



Final-Report

RITTS-Project Berlin (RITTS 134)

Methodology Approach of the Study and results of the Project

A report by

Technologiestiftung
Innovationszentrum
Berlin (TSB)

Berlin, February 1999

Table of Content	Seite
1. Introduction	3
2. The Background of the Study	5
2.1 The Historical Background of the Project	5
2.2 The Innovation Strategy of Berlin: A Strategy Innovation	5
3 Objectives of the Project	6
4. The Theoretical Platform of the Study	7
4.1 Technology Interchange Instead of Technology Transfer	7
4.2 Focus on Innovation-Fields	7
4.3 A Network Approach to Orchestrate the Team	7
4.4 Centre of Competence an Approach for Berlin?	7
5. Results of the Empirical Work	9
5.1 Results from the Work Conducted in the Fields	9
5.1.1. Results from the Biotechnology Field	9
5.1.2. Results from the Production Technology	9
5.1.3 Results from the Information and Communication Technology Field	9
5.1.4 Results from the Medical Technology Field	10
5.1.5 Results of the Microelectronics and Microsystems Technology Field	10
5.1.6 Results from the Traffic Technology	10
5.1.7 Results from the Construction Sector	11
5.1.8 Results from the Food Industry	11
5.2 Horizontal Activities Analysed by the Empirical Work	12
5.2.1 Berlin a Metropolis for the service sector	12
5.2.2 Definition of the Term Centre of Competence	12
5.2.3 Requirements Towards a Modern Innovation Management	12
6. First Proposals for a New Innovation Policy of Berlin	16

1. Introduction

The RITTS Project Berlin has been discussed controversially in the city. Was it a success? Has it initiated important steps towards a more efficient innovation policy in Berlin? Have the objectives been met by the project? In general we are convinced that it was worth running the project. Although the project faced some problems at the end the results can be valued very positively. The main objective has been realised. That is a fundamental change in the innovation policy of the state of Berlin.

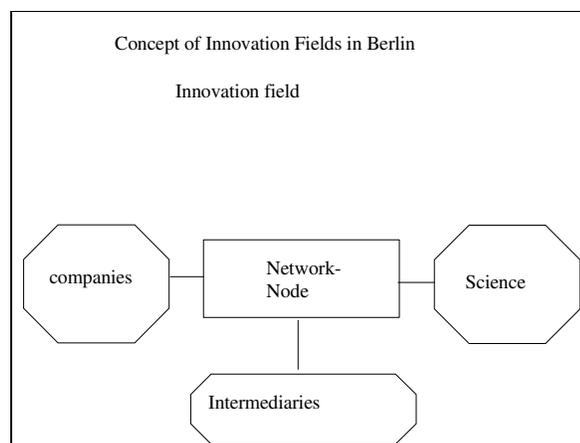
The project contributed to a shift towards a more efficient structure. The new structure is, on the one hand, based on a concept of decentralised networks. The term decentralised networks means that the future innovation policy of the state of Berlin will be focused on the establishment and increase of the inter-action among players from industry and science in networks. On the other hand these networks do not exist in an atomic pattern. It is rather the intention of the future innovation policy of Berlin to establish these networks in innovation fields. In the definition of the project an innovation field is not defined in a technological sense. An innovation field has rather a clear focus on applications. It is not, for instance, the medical technology in a traditional sense that is meant by the term innovation field but the health sector. We do not perceive the train technology as an innovation field but the mobility of people. For the convenience of the reader, however, the traditional terms have been kept in the report.

The shift towards an innovation policy in innovation fields is necessary because of new results of the discussion on the production and diffusion of knowledge. Recent publications show that the old discussion on technology-push and demand-pull is pretty nonsense. As Gibbons showed in his illuminating work today's production and diffusion has changed completely. There is no relay race of technology transfer that should be improved. The innovation progress is not sequential as assumed in the past. What we see today is the need for a clear focus on

1. Decentralised networks consisting of actors from science, industry and intermediaries
2. Technology Interchange instead of technology transfer.
3. Application orientation of the approach
4. Setting up new approaches to establish public-private partnerships

