Best Practice
Technology transfer in Brandenburg

BEFORE

Benchmarking and foresight for regions of Europe

http://www.before-project.org

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Introduction

The **BEFORE Project** (http://www.before-project.org) was approved in the **FP6-2004-KNOW-REG-2** call for proposals of the **6th Framework Programme**. The specific programme covered was **"Integrating and Strengthening the European Research Area"** and the activity areas included were **"Coherent development of research and innovation policies"**.

The project will perform the comparative analysis (**benchmarking**) of efficient support instruments for the RTD in **geographical areas with demographic significant imbalances**. In this way also specific tools of support would be analyzed for rural companies and entrepreneurs. Also, there would develop a **panel of indicators of impact of the regional RTD support policies** in this type of regions, with special attention to the indicators of social impact.

A special attention will be paid to the case of regions that have obtained significant advances implementing RTD policies in the last years (for example, regions to which the good use of the resources has allowed or will allow to leave the Objective 1). In the consortium take part some regions of this type (Castilla y León, Brandenburg). These regions will carry out a task of mentoring on the rest of regions in the project.

One of the factors for success in the present project is the achievement of wide regional consensus and the involvement of regional RTD players in the project. A strong effort will thus be made in order to obtain this actor interaction, integrating key players in the management structure and widely **disseminating project results**. Also the benchmarking process will contribute to trans-national exchange of experience.

Other objective of the project is to carry out **foresight studies** of policies and support instruments to RTD guided to **future sectors**, intensive in knowledge and with high added value. The sectors being covered will be **aeronautical** (Castilla y León), **biotechnology** (South Estonia), **ICTs** (Mid Sweden, South Estonia and West Romania), **transport** (**logistics** in Brandenburg and **automotive** in West Romania) and **renewable energies** (Brandenburg, Castilla y León and Mid Sweden). The development of these new sectors will allow to the participant regions to maintain and promote equilibrium between the competitiveness of its basic industries and businesses and the bid to introduce new economic activities in sectors with good prospects of future.

The partners and their respective regions and websites in the BEFORE Project are:

- **ADEuropa Foundation (ADEUROPA)** (Castilla y León) (http://www.adeuropa.org/) as coordinator.
- **Brandenburg Economic Development Board (ZAB)** (Brandenburg) (http://www.invest-in-brandenburg.com/).
- **ADR West Romania (ADR)** (West Romania) (http://www.adrvest.ro/).
- **Institute of Baltic Studies (IBS)** (South Estonia) (http://www.ibs.ee/).
- **The County Administrative Board of Västernorrland (LSTY)** (Mid Sweden) (http://www.y.lst.se/).
- **The Policy Research in Engineering, Science and Technology (PREST)** (Victoria University of Manchester) (http://www.mbs.ac.uk/prest) as expert in the design of foresight activities.

This document is one of the two best practices to be elaborated by the region of Castile and León within this project and the corresponding study tours related to them. This best practice focuses on the Technology Parks of Castile and León and its impact in Castile and León's economy as one of the leading RTD supporting instruments in the region.

This document has six parts: **Part One** focus on the basic coordinates of Brandenburg, **Part Two** gives a description of the project involved in the best practice, **Part Three** defines the political and strategic context on which it was framed, **Part Four** explains how the best practice was implemented, **Part Five** shows the results of the implementation of the best practice and **Part Six** includes the contact details for further information.

Part One: Basic coordinates

The state of Brandenburg

Brandenburg is one out of 16 federal states in Germany. The German capital, Berlin, lies - as a federal state of its own - in the heart of Brandenburg. With a population of about 2.6 million, Brandenburg is one of the smallest German *Länder*. The region is characterised by uneven development with growing population and a concentration of economic activity in the parts close to Berlin. The remote parts are threatened by severe processes of demographic decline and socio-economic problems – also with regard to a current and future shortage of skilled labour despite high unemployment rates. The proximity to Berlin is one of the biggest potentials of Brandenburg. The whole capital region forms a metropolitan area with about 6 million inhabitants. The capital region's economic attractiveness is attributable to its network of research and scientific institutes, its modern transport and communication infrastructure as well as its proximity to Eastern European markets. The density and quality of universities and non-university research institutions are an excellent basis for business development.

In the 17 years that have passed since German reunification, many and various instruments and programmes have been developed to support innovation, technology transfer and business formation. A considerable potential of innovative start-ups and spin-offs exists on the basis of the high density of universities, colleges and R&D organisations. The recently revised innovation strategy demonstrates a new approach to economic development promotion in Brandenburg.

Governmental structure

Such as Belgium, Austria, Italy or the United States of America, Germany is a federal state. Since reunification of the two German countries in 1990, 16 Länder form the federal system of Germany. The federal government (Bundesregierung) and the regional governments (Landesregierung) share responsibility in a complex system. The German Constitution regulates competences of the federal state and the Länder as well as joint responsibilities. German Länder have their own constitutive power and elected regional parliaments (Landtag). In particular in the fields of economic development, education and culture along with some other fields, the Länder can set their own priorities. In Brandenburg, every five years a new parliament (Landtag) of 88 members is elected. Since 1999, the government is built by a coalition of the Social Democrats (SPD) and the Conservatives (CDU). Prime Minister is Matthias Platzeck (SPD), Minister of Economic Affairs: Ulrich Junghanns (CDU).

