Cluster Management Excellence
Volume 1: Network Services

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Cluster Management Excellence
Volume 1: Network Services
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Introduction

In recent years, there has been a comprehensive and intensive debate about the development of networks and clusters and their importance for regional competitiveness. In so doing, the emphasis has been placed on a great variety of aspects, such as the establishment and further development of efficient network structures, areas of activity of Management, internal processes of communication or components of public funding and support by players setting frameworks. However, the focus has so far been less on specific possibilities for measures of support on behalf of network and cluster players involved – the so-called network services.

But what is specific about network and cluster services? Practice shows that the success of networks and clusters greatly depends, among other things, on the performance and notably on the added value of network/cluster management offered to the partners concerned. Enterprises in particular are typically only active in networks and clusters if apart from intensive cooperations, these target groups can profit from clearly communicable added value. This becomes even more important if affiliation to a network and/or cluster costs money. In that case, the costs of affiliation have to be offset by multiple supportive measures and offers.

Network services can thus be seen as an important instrument on the part of network and/or cluster management in order to be able to generate the necessary added value as wished by members. In that regard, a distinction must be made between classical services on the one hand and novel, highly innovated services on the other hand. The classical services are well known and have already been analyzed and illustrated repeatedly. With some research effort it is easy to identify these services, such as inter-company socials, workshops, trips by delegations, newsletters, etc. Any experienced network/cluster manager will have either implemented such services already or will not offer them deliberately if, for example, members are not interested in them.

Particularly successful network and cluster managements will rather be characterized by the fact that aside from “standard services”, they offer interesting, innovative services as well. Conceived in accordance with needs and implemented successfully, it is these network services that are highly accepted by members while frequently resulting in closer links with the network.

“But how do these innovative network services look like?”, “What has to be taken into account while developing service offers?” or, “Which network themes are especially suited for services?” It goes without saying that there is no standard solution, as such services are primarily geared to practical needs and thus greatly depend on the network structure and the needs of members.

Nevertheless, there are some aspects which basically have to be considered while developing and implementing them and which generally apply to many networks and clusters. The present publication, choosing a very illustrative and practice-oriented presentation, therefore answers many questions relating to the context of “network and cluster services” and shows an interesting range of service offers. It is notable that the chosen services have been conceived in accordance with practical needs and been implemented successfully and that, in principle, they can be easily transferred to other networks/cluster structures.

We hope that with this publication we can bring the subject of “innovative network services” closer to you and initiate a debate from which, in the end, new and still totally unknown network services could result.

Dr. Gerd Meier zu Köcker
Head of the Office of the Kompetenznetze Deutschland Initiative
1. Need-oriented services as a supportive element of successful cluster and network development

Claudia Martina Buhl

The continuous development of innovative products and processes is one of the crucial aspects to be able to keep not only pace within the global economic and technological processes, but to occupy a leading position as well. In so doing, future incremental innovations that only produce optimized products or process adaptations will no longer suffice to establish national or even international market leadership. Radical innovations, that is, producing “world novelities” and their timely, large-scale market introduction, are rather becoming more and more important to generate sustainable growth.

On account of the increased sophistication of (both incremental and radical) innovations, of the technologies used and the special know-how needed for it, individual players are less and less capable of providing the necessary competences and resources. In order to remain competitive nonetheless, adaptations have to be made. One of the measures practised most frequently is to link one’s own skills and know-how with that of other players. Joint cooperation between different players, such as companies, universities and colleges, research and educational institutions as well as service providers or even public business development institutions in so-called technological or branch-specific innovation networks, is thus one of the answers to the challenges of global competition.

Before innovation products and processes result from successful network and cluster activity, cooperation structures need to be initiated, built on existing ones and be intensified. From this process network and cluster organizations can develop that are effective and sustainable in the medium and long run. However, on the side of the players involved there are initially always different, individual institutions with a tradition that has evolved over the time, specially developed structures, own regulations and characteristic working methods and processes for the relevant system that have an impact on network and cluster activities. This implies that a joint basis has to be created from the existing structures and action potentials in order to start off development processes from that basis.

Numerous investigations make clear in that regard that networks and clusters that may be supported by a qualified organization unit in the development processes described above (as, for example, an office or management head office) have established faster and more efficient working structures, allowing members to concentrate on their core activities.

In addition to well-functioning working processes and intensive relations of cooperation, the players involved see the advantage of a network or cluster commitment particularly in the provision of need-oriented network-specific network services. That means, for the affiliated players different kinds and forms of services are provided which are often developed and offered by the Office or by Management and which particularly

- address issues and fields of problems of (daily) network and cluster activity,
- reduce the cost for individual approaches by members in terms of time and financial resources,
- guarantee concentration on the specific competencies of members, and
- enhance the efficiency of individual players and that of the network and cluster as a whole.

One important aspect of network services is that high added value and successful results are generated for their respective players, which without a network and cluster involvement would only have been possible employing a great amount of human, financial or material resources. Need-optimized services can thus offer a chance to effectively support members on the one hand and the entire network on the other hand in its economic development.

1.1 Aims of the publication

In the last few years numerous, very good services have been realized in networks and clusters. Analyses of the different services clearly show: However heterogeneous the individual approaches may be when clusters characteristics are considered, there are still common superordinate service categories in substance, which are mainly translated into supportive measures. That means, many networks and clusters face similar problems or needs. But in view of a great variety of aspects, such as a lack of creative ideas or possible solutions, scarce financial or human resources and not clearly defined demands, there are frequently difficulties in translating identifiable needs into suitable need-oriented services.
It is therefore the aim of this publication to present, on the one hand, the theoretical foundations of the very complex subject of “network services” in a practical way and, on the other hand, introduce ideas for successful and innovative problem solutions, services or possibilities of support. The publication points out network services in the form of “best-practice examples” developed by all networks and their offices, which are among the most efficient networks of the Federal Republic of Germany and are thus engaged in the Kompetenznetze Deutschland Initiative.

In order to make possible a comparison between services in spite of their heterogeneity, the individual services have been described in a unitary form on the basis of the following classification:

- Presentation of the corresponding network to document, on the one hand, the particularities of the network and, on the other hand, to understand the circumstances prevailing in the context of need.
- Clarification of the underlying problem, which originally was the basis for the conception of the service concerned.
- Description of the strategic approach and of the implementation of the service.
- Presentation of the financing and sustainability of the service.

In addition, the individual service presentations have been evaluated with regard to their transferability to other network and cluster structures. In doing this, the “degree of transferability” of every service has been ascertained on the basis of the following characteristics:

- Given the great diversity of very good network and cluster services implemented in the networks of the Kompetenznetze Deutschland Initiative, network and cluster services have been selected for this publication that were submitted as a contribution to

<table>
<thead>
<tr>
<th>Degree of transferability</th>
<th>Description of determination of degree</th>
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<tbody>
<tr>
<td>4 = very good transferability</td>
<td>Can be transferred “one to one” to other networks without further development or adaptations.</td>
</tr>
<tr>
<td>3 = good transferability</td>
<td>Can basically be transferred to other networks and clusters and/or branches or value creation chains following slight adaptations to individual problems.</td>
</tr>
<tr>
<td>2 = conditional transferability</td>
<td>Can be transferred to other problems or fields of activity only selectively or following deep-going changes or adaptation.</td>
</tr>
<tr>
<td>1 = relatively bad or no transferability</td>
<td>The service has been designed specially to suit the needs of the corresponding network or cluster or is the result of practical activity, so that transferability is only possible following a complete reformulation or is not at all possible.</td>
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the competition “Network of Competence 2008” (see chapter 1.2). Of all competition contributions, those network and cluster services will be presented which can be transferred very well or well to other network and cluster conditions. The aim is to ensure that tested, practice-oriented problem solutions and services can also be applied in other networks and clusters, integrating their specific features, and that they can have a relatively prompt impact, for example for intensifying internal communication processes, improving public relations or increasing efficiency.

1.2 “Network of Competence” competition

The Kompetenznetze Deutschland Initiative, which is funded following a resolution of the German Bundes- tag by the Federal Ministry of Economics and Technology, unites the most innovative and efficient national networks with a technological orientation. These competence networks are characterized by intensive action and cooperation on behalf of the innovative partners and by jointly defined goals, standing out for their high proximity to markets and industries, strong regional ties, dynamics and flexibility. All of these characteristics make the networks and clusters engaged in this initiative a core element of technological efficiency, of economic growth and competitiveness. Beyond that, they represent the concentrated capabilities of the Federal Republic of Germany in numerous economic and technical areas.

Nevertheless, networks and clusters are continuously evolving in order not only to maintain their efficiency, but to strengthen them and adapt them to changing macro-economic conditions and requirements. While younger networks are usually occupied with their constitution at the beginning, established competence networks and clusters are facing the task of developing further in keeping with changing requirements. Relevant questions are, among others, the way existing markets are changing, where new ones are emerging, how to achieve an adequate international positioning, which qualifications will be gaining in importance, the way technological trends of the future will look like, where one’s own technological competences will be able to conquer new fields of application and which regulations and processes have to be taken into account to a greater extent, etc.

In this context it is a special strength of networks and clusters to respond again and again to ever-new challenges of national and international competition in an adequate and flexible way. As far as these requirements and conditions are concerned, the Kompetenznetze Deutschland Initiative wants to actively support the networks and clusters associated to it and to successfully master these challenges. In doing this, special emphasis has been laid on the possibility to identify outstanding activities and instruments of individual networks and clusters and to offer prizes to them. Thus the Kompetenznetze Deutschland Initiative promotes the annual competition “Network of Competence”, which officially recognizes achievements by the networks involved, awarding a prize that has been endowed.

The competition addresses every year a different network-specific theme and, in awarding the prize, does not confine itself to looking at things in retrospect, but practically aims to show to other networks and clusters different concepts, potential problem solutions, best-practice examples or support options in order to develop its own future-oriented activities. In this manner, the whole initiative is to profit from the experience and successes of individual networks and clusters and thereby develop further jointly.

In the framework of the round of competitions “Best Network Service” innovative service offers have been submitted by affiliated networks of the Kompetenznetze Deutschland Initiative, conceived and implemented by network coordinators or an institution entrusted with this task. It was important that the service did not confine itself to the regular division of labour within the framework of cooperation, that a systematic process of determining needs was instituted before the service development started and that the services were established on a sustainable basis.
In the category “Best Network Service” three networks were awarded prizes:

1. **Baden-Württemberg: Connected e. V. (bwcon)**
   with “Coach & Connect” – the support programme for young high-tech companies

2. **Materials Innovation Network of Northern Bavaria (WIN)**
   with the further training programme “Training to be a process coordinator for plastics”

3. **competence center automotive region Aachen/Euregio Maas-Rhein (car e. V.)**
   with the personnel service project “One application – 60 recipients”

In order to award prizes to three networks and clusters each in every round of competitions, the innovative and need-oriented instruments, programmes, projects, measures or methods developed and applied by members of the Kompetenznetze Deutschland Initiative and having stood the test of practice, will also be made available to other networks and clusters in a “best-practice guideline” according to the motto “learning from the best networks”.
2. Increasing innovative power through cooperations in networks and clusters

Claudia Martina Buhl

The past decades have been marked by a historically unprecedented process of globalization, where global markets have emerged as a result of the liberalization of world trade and of the financial markets as well as of enormous progress achieved in the field of communication and information technologies. In this process, international competition on the worldwide markets also has far-reaching effects on the regional economic structure. The still advancing globalization has not only led to more intense competition among companies, but also and above all among different locations. As a result, locations – municipalities, regions, states – are entering into direct competition. This has made a clear positioning within this locational competition imperative.

Locations where the general economic conditions are good, where a critical mass of different age groups of an industrial branch or an innovation field is located and which closely cooperate with each other along the value creation chain and cultivate intensive relations of interaction are forecasted to have the best growth prospects. In this connection, networks and clusters are considered to be one of the possible solutions that can respond most rapidly and flexibly to the challenges arising in the wake of the changing processes of innovation and globalization of the economy.

In many regions of the world various initiatives and measures have therefore been adopted to step up the process of initiation and establishment of networks and clusters. On the one hand, the public promotion of business has witnessed a change away from the concentration of individual companies to the economic development of the region as a location of business activities. On the other hand, many networks and clusters have originated through so-called “bottom-up” processes, i.e. industrial and research-based mergers that have mostly evolved historically as a result of long-standing relations of cooperation.

2.1 Particularities of the cluster and network concept

Economic and technological developments usually do not come about across entire regions, but mainly result from agglomeration in one area, i.e. in regions with an appropriate research potential and economic potency. In that field research results can be translated relatively promptly into marketable products, processes and/or services. If the focus of attention is thus on positioning in the competition between different locations or on innovation and business promotion, this context has been described in an almost inflationary way in recent decades with the concepts “cluster” and “network”. The current popularity of the cluster and network concept can, inter alia, be substantiated by the thesis that it is seen as a crucial instrument for enhancing competitiveness and, based on it, contributes to guaranteeing regional employment. In this process, communicable differentiating features are becoming of outstanding significance. (Kiese 2008).

But which particularities of definition characterize the two concepts and how can they be delimited?

Cluster concept:

Following the definition by Michael E. Porter, clusters are defined as geographical concentration of interlinked companies and institutions in related branches of industry that complement each other by joint relations of exchange and activities along one (several) value creation chain(s) (Porter 1990). Well-functioning cluster structures extend in a three-dimensional space. This means, they are distributed horizontally all the way to manufacturers of complementary products and services and vertically through the sales channels, down to the customers.

The “geographical component”, i.e. the regional or spatial proximity of the individual players to each other, is of great importance for clusters. Nevertheless, the concentration of the relevant players within one branch or field of innovation only symbolizes the available cluster potential.

But only when regionality has a positive effect on processes of labour, exchange and communication of the local players and relations of cooperation develop therefrom, does the cluster potential develop into effective cluster structures. However, the relations of cooperation in clusters are basically characterized by more or less loose ties (“weak ties”) (Granovetter 1973).

Network concept:

Networks are regionally concentrated local, but supra-regionally operating, associations of cooperation of competent partners from science, research and the
Network service as element of success

Chart 1: Graphic distinction between cluster potential and effective cluster structures

1  Network service as element of success

2/ Note: The definition is oriented on the definition of “competence networks” of the Kompetenznetze Deutschland Initiative.

Source: Institute of Innovation and Technology (iit)

economy with a common thematic focus. As a rule, networks comprise the different levels of the value creation chain (vertical interlinking) and different branches and disciplines (horizontal interlinking). Networks are characterized by intensive, goal-oriented interaction by the players involved. The close and above all early cooperation between research institutions and companies helps to speed up the transfer of know-how, so that companies can profit from the research results. Research establishments on the other hand thus find efficient economic partners for turning their research results into marketable products and services.

This enables networks to enhance their capability for innovation considerably and to contribute to the profiling and positioning of regions in international competition. It must be seen, however, that networks are more than a loose nexus of relations between players because their affiliation in a cooperation association is mostly based on historically evolved and personally motivated relations of trust and a high rate of contact between the players involved, as a result of which their cooperation is frequently of a binding character and is based on sustainability and a longer-term time horizon.

Within networks there are processes of knowledge and information exchange on different levels, ranging from informal information exchange to the joint implementation of projects. Networks do, however, only contribute to innovation development if they are open and above all dynamic, while sealed-off networks, so-called closed shops, in contrast rather hinder development.

Generally it is a fact that the interlinking of research institutions, enterprises and public players
The factor conditions describe the local availability of human resources, capital resources and natural resources as well as of scientific and technological infrastructures. In this regard, the competitiveness increases while simultaneously the availability, the quality and the specialization of the factor conditions improve. By demand conditions we understand the local presence of ambitious and innovative purchasers, whose high demands are a challenge to manufacturers to develop more and more innovations. This makes it possible to increase supra-regional demand and to give local enterprises a competitive edge.

Sub-contractors and entrepreneurial service providers from related and supporting branches can likewise encourage the competitiveness and productivity of local enterprises by making their components or services flow into the products of cluster players. The corporate strategy and (domestic) competition between the individual enterprises forces them to continuously improve and newly develop innovative products, including a functioning technology transfer, is, on the one hand, key to strengthening innovative power and therefore, on the other hand, a motor for processes of growth. In view of that, (branch-specific) networks or structures similar to networks can emerge within bigger clusters (Sydow/Lerch 2007) with a view to intensifying cooperation, and networks can likewise be an effective instrument for developing clusters systematically.

However, the national competitiveness and an increase in the productivity of branches of industry are not only determined by the existence of effective cluster and networks structures, but they depend in their essence, according to M. Porter, on four components (“diamond model”): factor conditions, demand conditions, related and supporting branches, and the respective corporate strategy, corporate structure and domestic competition.

Chart 2: Ideal-type intra-network makeup

More rapid technology transfer, translation of research results into innovative products

Scientific institutes (uni, coll)
Basic research

Research and development (application-oriented research)

Basic and further training

Service providers (e.g., finances)

Companies (big companies, SMEs)

Cooperation between basic and application-oriented research

Network-specific training offers

Availability of venture capital

Communication of market requirements from the viewpoint of companies

Source: Office of the Kompetenznetze Deutschland Initiative

3/Note: In some literatures and contexts the concepts “clusters” and “networks” are used synonymously; in the other words, they only differ by minor nuances of definition. The aspects described by the authors of the publication and the service offers presented, which are very much oriented to practical needs, are suited for implementation in both clusters and networks. In the following, we will therefore not explicitly refer to clusters and networks, but are generally concerned with service offers able to be established in regional corporate research associations.
products and processes, which in the last analysis also leads to higher competitiveness and increased productivity.