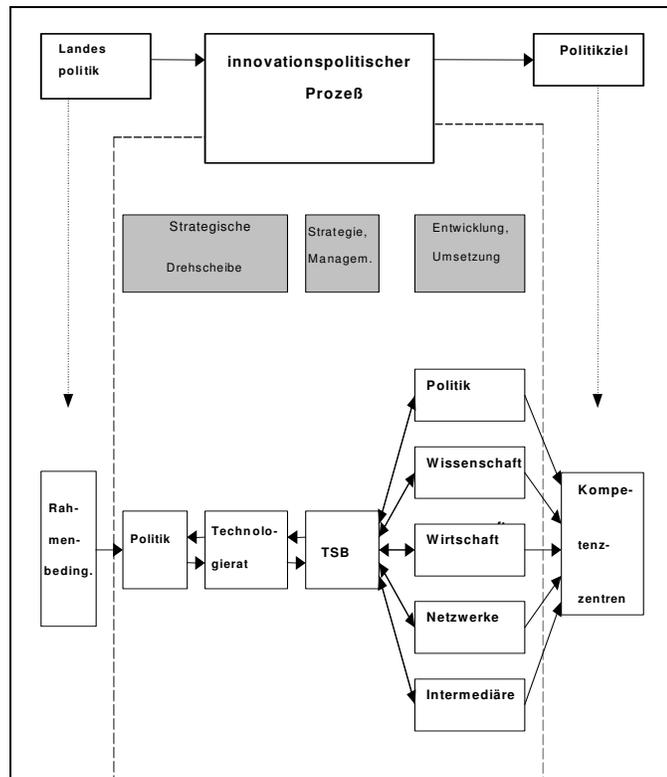
The RITTS Berlin project has developed with the main innovation actors in Berlin a concept that meets the requirements mentioned. The change of the innovation policy in Berlin is based on the concept .

The new approach is based on two elements. On the one hand the main objective of the innovation policy is the generation and acceleration of innovation field nodes that play a co-ordinating function. The following graph shows the concept:



In an innovation field a network node co-ordinates the activities of the actors in the field. Examples for nodes are the BioTOP office for the biotechnology field and the FAV for the traffic technology field.

The organisation of the nodes in established innovation field is a main activity of the TSB. Furthermore the TSB is in charge for the innovation policy portfolio of the state. That not only contents the selection of new innovation fields to approach but also the close co-operation with the political actors in the state. The concept for the tasks of the TSB is illustrated in the following graph.



Based on the concept the future innovation policy of Berlin is strongly influenced and shaped by the TSB. The TSB will function as a hub for all innovation policy activities.

The advantages of the new structure are quite obvious. The focus on innovation fields makes the main objectives of the innovation policy more transparent. Especially SMEs will be happy to have clear advice as to which activities they can take part in. Secondly the innovation policy will be more focused. The past approach to support a large variety of activities will be centred now towards the most promising fields. Furthermore the network approach offers opportunities to link also non Berlinian actors to the field. That is especially important due to the lack of a normal structure in company size in most sectors. We are convinced that all actors in Berlin will benefit from the new structure.

This report aims to give the reader information on the most important results of the RITTS project. The structure of the report is based on 4 steps. Chapter 2 gives you an introduction to the history of the project. In chapter 2 the main objectives of the project are described. Chapter 4 explains the theoretical background of the project. In chapter 5 the main results of the empirical work in is summarised. The final chapter 6 shows the attempts to implement the new innovation policy in Berlin.

2. The Background of the Study

2.1 The Historical Background of the Project

Berlin has been facing tremendous economic problems since reunification. The number of companies located in Berlin and the number of jobs available as well the trend of the regional economy shows that Berlin economy is in decline – a decline which it is not clear that the relocation of the federal German capital from Bonn will necessarily reverse.

In launching a RITTS project, the Technologiestiftung Innovationszentrum Berlin (TSB) intended to mitigate this decline by developing an innovation strategy for Berlin. A focus of the project was to improve the co-operation between industry and science. It was already known from a large number of studies that Berlin is more research-intensive than any other region in Germany. During the Cold War the German Federal Government consistently invested in the “Science Standort” Berlin. The former DDR also build a significant research presence in the East of the city. Berlin has therefore for a long time been ‘oversupplied’ with science, and this has become in some areas more extreme since the Wall fell.

The intention of the RITTS project was to build on previous studies as a starting point for implementation-oriented activities. They primarily aimed at the integration of actors from science and industry in the approach of the project.

It was pretty clear at the start of the project to most actors in Berlin that a large number of competing concepts of innovation and innovation policy co-existed. There was no single or coherent innovation and technology strategy for the city of Berlin. An innovation strategy was needed which would enable political and administrative actors in the City directly to improve the innovation and policy climate in the city.

2.2 The Innovation Strategy of Berlin: A Strategy Innovation

As indicated already by the headline, the RITTS Project Berlin can be seen as an experiment. On the one hand, it was clearly the objective of the project to define an innovation strategy for Berlin. On the other hand, it was quite clear from the beginning, that the traditional way to develop an innovation strategy would not be appropriate for Berlin. Accordingly, it was from the beginning the objective of the project to exercise an innovative approach to elaborate an innovation strategy. This was largely in accordance with the objectives of the RITTS action line initiated by the European Commission. The European Commission also perceived the tradition of steps for the development and implementation of an innovation strategy in European Regions as insufficient. It is, however, a very difficult task not only to develop on the one hand an innovation strategy and on the other hand to invent also a strategy for the development of a new innovation strategy. The dual approach caused some problems in the region when the different actors sometimes became somewhat confused by it. While especially the political actors were primarily interested in a new innovation strategy for Berlin, the administrations as well as the participating intermediaries were primarily interested in an innovation in the strategy to work out a new innovation strategy. This problems were finally solved in the conceptional phase, where all actors agreed on a common objectives for the project. Based on these objectives they also agreed on a work plan, that described the process to realise the objectives.