In 2003, Brandenburg was split up into two NUTS-2-Regions, Brandenburg Northeast (Convergence Region) and Brandenburg Southwest (Phasing Out Region). However, these two regions do not have any administrative function. Brandenburg is divided into five planning regions (regionale Planungsgemeinschaften) and 18 counties (including four unitary authorities). On the lowest level of administration there are 420 local authorities out of which 112 are proper cities.

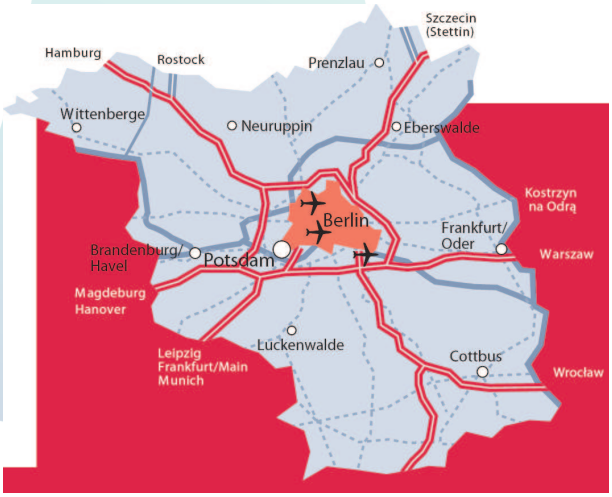

Figure 1. The Federal State of Brandenburg.

Regional characteristics and key statistics about demographics

Brandenburg's culture, landscape and nature offer a high quality of life and recreational activities. The German capital, Berlin, lies - as a federal state of its own - in the heart of Brandenburg. Potsdam, Brandenburg's capital (150,000 inhabitants), is famous for its world-renowned cultural heritage. Brandenburg is one of the smallest states in terms of population. With a population of just about 2.6 million people, the region ranks 10th among the 16 Länder and has one of the lowest population densities in Germany (87 people per square kilome-

tre). But with about 29,500 square kilometres, the federal state of Brandenburg is the largest of the Eastern German Länder. Brandenburg is dominated by small and medium sized towns. Except Potsdam there are just a few other cities in the region which are Cottbus (105,000), Frankfurt/Oder (62,500) and Brandenburg/Havel (74,000). Due to the proximity to Berlin, the whole capital region forms a metropolitan area with about 6.0 million inhabitants.

Demographically, Brandenburg and the other East German Länder are in a critical situation. Since reunification, East Germany has lost about one million inhabitants due to a slump in birth rates and due to East-West migration. With Berlin in the centre, the population development in Brandenburg is better than in many other areas in East Germany. Brandenburg is characterised on the one hand by a positive population development and a prosperous as well as innovative business climate stimulating the regional performance around Berlin, and on the other a decreasing population with low density and large agricultural areas in the remote parts of the region. But also in Brandenburg birth rates decreased to a long term low of 0.74 in 1993. Although the number of births has risen since to nearly 1.3 in 2004 (LBV 2006: 11), population development without migration is still negative.

Despite heavy population decline in the remote parts, the total population of the region remained more or less stable since 1990 due to population growth in those parts of Brandenburg neighbouring Berlin. Population forecasts, however, predict a loss of population in the future, in particular after 2012 with a total decline of estimated 13% until 2030 (LBV 2006: 16). A loss of population will affect the remote parts of Brandenburg (äußerer Entwicklungraum), in particular. Population development in the metropolitan suburbs (engerer Verflechtungsraum) will remain positive or stable. Future prospects of the peripheral parts of Brandenburg are seen as critical. According to population projections only 58% of Brandenburg's inhabitants will keep living in the remote parts in 2020 – compared to 70% in 1990.

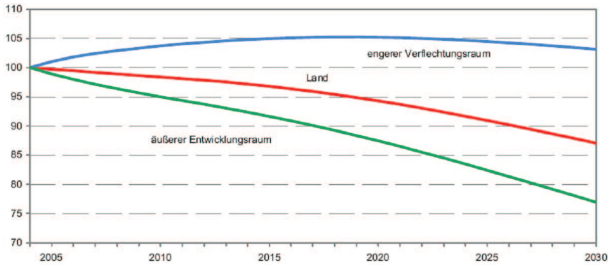

Figure 2. Population forecast for Brandenburg (2004 = 100%). Source: LBV 2006: 18.

Infrastructure, economic situation and industrial structure of Brandenburg

Brandenburg is well connected with highways, railway connections, and waterways, and with two international airports. The region has one of the world's most modern telecommunications infrastructures. Further developments focus on the expansion of the high-speed railway system and the forthcoming Berlin/ Brandenburg International Airport (BBI) at Schönefeld. In general, future prospects of the region are seen as positive, in particular due to the high density of innovative organisations in the metropolitan region.