Clusters and networks are basically distinguished by a large number of players and above all by a great diversity of players, which are favourable conditions for dense communication networks (Brandt/Krätsche/Hahn/Borst 2008), and, in turn, trigger off learning processes and learning effects. The sole existence of players would not trigger innovation developments, as those are always based on feedback processes and

Chart 3: “Diamond model”

Source: Institute of Innovation and Technology (IIT) based on the model of Michael Porter (1990)
require intensive relations of integration, which, however, can also be built specifically by a network/cluster management (see “Communication structure and exchange of experience concept” of CFK-Valley Stade, chapter 5.5.1). Moreover, networks and clusters are characterized by a “pool of resources” regarding highly qualified manpower, by access to different sales channels and sub-contracting markets and are usually endowed with a good communication transport and traffic infrastructure.

The collective, goal-oriented cooperation between highly different groups of players is capable of generating innovations with a specifically high value-added potential even more promptly and effectively. The rapid transfer of technology and products within the various levels of the value creation chain leads to an enormous competitive edge on the national and international economic market.

2.1.1 Advantages of cluster and network cooperations

The success of many business enterprises is not only based on their own well-developed strengths and strategic potentials. In the face of factors such as the development of technological innovations at increasingly shorter intervals, the ever-greater complexity of products, services and processes, the continued adaptation to changed general economic conditions, etc. individual strengths and achievements by different players are often being combined to maximize strengths.

By acting jointly, it is possible to rationalize, apart from other aspects, above all internal processes in companies and institutions, make use of synergies between the partners involved, pool resources, share and reduce risks and generate additional profits by adopting a different approach to competitors. In addition to that, by cooperating with each other, the following advantages can be achieved in terms of personnel and business management (Meier zu Köcker/Buhl 2008):

Advantages in terms of personnel:

- Bundling of individual specializations, i.e. of the relevant strengths of the players involved, enabling each of them to concentrate on their specific competencies
- Acquisition and addition of complementary competencies and resources (offsetting a lack of capacities that are not available or cannot be used up)
- Exploitation of existing capacities
- Building a know-how pool
- Reducing insecurities (exchange of experience)
- Improving the state of information
- Emergence of new qualification profiles and, as a result, development of differentiating features
- Learning advantages – mutual use of know-how and resources and increased know-how through participation in the specializations of members
- Support for the partners involved, usually through a network/cluster management that offers a variety of services to relieve personnel from superordinate tasks, or also offers standard solutions, thereby generating an additional value for the players involved

Advantages in terms of business management:

- Increasing productivity by facilitating access to production factors, including highly specialized personnel, the rapid dissemination of superior technologies and forms of organization and comparability with players within one network and/or cluster (in case of regional concentration)
- Commercialization is facilitated through joint sales channels, transparent markets or comparatively low costs of market entry (homogeneous profit sharing for the partners)
- Using sales channels of the partners concerned and thereby augmenting own sales network
- Decreasing personnel costs through mobility of personnel within the network (particularly R & D personnel)
- Strengthening and improving market position
- Opening up new sales markets and winning new customers
Reducing production times

Enlarging the range of products offered/production and possibility of offering complete system solutions and processes

Lowering development and manufacturing costs

Business models geared to benefit throughout and win-win strategies.

Besides the individual advantages for the employees resulting from increased personal competence on the one hand and for the companies and institutions concerned and, on the other hand, the benefit for the companies and institutions involved in terms of business management and personnel, networks and clusters are lending regions a profile in the national and international competition between locations by enhancing the capabilities of the region, enabling it to develop an active policy of local business promotion and settlement (Meier zu Köcker/Buhl 2008).

2.1.2 Challenges of cluster and network cooperations

In clusters and primarily in initiating and establishing network structures, players and/or initiators are confronted with numerous challenges. Major challenges are, on the one hand, searching for and finding appropriate partners unless they belong to a nexus of relationships that has evolved over the time, and, on the other hand, developing relations of cooperation which suit that purpose.

Apart from building relations of cooperation, the development of mutual structures of trust is an equally big challenge, because when different companies and institutions interact, independent systems meet with their own rules, working methods and structures that are made part of network and cluster processes. Moreover, it is necessary to coordinate action within cooperation associations with all partners in certain part-segments, as a result of which the sole decision-making monopoly is impaired. As there exists a bigger group of players then, coordinated decision-making mechanisms have to be introduced and observed, which, however may slow down procedures of coordination. Further challenges (possible limitations of networks for the individual partner) would be

- no sole use of patents of the newly developed product and process innovations
- exposure of one’s own know-how if competitors are given free access
- no sole use of profits
- partly longer process times as a result of comprehensive coordination efforts by the players involved
- frequently additional tasks that often have to be executed in parallel to the normal day-to-day business (i.e. the available working time for network tasks and the associated costs must relate profitably to the benefit resulting from the network activity).

Nevertheless, considering the possible disadvantages and/or challenges of cooperation in networks and clusters, especially concerning the exclusive use of innovations and profits, one should also consider if these would have arisen at all without network activities with the associated partners.

2.2 SMEs – greater success through cluster and network commitment?

In the Federal Republic of Germany 200,000 small and medium-sized enterprises (SME) from the industrial and service sector are launching new products and processes on the market every year. Of these SMEs, about 35,000 enterprises are regularly active in the field of research and development. These companies thus have an immense importance for the national innovation dynamics and competitiveness of Germany on the international technology market. However, it appears that SMEs tend to be less "innovative" than bigger enterprises since innovation activity only increases as enterprises become bigger (Kirner/Som/Dreher/Wiesenmaier 2006). Compared with bigger enterprises, small and medium-sized companies are less endowed with different kinds of resources. This applies, among other things, to their capitalization, the range of qualifications and competencies available or their national and international interlinking. Additionally, the process of innovation of SMEs differs enormously from the big companies doing systematic research work.
Generally, SMEs only have a relatively low research budget and innovation products or processes are based less on systematic research work than on constructive development work, product variations or organizational changes. Moreover, in many SMEs innovative activities mainly result from daily processes of work and production (Brandt/Krätke/Hahn/Borst 2008). This may be explained, among other things, by a complete lack of research and development personnel or limited financial resources allowing them to employ personnel mostly or exclusively for research and development activities.

In contrast, SMEs exhibit numerous advantages that might foster innovations if specific use is made of them. As far as SMEs are concerned, decision-making channels are typically shorter and less bureaucratic, they are frequently closer to the market and to customers and are mostly more flexible than large-scale enterprises (Kirner/Som/Dreher/Wiesenmaier 2006), because their structures are usually less diversified.

However, at the same time the whole process of innovation is complex in several ways, ranging from the idea for new products, techniques and organizational solutions via research and development and manufacturing to market introduction and broad market penetration. In addition to the complexity of the innovation process, its character has also changed in recent years. That means, innovation cycles are considerably faster today and innovations per se are much more comprehensive and often go beyond the boundary of disciplines and subjects, as a result of which they are often of a systemic type.

In view of all these factors, special efforts need to be made for SMEs to implement innovations nonetheless. In this connection cooperations will become even more important for SMEs to maintain the interdisciplinarity of research and development and the systemic character of innovations. In many places regional networks have shown to be meaningful and effective institutionalized structures of cooperation. Analyses of the various institutions participating in networks have proven that small and medium-sized enterprises are by far the largest group of players in the group as a whole.

In the framework of networks, cooperations ideally originate between equal, competent partners which jointly have high expectations for benefits and which within the (project-related) cooperation have no reservations concerning service, information and know-how. In networks cooperative elements (intensive cooperation along the value creation chain) can be efficiently connected with hierarchical aspects (organizational integration into an overall regional system) and market components (customer relations, access to further sales channels).

For SMEs the chances of an affiliation with networks on the one hand lie in a further concentration on their own strengths (specializations) and, on the other hand, in the specific form of cooperation for the development of innovative products and processes. That means that SMEs can concentrate on their core business within networks, optimizing their own products or services while they can simultaneously participate in system solutions and expand their limited resources following a successful market entry with innovative products. This also enables them to increase their capacity for action generally as an individual company.

The advantages of cooperation with other players (see chapter 2.1.1) are in particular the improved access to specialized, otherwise inaccessible, know-how, the combination of complementary competencies that perfectly match, the sharing of innovation risks and the improvement of the resource situation. Network cooperations thus help reduce the risks and (high) R&D costs necessarily brought about by innovation processes, by sharing them among the players involved. This high potential for lowering costs makes it easier for SMEs to allocate the needed financial and human resources. With innovative products the cooperation association can also address totally new target markets. The network in itself, but above all the individual enterprises, can thus enormously increase their degree of familiarity and are associated with specific competencies and a certain range of products. This can also result in larger sales markets for the core products of the SMEs concerned.

Generally, cooperation networks accelerate the commitment of the respective players to renew their products and services and thus greatly improve the SMEs’ innovative capability.
3. Importance of network services for the success of networks

Jörg Sydow und Rainer Zeichhardt

The development of networks and clusters is a concern of many players from economics, science and politics. In this process, there is an increasing recognition of the role played by network services. Regional clusters that really deserve to be named as such are not only characterized by the regional agglomeration of companies, research and educational establishments as well as state agencies, but also by close cooperation between these organizations. In consequence of this cooperation, “networks in clusters” then emerge (Sydow/Lerch 2007) – and the development of such networks or networks in clusters can be greatly influenced by customized network services.

3.1 What are network services?
A first clarification of definition

A definition of network services is of key importance, as we do not have here a modern label for management instruments already known in any way, but the designation of specific services capable of promoting the development of networks and clusters and, first of all, of networks in clusters. The examples presented in chapter 5 impressively show that such services can be found in network and cluster practice in great numbers and in many forms. If one looks at network and cluster research however, it is clear that various management methods and diverse management instruments are discussed from different angles and in consideration of the contribution they make to network development (cf. e.g. Sydow 2006 p. 406 and following pages) while the subject of network services and/or services intended for networks – in stark contrast to the subject of the provision of services by networks (cf. Bruhn/Stauss 2003) – has nevertheless not yet been discussed explicitly.

Network services and/or services intended for networks and clusters are a specific instrument of network management and, to be more precise, a more or less formalized procedure, the application of which makes possible the continuity of management practices as well as a reflexive network and cluster development (cf. Sydow 2006, p. 419 and more in detail in chapter 3.3.2). This initially rather abstract definition can be made more specific on the basis of the practical examples presented in chapter 5. Thus an overall view of the network services described there in detail makes clear that these different kinds and forms of services touch on the most different issues and problems of everyday network activity. They are mostly developed by one network partner’s or several network partners’ own initiative, are subsequently authorized by Management or the Office and are offered to all network members with the aim of generating added value for the network or cluster players. This added value can, for example, provide a basis for intensifying and/or stabilizing the interaction between the network players, reducing the time spent by members and/or financial cost through high-quality standard solutions, and/or guarantee a concentration of members on their core activities.

Taking the practical examples as a basis, it is also possible to work out further specific features of network services: The services are mostly based on a clearly formulated strategy that is geared to certain target groups and integrated in an overall conception; they are in some way of binding character and are characterized by sustainability and capability for development in view of their authorization by the network management (e.g. office). That means, network services are not only temporary offers, but offers conceived for the long run. Moreover, they are ideally evaluated in view of their efficiency and effectiveness and modified both with regard to their internal and potential cross-network application.

In order to avoid a non-binding and too broad labelling, we will, in the following, only speak of network service if services for networks and clusters are characterized by the above specified characteristics. Nonetheless it is possible that any collective activity can develop into a network service. Thus a “cooperative sourcing” (Eßig 1999) per se cannot be called network service to begin with. If, however, the idea of a joint procurement by the office is authorized and made available as an offer to the players of the whole network or cluster, this can develop into a network service.

3.2 Range of possibilities of network services

The range of possibilities offered by network services is made patent by the practical examples presented in chapter 5. These examples show that network service cannot only be differentiated content-wise but also organization-wise.
3.2.1. Classification of network services content-wise

The thematic orientation of network services is diverse and can be systematized on the basis of various criteria: There are services related to individual management functions (e.g. employment of personnel) or that have a cross-sectional function (e.g. comprehensive package solutions). Network services can be intangible/virtual (e.g. provision of electronic data banks and standard software) or rather have a material/physical character (e.g. provision of premises, test sites and transport fleets). There are service offers that support the core business (e.g. project managements) or comprise general additional services (e.g. assumption of public relations). What is more, network services can be differentiated on the basis of different network levels: There are service offers for persons (e.g. basic and further training programmes) and network organizations (e.g. funding of innovations and start-ups), just as there are offers for the overall network and cluster (e.g. network marketing, development of strategies of internationalization, search for and establishment of contact with international cooperation partners). Furthermore, network services can be designed both to support cooperation between persons (e.g. exchange of experience and building of inter-personal networks within the framework of meetings of working groups) and to improve the quality of inter-organizational relations within the network (e.g. through communication platforms and infrastructure) and across networks (e.g. through technical fairs or launching of cluster alliances). Table 2 sums up the whole range of the network services presented in chapter 5.

3.2.2 Classification of network services organization-wise

Not only the content but also the process and structure of network services can be diversified: It is basically possible to both create network services intentionally, i.e. without goal and plan. In the first case, services are explicitly offered by network management and formally anchored in the network and/or cluster structure. In contrast to it, network services can also rather originate emergently in day-to-day network activity, e.g. when network players correctively counteract the problems identified by them incrementally and, possibly, only informally in the first place through separate service initiatives, so that, as a result, network services originate from it as described above.

The process and structure of network services can moreover be differentiated in accordance with their internal or external orientation and thereby place them into the continuum of market and hierarchy that is popular in network research: services for networks can also be related to the market through the price mechanism or through contracts with external service providers. An example would be the involvement of external coaches or network consultants (cf. Sydow/Manning 2006). Instead of a market solution, the development and implementation of network services can also occur within the network, where both rather centralized and decentralized solutions are possible. In the first case, network services are offered and coordinated by local enterprises or by the office of the network. In the case of decentralized solutions however, network services, having been authorized by the office, are implemented by individual network members (also those on the periphery if need be) or in the group itself. Another option is the external and decentralized form of organization of network services, as services for networks can, in principle, always be obtained through service networks (cf. Bruhn/Stauss 2003) or consulting networks (cf. Manning 2006) as well.
Table 2: Range of network services content-wise

<table>
<thead>
<tr>
<th>Service category</th>
<th>Examples</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel services</strong> (marketing of personnel, recruiting of personnel)</td>
<td>Personnel service concept (“One application – 60 recipients” of car e.V. Aachen)</td>
<td>5.1.1</td>
</tr>
<tr>
<td>Tomtom service concept “Sensorics skilled personnel pool” of the Strategische Partnerschaft Sensorik e. V.</td>
<td>Personnel service concept “Sensorics skilled personnel pool” of the Strategische Partnerschaft Sensorik e. V.</td>
<td>5.1.2</td>
</tr>
<tr>
<td><strong>Basic and further training</strong> (relating to the promotion of young talent and to technical competences and key qualifications)</td>
<td>Young talent work concept “Bergischer Bildungspreis Automotive” of the Automotive Economic Region of the Bergisch Triangle</td>
<td>5.2.1</td>
</tr>
<tr>
<td><strong>Funding innovations and start-ups</strong> (provision of venture capital, sponsorships, patent lawyers, infrastructures, management seminars, etc.)</td>
<td>Technology and innovation concept “VDC Demo and Innovation Centre” of Virtual Dimension Center Fellbach w.V.</td>
<td>5.3.1</td>
</tr>
<tr>
<td><strong>Public relations</strong> (assumption of public relations by networks members; development of market analyses, financing instruments, search for national and international partners for cooperation)</td>
<td>Business consulting concept “Coach &amp; Connect” of Baden-Württemberg: Connected e.V.</td>
<td>5.3.2</td>
</tr>
<tr>
<td><strong>Communication and exchange of experience</strong> (collection and processing of information, organizing meetings of working groups, provision of infrastructure such as premises, laboratory equipment, test-sites and transport fleets, all the way to virtual IT platforms and data banks)</td>
<td>Communication structure and exchange of experience concept of the BioRegioN-Regional Initiative Life Sciences of Lower Saxony</td>
<td>5.4.1</td>
</tr>
<tr>
<td>Communication and exchange of experience concept of the BioPark Regensburg GmbH</td>
<td>Communication and exchange of experience concept of the BioPark Regensburg GmbH</td>
<td>5.5.1</td>
</tr>
<tr>
<td>Specialized collaboration concept of NEMO-VisQuaNet</td>
<td>Specialized collaboration concept of NEMO-VisQuaNet</td>
<td>5.5.2</td>
</tr>
<tr>
<td>Chapter 5.1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapter 5.1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapter 5.2.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapter 5.2.2</td>
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<tr>
<td>Chapter 5.2.3</td>
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<td>Chapter 5.3.1</td>
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<td>Chapter 5.3.2</td>
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<td>Chapter 5.4.1</td>
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<td>Chapter 5.5.1</td>
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<tr>
<td>Chapter 5.5.2</td>
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<tr>
<td>Chapter 5.5.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summing up, we can say that network services can expediently be classified organizationally on the basis of the three dimensions intentionality/emergence, internal/external orientation and centrality/decentrality (cf. chart 4), where the services described in chapter 5 primarily constitute network-internal and central solutions.