3 The Objectives of the Project: A Common Innovation Strategy for Berlin

The Berlin RITTS Project was experimental in nature. While the primary objective of the project was to define an innovation strategy for Berlin, it was clear from the beginning that the traditional way to develop an innovation strategy would not help in Berlin. The project therefore had to develop an innovative approach to strategy generation. As a result, it was necessary to invest considerable effort in the initial, definition phase of the project in order to get the approach right before embarking on the main project. This led to some understandable frustration at the political level, but was seen as a necessary precondition for success by those more closely involved in the project. By the end of the definition phase, the methodological issues were largely resolved and all the actors agreed on a common objectives for the project and a work plan.

The objectives of the project were

- The identification of *Leitbilder* for an innovation policy for Berlin. By *Leitbilder* we mean visions of specific **clusters** of industrial and innovative activity, which define the main fields where Berlin can compete with other regions in the world
- The definition, selection and initial implementation of the a sub-set of *Leitbilder* which would define the initial innovation strategy
- The creation of a model for selecting, managing and implementing further *Leitbilder* in the future, therefore leaving behind a set of tools which would enable continuing strategy evolution and management

A key principle in the project was to work in tight co-operation with all actors in Berlin involved in innovation and technology policy as well as with representatives of the region's scientific and industrial world. A main focus was therefore communication and negotiation with industrial and scientific actors rather than the creation of major new studies in a region that is in many respects already well documented.

This interactive approach is evident in the structure of the project. The RITTS Berlin project initiated three different committees. The highest ranking committee (*Projektausschuß*) comprised the members of the advisory board of the TSB completed by four representatives of SMEs. The advisory board of the TSB includes both high ranking political actors like the Senator für Wirtschaft und Betriebe and the Senator für Stadtentwicklung, Technologie und Umweltschutz and senior members from the scientific and industrial. The current chairman of the advisory board is a member of the executive board of DaimlerChrysler AG. The current president of the Technical University of Berlin is also a member. The main objectives of the *Projektausschuß* was to guarantee the implementation of the ideas proposed by the project. The committee was chosen because of the importance of having power in the political, industrial and scientific institutions if project findings are to be implemented.

At an operative level, the *Projektlenkung* was the main committee to control the day-to-day work of the project. It comprised representatives of the three administrations of Berlin concerned with innovation and technology policy, the chief executive of the TSB, the project officer at the TSB and the consultants. The main tasks of the *Projektlenkung* were to debate the findings of the consultants and act as a 'sparring-partner' for the consulting team, to provide inputs on the directions chosen by of the project team and to provide access both to high ranking political people on the one hand and to industrial and scientific partners on the other.

The main consultants in the project were the Deutsche Institut für Wirtschaftsforschung (DIW), the Gesellschaft für Innovationsforschung und Beratung mbH (GIB), Technopolis Ltd and VDI/VDE-Technologiezentrum Informationstechnik GmbH (VDI/VDE-IT).

4. The Theoretical Basis of the Study

Before the empirical work was started it was discussed by the different actors involved in the project, which theoretical model might fit as a blue-print for the general strategy in the project. From the outset the project could rely on results that had been developed by a large number of studies conducted in the past. In general, four main theoretical ideas built the platform from which the project started.

4.1 Technology Interchange rather than Technology Transfer

There is a broad discussion in Germany on the new shaping of technology transfer. A recently published study from the Ifo-Institute has shown that technology transfer as traditionally conceived as a sequential process produces a poor return on investment. Technology transfer agencies that provide a wide spectrum of information on technologies do not meet the needs of scientific and industrial users. It has also been observed in a large number of studies that the naïve 'linear' model of the diffusion of technology, starting from inventions initiated originally by scientific actors and ending with industrial adoption and use is attractive but wrong. Today, technology transfer is conceived instead as a system of actors and capabilities in which - just as in a Rugby team - different players interact and cooperate to develop new ideas and to implement them in the market

4.2 Focus on Innovation-Fields

A second intellectual foundation for the project was that **innovation and technology policy should be focused on *Innovationsfelder***, namely future industrial clusters and markets defined in the course of application, and which combine different branches as well as different technologies in the focus of applications. It follows that the focus of innovation and technology policy should not be on *Innovationsfelder* that are distant from markets and that do not have any impact on the generation of new industrial activity. The principle of subsidiarity in the Federal State of Germany gives the regions the opportunity to focus more on application-defined *Innovationsfelder* than Federal policy.

4.3 A Network Approach to Orchestrate the Team

A third basis is, that **innovation strategy should be focused on decentralised innovation networks**. There is a large number of publications in the social sciences which show that in the world of globalisation decentralised innovation networks are a crucial tool for increasing the rate of innovation and enhancing progress on new technologies. The decentralised network approach also has the advantage that the innovation policy can realise multiplier effects by involving more actors than a traditional centralised approach.