Brandenburg's Gross Domestic Product (GDP) in 2005 measured €48.1 billion with a decline of -1.1% compared to 2004. The rapid economic restructuring after German reunification in 1990 led to a wide-ranging reduction in the number of jobs, particularly in the agricultural sector and some "old sectors" such as the lignite industry and steel production. Other traditional industries are precision mechanics, electrical engineering, vehicle manufacturing, petrochemicals and food technology as well as agriculture (45% of total area). The economic mix of the region is shifting towards emerging industries such as medical and biotechnology, aerospace, automotive, logistics, environmental technology, ICT and media.

In particular the rural areas of Brandenburg still suffer heavily from the symptoms of structural change and economic decline of traditional sources of employment in the 1990s. Apart from some industrial cores (lignite mining around Cottbus, refinery and paper production in Schwedt/Oder, steel production in Eisenhüttenstadt, Hennigsdorf and Brandenburg/ Havel), a number of mono industrial structures have been lost during the process of transformation and privatisation after reunifica-

tion. The strategy of the Brandenburg government is to concentrate further development in 15 economic growth poles (regionale Wachstumskerne), which already today show a high concentration of economic activity.

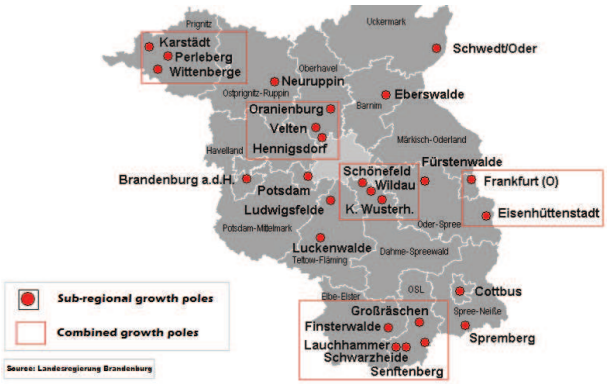

Figure 3. Regional Growth Poles in Brandenburg.

In the suburban region around Berlin, major internationally renowned investors, e.g. in the automotive sector (Daimler Chrysler, Volkswagen) and in the aerospace industry (MTU, Rolls Royce), found an attractive place for business activities. Also railway technologies are an important factor for the regional economic performance (Bombardier). Lots of growing innovative small and medium sized companies especially in Life science / biotechnology and ICT / media form a promising business area in and around Berlin. These sectors also show high numbers of spin-offs from universities and research centres. Brandenburg's new focus on clean energy is a chance to promote the rural areas. Brandenburg produces the majority of Germany's bio fuels, the number of biogas-installations, windpower plants and very recently solar panel production is on a very high level.

After the heavy decline of traditional industries, there has also been massive improvement of the regional economy: Between 1991 and 2006, there has been a net gain of 120,444 new companies, €22.3 billion direct investment and €4.5 billion state grants to industry. However, with over 18%, unemployment rates are still high in general and vary, mainly depending on the distance to Berlin (from 12% to nearly 30% in some counties).

In 2005, Brandenburg's exports measured €6.6 billion and its imports €8.4 billion. The largest share of Brandenburg's export was to Poland, followed by the Netherlands, USA, Italy, UK and Austria. Major shares of Brandenburg's import were from Russia, followed by imports from Poland and from France. Traditional trade relations with expanding markets in Central and Eastern Europe have the potential to make the region.

Part Two: Project description

Technology transfer in Brandenburg

Technology transfer and funding

Since 1992 there is explicit technology transfer support in Brandenburg with a number of technology transfer organisations and particular financial support instruments. Technology transfer is the dialogue and the exchange of intellectual knowledge between science and industry - technology transfer is much more than the transmission of results. In general there are two ways of technology transfer: focusing the demand of enterprises and focusing the supply-side of research organisations. In recent years there has been more emphasis on demand-led technology transfer whereas the more "traditional" model is the marketing of scientific knowledge for business.

Industry to Science	Science to Industry
Inquiry	Application, technology
Transfer into offer to university	Transfer into offer to the industry
Search for suitable scientific partners	Search for suitable industrial partners
Bringing partners together	Bringing partners together
Cooperation	Cooperation

Table 1. Demand-led and supply-side technology transfer.

In 2006, the state of Brandenburg supported 11 transfer departments with €1.3 million. The transfer departments are co-financed by financial means out of the European Regional Development Fund via the Brandenburg Operational Programme. Funding rates vary between 50% and 100%. Standard funding is with a funding rate of 75% and a maximum of €100,000 per year. Eligible costs are personnel, training for personnel, other costs for travel, marketing and communication, sub-contracts for special tasks (max. €15,000). Some of the transfer departments are financed with additional sources of funding. Altogether a total budget of €1.9 million could be mobilised in 2006. In future, funding is going to be more success-related.

One example: Logistics Transfer Office

The Logistics Transfer Office (BTL) at the University of Applied Sciences Wildau is the contact point for the logistics industry in the German capital region. It is a project of the Logistics Initiative Berlin-Brandenburg, which was officially started by the Federal States Berlin and Brandenburg in March 2006.