3.3 Why are network services important?

As the practical examples in chapter 5 impressively show, network services are undoubtedly relevant empirically, and it must be supposed that most of the networks belonging to “The Kompetenznetze Deutschland Initiative” (www.kompetenznetze.de) offer network services at least to some extent and that the network members more or less avail themselves of those services. We are thinking, for example, of the establishment of contacts with a business consultant by the offices popular with the competence networks. In the following, we will describe general chances and risks of network services and discuss the significance of network services for network management and network development.

3.3.1 Chances and risks of network services

Network services hold many chances and opportunities, but in a few cases there are also risks and limits. The latter need to be considered while the services are being established, but must also be fathomed out again and again within the framework of network and cluster management - or more precisely, of their evaluation (see chapter 4.3).

Chances of network services

From the viewpoint of business management, arguments relating to cost and income are of particular interest in judging chances and risks of network services. Because the various service offers are aimed at facilitating daily network activity through specific support services (cf. Table 2.) so that members can concentrate on their core activities, network service hold potential for saving time and decreasing coordination costs. Besides, network services can contribute to improving the quality of relations of cooperation, which is quite evident from all the service offers facilitating and encouraging the interaction of network players by providing them with a certain framework (e.g. physical and virtual communication platforms) (c.f. the examples of VDC, CFK-Valley, Automotive Bergisches Stätedreieck). If services aim to enable members of the network to jointly use high-quality standard solutions or to have access to common data banks (see example of NEMO-VisQuaNet), they can also generate considerable synergy effects.
Another chance shows itself when network services are the result of joint network learning. This is particularly evident in the process of an emergent development of network services when peripheral players, through their own initiative, recognize for example problems in their daily network activity and attempt to remedy them through service offers, which are then taken up by the office and are authorized and formalized as network services. If network services are developed on a basis of participation, it might simultaneously become possible to increase their acceptance by the players. Apart from that, network services can also support network learning, for example, if they help compile specific know-how, pooling in data banks, processing and providing it to network members (see example of NEMO/VisQuaNet).

In this place mention should be made of the service phenomenon: As services as described above, in contrast to material services, are predominantly characterized by intangibility and are thus usually not capable of being judged before they are used, special importance must be attached to the phenomenon of trust (cf. e.g. Engelhardt et al. 1993; Meffert/Bruhn 2006, p. 28 and following pages). A specific chance of network services could reside in enhancing the “soft” phenomenon of trust. Network services are therefore, on the one hand, a matter of trust, but at the same time the use of internal network services can also create trust in the network and even get a spiral of trust started (cf. Möllering 2006). It is thus possible that services offered by members inside the network are rather perceived as worthy of trust in contrast to external offers by unknown service providers, and that simultaneously, when use is made of internal services, trust in the network is shown, giving it a consistent basis.

In the last analysis, it is also possible that services can also be offered across networks as well if used successfully within the network, thereby opening up (another) source of income for the network. An innovative professionalized service concept could thus enlarge the portfolio of offers by a network and even develop, in consequence, into an additional core competence of the network (cf. Duschek 1998).

Summing up, we can note that network services offer good opportunities that should not be neglected, both internally in view of a stabilization or even achievement of a higher development level of the network (cf. in detail chapter 3.3.2) and externally if network services help to increase the competitiveness of the network towards other organizations or networks in the respective branch.

<table>
<thead>
<tr>
<th>Emergent</th>
<th>Intentional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network-internal</td>
<td>Network-internal</td>
</tr>
<tr>
<td>Network services through Office or focal enterprise</td>
<td>Network services through peripheral players in the group</td>
</tr>
<tr>
<td>Network services through service enterprise (e.g. consulting company)</td>
<td>Network services through service networks</td>
</tr>
</tbody>
</table>

Chart 4: Organization range of network services
Risks of network services

However, network services do not only provide chances, but – just like networks and clusters themselves (cf. e.g. Sydow 2006, p. 401 and following pages) – also risks. General risks can result from the fact, for example, that services by global network services aimed at individual organizations become superfluous or (quasi) externalized, which could lead to restructurings or even redundancies in individual network organizations.

There is another risk potential if network services are not accepted by members. This would be the case, for example, when the service is offered at the initiative of the office, but members see no necessity for it and do not (want to) relate to it in their activity within the network. Here the characteristic of a missing formal hierarchical power basis in networks and clusters becomes evident, pointing to the necessity that in such a context successful guidance and influencing must take different forms (cf. Sydow/Zeichhardt 2008).

Reversely, we should also think of shifts in power and internal dependencies through network services, for example if access to central resources (e.g. selection and distribution of qualified personnel) is exclusively controlled via service providers. This could allow players offering services (either the office or network players on the periphery) to strengthen and possibly exploit their position in the network.

In addition to these general risks, risks are always imaginable in dependence on the service provided. The original advantages of a network service would be counteracted if, for example, a pool of skilled personnel were abused by members for headhunting inside the network instead of optimizing recruitment of personnel and if, moreover, know-how were cannibalized within the network.

In the last analysis, cross-network transferability of network services has also certain limits. This does not only lead to the fundamental question to what extent service solutions (as e.g. Virtual Reality services by VDC) that are tailored to certain networks may be offered outside the respective network, but if those are not to be offered externally at all since the added value of many services resides in their exclusiveness for its members.

In résumé it becomes evident that networks services also have some risks apart from various advantages (cf. Table 3). Although these predominantly “relational risks” (Das/Teng 1996) cannot be prevented, an adequate network and cluster management can at least reduce them. This shows that it is of special importance to have a network management that makes use of the opportunities provided by network services, but also limits their risks.
After describing basic advantages and disadvantages of network services, the importance of such services for network management as well as for network/cluster development will be discussed in the next section. In the following, we will therefore neither speak about management of network services (this is the subject of chapter 5, where pertinent recommendations are presented) nor primarily about network services for network management as an institution (such as making use of an advisory service for the focal company or office). The following statements are rather focused on network management as a function and on the question as to how management functions can be supported by network services.

### Table 3: Chances and risks of network services

<table>
<thead>
<tr>
<th>Chances</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Saving time and reducing coordination costs</td>
<td>▶ Restructuring and possibly redundancy through (quasi-)externalization of services originally related to individual organizations</td>
</tr>
<tr>
<td>▶ Improving the quality of relations of cooperation</td>
<td>▶ Shifts in power and dependencies if there is access to central resources via services</td>
</tr>
<tr>
<td>▶ Synergy effects</td>
<td>▶ Possibly lack of acceptance in case of centralized offer by the focal organization or the office</td>
</tr>
<tr>
<td>▶ Emergently developed network services as a result of network learning; network services for the support of network learning</td>
<td>▶ Specific risks depending on the network</td>
</tr>
<tr>
<td>▶ Increasing and continuity of trust in the network through use of network services</td>
<td>▶ Limits of a network-external transferability of established services in the network on the market</td>
</tr>
<tr>
<td>▶ Enhancing acceptance through emergently developed services by players located on the periphery</td>
<td>▶ Restructuring and possibly redundancy through (quasi-)externalization of services originally related to individual organizations</td>
</tr>
<tr>
<td>▶ Network services as an additional cross-network offer or even core competence</td>
<td>▶ Shifts in power and dependencies if there is access to central resources via services</td>
</tr>
<tr>
<td>▶ Stabilizing interaction within the network and making possible a high development level</td>
<td>▶ Possibly lack of acceptance in case of centralized offer by the focal organization or the office</td>
</tr>
</tbody>
</table>

#### 3.3.2 Network services as an instrument of network management and of network/cluster development

The significance of network services for network management and network development can primarily be discussed within the framework informed by structural theory (cf. Giddens 1984; Sydow 2001; Windeler 2001). Such a perspective first draws the attention to the fact that network management – although predominantly intentional and reflexive – invariably has to take into account unintended consequences, not least on account of the fact that it occurs under not easily assessable conditions. Moreover, it becomes evident that network management and network/cluster development relate to each other recursively, i.e. reciprocally. This means that network management has an impact on the development of a network while the level of development of the network concerned defines specific possibilities and limits of network management (cf. particularly Sydow 2006, p. 421 and follo-
wing pages). As an example, a “higher” development level of the network can be achieved by adequate network management, thereby giving network management (for example as a result of an increased level of trust within the network or cluster) a greater scope of possibilities in future than in the event of a less adequate, less confidence-building network management.

The application of network services, notably in interaction with other instruments of network management, does contribute to a continuity of management practices, which again (as recurring actions) help evolve the management functions of inter-organizational networks. Network research mainly distinguishes between the following four key functions of network management (cf. Sydow 2006, p. 406 and following pages):

- **Selection function** (Who and what is to be integrated and/or to be made a permanent part of the network?)

- **Regulation function** (In what way and in what respect is the fulfilment of tasks coordinated mutually?)

- **Allocation function** (How are the tasks, resources and responsibilities to be shared within the network?)

- **Evaluation function** (How can services [costs and benefits] be determined within the network?)

Network services can be explicitly geared to the supporting of some of these management functions or they can act in a cross-sectional function. The interaction of network services, network management and network development is depicted in Chart 5.

This so far rather abstract description can be illustrated on the basis of the four functions of network management.

**Network services for the support of the selection function**

Network services focused on the selection function of network and/or cluster management can take a great variety of forms. Services can, on the one hand, be aimed at the selection of entire partner organizations, for example if the latter support the network in its strategic orientation and establishment of contacts with international cooperation partners, or prepare the framework for the establishment of cooperation with potential regional partners through moderated events or the organization of technical fairs (see the examples of bwcon and Biopark Regensburg GmbH).

On the other hand, services can also be aimed at the selection of personnel, for example by setting up pools of skilled labour (see examples of Regensburg, car e.V.) or creating regular events and meetings to recruit young talent (see Summer School of IVAM e.V.). But this includes not only the selection of personnel (e.g. of “boundary spanners”, i.e. individuals acting on the boundaries of network organizations), but also the specific basic and further training of personnel within the network and/or cluster, regarding both technical competences and key qualifications (see example of Materials Innovation Network of Bavaria).

**Network services for the support of the regulation function**

Network services can equally aim to coordinate the settlement of tasks within the network. This includes, for example, setting up inter-organizational service committees such as the “Automotive Intra-company Social” in the case of “Automotive Bergisch Municipal Triangle” or an inter-company project management. The regulatory function can likewise be supported through services in the form of implemented inter-organizational information systems, data banks and IT communication platforms (see examples of NEMO-VisQuaNet, CFK-Valley). In addition to the practical examples documented in Chapter 5, diverse other ideas are conceivable for network services: Service offers can consist in working out coordination procedures and settlements of conflicts, in institutionalizing arbitration committees within the network and in offering professional conflict management by moderators and mediators. Furthermore, legal experts may provide support in working out contracts, which promises to result in added value for cooperation relations with international partners and in taking into account specific legal framework conditions. Lastly, network services can also be instrumental in developing structures of gratification and incentive systems as, for example, by promoting a cluster innovation prize or carrying out network-internal contests on various subjects.
Network services for the support of the allocation function

The distribution of resources, tasks and competences within the network and/or cluster can likewise be made through network services. We are thinking of the standardization of processes of purposeful recruitment of personnel from the pool of skilled labour previously selected, where quality can be assured through network-specific certifications (see examples of Sensorik Regensburg, car e.V., Materials Innovation Network of Bavaria). In addition, the allocation function includes services which support the generation, storage and distribution of know-how within the network, whether in the form of scientific collections of materials, data banks and forums (see example of NEMO-VisQuaNet) or by integrating network players as content providers (see example of BioRegioN). If relevant network services are offered by the office, it is therefore also possible to give continuity to their function of network coordination.

Network services for the evaluation function

An evaluation or assessment of networks and clusters has so far rarely been done. It is not astonishing therefore that in Chapter 5 no practical examples of network services supporting the evaluation function can be found. Nonetheless, service offers for the support of the evaluation function are also conceivable. In regards of an evaluation of networks and clusters on several levels, services can be aligned differently. A person-oriented evaluation can be done e.g. by management coaches and trainers rating the interpersonal networks (i.e. the quantity and quality of personal contacts spanning organizational boundaries) of “boundary spanners” or of their “soft skills” that are indispensable for exercising this role. Evaluation services on the network level can comprise the development of quantitative and qualitative rating methods, for example network-related cost-benefit analyses or the regular statistical evaluation of data (whether economic indices or information gained from questioning members) by evaluation or controlling specialists, which could simultaneously allow network-internal benchmarking. It is furthermore possible to offer evaluation services on the cluster level. A case in point would be the use of network analysis software for the evaluation of cluster-wide relational data and to visually clarify and make comparable the nexus of relationships between all relevant players. Further services could be provided by market and regional research workers and made available by the office if they enhance the image of the cluster in the population and its attraction for the region.

As for a reflexive network and cluster development an evaluation invariably entails considerable implications, an evaluation basically occurs in the context of diverse interests and power potentials. Against this background, it could be an advantage if evaluation services are provided by external service providers, which possibly could do more justice to the postulate of neutrality than internal providers could do, so that micro-political action is limited. In this connection, one could also think of a kind of “meta-service” through which an (external) evaluation of the (internal) network evaluation is done.

Network service as a cross-sectional function

Apart from network services focused primarily on individual network functions, service offers can simultaneously support several functions or act in a cross-sectional function. This includes above all standard services like comprehensive activities of network marketing and public relations (see example of BioRegioN) or service package solutions, which at the same time provide consistent offers for different functions (e.g. selection and allocation of personnel in the example of Sensorik Regensburg).

Summing up we can note that network services, by supporting the functions of the management of inter-organizational networks and solving (mostly from inside the network) problems of daily network activity, may contribute to stabilizing or even developing a network and thus a cluster. Finally, we would, however, like to point out that the network service indeed constitutes an important, although only a small, part of the whole network management. Bad network management can hardly be corrected through an innovative network service, which underlines the significance of a precise anchoring of network services in the overall strategy of network services.
Chart 5: Relationship between network services, network management and network development (following the model of Sydow 2001, p. 88)
While network services have primarily been discussed analytically in the previous chapter, in this section recommendations will be given for a meaningful conception and implementation of network services on the basis of the above remarks on classification content- and organization-wise, as well as on potential chances and risks. This section is thus concerned with the management of network services following the idea of a phase strategy model: ranging from the development and selection via the authorization and implementation, through to the evaluation of network services. The basis for doing this can be the strategies presented in development-oriented (network) approaches (cf. in this connection the concept of transnational development by Chrisholm 1998 and the collaborative development approach by Huxham/Vangen 2005), which represent the early methodologies of a (more) reflexive network and/or cluster development and which can indeed be transferred in a modified form to the subject of services.

4.1 Conception and development of network services

The conception of network services first of all presupposes an awareness of the broad range of possibilities offered by network services. A need for services can basically be seen on any network level and potential improvements of daily network activity can merit investigation everywhere. Even innovative network services are mostly less revolutionary ideas, but rather constitute special additional services which can contribute to added value for all players and which may have been previously overlooked. A first insight into the diverse possibilities of network services can be given by an exchange of experience on panels, within the framework of information events and international cluster meetings or by the relevant literature (e.g. reading the practical cases presented in chapter 5).

Moreover, in order to be able to conceive network services, tolerance in principle towards emergent development processes is always helpful. Because innovative service concepts can also originate from unplanned action, and even more so on the periphery of the network where deficits and weak points of initiative inside the network are exposed and remedied, there is a need for a certain “sensor” for process improvements as well as for ideas produced by all network players in a decentralized and, possibly, informal way. A first access could be based, for example, on monitoring through data banks of ideas or (virtual) “blackboards” for problems and solutions. If there are first signs indicating that service ideas are generated within the network or cluster, surveys, workshops or professional large groups, moderations can be conducted with peripheral players (thus using the “strength of weak ties”) in order to integrate and formalize them.

Apart from that, the service initiative of network players can also be accelerated deliberately, for example through competitions of ideas or training of the “service look” as well as by supporting a general network service culture. Likewise, a kind of “meta-service” may also help generate network services. This is illustrated by the practical example of Automotive Bergisch Municipal Triangle, the central element of which is the “Automotive Intra-Company Social” held regularly and on various subjects, which explicitly represents a platform for initiating new services.

While these approaches aim to provide a framework for the generation of these service ideas by peripheral network players, the network management, the focal enterprise or the office is also able to directly develop a network service for a need derived from the overall strategy or for the support of an individual management function and its development, or to entrust external service providers with its development. A service conception could rather take an entirely new form, as for example through creativity techniques or through the development of feasibility studies. Another sensible approach would, however, also relate to inspiration from well-known service concepts, the imitation of approaches established in other networks and clusters or a transfer of successful organization-related services to the inter-organizational context of networks and/or clusters.

In this place, the fundamental question arises under what circumstances network services should rather be conceived internally or externally. A development of network services from inside the network primarily seems to promise success if services have to be tuned to specific network needs or if the service provider needs to understand and have a command of the language of the network or cluster. On the other hand, development through commission work or the obtaining of external offers makes sense if general standard services are needed (cf., with reference to business consulting, Kehrer/Schade 1995). A market
solution can moreover be expedient in case services are only to be obtained temporarily so that specific investments can be avoided. Since network services are basically matters of experience or even trust, it is always necessary to scrutinize market offers carefully, to pay attention to the reputation of providers (be it individual service providers or service networks) and to compare them with potential internal service ideas, which possibly are better suited because they are tailored to needs. Another possibility is a cooperative development of network services by network players and external service providers. Whatever form is chosen for the conception of the network service, some minimum of understanding is needed for the possibilities and effects of network services even if standardized services are obtained from outside the network. An intra-network development, which, of course, can be tailored in a much better way to the specific problems in the network and/or cluster, asks for much more even if one can use the services of external service providers, for example network consultants (cf. Sydow/Manning 2006) in intra-network development.