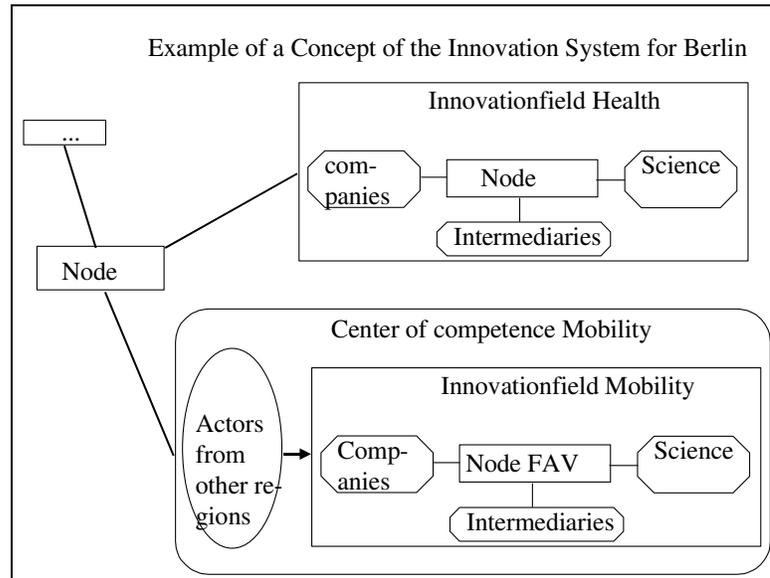
4.4 Centre of Competence an Approach for Berlin?

Fourth, it is clear from the discussion on **globalisation** that while many actors are now exposed to global competition, globalisation also offers for regions that can establish advantaged positions as providers of certain products. The Rhine-Main-region is a good example of this development. Financial services located in the Rhine-Main-region successfully compete with those in New York, Tokyo and Singapore. The Rhine-Main-region has been successful in establishing itself as a globally competitive region in financial services.

From the outset of the project, it was clear that Berlin must focus on those fields in which it has competitive advantage compared to other German and European regions. In the current German policy discussion, a competitively advantaged region is increasingly denoted a 'Centre of Competence,' indicating that – rather than a single organisation creating advantage – it is the **interaction** among actors from the scientific, industrial and intermediary worlds which generate efficiencies in the regional cluster. From the outset, it was a goal of the project to search for potential Centres of Competence in Berlin.

Based on these ideas, it appeared reasonable to position the TSB as a key node in a seamless web of innovation and technology policy in Berlin. By linking to several *Innovationsfelder*, it could become recognised as a natural platform for co-operation

between science and industry while in practice operating within the minimal budgets available for innovation policy in the City.



The idea of a seamless web is quite attractive, because, as already mentioned, they initiate thanks to increasing returns with fairly low budgets large multiplier effects.

Against this background, the initial phase of the project involved the identification and selection of those *Innovationsfelder* in Berlin that should be involved in the main project. The criteria for the selection of the *Innovationsfelder* were

- There should at least already be some minimal industrial activity, which could form the basis of future growth
- The scientific 'base' in the field should be strong
- As far as possible, intermediaries and some networking relationships should already be established in the region

Based on these criteria the following fields were selected

1. Biotechnology
2. Information- and Communications Technology
3. Transport technology
4. Medical technology
5. Microelectronics and Microsystems Technology
6. Production technology
7. Food production
8. Construction industry

The first three fields were already the subjects of action by TSB at the start of the RITTS project, aiming to launch decentralised innovation networks in the region. Fields 4 – 6 were selected because all available studies conducted in the state of Berlin indicated that they had at least the potential to become Competence Centres. The food production and construction industries were selected because of their large contribution to the economy of Berlin.

5. Results of the Empirical Work

At the start of the empirical work, three main issues were in focus

1. What were industry's needs for improvement in innovation capabilities?
2. How could the knowledge available in the scientific world be applied more effectively to the innovation process?
3. What structural and institutional changes were needed in order to improve the innovation capabilities of the actors in Berlin?

The empirical work was divided into vertical and horizontal components. In the vertical component, a qualitative study was conducted in each of the eight *Innovationsfelder* in scope. The main foci of this work were: to identify the needs of the industrial players in the *Innovationsfelder*; to identify opportunities for improved co-operation between science and industry; and to identify the needs for structural adjustments to improve the innovativeness of the region.

The horizontal part of the work focused on making clear what the term "Centre of Competence" means in practice and how innovation management should in practice be attempted by the TSB. An additional question stimulated by the planned move of the Federal Government from Bonn to Berlin was whether this represented an opportunity for Berlin to become a major service actor in Germany.