Figure 4. Logistics Transfer Office in the World Wide Web.

The principal aims have been to strengthen the region's position as an important logistics hub at both, national and international level. Logistics Transfer Office cooperates intensely with the LogisticsNet Berlin-Brandenburg e.V., a Public-Private Partnership of the same Länder including partners from industry, public administration and science.

Figure 5. Daniela Gorsler (left) during a logistics seminar.

As one of the first sectoral technology transfer offices, BTL has already a number of successes to show:

- Awareness raising: more than 1,000 contacts to companies, universities and multipliers; about 60 personal on-site interviews; more than 1,700 readers of the e-news „LogNewsBB".
- Networking and Thematic Stimulation: 5 workshops with about 200 participants

from industry, trade, science and the public sector and several smaller events.

- Communication of R&D expertise: interviews with about 50 experts; synopsis of the education and R&D expertise in logistics; 1st joint regional presentation of logistics innovations in industry and science on the Logistics Day BB 2007.

- Initiation of company-university cooperation: 15 current activities, e.g. optimisation of production, storage and disposition, implementation of RFID and biomass logistics.

- Other activities: numerous inquiries concerning stages, diploma thesis and search of alumni; joint workshops with partners from science, industry and public authorities; technology transfer award Brandenburg for the R&D project „RÜFILOG"; support and dissemination of the network „inilog – integrated information logistics"; access of the LogisticsNet Berlin-Brandenburg e.V. to the INTERREG project „European Network of Logistics Competence Centres".

Starting point, main partners and history

Starting point and partners

The metropolitan region Berlin/ Brandenburg offers a unique location of science and research. The region is characterised by more than 50,000 scientists and 170,000 students, seven universities, sixteen polytechnics as well as 250 private and public research-organisations (e.g. Fraunhofer and Max Planck Society). The region of Berlin/ Brandenburg shows the highest density of research institutions in Germany which is a very good basis for innovation.

In Brandenburg, the main players in science and R&D are the University of Potsdam, the Brandenburg Technical University of Cottbus and the European University Viadrina in Frankfurt (Oder) as well as the polytechnics FH Brandenburg, TFH Wildau, FH Lausitz, FH Eberswalde and FH Potsdam. Brandenburg's universities and polytechnics cooperate in technology transfer under the label of iq brandenburg (cf. below). Additionally, there is an established network of 23 incubation and technology centres, some of them specialised in emerging sectors (e.g. Biotech Campus Luckenwalde). All centres offer infrastructural support for innovative SMEs and start-ups.

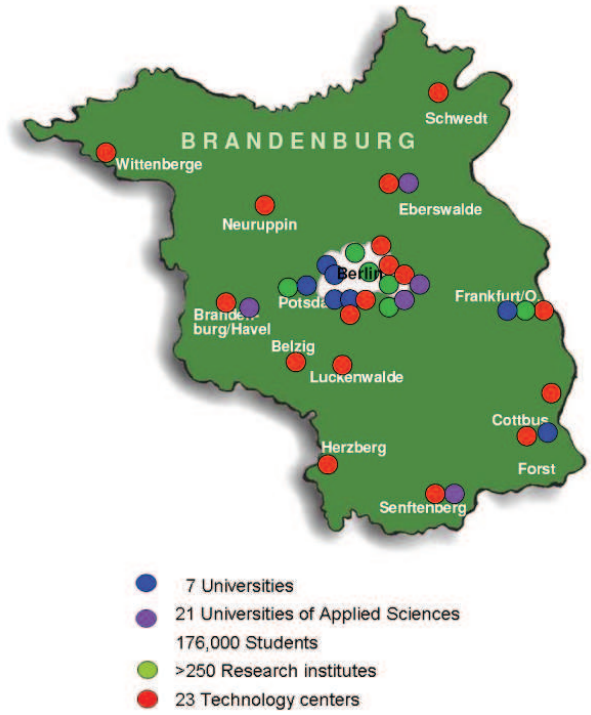

Figure 6. Berlin-Brandenburg and its R&D landscape.

It is the general objective of technology transfer support to make best possible use of the great scientific potential of the capital region to the benefit of the regional economy. The growing network of Brandenburg's technology transfer departments offers a broad spectrum of scientific know-how and concrete contacts to research. Within all phases of the innovation process the technology transfer departments provide the contacts to researcher organisations in the particular field.

Industry	Research
Profit oriented	Knowledge oriented
Constant pressure of time	Long term research
Secrecy of innovations	Publication of R&D-results

Table 2. The logic of technology transfer between science and industry.