4.2 Authorization and implementation of network services

If specific network service concepts are available, they need to be selected, authorized and implemented. This can be done centrally through the Office, the Board of Management or the Executive Board of the Association, or decentrally, for example by a majority vote within the framework of a general assembly.

Implementing network services is in principle difficult, even more so if conceived centrally. In this way, services introduced and centrally made binding may fail if there is a lack of acceptance for them by network players in their daily practical application. Exercising influence and guidance in networks and clusters cannot rely on a formal hierarchical authority, but must be done in a more subtle way and depends to an even greater extent on convincing people than in hierarchical organizations (cf. Sydow/Zeichhardt 2008). Therefore, in implementing network services it is particularly important to clearly indicate the possibility of participation by later users as well as the communication skills of the key players and the attractiveness and added value of the service. Only when the target group concerned perceives the additional benefit of the service as valuable do potentialities show themselves (cf. Table 3). The added value ideally derives from the offer itself, which again indicates the fundamental importance of a basic innovative orientation content-wise.

Regarding possible introduction strategies, it could thus be helpful to present network services within the framework of workshops and meetings of associations and communicate them to the relevant target groups in the process of internal communication (e.g. through newsletters). Furthermore, incentives could also be provided for implementation, such as a voluntary test phase or the offer to be able to participate in the further development of services by contributing one’s own experiences and wishes.

4.3 Evaluation and implications of network services

For an evaluation of network services that might follow their implementation, at first the question arises what a meaningful yardstick of evaluation is. Network management faces a basic problem of assignment concerning the impact of management instruments or network development, which proves to be even more difficult in relation to the service phenomenon. It is a fact that network services aim to facilitate and support daily network activity, so that the latter ideally have an indirect effect anyway.

A result-oriented evaluation of network services on the basis of economic indices (see example of NEMO-VisQuaNet) is therefore only conditionally meaningful. A differentiated access in turn makes possible a process-oriented evaluation aimed, for example, at perceptions, experiences and the satisfaction of network members concerning the offer of and the way of dealing with network services. In this connection, questions relating to the number of available services, the perceived degree of innovation as well as the consistency and embeddedness in the overall strategy of the network is interesting.

Relevant data in this respect could be obtained on the part of the target group, but also on the part of providers in the form of (online) questionnaires, and could be checked if the chances described in Table 3 (such as time saved, improved quality and quantity of relationship and trust) or rather the risks dominate (such as complicated restructurings, redundancies, dependencies and limitations of autonomy). But relevant goal-oriented intensive talks or group
discussions often constitute an alternative to surveys through questionnaires.

It is possible to organize an evaluation of network services as an independent procedure on the part of the office or of the service provider concerned or to integrate it into an existing evaluation procedure. Conceivable would be an evaluation of network services within the framework of the evaluation function of network management, which is actually a permanent concern (cf. chapter 3.3.2), or in the process of an evaluation on this occasion, which in any case is necessary as a consequence of public funding, complemented by network service-specific items.

Following an evaluation, the important point in the last analysis concerns the implications and/or consequences of action. On this score important decisions have to be taken if network services are to be offered further, need to be modified or to be eliminated. The first could apply if a network service is exclusively perceived as positive, the second is, for example, conceivable if the target group submits constructive proposals for improvement, and the third could be the consequence if network services are not accepted by the relevant player, if the service provider does not offer the service requested or if services are no longer up to date. Instead of eliminating a service completely, it could also be appropriate, if need be, to reduce only its offer to be able to react flexibly in future in case a new need arises. If a network service is, for example, aimed at the recruitment of personnel, this service decreases in importance if there exists a sufficient number of applicants with high qualifications. But instead of eliminating the whole network service in such a case, it could make sense to modify it, to anticipate trends of application (e.g. changes in the number of graduates of relevant courses of study) in order to react promptly if new bottlenecks of personnel occur in the future.

4.4 Résumé: guidelines for network services

The above remarks on the conception of network services can be summed up in the form of striking guidelines. Table 4 presents various guidelines and examples for specific implementation and suitable instruments.

In this place, mention should finally be made of the field of tension inherent in the service phenomenon between a standardization and capability for materialization on the one hand and between a specificity and immateriality on the other hand (cf. e.g. Meffert/Bruhn 2006, p.28 and following pages). In view of it, it is evident that the guidelines for network services presented in Table 4 must not be misunderstood as normative strategies of success. Network services can only be planned conditionally on the drawing board and standardized in a generally valid form. It is rather a matter of adapting basic service ideas to the contractual conditions of the respective network and cluster, thereby tailoring them in the truest sense of the word to specific requirements.

This circumstance can also be explained and illustrated, as we did in chapter 3.3.2, by adopting a network perspective based on structural theory. Accordingly, the conception and implementation of network services are characterized by “reflexive structuration” (Ortmann et al. 1997), i.e., basic innovative service ideas are first taken up by network management and authorized and tested by the respective target group in daily network activity. On the basis of the evaluation, the network services are modified and developed further by the players involved in order to be applied again subsequently in daily network activity. In the sense of structural theory, network services are not only tailor-made ex ante, but this tailoring should be understood as a permanent reflexive process. Successful network services thus are based not on a one-time ad hoc transfer of innovative or best-practice concepts, but on permanent further development adapted to specific circumstances.

Against this background, we would also like to recommend that the following chapter 5 should be read. The network services presented there are less standard solutions transferable to other networks and clusters, but rather provide primarily a well-founded and inspiring survey of the diversity of possible innovative services for networks and clusters.
## Table 4: Guidelines for network services

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Instruments for implementation</th>
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<tbody>
<tr>
<td><strong>1a. Increasing awareness of the broad range of possibilities of network services</strong>, because a need for services can become apparent on any network level and potential improvements of daily network activity are possible everywhere.</td>
<td>Informing all network players about the bases and possibilities of the subject of network services, e.g. within the framework of workshops or of association meetings.</td>
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<td><strong>1b. Emphasizing the “dimension of what is small”, because network services represent (seemingly “small”) additional services which, however, can contribute to a considerable added value through process improvement.</strong></td>
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<tr>
<td><strong>2a. Increasing awareness of emergent decentralized processes and viewing the network/cluster as a whole, because innovative service concepts often develop emergently and informally and can always have their origin in the periphery of the network as well.</strong></td>
<td>Monitoring on the basis of data banks of ideas or (virtual) “blackboards” for problems and solutions, workshops and professional large-group moderations with peripheral players.</td>
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<tr>
<td><strong>2b. Allowing and supporting decentralized personal initiative, because the management can thereby prepare a framework for generating innovative service ideas.</strong></td>
<td>Competitions of ideas, training to get a “service look”, support for a basic network service culture.</td>
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<tr>
<td><strong>3a. “Tailoring” of network services, because network management, the focal enterprise or the office can develop a network service for a need derived from the overall strategy or for the support of the specific management function and can entrust external service providers with its development.</strong></td>
<td>Diagnosis of potentials for improvement, analysis of the actual state (e.g. visual clarification of the quantity and quality of the relationship through network analysis software); Novel service development (e.g. through creativity techniques, innovation research, working out feasibility studies); Derived service development (e.g. inspiration through well-known service concepts, imitation of established approaches by other competence networks, transfer of successful organization-related services to the inter-organizational context).</td>
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### Table 4: Guidelines for network services

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<tr>
<td><strong>3b. Internal or external conception of network services? It depends!</strong></td>
<td><strong>Internal development of network services</strong> when network services are perceived as a matter of trust and have to be coordinated with specific network needs or if the service provider has to understand and have a command of the language of the network/cluster.</td>
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<td></td>
<td><strong>External development of network services</strong> through commissioned work or obtainment of external offers if general services are needed, if services are only to be obtained temporarily or if “neutrality” (e.g. within the framework of the evaluation function) is to be guaranteed. In case of a market solution, the reputation of the provider must be scrutinized carefully and a permanent comparison must be made with potential internal service ideas.</td>
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<tr>
<td><strong>4a. Selecting, authorizing and implementing network services</strong>, because only if this is done, an activity becomes a network service.</td>
<td><strong>Centrally</strong>, by the office, the management board or the association board;</td>
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<td></td>
<td><strong>Decentrally</strong>, e.g. by majority decision within the framework of a general assembly.</td>
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<tr>
<td><strong>4b. Focusing attention primarily on the attractiveness and added value of services in implementing network services</strong>, because the potentialities of network services can only unfold if the respective target group perceives the additional benefit of the service as valuable.</td>
<td><strong>Possible strategies of introduction</strong>: Presenting network services within the framework of events and association meetings, communicating them through newsletters to the relevant target groups, offering incentives for their implementation (e.g. a voluntary test phase or the offer to be able to participate in the further development of the services).</td>
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<tr>
<td><strong>5a. Fixing an appropriate yardstick for the evaluation of network services</strong>, where the problem of assignment of the impact of management instruments or network development particularly on network development presents itself.</td>
<td><strong>Result-oriented evaluation</strong> of network services on the basis of economic indices is only conditionally meaningful, because network services ideally only have an indirect effect;</td>
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<td></td>
<td><strong>Process-oriented evaluation</strong> opens up a differentiated approach, e.g. by making surveys of perceptions, experiences and satisfaction by the target group in its interaction with network services, but also by service providers in the form of (online) questionnaires; checking the number of available services, their consistency and embeddedness in the overall strategy of the network as well as comparison between chances and risks.</td>
</tr>
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</table>
### Guidelines

**5b. Establishing an appropriate evaluation procedure** to prevent an erroneous development in the conception and/or implementation of a network.

### Instruments for implementation

- **Organization of an independent procedure** on the part of the office or of the respective service provider;

- **Integrating the evaluation of network services into an existing evaluation procedure**, e.g. within the framework of the evaluation function of network management or in the process of an evaluation for which public funds are needed.

### 5c. Decisions and consequences of evaluation** so that the results of evaluation also have practical consequences for network and/or cluster development.

- Decisions following the evaluation of network services:
  - **Continuing to offer services** if network services are perceived as exclusively positive by the target group and providers;
  - **Modifying services** if constructive proposals for improvement are advanced by the target group;
  - **Eliminating services** if the target group does not accept network services, if the provider does not offer the desired service or if services are no longer up to date. Note: If need be, they should be rather reduced and used in the sense of a future-oriented monitoring.
5. Categories of network services

Claudia Martina Buhl
and Dr. Gerd Meier zu Köcker

Networks and clusters can be understood as the condensed scientific and technological competence potential of a region in a certain field of innovation. Innovation results can be produced by linking individual strengths, joint R&D projects, pooling products, processes and services built on each other as well as mutual additions to the range of offer, thus generating advantages in competition. However, these advantages do not unfold per se, but only as a consequence of continuous and intensive cooperation as well as by tackling joint tasks.

Besides developing joint innovative products, it is therefore one of the aims of networks and clusters to provide need-oriented structures of cooperation and to make cooperation between members in the innovation business more efficient, a task that is usually assumed by network management. The success of networks thus also depends on the extent to which network management succeeds in supporting the players involved with need-oriented services. In other words, with service offers addressing solutions for questions or fields of problems of central importance to network activity. In doing this, it is crucial for network partners to be able to concentrate on their specific core competences and that the expenditure of time and financial resources by individual approaches is thus reduced.

It is important that services are geared to needs in such a way that they generate high added value for members. We will therefore never find the "catalogue of services" that can be transferred “one to one” to networks. It will rather be crucial to consider first of all the needs and requirements of the members concerned and, in particular, the specific features of the network in the sense of an “optimal tailoring.”

Nevertheless, there are however numerous very good and general services that have been realized in networks and could serve as a model for offers developing and implementing one’s own services.

Good and general network services4 are for example:
- Using a joint transport fleet, especially bigger vehicles and transporters. This might be an option if members do not have to use the relevant vehicles every day.
- Purchasing groups (e.g. for any material) to reduce costs in case of larger quantities etc.
- Provision of premises or laboratory equipment for joint research work
- Setting up of job portals on the internet page of the network or cluster.
- Jointly used and operated Technikum (colleges of technology) to enable particularly small partners to engage in development work using expensive machinery and techniques or costly test runs.
- Organization of network-specific innovation forums, i.e. holding a regular fair where the innovations of members are presented to experts and to the interested public.
- Trend monitoring and trend scouting for affiliated players, for example at (international) fairs. Many players, especially SMEs, are often unable, for financial reasons and on account of the lack of personnel and time, to be represented at all fairs and events relevant for the specific branch. Persons authorized to do so can visit such fairs to provide subsequently, in the form of a report, the information gathered on future trends, developments and products or also potential cooperation partners to those interested.
- Collection of information and preparation of scientific literature
- Organization and carrying out of intra-company socials or trips by entrepreneurs to future target markets, cooperation partners, etc.

4/Note: These services have all been developed or established in networks affiliated to the Kompetenznetze Deutschland initiative.
However service offers do not always have to address members in their entirety, but they can also be conceived and used for individual groups of players. In doing this, it is imperative that a high benefit is connected with network service and, most of all, is generated as a result. Likewise, different service offers can also address various network subjects or build one on the other in a modular form. Basically, this will always be a result of a network and/or management process and thus highly network-specific.

Beyond that, services, apart from supporting members in their needs, also offer a good opportunity to generate additional financial income for the network. In that case, the service offers have to be benefit- and success-oriented so that players see such a high value in them that they are gladly willing to pay for using the service.

In the following, we will show in what thematic context, under which conditions and with which intentions network-specific network services can be developed and implemented, taking as a basis the general, but very practice-oriented service categories personnel service, basic and further training, funding of innovations and start-ups, public relations as well as communication and exchange of experience.

### 5.1 Personnel services

Basic research and application-oriented research and the rapid translation of research results into innovative products and processes in companies are regarded as key factors for the future orientation of branches. In Germany in particular, the world’s export nation number 1, products and processes of innovation will become ever more important to maintain this position.

But the mere development of innovative products and technologies alone is not sufficient to generate sustainable growth, but these rather have to be manufactured as well in Germany. It is therefore especially important that adequately and above all well-trained skilled personnel is available on all levels of the value creation chain. A lack of appropriate personnel has serious implications. As a consequence, development activities are only possible in a limited degree, working processes have to be slowed down or cannot be carried out at all, orders need to be cancelled and research results are not rapidly translated into products ready for the market.

The importance of the lack of skilled personnel is also immense in that particularly enterprises that describe their present economic situation as “good” and “very good” (Hug 2008/ Haufe Study) see their future development extremely impaired. This is even more so the case, because the corporate sectors “research and development”, “manufacturing/production” as well as “marketing and sales” are mostly affected by the lack of skilled personnel, i.e. especially the technology-related sectors necessary for developing and manufacturing innovative products and processes. The reasons for a lack of skilled personnel can be diverse and depend on a great variety of factors, such as, for example, the branch structure, the image and attractiveness of the branch concerned, corporate structures (SMEs that are less familiar are more affected), a lack of international perspectives or locational conditions (among other things, rural regions as a negative locational attribute).

All of these factors as a whole weaken economic growth and might have as a consequence that technology locations that are still highly innovative and competitive are no longer able to keep pace with other national and international locations, which may weaken their strong export position.

Despite these factors, it is all the more important to find suitable personnel to meet significant needs, for which all the classical instruments of personnel recruitment can be used, such as:

- Placing ads in (technical) journals
- Contact with the Labour Agency

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5/Note: According to the Haufe Study, the companies participating in the survey indicate that there are problems with new recruitment mainly in the corporate sectors “manufacturing/production” with 36 per cent, “research and development” with 24 per cent as well as “marketing and sales” with 22 per cent.

6/Note: In October 2007 the Institute of the German Economy in Cologne, acting on behalf of the Federal Ministry of Economics and Technology, made clear that the German national economy had to cope with a loss of value creation totaling some 18,500 million Euros in 2006 alone on account of unoccupied positions of highly qualified professionals.
Network service as element of success

- Placing ads on the corporate home page
- Using (branch-specific) internet job portals
- Personnel consultants
- Job fairs/job exchanges

The more the different channels are combined with each other to recruit personnel, the greater is the degree of success, i.e. the possibilities to choose from suitable applicants. Nevertheless, the whole process of personnel recruitment is, on the one hand, very labour-intensive as a result of aspects such as number and quality of applications as well as length of the application procedure, and, on the other hand, very time-intensive, which is frequently problematic for small and medium-sized enterprises, because this requires too much working capacity in addition to concentration on the core business.

In many sectors new, individual solutions can therefore still be found apart from the classical methods of personnel recruitment. In various networks and clusters specifically, different instruments have been developed by the network and/or cluster management, in case of need jointly with members, taking into account the specific needs and requirements of the companies and institutions involved. In this respect, possible activities that can be assumed by the network and/or cluster management are among others (to name some examples):

- Organizing the whole process of application (from placing ads to substantiated negative replies)
- Coordinating applications entered
- Informing interested candidates (which conditions and requirements the applicant has to fulfil)
- Examining applications and pre-selecting them on the basis of criteria of requirements
- Coaching applicants

The advantages of these need-oriented network and cluster solutions reside in the fact that the groups of players involved are mostly relieved from comprehensive time- and labour-intensive processes of general recruitment, that the selection of possible candidates is reduced and that therefore only applicants matching the recruitment profile are recommended to the respective companies and institutions.

