototype is not viewed as first copy of a mass produced offering, but is a more flexible model that helps systematically test and develop new business concepts. Functional models, forms, and customer scenarios make relevant aspects of the business concept tangible. For service components of the idea, these are especially important instruments for interacting with potential customers and receiving valid feedback. This process helps reduce insecurity within the innovation processes and generate knowledge. It helps determine to what extent the business concept is in demand, commercially viable and technically feasible, and what competences are required from individual participants and a surrounding team, for the successful implementation of the business concept.

The twelve-month Executive Program is aimed at ambitious specialists and executive managers, and also company founders. Participants who have completed the program will receive the academic degree of Executive Master of Business Administration (MBA). Further information is available at www.innovationprogram.de.
Innovative Educational Concepts

Prof. Ralf Reichwald, TUM and CLIC, in conversation with Prof. Dr. Dr. h. c. mult. Wolfgang A. Herrmann, President of the Technische Universität München (TUM)

Prof. Herrmann, what is the overall concept that characterizes TUM?

We see ourselves as an entrepreneurial university. This means that we follow a scientific entrepreneurial agenda in teaching and research.

What are your objectives for this process?

We aim to offer students an excellent, performance-oriented education with a practical orientation. We embrace the principle of achievement, and are constantly adjusting our study courses to new requirements. To guarantee a practical orientation, we not only cooperate with strong partners from the industrial sector, but in 2002 also founded UnternehmerTUM, an independent, non-profit, limited liability corporation and an associated institute of the TU München. The objectives of this institution include: the encouragement of entrepreneurial thinking and action on the part of students and academics, and the supervision of university innovation and start-up teams, in the development of their products and companies.

What is your vision for TUM?

One of our visions, is to become one of the most attractive technical universities in Germany for women. We aim to create study places and jobs that fulfill the special needs of women and young families through imaginative actions.

The HHL is pursuing an innovative path with its educational concepts. What do you see as the distinguishing characteristics of your institution, Prof. Wiesmeth?

We aim to educate capable and responsible managers who can recognize and surmount the challenges of the global economy. One of the projects in which we are pursuing new paths, is the ‘HHL Open School Initiative’.

What is the objective of the HHL Open School Initiative?

The concept was created to systematically bundle existing exchange processes and make our way of doing this more visible in the economic and academic world. Previously diversely contacts with businesses, are now integrated into a single network. A significant component of the HHL Open School Initiative is cooperation projects such as, student advisory services, practical projects, and personnel recruiting. However, knowledge transfer is not limited to the development and placement of highly qualified specialists. We provide a wide range of further training opportunities for various management levels.

What is your vision for HHL?

Our aim is to become one of the top ten leading European business schools by the year 2020. We are pursuing a growth strategy: we aim to increase both the number of staff and the number of students without forfeiting quality in service or teaching. We want to simultaneously extend cooperation projects with other leading European business schools offering diploma, master, and executive programs.
The High-Tech Strategy for Germany

For the first time, the German Federal Government has presented a national strategy for innovation policy which was developed in a joint effort by all federal government departments. The High-Tech Strategy for Germany marks a paradigm shift in research and innovation policy. Many good ideas are being developed in Germany but too few of them are turned to commercial account. We therefore need a climate where ideas can be „ignited”, where research results can be translated into products, processes and services. We want to turn Germany into the most research-friendly nation in the world. Until 2009, the German Federal Government will make available a total of approximately 15 billion Euro for cutting-edge technologies and technology spanning programmes with the aim of strengthening innovation. This will contribute substantially to achieving the goal of increasing the investments in research and development to three percent of the gross domestic product by 2010, as was agreed in the Lisbon Strategy. The Federal Government’s High-Tech Strategy establishes the following innovation policy priorities:

1. Developing lead markets

Defining clear objectives and fields of action: In its High-Tech Strategy, the Federal Government has defined objectives for 17 cutting-edge fields. These include, for example, health research, security research and energy research. There is a clear time table for initiatives in each of these fields. Both research funding and the prevailing conditions are taken into account.