Brandenburg Economic Development Board (ZAB) is the main player in regional innovation (evaluation of regional R&D-funds including start-up and technology transfer support instruments, cluster-initiatives, RIS/RITTS-projects, Innovation Relay Centre, IPR-exploration support, etc.). As one-stop-agency

ZAB provides all performances for economic enhancement of the region. Beside consultancy and promotion for innovative and technology-oriented entrepreneurs, investors and founders of businesses, the agency escorts entrepreneurs from idea to business, enhances technology-transfer, participates at specific national and international fairs, informs about subsidies and cares for realisation of patents. There is a close cooperation between ZAB and Berlin Partner GmbH as well as Technology Foundation Berlin in the capital which offer similar services. A new department, the Transfer Centre for Founding New Businesses and Innovation was established in 2002 with the objective to bundle and coordinate activities regarding technology transfer, innovation and network support. ZAB closely cooperates in this area with the Ministry for Economy of the State of Brandenburg, the Brandenburg Technology Foundation, and the Technology and Innovation Consulting Points (TIBS) at Brandenburg's universities and colleges.

History of technology transfer organisations in Brandenburg

One of the first priorities of economic regeneration in East Germany after reunification in 1990 has been to re-develop the regional scientific landscape. Already in 1992 the first technology transfer organisations were implemented in Brandenburg. At seven of the nine new universities and polytechnics technology transfer departments (so-called Technologie- und Beratungsstellen, TIBS) were made operational. Also one sectoral transfer office oriented towards food industry was made operational in 1992. In 2005, Europe University in Frankfurt/ Oder, jointly with the microelectronics institute IHP got a transfer department. There are preparations to implement another transfer department at the University for Film and Television Babelsberg.

The second step has been the networking of the technology transfer departments in Brandenburg, beginning in 1997. In 1999, iq brandenburg was founded as informal network of technology transfer staff at the consulting points. iq stands for innovation with quality. ZAB coordinates and monitors the activities of iq and the technology transfer departments.

In 2001, iq brandenburg jointly with ZAB and the Technology Foundation Brandenburg organised the first technology transfer day (T^3). Since then, every year such a public event has taken place to demonstrate the opportunities of technology transfer to a wider public. Another objective has been to promote the activities of Brandenburg's technology transfer organisations. Since 2005 the technology transfer day has been organised jointly with the Technology Foundation Berlin.

The Technology Foundation Brandenburg also invites applications for especially successful technology transfer projects on a yearly basis. The €10.000 technology transfer award was given to its first recipient, a research group at Cottbus University of Technology at the technology transfer day 2001. The award values the successful application of scientific results from research at universities or research institutes in business.

An evaluation of effectiveness and efficiency of the technology transfer departments' work in 2001 showed positive results. As well as positive aspects there were a number of deficits concerning the organisation of transfer and the university-oriented supply-side structure implementation of the departments. The evaluation included main recommendations to improve the technology transfer system in Brandenburg and strongly recommended to continue the successful work of the departments. In 2005, the first extra-university research institute became a partner in the technology transfer network and in 2006 the first branch-related transfer office according to the new model (logistics) was established and included in the iq network.

Project objectives and target group

Main objectives

The objective of the technology transfer organisations is to promote technology transfer in form of projects. The overall objective of technology transfer is better economic performance and competitiveness of Brandenburg's economy as a whole by improving the economic benefit of the regional scientific capacity. More concrete, by the transfer of technology innovations into business, the general innovative capacity of enterprises shall be improved. By making enterprises more innovative and technologically advanced another aim is to raise their overall competitiveness and to increase their market opportunities. Other expected effects

are raising added value of such enterprises and the improvement of the employment base of these firms. Hence, technology transfer activities also shall help to keep highly skilled workforce in the region to the benefit of the regional economy.

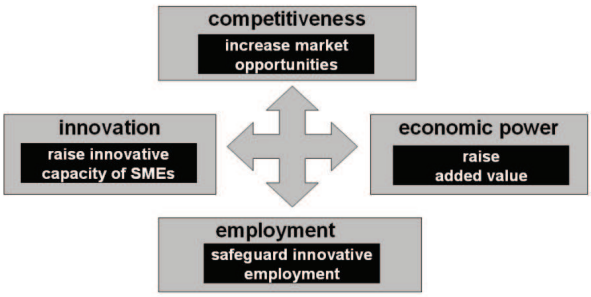

Figure 7. Main objectives of technology transfer in Brandenburg.

Other objectives of the technology transfer organisations' work are close contacts to the local enterprises and research organisations and the initiation of co-operations between science and industry, better marketing of the research opportunities given by universities and polytechnics and a supplementing branch-focussed network of business-related technology transfer support.

Target Group

The main target group of technology transfer is small and medium sized companies (SMEs) with less than 250 employees and a turnover of a maximum of €50 million or a balance sheet total of less than €43 million. The SME must not have more than 25% of its shares in the ownership of large enterprises. The subsidiary of technology transfer support schemes must be located in the state of Brandenburg. The final beneficiary must be able to co-finance the transfer project. There is no legal claim for receiving a grant. Technology transfer organisations are open for everybody for initial consultations.

Structure of technology transfer support

There are three different types of technology transfer organisations in the State of Brandenburg. The established form of transfer departments is linked to universities and polytechnics in form of eight technology and innovation consulting points (TIBS) in Brandenburg/ Havel, Cottbus, Frankfurt/ Oder, Potsdam, Eberswalde, Senftenberg and Wildau. With the new regional innovation concept (Landesinnovationskonzept 2006) the creation of branch-related transfer offices started. The third element of technology transfer support organisations are sub-regional transfer offices which are in a two year pilot-phase since 2007. Two pilot projects were started in Wittenberge and in Schwarzheide.