The way in which such network-specific solutions can be designed to support the process of personnel recruitment is illustrated below by the two personnel service concepts “One application – 60 recipients” of the competence center automotive region Aachen/Euregion Maas-Rhein and the “Sensorics skilled personnel pool” of the Strategische Partnerschaft Sensorik e.V., which may be transferred to network and cluster structures in other branches.

5.1.1 Personnel service concept “One application – 60 recipients” of car e.V.

5.1.1.1 Description of the network

The competence center automotive region Aachen/Euregion Maas-Rhein (car e.V.) is an independent competence network of companies and research institutions of the automobile branch. car e.V. is largely financed through contributions by its members and research projects, offering a broad range of services, such as lectures and contacts with supra-regional networks and international projects to its approximately 16 members located in Germany, Belgium and the Netherlands. Since the beginning of 2007, car e.V. has supported its members additionally in the sector of personnel marketing with the campaign “one application – 60 recipients”.

5.1.1.2 Description of the network

The competence center automotive region Aachen/Euregion Maas-Rhein (car e.V.) is an independent competence network of companies and research institutions of the automobile branch. car e.V. is largely financed through contributions by its members and research projects, offering a broad range of services, such as lectures and contacts with supra-regional networks and international projects to its approximately 16 members located in Germany, Belgium and the Netherlands. Since the beginning of 2007, car e.V. has supported its members additionally in the sector of personnel marketing with the campaign “one application – 60 recipients”.

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5.1.1.2 Brief description of the service “One application – 60 recipients”

With “One application – 60 recipients” the network car e. V. has developed a unique inter-company personnel service concept. The service aims to enable members to have access to qualified skilled personnel at a low cost and with minimal expenditure. Applicants thus send an initiative application to car e. V., which passes the application to selected members and establishes contact in case of interest.
5.1.1.3 “One application – 60 recipients”

5.1.1.3.1 Underlying problems

Within the network car e.V. concrete demands related to members are made part of regular bilateral talks between the office and the representatives of the individual members. The wishes identified in this way are analyzed by the office, which develops concrete measures on this basis that are discussed with the executives of the association and the whole membership.

In 2006 the acute shortage of qualified young engineers was a direct challenge for members, as about 70 per cent of them were affected. An analysis by car e.V. showed that although the number of open jobs for engineers in North Rhine-Westphalia had increased by 47 per cent to 4,200 per month, the professional prospects for engineers in the region of Cologne/ Aix-la-Chapelle were rated as being good by only some 4 per cent of students, as against some 25 per cent for Munich and roundabout 15 per cent for Stuttgart.

The untapped local and supra-regional potential opened an opportunity for car e.V. as a regional competence network to support its members through the active marketing of local job possibilities. A detailed survey conducted by car e.V. in 2006 among visitors to the job fair “Bonding” in Aix-la-Chapelle showed a potential of up to 280 engineers per year who might be interested in an activity with the members of the competence network; who, in other words, wished to have a job in small and medium-sized companies of the automobile and/or mechanical engineering branches, and who could imagine Aix-la-Chapelle as a location. The service offered by car e.V. is therefore not exclusively geared to the interests of members, but also constitutes an added value for the technical university graduates of Aix-la-Chapelle (engineers of the universities RWTH and FH), closely acquainting them with an attractive option for a professional career of which they had been little aware.

5.1.1.3.2 Strategic approach and implementation of the service

The service offered since the beginning of 2007 is aimed at establishing contact between employers (primarily members of the association) and qualified job seekers at regional level. This is done in a service package comprising various measures. On the one hand, members can publish their current job offers in a job exchange on the website of car e.V. On the other hand, car e.V. engages in personnel marketing for its whole membership in the region of Aix-la-Chapelle, e.g. through visits to fairs and classical measures of advertising. The focus of the activities is on active marketing by the personnel marketing service under the name of “one application – 60 recipients” at the Aix-la-Chapelle universities and at personnel fairs in the region. car e.V. thereby enables people to have access to the universities, which the majority of the mostly small and medium-size members is unable to achieve with their own resources on account of their lack of size. At the same time the students are offered an attractive and simple chance to submit their applications to highly innovative, but frequently less known, employers of the region.

This is done through an initiative application to car e.V., which is transmitted to selected affiliated companies. The affiliated companies are selected individually on the basis of the interest and competence profile of applicants.
The service is based on the following process:

1. Applicant sends initiative application to car e.V.
2. car e.V.-office transmits application documents to selected members who match the profile of the applicant (collection of several applications in the form of an email sent weekly).
3. Interested members contact car e.V.
4. car e.V. establishes direct contact between applicant and interested company. Interviews are agreed bilaterally.
5. car e.V. gives applicant feedback about interested companies or negative replies; in the case of incomplete or qualitatively insufficient application documents, car e.V. gives the applicant feedback and hints for improving his application before it is distributed.

5.1.3.3 Financing and sustainability of the service
Success is controlled through structured replies from companies and applicants, personal feedback talks with affiliated companies and continuously recorded indicators of success. The replies are used to improve the service regularly and are implemented by the office and the association board. Furthermore, indicators of success are registered; so far some 50 per cent of applicants have been invited for interviews, on average to 2-3 companies each. 15 to 20 per cent of applicants invited to interviews have been employed.

The service “One application – 60 recipients” is offered permanently and is continued as long as the shortage of qualified young personnel makes support for the affiliated companies of car e.V. appear meaningful. The continuous recording of feedback and indicators of success helps to adapt the service regularly to changed requirements and framework conditions, so that a sustainable and also need-oriented offer may be guaranteed in future. A further development is, for example, possible because car e.V. could offer an integrated service model with which the complete application management is assumed if this service is wished by members.

This concept exhibits a great number of advantages for the parties involved over other offers and approaches. Important unique features are little expenditure and low-cost for companies and applicants, a regional focus and a quality assurance by car e.V. Furthermore, the great efficiency of an initiative application through “One application – 60 recipients” should be highly emphasized as the application is directly transmitted to the business management level of the company rather than to the personnel departments. Business managers generally have an optimal strategic overall view of the employment opportunities for interesting applicants even if no concrete jobs are advertised on these specific occasions.

At present the service is exclusively financed from members’ contributions. A commercial opening for external players is possible, however is currently not being offered on strategic grounds, providing a considerable added value to members.

5.1.2 Personnel service concept “Sensorics skilled personnel pool” of Strategische Partnerschaft Sensorik e.V.

5.1.2.1 Presentation of the service
Strategische Partnerschaft Sensorik e.V. (SPS) is a sensorics network with over 60 partners from industry and science. Since 2003 SPS has formed a
cluster platform to link and coach innovative enterprises from the fields of life sciences, environmental technology, automobile engineering, automation, and mechatronics with upstream service providers, public institutions, technical colleges and universities, training centres and consulting firms. Within the framework Bavarian cluster drive the Strategische Partnerschaft Sensorik e.V. was entrusted with the tasks of cluster management for the sector of sensor technology in August 2006. Its aim is to speed up corporate networking, innovation funding and competence training.

### Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>Micro-Nano-Opto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>Southern Germany</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>2006 (within the framework of the Bavarian cluster drive)</td>
</tr>
<tr>
<td>Branches</td>
<td>Sensor technology</td>
</tr>
<tr>
<td>Number of members</td>
<td>38 members, 75 partners (end of 2008)</td>
</tr>
</tbody>
</table>
| Contact                | Strategische Partnerschaft Sensorik e.V.  
                          | Josef-Engert-Strasse 9, 93054 Regensburg  
                          | www.sensorik-bayern.de |

### 5.1.2.2 Brief description of the service “Sensorics skilled personnel pool”

The new network service functions as an agile platform developing into the interface and the bridge between qualified skilled labour and managerial personnel and the network companies. Here the network structure frequently acts as a catalyst in the process of application. Close contacts with cluster members from the university and college sector are used for recruitment. The network of relations with partner companies creates the prerequisites for job placements. The interests of applicants, employers and of Strategische Partnerschaft Sensorik e.V. itself are actively represented by the Sensorics skilled personnel pool.
5.1.2.3 “Sensorics skilled personnel pool”

5.1.2.3.1 Underlying problems

SME members have repeatedly addressed Strategische Partnerschaft Sensorik e.V. in order to support it strongly in the field of job placements for skilled labour and managerial personnel. Acting in the shadow of the global players, the SMEs are often not able to obtain for themselves the personal competences that suit their requirements. Indeed, graduates from the engineering sciences as well, looking for their first employer, frequently orientate themselves on the global players of the branch which greatly appeal to them through more attractive working and payment conditions. At the same time, the economic revival aggravates the struggle for the scarce resource of skilled labour, which confronts both big industrial enterprises and SMEs in the network with increasing problems. To meet this requirement, Strategische Partnerschaft Sensorik e.V. instituted the “Sensorics skilled personnel pool”. Its partners from the universities and colleges had likewise recognized the chance to familiarize their students with the less known or mostly unknown high-tech companies of the sensorics branch in the region through network cooperation in personnel pooling. The clearly articulated need of network members was therefore primarily the basis for deciding to create the network service.

5.1.2.3.2 Strategic approach and implementation

The clearly defined target groups – on the one hand, well over 30 affiliated firms of Strategische Partnerschaft Sensorik e.V. and its close partners and, on the other hand, all qualified applicants – were henceforth able to direct their open job offers and/or their applications to Strategische Partnerschaft Sensorik e.V. and have them included in the pool. In order not to endanger loyalties and relations of trust between the network partners, Strategische Partnerschaft Sensorik e.V. established a clear principle: “There must be no draining of personnel or so-called head hunting among the partners by the Sensorics Skilled Labour Pool”. The affiliated firms along the sensorics value creation chain, especially as a result of geographical proximity, all too frequently find themselves in competitive patterns with identical personnel need structures. Thus, no applicant who has a labour contract with a network company is in principle given access to the Sensorics skilled personnel pool.

Following this first step, an applicant is invited to join in an individual consultation as well as coaching units by Strategische Partnerschaft Sensorik e.V. At that initial stage, methods of optimizing application documents are jointly worked out by the interested parties, the wanted professional orientation is established, and existing potentials and “soft skills” of the applicant are focused. This allows a pre-selection and a concretely coordinated recommendation of applicants for vacancies existing with network members. In addition to that, the individual interview functions as an efficient instrument of quality control.

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### Fact file of network service

<table>
<thead>
<tr>
<th>Service category</th>
<th>Personnel service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group</td>
<td>Network members (internal players) and partners</td>
</tr>
<tr>
<td>Service approach</td>
<td>Aimed at solving the shortage of skilled young personnel, especially engineers and skilled labour groups.</td>
</tr>
<tr>
<td>Transferability to other networks</td>
<td>4 = very good transferability – can be transferred “one to one” to other networks without further developments or adaptations.</td>
</tr>
</tbody>
</table>

---
in order to subsequently admit appropriate applicants to the service pool. Applicants who have been admitted are presented to all network partners in an optimized way and with their respective social profile. The Sensorics skilled personnel pool thereby has recourse to the cluster’s nexus of relationship for applicants, using its own close relations purposefully for establishing contacts and negotiations between applicants and enterprises. For the network companies, the Sensorics skilled personnel pool acts as a catalyst in the process of recruitment – the companies thereby save time and costs. The SME members in particular experience the exclusive Sensorics skilled personnel pool as a service innovation that represents the frequently non-existent human resource department to a large extent. The service has been offered since April 2007 and there are permanently about 10 to 20 current applicants in the Sensorics Skilled Labour Pool. In total, over 100 applicants are already making use of the pool.

5.1.2.3.3 Financing and sustainability of the service

An increasing service demand on the part of network partners and much positive feedback have caused Strategische Partnerschaft Sensorik e.V. to press ahead with the establishment and further development of the Sensorics skilled personnel pool. At present a digitalized, complete placement service is being built on the new homepage of Sensorik, Bavaria. The network service can thereby increase its rapidness, availability and clarity. New standards for application have been created which can condense relevant information of the applicant on one page, allowing companies to compare applicants with each other comfortably and to save time. Furthermore, an in-depth and extensive programme of services has been worked out. In future, subjects like interim management, personnel leasing and a separate experts’ pool will be included in the portfolio of offer. Potential value creation through the commercialization of the network service Sensorics skilled personnel pool, which then goes on to market the profiles of applicants for external interested parties as well, is of great interest to SPS. SPS thus appears as a personnel service provider to external players of the cluster requiring fees to be paid, while network companies continue to be conceded an exclusive, free or cost-reduced right of access.

5.2 Basic and further training

Like other technology locations, Germany is forced, economically and socially, to generate outstanding technical innovations. Without this capability for the permanent development and renewal of products, processes and services Germany’s position as one of the leading industrial nations would not have been possible. In that regard, the success of research institutions and companies depends, in addition to many other factors, chiefly on the capabilities and qualifications of the working population.

However, as a result of aspects such as, for example, globalization, demographic change or technological and scientific innovations, requirements for qualification, i.e. basic and further training, are increasing permanently. Moreover, the range of basic and further training offered in Germany is extremely diverse and differentiated. The offer of further training measures ranges from vocational schools for graduates of compulsory schooling undergoing their first vocational training to those who are already qualified vocationally in the framework of basic and further training.

Nonetheless, in view of the relevant teaching methods and contents, the different training measures always can only observe current standards and levels of development, research and know-how. As far as general vocational training schemes and offers for further training are concerned, it is however not often possible to consider the specific needs of highly specialized technology companies and innovation networks. But in contrast to it and in view of the thematic focusing within fields of innovation, the recruitment of qualified personnel and notably subject-related training and continuing training activities are, among other things, key to the long-term success of companies and networks.

For this reason, companies and also complete networks and clusters are frequently forced to become active themselves within the framework of basic and further training themselves. Basically, there are two different options in that respect, where companies and networks

- either look for continuing education schemes and training measures as well as seminars that are best suited to cope with concrete requirements or problems involving established providers,
or develop their own (certifiable) company-/ network-specific basic and further training concepts (possibly in cooperation with training establishments).

### Chart 7: The most frequent activities to qualify personnel

<table>
<thead>
<tr>
<th>Activities to train personnel</th>
<th>Data in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal system of mentors</td>
<td>21 %</td>
</tr>
<tr>
<td>Part-time training</td>
<td>22 %</td>
</tr>
<tr>
<td>Offering internal training and seminars</td>
<td>51 %</td>
</tr>
<tr>
<td>Possibility to participate in external training and seminars</td>
<td>52 %</td>
</tr>
</tbody>
</table>

Source: Haufe series of studies 2008

It is of crucial importance for companies and networks and/or clusters to know which key qualifications and project-oriented skilled competences are needed for future developments. Particularly in the increasingly rapid process of innovation, the subject of “life-long learning” will be gaining in importance, i.e. the knowledge and the ability to apply the acquired knowledge and skills need to be adapted permanently by learning throughout life. This mainly goes for the technology-related networks and clusters as well, whose market and competitive position are dependent on new processes as well as products and services. However, in order to be able to generate innovations regularly, specialized know-how, which always has to be up to date, is required for the players active within the network/cluster.

In that field many companies and networks are already committed within the framework of “Training on the Job” to train personnel for forthcoming tasks. In enterprises, research institutions and other players affiliated to networks/clusters inter-institutional measures, designed for basic and further training, are frequently carried out by the respective management. Therefore, possible fields of activity for network/cluster management are (by way of example):

- Observing the educational market/recruiting new and existing scientific personnel
- Examining the needs and requirements of affiliated players regarding future profiles of personnel (requirements and key areas of qualification in dependence on network-specific framework conditions)
- Analyzing branch-related basic and further training requirements
- Support for, and complete conception of, measures of qualification
- Organizing and carrying out qualification meetings and seminars (in-house training, workshops, study trips or inter-company learning)
- Developing and participating in the initiation of complete vocational training schemes and study courses at technical universities and colleges.

The basic fields that may be addressed in coordination with network members and their most urgent requirements usually comprise three different approaches (with their subdivisions), such as: “Inspiring in young people an enthusiasm for technology from early on”, “tailor-made training activities” all the way to “continuing training measures to optimize success”. The network and the network partners involved increase their appeal through basic and further training measures – primarily designed for the network and oriented to the needs of the network - through employees with qualifications in special fields of knowledge, which are an important precondition for developing processes and products of innovation of the network and which may constitute a unique characteristic.

7/ Note: These three approaches describe the whole spectrum – promoting young people, training and continuing education – and need not be regarded as being exclusive, but describe possible fields of activity. Neither is it necessary to address all fields, but only those that have been classified as specially important, which, however, can be built on each other in a modular form if required.
In the following we will explain the “Bergische Bildungskreis Automotive/Automotive Education Award” of the Automotive Economic Region of the Bergisch Triangle, the Summer School of IVAM e.V. and the further training concept “Training to be a process coordinator for plastics” of the Materials Innovation Network of Northern Bavaria, as these are very good youth promotion schemes and basic and further training measures, which are being implemented by network management following a survey of needs conducted among affiliated players in networks.

5.2.1 Young talent work concept “Bergischer Bildungskreis Automotive” of the Automotive Economic Region of the Bergisch Triangle

5.2.1.1 Presentation of the network

The Bergisch Triangle is one of the leading technology regions and is marked by a high density of innovative companies, especially from the sector of automobile subcontracting. Under the umbrella organization “kompetenzhoch3” its activities are geared to supporting the future-oriented development of the automotive location and its quality. Entrepreneurs as incubators of ideas largely contribute to developing the network further through their financial and commercial commitment.