5.1 Results from the Work Conducted in the Fields

5.1.1. Results from the Biotechnology Field

Berlin is beginning to develop some sources of comparative advantage in biotechnology. Molecular medicine is strong, and there is a large range of scientific research being performed in biotechnology which could potentially be useful to industry. Because of the size of the research base, the availability of skilled people is also good. However, most companies involved are small. About 70 SMEs are active in biotechnology in Berlin. The science being done under the label 'biotechnology' is very heterogeneous, so there is no clear focus either in the research 'base' or in industry. Further, there has been little systematic marketing of Berlin as a biotechnology centre. These factors help explain why Berlin was not successful in the recent BMBF "BioRegio" competition. However, there is potential which can be developed. In order to do this, better networking is required with other regions, links and cooperation must be improved between industry and scientific researchers and the problem of access for small firms to the capital market should be tackled.

5.1.2. Results from the Production Technology

Berlin has great strength in research institutes and academic research in mechanical and production engineering. While many of the SMEs in Berlin focus on the low-value end of the supply chain, the industry remains a major contributor to the Berlin economy and a significant employer. However, few companies are technologically advanced and it is often hard to implement new technologies as a result. They tend to be poorly networked, both within Berlin and with other markets. Organisational innovation, especially enhancing user/supplier-relations between industry in Berlin and larger enterprises in other regions in Germany or Europe, is an important opportunity to improve the performance of the industry. Measures to improve the take-up of newer technologies like CNC would also be helpful.

5.1.3 Results from the Information and Communication Technology Field

Like many other cosmopolitan cities, Berlin has a large number of small companies working in software and multimedia. They enjoy the particular advantage of having an exceptionally strong research and scientific environment. Unusually, there is a large number of highly qualified employees available in the sector. In most other places, these kinds of

skills are in short supply. However, cooperation between industry and research remains limited and few large enterprises have their headquarters in the state of Berlin. The economic value produced by Berlin ICT companies remains rather low. A focused effort is needed to link the broader ICT strengths in Berlin industry to the 'motor' of the already strong Berlin media sector. It should be a major objective of innovation policy of Berlin to attract larger enterprises to move their headquarters to Berlin.

5.1.4 Results from the Medical Technology Field

The empirical work in the medical technology industry showed that the scientific institutions in Berlin are strong. Compared with many other fields, there is also a large number of relevant SMEs in Berlin. What makes the medical sector particularly interesting for innovation policy in Berlin is not only that the scientific and industrial actors are present in strength but also that, since Berlin is a major location for hospitals, the main users and demanders of medical technology are present. The medical technology field is therefore one of the few in Berlin where the suppliers and users of technology are both present.

The main impediment to growth is that no large enterprise is located in Berlin. Accordingly, the main decisions on research are made by these large enterprises in other regions. The scientific research is also fragmented. Rather than concentrating on certain innovation fields in scientific and medical research, the Berlin research scene is characterised by a large number of very small projects. There is also a lack of co-operation among actors from science, industry and medical centres. The analysis showed that there is nonetheless some potential for development. A key issue is to identify and focus efforts on certain a limited number of topics on which actors from science, industry and medical centres may concentrate in their research activities. A second issue is that the research in Berlin is sophisticated, having been established by those institutions that do basic research. A stronger emphasis needs to be put on fostering an applications orientation in the research sector. Linkage to other regions should also be enhanced.

5.1.5 Results from the Microelectronics and Microsystems Technology Field

It is a main advantage of Berlin in the **microelectronics** and **microsystems technology** field that there are many companies located in Berlin, and primarily in East-Berlin. The research and scientific landscape shows some of the highest ranking researchers located in Berlin. Accordingly the research is very strong in the region. It is therefore no wonder that in a national study Berlin is ranked as a centre of competence for the research in the field.

However, this advantage is contradicted by some disadvantages. So, there are primarily small enterprises that work in the field. The economic wealth produced by the industry is fairly low. Furthermore there are no communication networks among the different actors in Berlin and almost no linkage to other regions in Germany or in Europe. It is quite obvious that the industrial side of the field needs strong developments to meet the opportunities provided by the research institutes.

To create some growth potential, it is, therefore, necessary to improve the network structure in Berlin and especially for the very research based small enterprises the availability of sophisticated economic know how is tremendously seek.

5.1.6 Results from the Traffic Technology

The **traffic technology** shows some impressive strength in Berlin. The traffic technology field is the only field where we find normal structure of the distribution of companies among large and small enterprises. Accordingly, the traffic technology field is the only field in Berlin, where we have a nearly existing local supply chain. Additionally, Berlin is among all German locations one of the most sophisticated research location in the traffic technology. A special focus can be laid and should be laid on the track and train based traffic technology. And last, but not least, it is a main advantage of the state of Berlin, that the main customers for traffic technology (Deutsche Bahn AG; Berliner VerkehrsBetriebe (BVG)) are located in Berlin.

However, these strength of the "Standort" Berlin also face some disadvantages. There is still a low embedding of regional SMEs in the supply chain. Large enterprises like AdTRANS, BMW and DWA still buy most of their components from SMEs in other regions.