Establishing a clear profile: For the first time, an analysis of strengths and weaknesses clearly shows where Germany stands in the various cutting-edge fields and where further action is needed. The central task is to open up new markets for products and services and to develop existing markets into lead markets. Within the cutting-edge fields, the High-Tech Strategy focusses on areas which are of outstanding national interest and which have economic and scientific potential.

Designing roadmap processes with industry and science: Coordination between politics, science and industry is necessary for enhancing Germany’s competitiveness on international markets. It is a task for innovation policy to shape and steer this process, to support it and to provide for suitable conditions. Strategic partnerships are of particular importance in this respect.

2. Improving the cooperation between science and industry

Pooling the strengths of industry and science: With our High-Tech Strategy we forge links between industry and science. Collaborations and joint projects will receive greater support than ever before, for example through the introduction of a new type of research grant, the funding of leadingedge clusters and by spotlighting the best examples of cooperation between industry and science.

Investing in minds: The systems of initial and continuing vocational training will be developed further in keeping with future needs, and support for the highly talented and for young researchers will be extended. The Pact for Higher Education 2020 aims to ensure that a growing number of students will find favourable conditions for study and research.

Actively shaping European research and innovation policy: The national innovation system forms part of the European Research Area. The Federal Government therefore aims to link its innovation policy to European initiatives. This will also be an objective of the German EU Council Presidency during the first half of 2007.

3. Accelerating direct application of research findings

Shortening the time to market: Standards enable the successful marketing of products throughout the world. The High-Tech Strategy will assist industry in establishing such standards more quickly, thus increasing the competitiveness of industrial products. Furthermore, public procurement will be designed as a driver of innovation.

Improving conditions for high-tech start-ups and innovative SMEs: Young entrepreneurs will be assisted in entering the market, companies will receive support in establishing contacts with the scientific community and in translating their own research findings into products, and the funding policy for small and medium-sized enterprises will be streamlined. General conditions will also be improved.

The Federal Government’s High-Tech Strategy initiates an interdepartmental process for the entire legislative period. The Industry-Science Research Alliance, which includes representatives from industry and the scientific community, will support the implementation and further development of the High-Tech Strategy together with the competent government departments. The process of implementing the High-Tech Strategy will be regularly reviewed. A first review by the Federal Government will take place in September 2007.

Further information:
http://www.ideen-zuenden.de
http://www.bmbf.de

Hot Spots of Service Innovation in Education and Research
Universität Karlsruhe (TH)

Universität Karlsruhe – concept for the future

With the Excellence Initiative award, the German research landscape is being revolutionized. In this instance, a university and a non-university large-scale research institution plan to merge to become the Karlsruhe Institute for Technology (KIT), which will set new benchmarks in research, teaching, and innovation. A detailed concept has been compiled and all obstacles have been eliminated for its implementation. Federal and regional governments recently decided that KIT should be created in the form of a statutory body according to the regional regulations in Baden-Wuerttemberg. The relevant legal framework is expected to be in place by the beginning of 2009.

KIT will focus primarily on natural and engineering sciences and new innovation approaches with the aid of outstanding international research and teaching. It is expected to become the leading European center for energy research. The organizational concept foresees common structural and development planning, as well as common appointment strategies. This would mean that the academic competence of a research university is linked under the same roof with a large-scale research institution. Faculty and graduate students will be integrated in large-scale research projects and teaching activities. The design and scope of the new organization is expected to attract the best minds from around the world.
Technische Universität München

TUM. The Entrepreneurial University.

Entrepreneurial spirit at the TUM is interpreted as the encouragement and consolidation of a wide spectrum of talents. Within the context of state-of-the-art research, this guarantees a maximum of individual freedom coupled with a functioning and academically friendly administration. The university presented its concept for the future under the motto “TUM. The Entrepreneurial University.” Linking up with numerous reform steps since 1996, the TUM was able to convincingly present its future aims targeting the best international standards of an entrepreneurial thinking and acting university. The business objective is scientificity which is measured according to top international standards. The focal point is the “TUM Institute for Advanced Study” (TUM-IAS), the concept of which is the creation of maximum creative freedom for its top academics, the “IAS-Fellows”.