5.2.1.2 Short description of the service “Bergischer Bildungskreis Automotive” (Bergisch Education Award Automotive)

In order to strengthen the innovative power of companies with qualified young personnel in future too, the group of regional automobile sub-suppliers – the Bergisch Automotive Intra-company Social – has embarked upon an alternative road in the run-up to classical recruitment. The Bergisch Education Award primarily aims to draw the attention of junior staff to the great number of occupational prospects of the local automobile subcontracting industry and to attract them to the region in the medium term.
5.2.1.3 “Bergischer Bildungspreis Automotive”

5.2.1.3.1 Underlying problems
Technologically oriented companies need committed young talent to maintain their position on the market in future, too. A common denominator for the members of the network found quickly was therefore their work with junior staff, to which they had adopted a completely different approach before the network was set up, the aim being to produce young academics by their own efforts to maintain the region’s edge in research and development. This is addressed to the upper school level, which is unaware that 80 per cent of value creation in the automobile sector comes from subcontractors and that the development and the design of new generations of vehicles are largely controlled by that sector. Those students even do not know that the number of automobile subcontractors in the Bergisch Triangle is as high as that and that the diversity of job characteristics is as diversified as in hardly any other branch of industry.

5.2.1.3.2 Strategic approach and implementation
Under the Bergisch Education Award, students of the 12th grade are invited to come to companies, and are asked to solve a task which all groups, no matter to what company they have been assigned, have to solve equally. In this way, teams made up of students from Remscheid, Solingen and Wuppertal, are deliberately put together in such a way that they possibly do not know each other. The task is to prove their spontaneity, team spirit and creativity. On the following day, the groups of students, meeting all together on the stage, present the results of their work individually to a jury of entrepreneurs. This has the advantage that as result of the presentations, all the students come to know each of the companies involved. Apart from attractive prizes, the biggest advantage for the students is, however, the fact that no matter what place a student has reached in the competition, each participant is guaranteed a position of his own choice for their practical training in a company.

5.2.1.3.3 Financing and sustainability of the service
The Bergisch Education Award was held for the fourth time in October 2008 and for the first time the number of applicants from schools was so great that the quality of the applications was the decisive factor for the participation so that many negative replies had to be given by the network. As the network is in charge of the procedure of selection, no company will thus become unpopular with the potential junior staff. The Bergisch Education Award 2008 was offered by 13 companies.

This project could be raised to federal state level in future. The idea is to have the competition carried out in the automotive regions of the federal state of North-Rhine Westphalia (Aix-la-Chapelle, Lippstadt, South-Westphalia). Subsequently, the three winners of each competition would be able to participate in a state-wide competition. The state-wide students’ competition “Bildungspreis Automotive NRW” would
indeed be realistic on the basis of the model of the 2009 Bergisch Initiative.

The Bergisch Education Award is fully financed by the companies involved. The network only assumes a coordinating role to facilitate the process (www.bergischerbildungspreis.de).

5.2.2 Training concept “Summer School” of IVAM e.V.

5.2.2.1 Description of the network

IVAM is the professional association for microtechnology, nanotechnology and New Materials in Dortmund. Currently, nearly 300 companies, institutes and networks from 18 nations are affiliated to the competence network IVAM. The association is industry-oriented and essentially works for small and medium-sized companies. Only companies are members with voting right so that on the Management Board too only companies take an active part and develop the strategy (further). The members affiliated to IVAM are predominantly small companies which in their operation are very technology-intensive, working with high investment costs and a high degree of specialization. They offer services and products that require explanation, frequently for new markets and/or new applications. Given this feature of membership, three lines of activity of IVAM have developed since 1995:

1. Technology marketing: support for marketing and for communication concerning products and services requiring explanation.

2. Internationalization: development of strategies for an optimal support of corporate tasks of internationalization.

3. Lobby work: supportive measures, particularly for small enterprises in the field of personnel, financing of innovations, e.g. public projects eligible for funding and advisory service for business start-ups.
5.2.2.2 Brief description of the service “Summer School”

The Microtechnology Summer School is designed as a recruiting instrument for companies and for small and medium-sized enterprises in particular, which to students are not known, as well as the big players. At the same time, the Microtechnology Summer School addresses itself to students throughout Germany. The basic idea is to create a specific platform for companies and potential applicants with a view to recruiting new personnel.

Fact file of network service

<table>
<thead>
<tr>
<th>Service category</th>
<th>Personnel service and training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group</td>
<td>Companies; network members (internal players) and non-members (external players), students from the whole of Germany in the fields of micro- and nanotechnology</td>
</tr>
<tr>
<td>Service approach</td>
<td>Aimed at solving the recruitment bottleneck and the shortage of qualified young talent, especially in the sectors of micro- and nanotechnology in Germany</td>
</tr>
<tr>
<td>Transferability to other network</td>
<td>3 = good transferability – can be transferred to other branches and value creation chains after minor adaptations to individual problems.</td>
</tr>
</tbody>
</table>
5.2.2.3 „Summer School“

5.2.2.3.1 Underlying problems

The Microtechnology Summer School was launched in 2006 by IVAM companies at the cluster at Dortmund to counteract the recruitment bottleneck of this branch of industry. Micro- and nanotechnology are a cross-sectional technology so that the diversity of branch-specific job characteristics is correspondingly high. Given this high interdisciplinarity and innovative power as well as technology and knowledge intensity, there are at present a recruitment bottleneck and a shortage of skilled personnel. This basic problem was taken up in the annual survey conducted among members and led to the conception of "Microtechnology Summer School Dortmund".

5.2.2.3.2 Strategic approach and implementation

The Microtechnology Summer School in Dortmund is directed at students of the engineering and natural sciences. Companies from the microtechnology field present themselves as potential employers and inform them about the excellent job prospects offered notably by small and medium-sized enterprises, conducting talks with tomorrow’s skilled labour. Students come to know the regional microtechnology companies. They are given specific information about in-house activities, establishing sustainable contacts with potential employers.

In addition to that, fresher-up courses are given on the basics of technologies, predominantly by university professors. Information is provided on technological practice in the company all the way to product examples. To complete college and university education by business and practice-related topics, the aspects Setting up business, Technology marketing and Patent system are discussed.

The organizers (FH Dortmund, FH Gelsenkirchen, IVAM and dortmund-project) choose from the applications of students a group of 30-35 participants who may be eligible for recruitment. A high yardstick of quality is thus applied. The participants come from all over Germany, but most of them from North Rhine-Westphalia.

5.2.2.3.3 Financing and sustainability of the service

The Microtechnology Summer School does not only serve to deepen learning contents subject-wise, as all common models of the Summer School have previously done at universities and colleges, but also offers a recruiting platform for companies which is the first of its kind. The Microtechnology Summer School has already achieved a high degree of familiarity after two years only.

At present, it is planned to expand the concept of service technology in the framework of which IVAM e.V. has a special focus on nanotechnology and New Materials. In the sector of surface technology – above all with regard to plastics – there are currently no study courses so that such an event is also intended to motivate students to specialize and concentrate themselves on this sector. The programme is being established with competent partners.

Another development of the service is to extend the Microtechnology Summer School to other locations. In 2008 it was held once again in Dortmund, for the first time with Speed Recruiting. In future it will also be conceivable to have the Summer School take place at other locations and MST clusters, e.g. Baden-Württemberg and Munich, to integrate the practical experience and scientific competences of other locations into the network. The event is open for external participants and thus can also be an instrument for winning new members.

As a follow-up to this Summer School, the participants are questioned about the quality of the content, of the presentation of lectures and of the selection of themes, which allows optimizing the organization, the contents and the implementation.

Financing by the participating companies will show if the event is useful. If financial support for the companies should be reduced, the concept will be scrutinized in depth and a decision taken whether it will be continued. To ensure its sustainability, the business model has been defined from the beginning: financing through participants (minor part) and by companies.
5.2.3 Further training concept "Training to be a process coordinator for plastics" of the Materials Innovation Network of Northern Bavaria

5.2.3.1 Presentation of the network

The Materials Innovation Network of Northern Bavaria (WIN) is a cooperative venture of the competence centre “New Materials of Northern Bavaria” (KNM) and of the Frankonia Plastics Network e.V. (KNF). While the former – KNM – is a scientific service provider for process development, the focus of the latter – KNF – is on information management and the exchange of experience for the plastics processing industry. Within the network all corporate levels – from the R&D department to the skilled worker – are integrated. It is the aim of WIN to encourage the exchange of experience and cooperation between the companies in Northern Bavaria.

5.2.3.2 Brief description of the service "process coordinator"

The Frankonia Plastics Network (KNF), as one of the cooperation partners in the Materials Innovation Network of Northern Bavaria (WIN), has developed a further training concept specially adapted to plastics processing entitled “Training to be a Process Coordinator for Plastics”. The service aims to train personnel from various affiliated companies, taking into account the different corporate and work cultures as well as technical languages as found particularly at the interfaces of the value creation chain.

Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>New Materials and Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>Southern Germany</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>2003 (within the framework of the high-tech drive “Future of Bavaria”)</td>
</tr>
<tr>
<td>Branches</td>
<td>Plastics, materials research, materials technology</td>
</tr>
<tr>
<td>Number of members</td>
<td>92 members (in 2008)</td>
</tr>
</tbody>
</table>
| Contact                | Kunststoff-Netzwerk Franken e.V.  
|                        | Gottlieb-Keim-Strasse 60, 95448 Bayreuth  
|                        | www.kunststoff-netzwerk-franken.de |
5.2.3.3 Training to be a "process coordinator for plastics"

5.2.3.3.1 Underlying problems

Within the KNF, groups of experts meet regularly in ten working groups, such as processors, toolmakers and technology-oriented subcontractors. This mutual exchange of experience on the operative level and the possibility of looking at problems from different angles showed the players involved that there was a problem of communication and understanding within the value creation chain of plastics processing, reducing the efficiency of cooperation. This often results from the fact that different corporate and work cultures, different languages, and qualification profiles meet at the interfaces of the process chain. Starting from the way in which that problem is perceived, the further training offer “Training concepts for a process coordinator of plastics” was worked out, specially tailored to the concerns of the network and of the plastics industry.

5.2.3.3.2 Strategic approach and implementation

In the Frankonia Plastics Network (KNF) 17 companies from the different value creation levels, acting jointly with the office of the competence network, set up a working group on the subject of “basic and further training” to jointly develop a strategy for problem solutions. The concept, which was worked out in moderated working sessions, envisages preparing skilled personnel for challenges they have to face at the interfaces, the aim being to train personnel at the internal and external interface positions in such a way that they acquire the skill to coordinate the manufacturing process on their job across the respective interfaces.

Special importance is attached, apart from technical contents, to imparting communicative skills, because these are hardly taken into account in traditional technical training. Over and above it, the emphasis of further training is to be put on understanding the concerns, requirements and technical necessities facing the cooperation partners.

The qualification concept is characterized by the following modules:

- Seminars with technical contents
- Follow-up preparation of seminars within the framework of a virtual class room
- Accompanying measures
- A scientific evaluation by an external institution.

The seminar contents, which are jointly coordinated with companies and participants in the courses, are taught over a period of two years in seven to eight special seminars usually lasting two days. This knowledge is imparted by personnel of the companies involved, which means, the training measures are carried out by experts in the premises of the companies. In this way, participants are enabled to get acquainted with the other companies and to see practical applications on site. All seminars are geared to interaction and communication, where so-called “soft skills” like conducting conversations or conflict
management are part of the further training programme.

Between the individual seminars the seminar contents are discussed subsequently with the help of an interactive computer-assisted system provided by an affiliated company to the further training team as a platform within the framework of a virtual classroom. This instrument serves to answer the questions that have remained open.

Beyond that, accompanying measures have been conceived, such as team-building seminars and "Train the Trainer seminars", where lecturers for the seminars are trained by a professional lecturer regarding rhetoric, techniques of presentation, dealing with objections, etc. to ensure for participants of the further training measures proper that technical contents are imparted in an optimal way. Furthermore, the participants have the chance to assess the qualification measure within the framework of a "closing seminar".

To give scientific assistance to the further training measure, the "Business Management Research Centre" for questions relating to small and medium-sized companies at the university of Bayreuth (BF/M-Bayreuth) has been integrated. Together with the network office, an evaluation concept has been worked out which on the basis of scientific methods investigates the status quo at the interfaces of the company. The results were processed and evaluated at the research centre, which transmitted them jointly with the office to the members of the working group and presented them to the participants in the team-training seminar to guarantee the transparency of all processes.

Additionally, the participants are given the opportunity to fill in a questionnaire on every event and to make suggestions which, if possible, are materialized at the follow-up events. The further training concept is thereby going through a permanent process of optimization, which is consistently oriented to the practical needs of the participants and, as a result, to those of the companies.

5.2.3.3.3 Financing and sustainability of the service

To finance the entire further training process, an independent method of calculation has been developed. It foresees that the costs of the events are borne by the companies themselves. The fee for participation in the further training measure totals 2,750 Euros, but the companies which admit and teach the participants, thus giving an input in the form of learning units, get a refund from the overall costs of the project.

Within the working group "basic and further training" those in charge of the participants in the training represented there report on positive effects of the further training concept, both regarding participants’ personal development and development of skills. In addition to an "added self-confidence", there is an awareness of increased personal initiative and improved team behaviour. These changes are noticeable with all participants.

The further training measure to become a "process coordinator for plastics" has been in its first round since 2007. After the first half of the measure had been completed, the competence network was faced with numerous demands for more rounds to be carried out, so that this network service is to be put on a permanent basis.

5.3 Funding of innovations and start-ups

Efficient companies, colleges and universities, research institutions and various service providers cooperate in successful networks and clusters, thus uniting the qualified labour of a region, too, in a special field of subjects. Given this great concentration of skills and, frequently, the existence of a good branch-specific infrastructure as well, networks are usually characterized by a high measure of readiness for an innovation culture and development.

The close cooperation between research and the economy also helps strengthen entrepreneurial thought, particularly at universities and research establishments and innovations having been developed partly serve as a concrete reason for company spin-offs and mainly start-ups. Moreover, new products and methods of production are frequently implemented and marketed by young companies in the first place, because established firms are generally too much oriented to the requests of big customers or their main target group and confine themselves to marginal improvements of their existing product portfolio or do no see any, or only too little, demand for radically new products (Metzger/Nielfert/Licht
2008). Accordingly, young companies are of great importance for the diversity of commodities and the growth of economies. In that process, young high-tech companies are especially relevant, because the degree of innovation and/or the knowledge orientation is in the high-tech sectors above average and the probability of innovations with an extraordinary potential is higher than in other sectors.

The consequence from this fact is that high-tech companies, considering their sales figures, frequently have above-average expenditure for R&D measures. In order to compensate it quickly, it is necessary to develop a new product fast for market entry and thereby make it available to the customer (Metzger/Niefert/Licht 2008). Young high-tech companies thereby accelerate technological change, but likewise force established companies to engage in further innovation activities, thus increasing the competitiveness of the economy.

Nevertheless, young companies are facing new demands, particularly in case of spin-offs and start-ups, because the successful foundation of a company is not only dependent on an innovative idea and its implementation, but also makes high strategic and economic demands on business starters. That means, not only scientific and technological competences are crucial for the long-term success of a newly founded company, but above all business management qualifications.

As a rule, young business starters in the phase of setting up and establishing business, where the focus must be on the development and implementation of innovative ideas in the first place, need to be supported by competent and experienced experts. For business starters therefore the most important basis for success is, apart from the business plan, correct information about such aspects as, for example: “what is the process of starting business like”, “how can a business plan be developed”, “where can I get the necessary capital from”, “are there alternative financing options”, “what is the right legal form", or “how can a sales network be built up”, etc. For this reason, advisory services in Germany are extremely diverse, ranging from advisory offers on municipal, regional as well as federal state and national level to different commercial consulting firms.

In addition to these comprehensive advisory services, various competence networks and clusters, such as the network of Baden-Württemberg: Connected e.V., have developed their own advisory concepts with high practical relevance, integrating network players as coaches for special issues offered to network managements as services. Apart from support and advisory services for business start-ups, there are also many opportunities for networks and clusters in the field of innovation funding to develop offers or services for internal and external players. Frequently, small and medium-sized companies without R&D departments of their own are in need of large financial resources for development activities or their own laboratories and/or test sites in order to translate innovative ideas into marketable products.

Services of support which could be rendered here are, among others, advisory services for process development “from the idea to the product”, information about financing possibilities for R&D projects, the search for potential cooperation partners or the allocation of branch-specific infrastructures such as laboratory, demonstration or test facilities. Taking the VDC Demonstration and Innovation Centre of the network Virtual Dimension Centre from Fellbach as an example, it is shown how networks and clusters can build up infra-structural measures and make them available to their members.

5.3.1 Technology and innovation concept "VDC Demo and Innovation Centre“ of Virtual Dimension Center Fellbach w. V.

5.3.1.1 Presentation of the network

The Virtual Dimension Center VDC was founded in 2002 as a competence and innovation centre for the technology field Virtual Engineering (VE) headquartered at Fellbach. The network pools the know-how of leading researchers, developers, providers and users of 3D visualization and simulation technology as well as technologies of Virtual Reality (VR). It has set itself the aim to foster the development and dissemination of VE technologies by establishing a sustainable communication platform for all the companies participating in the development, and universities, colleges and research establishments. Of all enterprises, SMEs are to be supported in introducing the new technologies in order to improve
their competitive situation and to develop the relevant know-how further.