Secondly, the concentration on the supply of complete system services for the transport sector including the supply of rolling stock, infrastructure components, financing and service on the systems is not really perceived as a future market by the industrial actors in Berlin. Additionally, there is some frictions initiated by the main customers, which are primarily those institutions owned by the state. These public users still do not behave like market users. It is also a matter of fact that due to these public customers the ability of the German train industry was never very successful to export the ICE train to any other state.

For an enhanced development of the sectors some adjustments are needed. On the one hand, the idea of intelligent traffic systems including telematic applications should be taken into consideration. Secondly, the empirical work showed that those systems that combine traffic technologies for the road and the train and any other carrier promises high potential for the future. Accordingly, a main emphasis of future activities in the innovation field should be concentrated on those system combining technologies. At last, but not least, the smart traffic systems based on information and communication technology should be an additional issue of concentration.

5.1.7 Results from the Construction Sector

The **construction sector** is still one of the most powerful sectors in Berlin. This is also valid from the perspective of the turnover as of the number of employees. It is also true that the construction sector shows some very sophisticated new approaches with regard to new materials and new information and communication technologies, so called intelligent home technologies.

However, it has to be clearly stated, that the regional actors in Berlin, and that means in particular the companies in Berlin, are not competitive at the research edge. It is rather quite visible, that there is technological drawback of the companies, the organisational arrangements in the companies are not very sophisticated and the networking of Berlinian construction companies with other actors is not very sophisticated either. It is no wonder therefore, that most of the high technology buildings in Berlin are constructed by companies not located in the state of Berlin.

A potential for a change can be seen in the use of new technologies used in the construction of sites as well as for the construction of sites. Additionally, the logistics and organisational arrangements show large potential for improvements. If the companies in Berlin will succeed in their attempt to improve their technological platform there is a chance that Berlin becomes very attractive not only for German but also for international construction companies.

5.1.8 Results from the Food Industry

The **food industry** in Berlin is also a very important sector similar to the construction sector. The companies producing in Berlin use high-tech production technologies. Berlin becomes more and more a main location for the research on food as well as on the production of food. This is even more visible if not only the state of Berlin is taken into consideration but also the neighbouring state of Brandenburg.

However, the co-operation among the food companies is still very low and the competitiveness compared to companies from West-Germany or West-Europe is still not given. This is a result on the one hand of the low rate of larger companies in the region. The major food producing and distributing companies are still placed in the West of Germany. On the other hand companies placed in Berlin are still focused on end of pipe production. Those activities that produce high value are still dominantly done in West Germany.

It is, therefore, a need for a change in the innovation policy, that aims at the food industry. A high potential for a change is seen in the combination of the food industry with activities in Berlin that aim at the biotechnology. Especially the use of new and innovative biotechnological processes in the production of food and in the packaging can be seen as a high potential for the city of Berlin.

As can be seen from the empirical work in the eight innovation and application fields that the state of Berlin still suffers from the political situation at the past. There is still a decline in the number of companies in all these sectors. It is still a prevailing problem of the city of Berlin that there is almost no large enterprise headquarters located in Berlin and still there is a

bias towards a sophisticated research and science basis in Berlin, that is in no way linked to any application oriented research driven by companies. However, the empirical work has shown that all the fields have some potential and it is necessary that the new orientation of the innovation and technology policy in Berlin reacts on these identified potentials.

5.2 Horizontal Issues Analysed by the Empirical Work

Besides the empirical work in the innovation fields three horizontal questions were approached by the empirical work. These horizontal issues are a definition of the term 'Competence Centre'. Secondly the question was analysed what the innovation management means and how to shape innovation management. And last, but not least, the question was analysed whether Berlin will profit from the move of the capital to Berlin and will become a future service metropolis in Europe.

5.2.1 Berlin a Metropolis for the service sector

Results of the empirical work towards the question of Berlin as a **service metropolis** of the future, show that today the service sector is still the weakest part in Berlin. It is an identified disadvantage of the location that there are almost no production oriented services. Berlin still shows a very high share of public services, that can be rooted back to the cold war period, where the state was the main employer in Berlin. It was analysed by Technopolis that there are some potentials for development. On the one hand, the high standard in universities show some potential, that highly skilled people will establish service companies. Additionally, the move of the German Federal Government to Berlin will definitely initiate some new markets in Berlin. On the other hand, the location of Berlin shows some of the strongest broadcast and media companies. Accordingly, there will be a need for new services provided by news companies. And last, but not least, Berlin is still the German capital of culture and science, and here some chances and opportunities for new services is given.

5.2.2 Definition of the Term Centre of Competence

In the study it was also defined the term '**Centre of Competence**'. According to the definition in the project, a Centre of Competence is defined by an innovation field that shows world reputation.

- It is a result of a long term development
- it is an engine of the regional development
- it covers all elements of the value chain and
- it is a dynamic network.

It should be pretty clear from the definition that the term is not used in an organisational sense. The term Centre of Competence is rather defined to describe a network structure in which a team of highly sophisticated player from science and industry co-operate.

5.2.3 Requirements Towards a Modern Innovation Management

The empirical work showed, that the idea of **technology interchange** needs a decentralised network structure. Accordingly, no central intervention by any political actor is an appropriate tool.