The TU München displays a future-oriented and characteristic profile particularly within the areas of natural sciences and engineering sciences. In addition to the core areas of a technical university, productive links to life sciences have been set up, ranging from nutritional science, biotechnology and bioinformatics, to medicine. Numerous innovative research projects and study courses have originated from fruitful interdisciplinary cooperation.

The excellence clusters “Cotesys” and “Universe” are two of the particularly outstanding research areas at the TU München which play a prominent role in the characterization of the university and simultaneously provide young academics with excellent study and career opportunities. The TU München not only provides visible and competitive research and learning structures, but also supports the required accompanying academic network structures and cooperation projects with non-university institutions and the economic sector.

The Excellence Initiative at the Technische Universität München additionally enables a new design of its teaching structures with the aid of the TUM International Graduate School of Science and Engineering” (IGSSE). The core concept of this project is the increased dovetailing of natural and engineering sciences on a strong research basis throughout graduate and post-graduate courses. This creates additional benefits in interdisciplinary experience for young entrepreneurially thinking and acting academics.

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The Georg-August-Universität Göttingen, as supported by the Excellence Initiative on the part of the Federal and Regional governments, is realizing a concept for the future titled “Tradition – innovation – autonomy.” The project is related to top university research in areas developed by Brain Gain, Brain Sustain, Lichtenberg Kolleg, and Göttingen International. During the process of the excellence competition, the Göttingen Graduate School for Neurosciences and Molecular biosciences (GGNB) and the excellence cluster “Microscopy on a Nanometer scale,” were established to support this concept.

Through the Brain Gain, the “Georgia Augusta” is pursuing an innovative path to gain outstanding young academics and provide the best of them with a secure professional career. Additionally, Brain Sustain provides a concept that enables the retention of established top researchers. These projects are accompanied by two further measures: the Lichtenberg Kolleg encourages humanistic and social research and Göttingen International, the recruitment of excellent foreign students and young academics. The concept is person-oriented, but its structure ensures the further development and polishing of the image of the academic institution.

The long-term strategy of the Georgia Augusta is to build on the particular strengths of the university with its established research tradition in a wide range of subjects, close links with the excellent non-university research environment, and its autonomy as a foundation university. Academic progress is conceived as a process that primarily results from creativity and the efforts of individual researchers, but which can simultaneously be accelerated by strategic control, for example the consistent performance-oriented allocation of resources.

The university’s concept for the future aims to gain and retain the “best brains” internationally and provide them with the best possible environment for the development of their potential. The University of Göttingen is situated in the center of an environment of non-university research institutions in close vicinity that is probably unique in Germany. The gradual coalescence with these partners to provide a joint academic location, provides opportunities that are unique to Göttingen for the gaining and retaining of excellent researchers and the growth and extension of internationally competitive top-class research.
With its commitment as a comprehensive university, the University of Heidelberg achieved entry into the group of nine universities that were successful in the Excellence Initiative on the part of the Federal and Regional governments. That enabled the university to receive supplementary funding up to the year 2012 for its future-oriented concept “Heidelberg: realizing the potential of a comprehensive university.” The project will encourage research and young academics, and significantly advance transformation from a classical “universitas” to a comprehensive university of the future.

The success recognizes that the “Ruperto Carola”, founded in 1386, is not only Germany’s oldest university, but also regularly appears in international rankings as an excellence university. The institution is provided with a unique opportunity to develop knowledge addressing the major issues of humanity, transforming Heidelberg into an even more successful and internationally attractive location.

Their concept for the future not only builds on disciplinary strengths, but aims to develop new forms of interdisciplinary cooperation and improve the position of Heidelberg in national, and international networks. Three measures can be cited as primary examples for the strengthening of a comprehensive university. The first is the establishment of the Maresilus-Kolleg to create new quality in the cooperation between the disciplines with various academic cultures. The second is the national character of the strategic alliance between the Center for Molecular Biology (ZMBH) and the German Center for Cancer Research (DKFZ). The third concept for the future improves support for the encouragement of young academic researchers.