Figure 8. Technology Transfer Departments and Offices in Brandenburg (2007).

In 2007, there are already four transfer offices working. They are linked to the branches logistics (Wildau), aerospace (Schönefeld), food technology (Bergholz-Rehbrücke) and synthetics/ chemical industry (Schwarzheide). Further branch related transfer offices are in the planning process. The long term aim is to establish transfer offices linked to all R&D relevant branches defined in the Landesinnovationskonzept.

Number	Growth sector/ field of competence	Exploratory discussions	Contact to branch networks	Draft application	Final application	Project approval	Project start
1	Logistics	✓	✓	✓	✓	✓	✓
2	Aerospace	✓	✓	✓	✓	✓	✓
3	Energy industry & technology	✓	✓	✓	✓		(✓)
4	Food industry	✓	✓	✓	✓	✓	✓
5	Geo information	✓	✓	✓			
6	Synthetics & chemistry	✓	✓	✓	✓		✓
7	Automotive	✓	✓	✓			
8	Media & ICT	✓	✓				
9	Wood processing industry	✓					
10	Biotechnology & Life Sciences	Ongoing activities of the established Berlin-Brandenburg BioTOP network					
11	Metal production & mechatronics	Ongoing activities in two branch-related science-industry networks					
12	Mineral oil industry & biofuels						
13	Optics						
14	Paper						
15	Railway technology						
16	Microelectronics	Ongoing activities by the transfer department in Frankfurt/ Oder					

Figure 9. Branch related Technology Transfer Office. State: May 2007.

To avoid the duplication of support structures and consultation Brandenburg's technology transfer model is in a phase of adaptation. With the new branch-related and sub-regional transfer offices there is a need for fine-tuning of the overall relation of transfer organisations. In particular the profile of the established transfer departments at Brandenburg's universities and polytechnics might have to change.

Tasks of technology transfer organisations

Technology transfer departments (TIBS)

The transfer departments at Brandenburg's universities and polytechnics have the priority task to organize the transfer of technologies to the SMEs in the State of Brandenburg. The TIBS prepare the ground for contacts and arrange information sessions for SMEs with competent researchers. These contacts shall lead to further-reaching common projects between the university/ polytechnic and the enterprise, which indeed happens in many cases. It is part of the tasks of the transfer departments to accompany and support that process. Whenever appropriate, the transfer department may as well take on the management of such projects.

Main tasks of the technology transfer departments related to the core interests of the university or polytechnic:

- Initiation and professional management of third party funded science-industry projects (e.g. by means of flexible model contracts).
- Management of third party funded projects: financial administration for university staff, administrative contacts to funding parties etc.
- Consulting and mentoring of innovative start-ups: assistance for market studies, consulting for start up strategies, consulting for subsidies, coaching.
- Placements of students and graduates (alumni, career service, placement centre).
- Organisation of technology transfer events and workshops.
- Initiation and organisation of further training courses.
- Patent advising in cooperation with Brainshell: exclusive marketing of intellectual property, systematic development of innovation potential, incentives for patent applications.
- Presence on selected fairs and exhibitions.
- Marketing of specific offers and competences of the university / polytechnic.
- Networking and cooperation in the framework of Iq brandenburg and further networking with extra-university organisations.
- Keep contact with regional businesses and branch-related transfer offices.

Branch-related Technology Transfer Offices

Branch-related technology transfer offices are mainly to the service of enterprises and research partners in particular lines of business:

- Close contacts to enterprises, research about the R&D and technology transfer demand of enterprises in the particular branch.
- Branch-related market observation, information to foreign markets (e.g. Eastern Europe).
- Establishment of personal contacts to branch specific experts in research organisations and market leading enterprises (on regional, national, European or world level).
- Networking with technology transfer departments in the framework of iq brandenburg.
- Branch-specific search for best suitable project partners in research organisations, enterprises or networks for the preparation of R&D-projects.
- Initiation and professional management of R&D-projects based on enterprises' needs, consultation for cooperation contracts (e.g. for the joint use of machines and laboratories).
- Information and consultation regarding regional, national and European R&D support grants, advice for best suitable subsidy sources.
- Initiation and organisation of further training courses for industry and branch specific workshops.
- Presence on selected fairs and exhibitions, in particular related to the relevant fields of business.
- Support of branch specific inward investment activities targeting companies along the value chain.

Sub-regional Technology Transfer Offices

In particular in the remote sub-regions of Brandenburg with less networking with the metropolitan core and its main research organisations – such as the Prignitz or the Westlausitz – there is a need for innovation support. Local firms need to constantly adapt their products and services to compete in global markets. It is more difficult for firms in remote sub-regions to benefit from the mainly metropolitan research landscape. Two sub-regional technology transfer offices in Wittenberge and in Schwarzheide acknowledge the particular needs of these firms and offer transfer services with a geographic focus as a two-year pilot project. In particular Wittenberge is far away from any of the universities and other research organisations in Berlin and Brandenburg.