Furthermore, it was fairly clear from the beginning that **images** (Leitbilder) are a central element of decentralised network. The problem of decentralised network is primarily that most of the actors have to define a common approach to follow. Accordingly, images may gain a momentum for the development of an innovation field. It was quite clear, that the TSB should be in charge of the management of the decentralised networks. The TSB as an neutral institution accepted by policy actors as well as scientific and industrial actors is a adequate institution for these activities.

However, it became obvious in the work that a structural change towards a decentralised network is not sufficient. To establish an efficient decentralised structure the participating organisations have to adjust to the demands of the network. That was and is in particular

true for the **universities**. It therefore became quite important to take into account the need for an organisational change in the universities placed in Berlin. The analysis showed clearly, that the prevailing structure of the universities shows a tremendous institutional sclerosis. Accordingly, in the project attempts were supported that make universities more flexible. A blue print for a flexible structure can be seen in the approach chosen by the Technical University of Berlin. From the blue print it became quite clear, that a matrix organisation might fit best with the new construction of innovation policy. In the matrix organisation the faculties represent the competence in the different fields. In addition to the faculties there are some research projects that run horizontal to the faculties and play a platform for interdisciplinary co-operation.

Furthermore, the project showed clearly, that there is a tremendous need to establish an **innovation committee** (Innovationsrat), that not only has seats for delegates from Berlin, but also for those delegates coming from other European or German regions.

The funding of new initiatives in Berlin was in the past primarily done by the Government. It is a proposal of the RITTS project, that the state should now establish a **monetary fund** (Zukunftsfonds), that is a tool of the innovation committee, to stimulate new innovation activities. In accordance to the mergence of the monetary fond the TSB should stop any funding of activities that go beyond the funding of new or the enhancement of existing networks in innovation fields.

Finally, the empirical work showed that there is a tremendous need to **evaluate regularly** the activities in the innovation fields. It is the main intention of these evaluations to stop dead end roads and to generate new activities in new fields.

5.3 Initiating a New Innovation Policy in Berlin

Based on the results of the empirical work it was quite clear, that in the future an innovation policy in Berlin should be initiated that aims towards the establishment of a decentralised network with the TSB as the 'spider in the cobweb'. To illustrate the concept within the project the implementation phase of the project concentrated on three innovation fields and their potential to develop into a 'Centre of Competence'. From the eight innovation fields analysed in the first phase the following were selected for the implementation phase:

- biotechnology,
- machinery tool industry and the
- medical technology.

For these fields the main approach was to implement the ideas to develop in the innovation management concept. That is:

1. establishment and enhancement of a decentralised network in the field under consideration,
2. the setting of incentives in the network,
3. the establishment of an innovation culture and
4. the agreement on a common image for the field.

On this basis, the following activities has been realised in the three fields by the RITTS project consultants. In the implementation phase it was the clear objective of the project to implement the above mentioned structure. It was therefore primarily an attempt by the project consultants to bring together the actors in the field and start the process of the creation of a decentralised network in the innovation field.

5.3.1 Measures for the Biotechnology Field

In the **biotechnology field** the main focus of the activities in the RITTS project was on four issues. On the one hand, it was quite clear, that the number of companies has to be enhanced by incubators activities and measures to stimulate the number of new enterprises. Accordingly, a main focus was laid on this issues. Secondly, it was quite clear, that the main node in the biotechnology field is the 'BioTOP-Büro', a common initiative of the states of Berlin and Brandenburg. Accordingly, the RITTS consultants discussed with

the network managers in the BioTOP bureau the necessary adjustments for the establishment for a decentralised network in the biotechnology field.

In the common workshops the approach aimed towards a better implementation of Berlin actors in international networks of users and the co-operation between science and industry was enhanced. In general, it was quite clear from the work that the biotechnology field should prevail as an innovation field in Berlin and shows some potential to be established as a competence centre.

5.3.2 Measures for the Medical Sector

In the **medical field** based on the results of the empirical work it was quite clear, that it is not an innovation field at the moment. However, the implementation activities showed, that a one year pilot phase should be implemented. The main objectives of the pilot phase are identification of objectives and images for sector. In particular the variety of research should be reduced.

Secondly in the workshops it was discussed how to make the competences available in the companies located in Berlin can be made compatible with the competences of the research units at the universities.

Thirdly an agreement on a application oriented approach in the sector was stimulated. In the medical field there is a tendency in the research units to focus only on basic research. The application orientation however is necessary to enhance the potentials for co-operation with companies.

Fourth, in the implementation phase also the link to medical technology companies from other regions was an objective. Therefore, in the workshops non-Berlinian companies were invited and a platform for exchange of information was set.

establishment and organisation of the network,

It was quite clear from the outset that the establishment of an efficient decentralised network in the medical field will cost some money. It was therefore the task of the TSB to show ways how the funding can be handled.