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Ludwig-Maximilians-Universität München

LMUexcellent: working brains – networking minds – living knowledge

The LMU was extremely successful in the first round of the national Excellence Initiative competition in 2006. The university achieved success in all three funding lines in the competition, and was nominated as one of three Excellence Universities in Germany. Within the LMU, a graduate school, three excellence clusters, and the concept for the future, LMUexcellent received support.

LMU includes the “Graduate School of Systemic Neurosciences GSN-LMU” which devotes itself to one of the fundamental issues in modern science: how does the brain function? Research into proteins forms the core of life sciences at the university. The excellence cluster, “Munich Center for Integrated Protein Science (CIPSM)”, aims to bring leading researchers to Munich who can create new structures in teaching, services, and above all research.

Photons, photon sources and technical processes utilizing photons, are key elements of the technology of the 21st century. The excellence cluster “Munich Center for Advanced Photonics (MAP)”, will search for new operational possibilities for photons with the aim of achieving higher intensities, higher accuracies in frequency, and higher photon energies. This would enable the control of an electromagnetic field within a time scale of below a femtosecond, i.e. one thousandth of a trillionth of a second, to be achieved.

Nanosystems already play a prominent role in information technology at LMU. The electronic components of computers and communication technology are becoming increasingly smaller. This development cannot be continued indefinitely once the nanometer scale has been reached. In the excellence cluster “Nanosystems Initiative Munich (NIM)”, scientists from a variety of research institutions within the vicinity of Munich, are working together with the objective of designing, creating, and controlling a series of artificial and multifunctional nanosystems.

The LMU also provided a concept for the future with “working brains – networking minds – living knowledge.” This framework will strengthen its position as an outstanding German research university. To this end, LMU is cultivating an extensive international network and academic cooperation on all levels from study courses, research, and administration with renowned partners from around the world.
The Freie Universität Berlin was established during the blockade of West Berlin in 1948, prompted by the politically motivated exclusion of students from the Universität Unter den Linden. The Free University initiative on the part of students and academic staff was supported by the United States and Berlin politicians. Students and staff wished to learn and do research unencumbered by political restrictions. Today, the Free University of Berlin is still guided by the principles of truth, justice, and freedom, as shown on its official seal. The university offers over 100 study courses in 15 faculties and central institutes. Around 34,000 students are currently enrolled at the university; 16 per cent of these are foreign nationals from all around the world.

Sixty years after its establishment, the Free University Berlin is one of the top academic addresses in Germany, and was one of nine universities to receive recognition within the framework of the Federal and Regional government Excellence Initiative. This will permit the University to set up several interdisciplinary clusters and graduate schools. Within research projects and the graduate schools, academics from the Freie Universität Berlin, on a variety of levels, also are cooperating with other universities and non-university research institutions.

Individual research areas include emotions, cultures of the Old World, the development of new forms of therapy for neurological disorders, pure and applied mathematical research, Muslim-influenced cultures, North American society at the beginning of the 21st century, literature of world cultures, and the development of regenerative therapies.

The Freie Universität’s concept for the future is to be an International Network University, continuing the strategy pursued since the time of its foundation. While at the beginning it was necessary for the academic future of the university to establish connections throughout the world from its “island location” in West Berlin, this strategy of necessity has now developed into a success strategy of internationalization and academic excellence. For a number of years the Freie Universität Berlin has bundled its research into clusters, some of which are currently receiving support through the Excellence Initiative. The new graduate schools are part of the Dahlem Research School, the umbrella organization for structured doctoral programs at the Freie Universität. The university currently has 130 partnerships throughout the world and external sites in New York, Moscow, Beijing, and New-Delhi. The establishment of further offices and the structuring of new cooperation projects are planned. The internationalization strategy of the Freie Universität will, in the future be controlled in three strategic centers - the Center for Cluster Development, the Center for Graduate Studies and the Center for International Exchange.
University of Freiburg

Windows for research

With the long-awaited decision in the Federal and Regional government Excellence Initiative for the encouragement of scholarship and research in German universities, the University of Freiburg will be able to implement its concept for the future. The university has achieved the highest possible level of support, and is officially permitted to refer to itself as an “Excellence University”. In addition, the authorizing committee of the university has approved a new excellence cluster, the “Center for Biological Signal Studies (bioss).”