In this context the cooperation of enterprises, universities, polytechnics and other R&D organisations is very relevant. Sub-regional actors e.g. in the Prignitz are challenged to support cooperation structures and cooperative projects with R&D organisations to promote the innovative capacity of the economic basis in the area.

As the new sub-regional transfer offices are in a pilot phase, there are no general guidelines for the work of the offices. Both are based in local technology centres. Their main tasks will be linked to the following fields:

- Act as central contact point for all enterprises and research organisations.
- Support the sub-regional growth-pole activities in terms of technology transfer.
- Network sub-regional enterprises according to the defined fields of branch competence in Brandenburg.
- Coordinate innovation activities, enable business-science cooperation projects and support the creation of regional value chains.
- Arrange demand-led and branch related knowledge- and technology transfer and minimise the obstacles impeding such activities.
- Networking with all other technology transfer organisations in the framework of iq

brandenburg.

In a pre-project implementation phase, in Wittenberge there have been activities to assess the scientific-technological demands and innovation capacities of enterprises in the sub-region. Another priority was the establishment of contacts to research organisations in Brandenburg and the neighbouring Länder Sachsen-Anhalt, Niedersachsen and Mecklenburg-Vorpommern. Staff of the transfer office also supported cooperation projects of schools and other educational organisations in the sub-regions with local enterprises.

Part Three: Political and strategic context

Strategic context and political support

Following the elections for the Brandenburg regional parliament (Landtag) in 2004, the governing coalition decided to re-arrange the economic development policies in Brandenburg. Also the model for technology transfer support has been re-conceptualised. One of the main advantages of the new model is the financial support of technology transfer offices linked to the defined fields of branch competence. Within each field of branch competence there have been efforts to install networks of businesses, research organisations and intermediaries. The work of the new technology transfer offices is conceptually linked to the work of the branch networks. However, the new offices will be independent and to the service of all actors in the specific branch.

In the new orientation of its economic development strategy, the regional government of Brandenburg sets sectoral and spatial priorities. Since the 1990s specific potentials in several branches have developed in Brandenburg which allow for passing from an area-focussed view to support according to economic priorities. In analysing the growth potentials of all branches present in the federal state, consideration was given to both, current structures and prospects of future development. Beyond that, also cross-border aspects in the interlinking with Berlin were considered. As a result, 16 fields of branch competence were established (cf. above) with the idea to offer specific support for these growth sectors – e.g. with branch related technology transfer support. Most of the branches are not equally distributed around Brandenburg but have specific spatial foci. The development of branch-specific infrastructures in such locations is especially supported. A system of incentives in investment support guides new investment primarily to those branch-focused locations ("strengthen the strong points").

In the framework of the reorientation of economic policy in Brandenburg, the ministry of economics, the Brandenburg Economic Development Board and the Foundation of Technology Brandenburg developed a concept of action-fields related to innovation that aims to strengthen the economic position of Brandenburg in a national and international view: The "Landesinnovationskonzept Brandenburg 2006" (LIK 2006). This innovation concept includes suggestions to change the system of technology transfer support which were elaborated by a task force of different key players in the region. The primarily offer-oriented structures until now prevailing in Brandenburg will be revised and, if appropriate, substituted or complemented by demand-oriented structures. The new system shall be branch-related to better meet the actual demand of businesses.

Innovative character of the best practice

The threefold approach to technology transfer support in Brandenburg is hold to be quite innovative. The traditional system of supply-side technology transfer has shown some difficulties in matching the needs of enterprises. It is unique in Germany that a regional ministry offers support schemes for technology transfer. The Brandenburg Ministry of Economic Affairs nowadays supports three different types of technology transfer organisations with a particular focus on demand-led transfer.

In the wider context of innovation support in particular the following points can be seen as innovative:

- Focus on growth sectors with branch networks.
- Branch related technology transfer support.
- Sub-regional technology transfer offices in remote sub-regions.
- Networking of all actors in the Brandenburg technology transfer network iq.
- Joint marketing activities and mutual learning within the context of iq.

Part Four: Implementation

Programming

The current system of technology transfer support in Brandenburg is the result of a long process of evaluation and consultation. The first technology transfer departments have been established in 1992. Since then a wealth of experience has lead to improvements of the transfer system and – following the elections in 2004 – finally the introduction of new elements complementary to the established system. A four-page guideline contains all relevant information about the conditions and funding possibilities for technology transfer.

The regional Ministry of Economic Affairs and the Technology Foundation Brandenburg are responsible for the long term vision and strategic orientation of the system of technology transfer support in Brandenburg. With the coordination office technology transfer (Koordinierungsstelle Technologietransfer), the Economic Development Board Brandenburg (ZAB) is responsible for the implementation and coordination of all technology transfer activities in Brandenburg. The newly created coordination office is seen as a crucial instrument to implement the new innovation concept Landesinnovationskonzeptes Brandenburg 2006 (LIK). The implementation of technology transfer organisations is monitored by ZAB. ZAB also discusses potential changes to the transfer support system with the Ministry of Economic Affairs – the programme owner. In particular the change from a supply-side to a demand-led system of technology transfer support is one of the main objectives of the new coordination office at ZAB. This includes the coordination of the interaction of technology transfer departments and technology transfer offices.