5.3.3 Measures for the Machinery Tool Industry

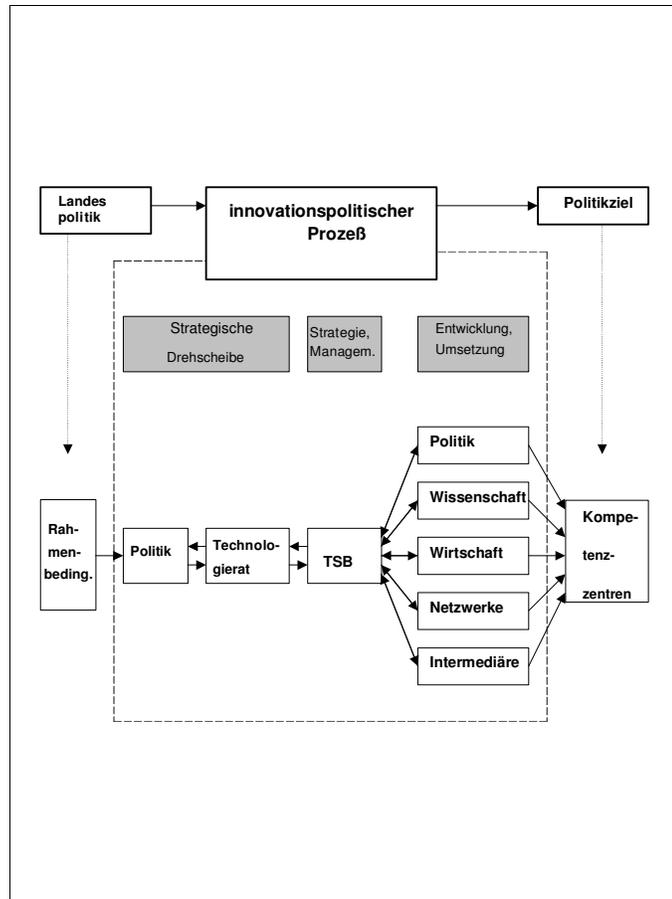
It was quite clear from the empirical work as well as the implementation work, that the **machinery tool** industry shows no potential for a competence centre strategy. However, there are some positive elements, that might be used as a leverage to improve the innovativeness in the sector. However, this is not 100 percent compatible to the network approach and therefore, in the machinery tool, a new strategy to enhance to innovativeness of the sector has to be identified in the future.

5.3.4 Horizontal Measures

In the **horizontal measures** it was quite clear, that primarily the role of the TSB as a network node had to be enhanced. For the TSB, three main activities have been identified:

1. On the one hand, they should regularly identify future innovation fields for Berlin.
2. Secondly, the co-ordination of the decentralised network nodes in the innovation fields is an objective of the activities of the TSB.
3. The link of the network conception on other innovation policy measures should be realised by the TSB.

In the concept developed by the project the TSB is a central unit for innovation policy. The concept is best illustrated by the following graph:



It will be a very demanding task for the TSB to meet the expectations raised by the project. Today the expectations are very high. People expect that the TSB will identify very potential new fields pretty soon. It is also expected that the economic impact of the new fields will be visible very soon. To meet these expectations the TSB will need to improve its efficiency a lot. The necessary actions to realise the target has been started in the project. The merger of TSB and TVA can be seen as a perfect first step to prepare for the future demands.

6. First Proposals for a New Innovation Policy of Berlin

It can be summarised for the RITTS Berlin-Project, that the success of the developed measures and activities depends on six factors:

First, the focus of the innovation policy on centres of competence shows high potentials for Berlin. It should be quite clear for all actors, especially the political actors, that the traditional approach, that focused on widespread funding for a variety of sectors does not show any potential to solve the problems in Berlin.

It secondly was quite clear, that the success on the approach is very depending on the implementation of the network management strategy by the TSB. Only if the TSB is successful in pushing through the network management strategy, the whole approach can be successful.

Third, especially the decentralised network nodes in the innovation fields need some efficiency. It is therefore very important, that the selection of the network node managers is provided according an entrepreneurial approach. Only these managers really are capable of driving the whole innovation fields, and they can succeed, if they have the incentive and advantages of an entrepreneurial habit.

Fourth, the current structures of the universities and research centres in Berlin is not perfectly fitting in that concept of decentralised innovation networks. Accordingly, there is a tremendous need to restructure the universities and research institutes towards an application oriented institution. The use of a matrix organisation for this new structure show high potentials.

Fifth, there is a tremendous need for the establishment of an innovation committee. The policy actors have started the adequate initiatives to establish the innovation committee within the near future. The innovation committee however will work only if delegates from outside Berlin will be integrated. Berlin has to leave its isolated state and become a member of large networks.

And last, but not least, the establishment of a future capital fond is necessary to give the innovation committee a tool to really stimulate and influence the future activities in high potential innovation fields for Berlin. If these actions are undertaken, it is likely that the structures developed by the RITTS Project will make a significant contribution to increased innovation, competitiveness and wealth creation in Berlin.