Through the development and strengthening of interdisciplinary research, the Center will throw light on the molecular foundation and principles of biological signal processing. Numerous human disorders are caused by defective or unregulated signal paths. A better understanding of these signal processes will make an essential contribution to progress in medical research and practice.

The excellence award will permit the University of Freiburg not only to implement this concept for the future, but to attract highly qualified young academics, internationally renowned researchers and guest academic staff to the campus. With its international “Institute for Advanced Studies” (FRIAS), Freiburg aims to penetrate the top group of international research universities. Instead of a daily life full of applications for third-party funds, committee work and administration, researchers should be provided with the freedom to undertake excellent research.

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RWTH Aachen University

RWTH 2020: meeting global challenges

On September 19, 2007, RWTH Aachen was designated as an Excellence University by the German Science and Humanities Council and the German Research Association within the framework of the German Federal and Regional governments’ Excellence Initiative. Their concept for the future was “RWTH 2020: Meeting Global Challenges,” which included proposals by the Graduate School for the “Aachen Institute for Advanced Study in Computational Engineering Science” (AICES), and the development of excellence clusters in “Ultra High-Speed Mobile Information and Communication” (UMIC), “Integrative Production Technology for High Wage Countries”, and “Tailor-Made Fuels from Biomass” (TFMB). The total amount of support is 180 million Euros over a five year period.

The funding provides RWTH Aachen with a unique and valuable opportunity to align its core competences to undertake top-class research and significantly raise its international visibility within a few years. To achieve these goals, RWTH Aachen has developed a strategy that will lead to a superior objective: in contrast to the individual strengths that currently characterize the university, which is above all renowned for engineering sciences, RWTH Aachen now, aims to develop into an integrated, interdisciplinary technical university that can meet global challenges.

In order to accomplish a thorough and complex reorientation and refocusing process, four specific measures have been compiled within a strategic plan to reinforce existing strengths of the university while rectifying existing deficits.

These measures include:
• raising the academic profile of the university
• forging a research alliance among Jülich-Aachen (JARA) to include JARA-Brain Translational Brain Medicine (neurosciences), JARA-FIT Fundamentals of Future Information Technology, JARA-SIM Simulation Sciences, and JARA-Energy
• mobilizing people through a university-wide personnel and organizational development, and
• the reinforcement of university management structures.
Microsoft Deutschland GmbH

IT for smart mice

PC-WARE is the result of cooperation between Microsoft Deutschland and Porsche. As part of a project initiated by the German Federal Minister of Justice, Brigitte Zypries, the effort supplied 120 nursery schools in Darmstadt and the region of Darmstadt-Dieburg with a learning program titled “Smart Mice: children discover language.”

The Smart Mice software is oriented towards children between the ages of four to six and encourages linguistic competence through a playful approach to computers. It was created in the spring of 2003 by Microsoft Deutschland and partners. Two hundred nursery schools, located primarily in socially disadvantaged areas, were supplied with the Smart Mice package in a pilot project. Today, over 2,000 nursery schools nationwide, with a total of more than 60,000 children, have used the Smart Mice programs.

Dr. Knut Löschke, chairman of the managerial board at PC-WARE, comments: “Social commitment is an integral part of the strategy and culture of PC-WARE. For over 17 years, we have been making a sustainable contribution to growth and development at the company head office location in Leipzig and similarly to the constant expansion of subsidiary companies. Our social commitment is primarily oriented towards the education and encouragement of young people. For this reason, it went without saying that we would support educational initiatives on the part of our long-term partner Microsoft.”