Management structure and partnerships

Iq brandenburg is the network of Brandenburg's 8 Technology Transfer Departments and 6 Technology Transfer Offices (4 branch-related, 2 sub-regional) within the federal state. All technology transfer organisations are member of iq. The network offers gateways between science and industry. All iq partners especially target small and medium sized businesses. As well as easy access to research capacities entrepreneurs can receive information about the technological status and current work of research departments active in matching fields. ZAB runs the network management for iq, is responsible for the administration of iq and is involved in the overall coordination of technology transfer support. Among other tasks, ZAB is involved in the following tasks and roles:

- Providing services for all technology transfer departments and offices in Brandenburg and for those in the application process.
- Coordination of all activities of Iq brandenburg and support of the thematic working groups of iq (such as marketing, financial support, property rights).
- Integration of branch-related and regional transfer offices in the existing network.
- Super-ordinated contact point for enterprises and facilitating contacts between science and industry.
- Cooperation with technology transfer actors in ministries, associations, chambers, ZAB branch teams, branch-network coordinators, technology foundation Brandenburg and others.
- Coordination of all technology transfer support activities and the involved actors in Brandenburg.
- Encouraging, consulting and "escorting" technology transfer organisations in the application and implementation process of technology transfer departments / offices.

Marketing activities

ZAB is responsible for the overall marketing of technology transfer support in Brandenburg. With the improvement and advancement of the transfer system a marketing concept has been elaborated which contains among other things the following tasks:

- Iq brandenburg web-platform: upgrading to the central information platform for technology transfer in Brandenburg.

- Organising and implementation of events for the target groups (Technology-Transfer-Day, Future Dialogues, joint participation at fares, events for innovation champions).
- Regular PR.
- Establish iq brandenburg as brand for technology transfer.
- Further development and implementation of a corporate design for iq brandenburg.

Obstacles

The general idea of technology transfer support via dedicated offices or departments is transferable to other regions and countries. However, the Brandenburg system surely has to be adapted to other regional contexts. Further, the threefold system is still in its initial phase and needs further qualification. Another obstacle when talking about transferability is the specific background of economic development support in Brandenburg. Technology transfer support is one element of a much broader system of support policies and infrastructure. Taking one element of this system without adapting it to another environment would probably lead to failure. Another argument is the clear link between cluster support and dedicated technology transfer support. If there are no structures of cluster networking, also cluster oriented technology transfer will be more difficult.

Part Five: Effectiveness

Pertinence and sustainability

The new technology transfer support policy is seen as a very relevant element of economic development promotion in Brandenburg. The new general guideline for business development support in Brandenburg is: "to strengthen the strong points" by:

- Concentrating economic development support on growth branches in which Brandenburg has special competences.
- Establishing strong networks and clusters within the identified fields of branch competences.
- Further developing the regional technology transfer system towards demand-driven technology transfer offices related to the networks and clusters.
- Improving the integration of universities and other research institutions in the economic system of the state of Brandenburg.

Primary effects	Secondary effects
New products	Inward investment
Innovative employment	Innovation capacity
Business start-up	Competitiveness
Added value	Technology transfer networks

Figure 10. Effects of technology transfer support.

Since changing the technology transfer system in Brandenburg no further evaluation has taken place. Key decision takers in Brandenburg expect a higher number of technology transfer activities and a better matching of business demands and research capacities. The new offices ought to develop a closer contact to business.

The whole system will be evaluated within the next years. There will be constant improvement of the current system. So far, there is not enough experience to develop clear and measurable outputs. After the next evaluation it will be decided how to shape the technology transfer support system in future. Technology transfer departments and offices are not expected to be self-sustaining. There is an acknowledged need for continuous support of such organisations.

Impact and relevance

In 2002 an evaluation of the established system of technology transfer departments at universities documents the relevance of technology transfer support. Over 75% of the respondents from science and industry appreciate the support via technology transfer departments. Also a lot of good practice results have been documented and the system has been seen as effective. The participating companies were supported to work more closely together with regional research organisations and gained technological capacity. The evaluation also documented a raising number of product- and process innovations. The evaluation suggested to continue the established model of transfer departments at universities but at the same time suggested thinking about support systems which would better link up with actual demands.

After the general re-design of economic development support in Brandenburg, the technology transfer system has been re-developed as well and now contains clear elements of demand driven technology transfer (cf. above). The main advantages of the new system are seen in:

- The coverage of the complete regional potential of the defined fields of branch competence which is distributed across Brandenburg.
- A complete overview of the available scientific competence at once.
- Best possible access to enterprises.
- The integration of science and industry in networks and projects.
- An intensification of cooperation structures between science and industry including growing numbers of technology transfer activities within the fields of branch competence.

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