Robert Bosch comprehensive school

A prize-winning educational establishment

The Robert Bosch School is an integrated comprehensive school with a senior high school that meets excellent educational standards, displays a healthy competitive culture, and can be viewed as a model for innovative school development. As early as 1979, the school was designated as a “UNESCO project school.” Then in 1996 it became an “environmental school in Europe” because of its orientation toward the guidelines of UNESCO and Agenda 21 – which focused on peace, justice, international understanding, and the preservation of the natural environment. In 2000, the school was given the opportunity to present itself at the World Exposition in Hanover following an extensive selection procedure to answer the question: “What sort of school does the world of the future need?” It was also the chief prize winner in the German School Competition in 2007, the largest and best endowed German schools competition.

The school trains social competences through its own zoo and a schedule of duties in seniors’ homes. The program is characterized by team work and long-term assignments with numerous cooperation partners. Pupils have no fear of failure, as no pupil has to repeat a year prior to the tenth grade. Homework and exercises for grades 5–10 are undertaken at school in three study hours with teacher support. Close cooperation with the pupils’ homes is encouraged through regular parent-teacher meetings and ‘group lessons’ in which parents participate as supervisors. During career discovery days, pupils are also able to become acquainted with their parents’ workplaces.

Work in the table group: “stronger” pupils – help “weaker” pupils.

The Robert Bosch comprehensive school distinguishes itself through numerous projects, such as a summer school in Denmark and support for the Baltic Sea Project – an international UNESCO project. The school has a large range of facilities that include teaching rooms and space for events to demonstrate a variety of practical and theoretical talents. For example, it has a leisure center that supports a variety of activities, including chess and card games, table tennis, and billiards. Further facilities include a photo laboratory, a playground, school garden, school computer, and theatre stages.

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INI.FAU – Ingolstadt Institute of the Friedrich-Alexander-University Erlangen-Nuremberg

The FAU academic competence center in Ingolstadt

The Friedrich-Alexander-University Erlangen-Nuremberg is pursuing new paths in research and teaching with its Institute INI.FAU. In cooperation with AUDI AG, a regional competence center is being established in Ingolstadt that will provide young academics with unique working conditions to enable practical utilization of theoretic knowledge.

The overriding aim of the institute is the further development of automotive electronics through new developments in simulation, design, data analysis, and safety technology. This includes mixed time- and process-controlled control unit architecture, bus systems (e.g. CAN), hybrid real-time systems, and sensor data in networked systems. The output of these efforts can be utilized in areas such as diagnosis, driver assistance, and the prevention of collisions.

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Festo AG & Co. KG

More efficient study – the Festo educational fund

Festo, a company that delivers solutions for industrial and process automation, is the global market leader in technical training and specialized training. It employs a workforce of over 12,800 and had a turnover of 1.65 billion Euros in 2007. The Festo educational fund is an example of the independent family-run enterprise’s strong commitment to education. Their corporate educational responsibility includes numerous projects within the general areas of youth and technology.

For example, Festo was the first company in Germany to participate in directly funding students’ costs of education. The Esslingen-based company set up an educational fund with CareerConcept AG in Munich. The Festo fund provides financial support for living costs and tuition fees of Engineering Science and Technology students, thereby encouraging targeted study courses that can be completed swiftly. Subsequent repayments are income-dependent, limited to a maximum sum, and display greater flexibility than student credit schemes. In addition to the provision of financial aid, a special feature of the Festo educational fund is career-oriented qualification of graduates and doctoral students who are able to profit from an exclusive network of technically oriented companies and committed professors.

Not only is the Festo educational fund the first initiative on the part of a large-scale German company to specifically support necessary professional qualifications, student repayments are utilized to finance subsequent students. Thus Festo has developed the first example of a generational contract for education. The new model should encourage contributions from other businesses to reduce the lack of academic specialists and secure the future of German industry.

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The Boston Consulting Group

Business@school – school as the “market place of opportunity”

Business@school has set itself the target of preparing young people to take on individual responsibility in an increasingly “entrepreneurial” world. It is an open project platform of the Boston Consulting Group and committed partners, that encourages dialogue between school and business and among pupils, teachers, parents, and business experts. Classical knowledge transfer is combined with new forms of learning in which pupils are provided with insight into the professional and industrial world. They also become acquainted with specific areas of business knowledge, learning team work, presentation techniques, communication skills, and how to handle new media.

A particularly important capacity of the program is its ability to facilitate individually acquired knowledge. Research shows, that this approach makes the greatest impression on pupils, and, for this reason, those involved with business@school learn to occupy themselves in increasing independent projects. Teamwork is also important, and all teams participate in an international competition with their individually developed concepts. The results of business@school are presented to other teams and a jury; these results are subsequently discussed and feedback is provided. The cooperative working methods and sporting competitiveness of the program are particularly motivating for young people.

The projects allow students to become acquainted with a variety of business activities through visits to companies and contact with managerial staff. It is aimed at senior high school pupils in grades 10 to 13. Project work can be variously integrated into lessons in major school subjects. It can also be used in the form of an optional subject, or as a project carried on outside normal school hours.

Berufsakademie Baden-Wuerttemberg

Recognition for an innovative educational model

Companies such as Daimler and Bosch, dissatisfied with the quality of applicants from university, established the first academy of cooperative education in Stuttgart with financial support from the federal state of Baden-Wuerttemberg in the 1970s. Two decades later, substantial negotiations with the Standing Conference of Ministers for Education and Culture in 1996 were necessary before the BA course was recognized on an equal standing to qualifications from universities of applied science. Since then, this kind of academy has gained popularity alongside the large-scale state universities.

Berlin, Thuringia and Saxony have copied the model developed at the “Ländle” Baden-Wuerttemberg.

Students of the Berufsakademie constantly alternate between lecture rooms and businesses. This provides them with substantial practical knowledge, with the result that they frequently have a head start in comparison to university students at the beginning of their professional careers. The blend of academic courses and vocational training available from this kind of institution, currently enjoys great popularity due to its career-oriented content. According to a survey carried out by the research institute (Institut der deutschen Wirtschaft) in Cologne, over 4,000 companies currently offer around 19,000 special training places.
MIPLC – Munich Intellectual Property Law Center

Further educational study in a class of its own

Since 2003, the University of Augsburg, the Technische Universität München, George Washington University in the United States, and the Max Planck Society have offered an elite, international study course in the “laws of intellectual property” at the Munich Intellectual Property Law Center (MIPLC). This is a one-year advanced study course taught in the English language for which tuition fees must be paid. Participants originate from law and business schools, but are additionally recruited from natural and engineering sciences, as well as media and literature studies. They acquire knowledge of all facets of law concerning intellectual property, not only on national and European levels, but also with a consistent international orientation and with an in-depth consideration of practical and economic aspects. Graduates of this course receive the title Master of Laws in Intellectual Property (LL.M.).

This is an advanced study course in a class of its own that is educating the elite of tomorrow. “We attract the top minds worldwide within this subject area from academic and practical backgrounds. They come to Munich and unite at MIPLC in a top-class faculty,” emphasizes Prof. Straus from the Max-Planck Institute for Intellectual Property. Students are provided with individual offices and have access to the largest existing library on intellectual property at MPI.

Each student is allocated an individual tutor for the entire program. A study module in Washington is a fixed course element, as is participation in conferences offered by cooperating educational institutions of the European Intellectual Property Institute Network (EIPIN). Students also complete a one-month practical experience course.

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VIWIS
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VIWIS customers are companies and education providers that view education as a top priority and wish to offer modern courses partially, or even totally online. The offerings include single education elements as a primary product, but also seminars for supplementary customer value creation, internal training courses, and company-specific seminars. A wide range of subjects are included, from financial services and healthcare topics, to expert knowledge within the areas of wholesale and retail trade.

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