5.3.1.2 Brief description of VDC Demo and Innovation Centre

The VDC operates a demo and innovation centre where a great variety of products (hard- and software) of members are provided for the purpose of demonstration, further development and testing as well as for the transfer of technology. Aside from intensifying the exchange of know-how and information between players, supra-enterprise cooperation is launched via the platform and, above all, the technologies of Virtual Engineering are opened up for small and medium-sized companies as well.

Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>Information and Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>Southern Germany</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>2002</td>
</tr>
<tr>
<td>Branches</td>
<td>Virtual Engineering, 3D visualization and simulation technology, Virtual Reality technology, for the computer-controlled planning and development of new products</td>
</tr>
<tr>
<td>Number of members</td>
<td>65 members (in 2008)</td>
</tr>
<tr>
<td>Contact</td>
<td>Virtual Dimension Center</td>
</tr>
<tr>
<td></td>
<td>Aubelenstrasse 13, 70736 Fellbach</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.vdc-fellbach.de">www.vdc-fellbach.de</a></td>
</tr>
</tbody>
</table>

Fact file of network service

<table>
<thead>
<tr>
<th>Service category</th>
<th>Funding of innovations and start-ups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group</td>
<td>Network members (internal players) and external players (e.g. SMEs)</td>
</tr>
<tr>
<td>Service approach</td>
<td>Aimed at solving a concrete problem for SMEs within the branch and provides infrastructural offers</td>
</tr>
<tr>
<td>Transferability to other network</td>
<td>3 = good transferability – can basically be transferred to other branches and value creation chains after minor adaptations to individual problems.</td>
</tr>
</tbody>
</table>
5.3.1.3 VDC Demo and Innovation Centre

5.3.1.3.1 Underlying problems

Especially in small and medium-sized companies, the use and integration of new technologies is often bound up with great insecurities. In its demonstration centre the VDC provides a neutral and objective overview of the different solutions that can be leased from the companies for first projects, too. The possibility of further developing the technologies in the area of Virtual Engineering in the Demo and Innovation Centre through the “Living Lab” approach described above, has as a consequence to tap the great development and thus also the future market potential of the technology field. Further training seminars and lectures given to students and pupils in the demo centre make (future) personnel of the companies fit for current and future requirements and draw the attention of young people to vocations in the ambient technical field.

5.3.1.3.2 Strategic approach and implementation of the service

The VDC demonstration centre is located in a modern office building in the immediate vicinity of the station at Fellbach. Apart from office workplaces and the generous lounge (ca. 80 square metres) with counter and catering section, which can be used for the closing of events, the demonstration centre is made up of two show rooms (61 and 38 square metres, respectively). In these rooms topical products from the fields of the VDC’s hard- and software are exhibited and made available to members (crash and flow simulations, projection systems, 3D architecture visualization and virtual design demos). The technology team of the VDC office is in charge of their maintenance and operation and of providing them to both members and external players (e.g. SMEs) for demonstration purposes and projects.

The demonstration centre can additionally be used for talks, workshops, presentations and/or congresses. Both show rooms are equipped with a fully functional VR system (stereoscopic back projection, optical tracking, input devices, surround sound systems). With regard to the soft- and hardware currently used, a number of VE solutions are offered by the affiliated companies. The infrastructure allows integrating VE systems and components both on a Microsoft Windows and on a Linux platform. The technical resources in the show room are being permanently developed in cooperation with members. New technologies can be installed, tested and improved as well as developed further without any problems and also in collaboration with final users, researchers and other partners. The office possesses the technical competence to put the installed soft- and hardware in operation and to implement and explain applications for demonstration. The platform offers users an overview of the solutions existing on the market.

In addition to permanently developing the offer and technical resources of the demonstration centre, a technology and application-oriented laboratory is being built, where the current project stages are regularly used by prospective users in the form of prototypes and where interim project results are being permanently fed back (Living Lab approach). This approach ensures on the one hand that project users can participate early in project results. At the same time, developers are given feedback on project/ product improvements from a user’s viewpoint very early in the development process.

5.3.1.3.3 Financing and sustainability of the service

The VDC provides for this laboratory the technical infrastructure in the form of up-to-date computers, projection and tracking systems, etc. In order to achieve an exchange with comparable facilities about the latest developments, methods and instruments relating to the Living Lab approach, the VDC has also applied for admission to the “European Network of Living Labs” and was admitted as a new member to the network in October 2007.

The VDC office finances itself through contributions of its members, by leasing premises and equipment, and through projects and funds.

Public relations are organized through events, press contacts, technical contributions, lectures and a monthly newsletter with topical news from the network and news around the subject of Virtual Engineering.
5.3.2 "Coach & Connect" – the support programme for young high-tech companies of the Economic Initiative of Baden-Württemberg: Connected e. V. (bwcon)

5.3.2.1 Presentation of the network

Baden-Württemberg: Connected e.V. (bwcon) is one of the most successful technology networks in Europe and the leading economic initiative for the promotion of the innovation and high-tech location of Baden-Württemberg. Some 430 companies and research institutions with 4,400 experts profit from networking via the bwcon platform. With its working fields Creative Economy, Health Care, Information and Communication Technology (ITC) as well as Connecting Technologies bwcon is setting up a basis unique in Baden-Württemberg for inter-branch technology use and interdisciplinary cooperation between developers, users and investors. With its annual advertising of the renowned High-tech Awards CyberOne, bwcon appeals to young companies that provide impulses and new standards with innovative business concepts.

Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>Information and Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>Southern Germany</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>1997</td>
</tr>
<tr>
<td>Branches</td>
<td>IT and High Tech</td>
</tr>
<tr>
<td>Number of members</td>
<td>430 members in Germany (in 2008)</td>
</tr>
<tr>
<td>Contact</td>
<td>Baden-Württemberg: Connected e.V. Breitscheidstr. 4, 70174 Stuttgart <a href="http://www.bwcon.de">www.bwcon.de</a></td>
</tr>
</tbody>
</table>

5.3.2.2 Brief description of the service "Coach & Connect"

With "Coach & Connect" bwcon offers a broad range of advisory and coaching services both for young and expanding companies. The companies are linked with experts, investors and cooperation partners within this framework, the aim being to assist innovative companies from the technology field, branch-specifically and purposefully, in the different phases of their corporate setup, from business start-up via consolidation all the way to expansion.
Fact file of network service

Service category
Support programme for young high-tech companies

Target group
Innovative start-ups and young technology businesses. The service is open to network members and external players.

Service approach
Aimed at solving a concrete lack of experience and competences in respect of entrepreneurial and market-related problems for business starters.

Transferability to other network
4 = very good transferability – can be transferred “one to one” to other networks without further developments or adaptations.

5.3.2.3 “Coach & Connect”

5.3.2.3.1 Underlying problems

Many business starters want to be supported competently in the different stages of setting up business, from start-up via consolidation all the way to expansion. Technology-oriented start-up teams often lack the experience and competences in business and market-related questions. Support is needed especially in issues relating to strategic alignment, market and competitive strategy, setting up sales business and questions of alternative forms of financing (e.g. venture capital). Many classical advisory services are unable to meet the highly specific needs and requirements of high-tech start-ups and expanding high-tech companies. In order to overcome this shortage, bwcon has developed the programme “Coach & Connect”.

5.3.2.3.2 Strategic approach and implementation

Components of the programme “Coach & Connect” are, among other things, initial consulting, business plan advice, financial consulting, providing coaches and experts, as well as various events as networking platforms. Moreover, selected further training measures are offered as a basis to start from. The project is made up of methodologically and didactically different individual modules, which are adjusted to each other and can be combined depending on the needs of the young company.

Chart 8: Modules of the service “Coach & Connect”

Fostering innovation and entrepreneurship at the technology location of Baden-Württemberg

Within the framework of free initial consultation by personnel of the bwcon office, where the business and start-up plan is checked, conceptional and personal-related weak points are identified. On the basis of the identified need for support, the follow-up support process is developed and appropriate measures from the “Coach & Connect” programme recommended. In
updating talks the progress achieved is evaluated and the support programme adapted.

For support, the following modules in particular are available:

- **Directly providing experts:** As a central contact point, the bwcon office directly provides young technology companies to suitable partners from the bwcon network in the field of specific questions such as legal protection of software and due diligence. In addition, direct contact can be established with investors through the comprehensive contact network with business angel networks, VC firms as well as business and funding banks.

- **Management Coaching Group (MCG):** Under the direction of bwcon board member Harald Fuchs (LBBW Venture Capital GmbH), 19 mostly former board members and business executives from the high-tech branch have come together in the MCG, contributing their valuable joint experience and know-how in coaching and advisory services for young and medium-sized companies. The focus of the offer is on project-related consulting or management tasks that are limited in time. It is the aim of the mentors' programme to critically discuss existing business models of young companies as well as to advising and assisting them. In the office a person who organizes the matching of mentors' and management teams is centrally in charge of the MCG. The young managers can professionalize their entrepreneurial thinking and acting within the mentors' programme. In that programme bwcon provides support, constructive criticism, a profound knowledge of the market and knowledge of methods in translating the respective business ideas into practice. In this respect, an assessment has to be made of the business plan in the fields of the corporate parameters Product/service, Market and competition, and Marketing/sales, Financing and providing important business contacts. Business starters profit from the excellent technical competences and experience of the mentors in questions related to business management and branches and from the possibility to make use of their large personal networks.

- **Business round table and VC intra-company socials:** The round tables and socials are held in the form of motivation presentations by successful business starters and experienced entrepreneurs, offering, in addition to authentic reports on experience gained, an effective networking platform. The thematic focus is on financing, marketing, sales and competition. For networking, other forms of events are available, such as lunches or dialogues.

- **Working groups (special interest groups):** For the subjects of CRM, IT Law, eHealth and Outsourcing, special interest groups are offered. By becoming integrated into these working groups, which exchange experience on specific topics in sessions held regularly, and develop joint projects, business starters can get networked with experts and experienced entrepreneurs. The working groups organize forums of experts and technical congresses annually. The latter offer young enterprises an opportunity to deal with the latest technological developments intensively and with a focus on a special branch, as well as making contact with established enterprises and branch experts.

- **Innovation fair:** The innovation fair, which is held every year, offers exhibitors the unique chance to present, in a compact way and across different branches, products, services and processes at low cost to a high-ranking audience at the fair. By cooperating with other networks it is possible to adopt an approach spanning different technologies, which helps to initiate cooperations and new business contacts.

- **Seminars and intensive workshops:** In compact half- and full-day meetings management and technology-related subjects are specifically prepared for young technology companies and provided within the framework of interactive small group coachings. Professional trainers and experienced entrepreneurs from the bwcon network are recruited for the meetings, which ensures that their lectures are very much oriented to practical needs.

5.3.2.3.3 Financing and sustainability of the service

The programme "Coach & Connect" has been offered since 2005. By the end of 2007, roundabout 2,000 short and intensive consultations with business
starters, people interested in setting up business, young entrepreneurs and cooperation partners were conducted. 57 qualification and networking meetings on different management and technology themes were carried out with about 1,900 participants and 129 lecturers from the economic and scientific communities. 28 mentors of the management coaching group were placed at the disposal of young management teams. Since September 2008, the programme has been offered with additional service modules named “Coach & Connect Plus+”. 

In order to implement services of support, it is necessary mainly to fall back on experts from the bwcon network (experts from affiliated companies and organizations act as lecturers and coaches). This ensures that the lectures have a high degree of relevance to practical needs. In addition, individual measures of support to deal with highly specific problems and questions can be offered.

It is thereby possible to provide a very large range of technology expertise and branch-related know-how. The support pool is being updated and expanded continuously. It is expanded by addressing appropriate candidates from the personal network of relationships of bwcon players.

The services are financed from the Association’s own funds and participation fees (e.g. seminars requiring fees). The programme “Coach & Connect” was supported by the Ministry of Economics Baden-Württemberg - initiative for business start-ups and business succession (ifex) - with funds from the European Social Fund (objective 3) – in the period 2005-2007. The follow-up programme "Coach & Connect Plus+" is also being supported accordingly.

5.4 Public relations

The fundamental importance of measures of public impact resides in the art of “generating a positive public opinion by the spoken or printed word, by actions or by visible symbols, for one’s own firm, its products or services”, Carl Hundhausen, one of the first German PR experts, observed in an article published in the journal “Die deutsche Werbung” as early as 1937. With regard to networks and clusters, public relations can be defined as the succinct, externally oriented presentation of the network and/or cluster with its visions, goals, structures, profiles of players, innovation products, services, and other specific network/cluster features in order to achieve an increased degree of familiarity.

It is the aim of the externally oriented communication to build reputation for the network/cluster and for the region as a location (appeal) and attract through it further players (investors, customers, clients, etc.) for the network and the region (power of attraction). For external players, meaningful public relations must make clear, rapidly and precisely, what is specific and unique about the network concerned. In other words, it must be shown where the network and/or cluster differs from others of the same branch or innovation field. This implies that the clearer the message of the network, the more effective its (national and international) positioning will be in consequence.

Successes which accentuated public relations can aim to achieve, are among others:

- clear perception of its position in locational competition,
- more orders,
- more cooperations, also with external players, and, as a consequence, more innovation products,
- addressing and contacting new target groups,
- opening up new markets,
- higher and faster increase in membership, as well as
- more recognition and acceptance outside.

At the same time, public relations prior to an externally oriented presentation, offers the chance in particular that networks internally make clear their own aims, visions, methods or cooperation relations again and again, define their actual message and unique characteristics and, if need be, adapt them to changed framework conditions. It is crucial in this connection that members of networks and/or clusters identify themselves with the different forms of presentation of a communication oriented internally and externally, because their own innovation activities, strategies etc. are presented in association with other players. In order to have public relations that are structured in a unitary way and are rich in substance, networks and clusters as a symbol of their visions,
leitmotifs and activities must develop a brand of their own, i.e. a “Corporate Identity”, which can be clearly recognized again.

Publicly effective measures are one of the general and, above all, regular fields of activity of networks and clusters. On the basis of the key function of network/cluster management as a centre and interface of the cooperative association, it is also usually responsible, in awareness of the diversified processes and structures, for public relations oriented to target groups.

Instruments and forms that can be used by network management to realize up-to-date marketing and activities relevant to public relations at any time are extremely diversified and are equally dependent on the specific PR goals and requirements, which are also expressed by the players of the cluster.

Table 5: Selected objectives, fields of activity and instruments for public relations by networks and clusters

<table>
<thead>
<tr>
<th>Objectives of public relations (by way of examples)</th>
<th>Tasks for the network/cluster management</th>
<th>Instruments of network-oriented public relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Information, communication and persuasion</td>
<td>▶ Basically cultivating relations with the public</td>
<td>▶ Cultivating a (multilingual) internet presence that is always up to date, as a “window to global public” with all the relevant information about goals of clusters, visions, players as well as products and services</td>
</tr>
<tr>
<td>▶ Concise presentation of the network with its structures, players’ profiles, innovation products, services, unique features and characteristics</td>
<td>▶ Establishing, consolidating and developing contact structures between clients and/or contractors and a defined target group</td>
<td>▶ Producing and sending regular newsletters about activities and innovation products</td>
</tr>
<tr>
<td>▶ Expanding the degree of familiarity</td>
<td>▶ Personal representation and presentation of the whole network in the national and international field</td>
<td>▶ Producing meaningful information materials, catalogues of players, CDs, booklets, etc. about the overall network</td>
</tr>
<tr>
<td>▶ Building confidence and trust in players and in their services and products</td>
<td>▶ Support for cluster partners in their player-oriented public relations and conception of an appropriate PR strategy for members</td>
<td>▶ Organizing participation in fairs or joint stands at the relevant fairs</td>
</tr>
<tr>
<td>▶ Addressing new target groups and markets</td>
<td>▶ Localization of the network in the regional identity and economic structure</td>
<td>▶ Preparing information events about the network or cluster</td>
</tr>
<tr>
<td>▶ Increasing the range of players</td>
<td>▶ Lobbying</td>
<td>▶ Conducting visits to companies and trips to networks</td>
</tr>
</tbody>
</table>

Source: VDI/VDE-IT
Various factors, such as envisaged target group, intended purpose, degree of preparation and/or innovation content, determine which public relations and marketing instruments are the optimal form for the relevant network. In the following, we will show the way an overall marketing concept can be designed for networks and clusters and which aspects have to be taken in account in doing this, taking the “network marketing and public relations concept of the BioRegioN – regional initiative Life Sciences of Lower Saxony” as an example.

5.4.1 Network marketing and public relations concept of the BioRegioN – regional initiative Life Sciences of Lower Saxony

Having emerged from the BioRegio Initiative of the Federal Government in 1996, the regional initiative Life Sciences of Lower Saxony BioRegioN is the central point of contact for life sciences in Lower Saxony and unites partners from the economy, science and politics with the aim of early marketing the great potential of excellent research results, encouraging settlements and strengthening the life science location of Lower Saxony. The competence network is active in the area of pharmaceutical biotechnology, with special strengths in infection, neuro- and stem cell biology. The office of the regional activity is coordinated by Corvay GmbH, a consulting service company with a focus on technology-oriented branches.

5.4.1.1 Brief description of the service "Network marketing and public relations"

The office has been commissioned by the Ministry of Economics, Labour and Transport of Lower Saxony to carry out network marketing and public relations for the Life Science network at home and abroad. A particular feature of the concept is the broad range of the media and communication provided, which are built on each other in a modular way. They make information available to the regional network partners and to the national and international public specialized in this field.

Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>Biotechnology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>North German Lowlands</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>1996</td>
</tr>
<tr>
<td>Branches</td>
<td>Infection, neuro- and stem cell biology</td>
</tr>
<tr>
<td>Number of members</td>
<td>325 members (in 2007)</td>
</tr>
</tbody>
</table>
| Contact                | BioRegioN – biotechnology Lower Saxony  
c/o Corvay GmbH  
Sophienstrasse 6, 30159 Hannover  
www.bioregion.de |
5.4.1.2 “Network marketing and public relations”

5.4.1.2.1 Underlying problems

Network activity is essentially defined by communication. This applies to the information of the individual network partners via network-internal activities but also via external information relevant to the network’s focus. At the same time, it is important for the way the network is perceived from outside to communicate activities, potentials and developments of the network and its partners adequately. Besides, the development of the network itself has to be documented and presented. With their press reports, the network partners supply the basis for communication of the network in the various media. Additionally, they are asked by the editorial board to make contributions on certain subjects.

5.4.1.2.2 Strategic approach and implementation of the service

Communication within the network and with the national and international public specialized in this field is conducted through the following media:

- Online newsletter (since 2003, regionally, 1-2x weekly, circulation of 1,000)
- Print newsletter (since 1996, nationally, 4x annually, circulation of 1,800)
- Life Science Report of Lower Saxony (since 2006, nationally and internationally, annually, circulation of 500 in German and 500 in English)
- CD “Life Sciences in Lower Saxony” (since 2001, nationally and internationally, every 2 years, circulation of 2,000 in English)
- Internet (since 1996, nationally and internationally, continually, up to 12,000 visitors per month)
- Life Science Day (since 2003, regionally, annually, ca. 200 participants)

All the media are closely interlinked and modularized. Important reports of the online newsletter informing about current dates and deadlines, funding announcements and corporate news, are found in a detailed form in the print newsletter as well. Apart from topical press communications from firms and research institutions, the printed newsletter includes a service section focused on the relevant branch. Detailed interviews and background reports are designed to present important key persons in the network.

A letter is sent to the firms of the network working in the field of biotechnology once a year, asking them to fill in a specific questionnaire, in order to work out the Life Sciences Report of Lower Saxony. The data collected is used to compile the report. Information on important business contracts or partnerships communicated through the newsletter is also used for the report.

Fact file of network service

<table>
<thead>
<tr>
<th>Service category</th>
<th>Network marketing and public relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group</td>
<td>Network members (internal players) and national and international public specialist in this field (external players)</td>
</tr>
<tr>
<td>Service approach</td>
<td>Public relations spanning players for theme-specific visibility of partners involved and of the federal state of Lower Saxony.</td>
</tr>
<tr>
<td>Transferability to other network</td>
<td>4 = very good transferability – can be transferred “one to one” to other networks without further developments or adaptations.</td>
</tr>
</tbody>
</table>
Besides ca. 200 portraits of firms and institutes, the CD “Life Sciences in Lower Saxony” also includes a topical edition of the Life Science Report. All the printed media and the contents of the CD are available on the internet at www.bioregion.de from which they can be downloaded. In addition to topical reports and information on events, the internet page offers a broad range of information about the network and the Life Science branch in Lower Saxony.

The “Life Science Day of Lower Saxony”, which is held annually at changing locations, is designed for direct communication and to strengthen the network, offering an opportunity of discussing, in addition to special lectures on subjects of biotechnology from the Lower Saxon network, new project ideas with other players present, and establishing joint objectives.

5.4.1.2.3 Financing and sustainability of the service

The communication concept has been developed continuously and expanded systematically during the last few years. The regional initiative Life Sciences of Lower Saxony – BioRegioN will pursue this concept further and integrate topical technical developments.

Questionnaires and direct contacts with the network partners are used to question them in what way the materials are perceived and how attractive they are. The active participation of many partners in supplying materials (questionnaires, firm/institute portraits, press reports) is proof that the network accepts and supports the communication concept. At fairs and events external players are also questioned about their views. The BioRegioN examines regularly which are the latest technical innovations that can complement the existing communication concept meaningfully in integrating them in case of need. Suggestions from the network partners on substance and forms are implemented if they are meaningful. For the near future, the development of a new series of brochures is planned with a strong focus on individual major topics of Life Sciences in Lower Saxony as a meaningful addition to the existing materials.

The service section is praised by the network partners and external players as useful for practice and as excellent. In view of the high degree of familiarity of the BioRegioN, many new players are even reporting to the office to become integrated in the network.

The BioRegioN has the structure of a loose network without an active declaration of membership of the individual partners, as would be necessary, for example, in an association. For the network partners, the service is free.

5.5 Communication and exchange of experience

The process of innovation in dynamic organizations, as for example, in networks and clusters, is largely determined by communicative processes, i.e. particularly by the way the players involved communicate with each other and pursue common aims. At the same time, this implies that in daily cooperation specialized knowledge is largely shared communicatively (verbally and non-verbally). Situations in which communication and experience is exchanged thereby contribute to value creation and are, as a result, a decisive economic factor.

Generally and consequently, as far as networks and clusters are concerned, communication is characterized by four core functions to control joint actions and relations of cooperation. Communication establishes the contact between the players (constituion – mutual contact), acts as a medium of knowledge transfer (interpretation – symbolic transfer), enables efficient communication (control – entrepreneurial and inter-personal communication) and builds up and maintains the inter-personal nexus of relations (development of relations – professional culture of interaction).

But network and cluster communication exceeds the general exchange of information about specific projects. Communication is designed to enable the players involved to build up long-term relations (of cooperation), to exchange experience and to learn from each other. The communication realized in networks is based on the underlying organizational structures; in other words, concrete cooperations are based on the results of a successful communication. However, while initiating relations of cooperation, networks and clusters in particular are mainly characterized by the fact that initially they still lack stabilizing factors such as joint experiences,
processes, results or forms of dealing with each other. In this regard, players, and above all cluster management, are called upon to make use of their personal, methodological and social competences of communication and to develop a common base.

Aspects which have an effect on the new adapted communication structures are (by way of examples):

- **Strategic and situational professionality** – making clear to the players which position and role they have in networks. This is the precondition for focused planning and acting with heterogeneous partners and developing structures of relationship.

- **Self-awareness of personal attitude, views, motives and values** – leading to a more efficient form of working relationships. Communicative common interests and innovation results develop only if players unknown or unfamiliar to each other are able to find common bases to start from.

- **Interpretive learning** – many interdisciplinary and intercultural backgrounds meet temporarily. The complex processes of mutual understanding between the players involved are additionally supported by an open, flexible working atmosphere. “Scientific understanding” always has a technical and personal portion, with a solid basis of relationships supporting and strengthening cooperation within the discipline.

- **Security of understanding** – cooperative successes occur once the multiple structures of communication have become established. However, rare personal presence, lack of routines, concentration on exclusively (electronic) written relations of exchange and asynchronous interactions impair a rapid and sustainable innovation success. The overall character of “face-to-face communication” therefore provides the most diversified development of a nexus of contacts and relations (cf. Pardon 2006, p. 115 and following pages).

In this process, the structure of organization and communication can become very differentiated from network to network. On the basis of the experience with the different networks and clusters, the following key aspects of organization and communication can be described despite a great diversity of structuring possibilities (Chart 9).
Chart 9: Ideal-type representation of the organization and of the working and communication structures of a network and/or cluster

- Requirements of the market – customers’ wishes – new technological challenges
- Fixing strategic orientation in close coordination with network management and network groups – what are future major concerns and challenges
- Advisory council/steering or strategy group
- Close processes of coordination
- Office / network management (i.e., management of network, coordination of working groups, winning support for projects, financing)*
- Information and coordination processes between all network groups and sectors
- Thematic working groups
- Project groups
- General Assembly, Annual Meeting
- Other cooperations (seminars, workshops)
- Implementation of the results of the working and project groups with the players involved
- All network players involved
- Joint infrastructure, i.a. labs, working and office areas, technical equipment, office and communication equipment

*Public relations, setup of communication structures

Source: Institute of Innovation and Technology
As Chart 9 shows, the players involved communicate both with management and, particularly, with one another as, for example, within the framework of working groups or project meetings, where the cooperations themselves take place. The subjects treated range from the development of a joint working group-specific strategy for the region, via aspects relevant to public relations, to winning customers for projects as well as implementing cooperation projects. Implementing a joint innovation project is especially suited for realizing the network and/or cluster strategy, because these projects, on the one hand, produce immediate results and they decisively contribute to the focusing and the commitment of the partners.

Working groups and meetings for the exchange of experience are especially gaining in importance when the cooperation association has become so big that the direct theme-oriented and technically oriented communication of all partners is difficult within the framework of larger sessions. As a rule, potential working groups are formed in the course of a sustainable network and cluster activity, which means, they are not fixed from the start to the end, but are characterized by a continuous process of origination geared to the needs of the network (Meier zu Köcker/Buhl 2008).

Basic communication and the successful exchange of experience can be realized through direct communication, and with the assistance of electronic aids. Despite all existing technological possibilities, face-to-face communication is, however, of the greatest importance to all players involved, both with regard to finding a strategy and objective as well as building confidence and to the implementation of a project. Indeed, indirect forms of communication such as newsletters, email and telephone contacts, web-based communication platforms and online working groups are helpful complementary tools which support direct personal communication, but which basically cannot replace them.

There are, however, no generally valid rules for how to shape the organization, method of work and communication structure of a cluster. Any network and cluster must therefore classify and implement for itself the suitable form of organization and identify the optimal forms of communication. The members of the Kompetenznetze Deutschland Initiative have implemented different overall communication concepts and/or individual modules that support the players involved in central cooperation aspects only. As examples of the multiple possibilities of developing communication concepts and services for the exchange of experience and/or for support we will present below the “communication structure and the exchange of experience concept of the CFK Valley Stade, the young talent work concept “Bergischer Bildungsspreis Automotive” of the Automotive Economic Region of the Bergisch Triangle as well as, furthermore, the “communication and exchange of experience concept with the Interdisciplinary Agency” of the BioRegio Regensburg and the “specialized cooperation service” of the network NEMO-VisQuaNet.

5.5.1 Communication structure and exchange of experience concept of CFK-Valley Stade e. V.

5.5.1.1 Presentation of the network

In the growth market of the carbon fibre reinforced plastics (CFK), CFK-Valley Stade e.V. is focused on future-oriented building techniques and automated manufacturing processes. The interdisciplinary core competences of the experts of CFK-Valley Stade e.V. cover the entire value creation chain, starting with the conception up to the disposal of a CFK structure after operational use. On the basis of the know-how of over 80 renowned companies and research institutions, an innovation complex has originated under the roof of “CFK-Valley Stade” with a comprehensive infrastructure (technology, service and recycling centre, technical university, international special events). Apart from the regional and technical pooling of individual activities, the systematic networking of partners by channelling the requisite information and decision-making flows offers the basis of the day-to-day development processes at CVK-Valley Stade e.V.
5.5.1.2 Brief description of the service “Advisory councils and working groups”

The business model of CFK-Valley Stade e.V. is structurally related, on the one hand, to the individual technology modules within the framework of the development line of carbon fibre compound structures and, on the other hand, to the requisite process chain from training through research and development to industrial application in the different fields of branches. One component of the success achieved by CFK-Valley Stade in this model is the interdisciplinary cooperation between the members of the network in twelve specific working groups. The latter are directed by advisory councils and constitute the basis for technological development within the network. To support the activities in the working groups, the offer provides a package of services promoting the exchange between the partners and thus contributing to successful project implementation.

Key factors of success in this respect are clear responsibilities and communication structures as a basis for the implementation of efficient instruments and services. The network service is based on an interdisciplinary cooperation between the members of the network in twelve specific working groups. The latter are directed by advisory councils and constitute the basis for technological development within the network. To support the activities in the working groups, the offer provides a package of services promoting the exchange between the partners and thus contributing to successful project implementation.

Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>New Materials and Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>Coast</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>2003</td>
</tr>
<tr>
<td>Branches</td>
<td>CFK lightweight and manufacturing technologies used in the construction of aircraft, rail vehicles, utility vehicles and motor vehicles</td>
</tr>
<tr>
<td>Number of members</td>
<td>80 members (as of September 2008)</td>
</tr>
<tr>
<td>Contact</td>
<td>CFK-Valley Stade e.V.</td>
</tr>
<tr>
<td></td>
<td>Airbus-Strasse 1, 21684 Stade</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.cfk-valley.com">www.cfk-valley.com</a></td>
</tr>
</tbody>
</table>

Fact file of the network service

<table>
<thead>
<tr>
<th>Service category</th>
<th>Communication structure and exchange of experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group</td>
<td>Network members (internal players)</td>
</tr>
<tr>
<td>Service approach</td>
<td>Aimed at solving a specific problem within the network, i.e., in how far technology-related subjects can be advanced further within the network.</td>
</tr>
<tr>
<td>Transferability to other network</td>
<td>4 = very good transferability – can be transferred “one to one” to other networks without further developments or adaptations.</td>
</tr>
</tbody>
</table>
organizational model developed by Sperlich Consulting GmbH. The specialist for technology management and marketing directs the office of CFK-Valley Stade e.V. and was awarded, among other things, the “Innovation Prize 2007 Industry” in the category “research” of the Initiative SMEs for the Sperlich consulting network group.

5.5.1.3 Systematic support for success-oriented technology development in the working groups

5.5.1.3.1 Underlying problems

The integration of advisory councils and working groups in the communication structures of the network and the systematic support for success-oriented technology developments in the working groups was tailored purposefully to the needs of members thanks to the three columns of the service portfolio presented below. The great number of defined interfaces and the intensive communications between advisory councils, working groups and the office allows a fruitful exchange, finally leading to the generation of new know-how as a result of joint project cooperation within the working groups. In this process, the important point is to structure the information flow of the partners through supportive services, thus encouraging communication as a key element of successful project initiation. This is particularly the case in view of the need of bridging regional distances.

5.5.1.3.2 Strategic approach and implementation

The working groups are headed by two experts each (counsellors) from research and industry. The direct exchange of information is organized via the counsellors and takes place in regular working meetings. They constitute the bridge to all committees in the association. In the working groups joint project ideas are generated, project outlines defined, coordinated and, finally, combined into an overall research strategy. In addition, the counsellors coordinate the topics of their field of responsibility within the framework of advisory council sessions and organize cooperation between the working groups.

Furthermore, a strategic agreement is reached between the advisory council and the management board on key topics and/or project themes.

For the process of systematic project development and strategic coordination, the service portfolio has been developed on the basis of three columns. It is composed of measures of support by the office, including Standing Orders, Internet Community and TeamDrive.

Chart 10: The three columns of the service portfolio

Office – standing orders and administrative support conduits:

For an efficient procedure, standing orders have been developed for the three key phases of work group direction (preparation, implementation and report of results) with a view to structuring tasks and responsibilities clearly. Additionally, a process has been defined showing the way from the idea to funding. The office offers supportive services for all administrative processes and is the central contact for counsellors and members. Especially conference and lecture rooms are organized locally with the techniques of presentation needed for the meeting. If possible, the office participates in the meetings, offering its support and moderating if need be.
Internet community – information and communication platform:

In parallel to the structure in the association, an information and communication platform (www.cfk-valley.com) has been developed which represents the real business processes 1:1 and also meets the information requirements of the market and the security requirements regarding the partners' know-how in their project activity. For this purpose, a Content Management System is employed, which is continuously being developed further with the provider on the basis of needs. To this end, domains have been created on the internet page of CFK-Valley Stade for every working group with limited access, where all the relevant information is compiled in a central location. Apart from a date book with forthcoming meetings, templates for drafting invitations, protocols, replies and project outlines are found there. Protocols of past meetings are also filed to document the process of work and to inform working group members who are newcomers. For the purpose of directly addressing partners, the visiting cards and profiles of players are deposited in a data bank of addresses oriented to individual working groups, which have been dynamically generated and maintained by the members. Addressing the committees or individual working groups via a group email function is a special feature. Counsellors can thereby collectively address, inform and invite for meetings the desired partners through the system with one click only.

TeamDrive – safe exchange of data in the working and project groups:

Over and beyond the information offered by the internet community, another level of exchange has been created. The implemented TeamDrive software represents a good platform for data exchange in individual project groups, especially with regard to the safe transfer of all kinds of documents and data files over the internet. With this software all team members have encoded access to joint files at any time and at any place. The documents are always available in their latest version. When the software has been installed, an additional drive appears in the customary Microsoft Explorer work environment, where all the documents of the team are stored and adjusted automatically. This enables the user to operate the software intuitively. All documents are transmitted in an encoded form and are safely deposited on a server. The documents may exclusively be decoded by team members and not on the data server itself. For communication between the team members, an “AdHoc VPN link” is built to ensure safe communication across corporate limits and firewalls. The data between the computers are automatically synchronized and can thereby be provided for offline use.

5.5.1.3.3 Financing and sustainability of the service

The services are made available to the partners via the competence network office. The sustainability of the service is guaranteed, on the one hand, by the partners' interests in the initiation of projects and, on the other hand, by a continuous offer on the part of the office. The members are in charge of controlling its success by their permanent use of this offer.

5.5.2. Communication and exchange of experience concept of the BioRegio of Regensburg

5.5.2.1 Presentation of the service

BioPark Regensburg GmbH is the administrative centre and the management unit of the biotechnology cluster BioRegio Regensburg in Eastern Bavaria. The network pools local capacities in the field of biotechnology from university, clinic, technical college, companies and business development agency. By setting up BioPark Regensburg GmbH, the city in 1998 created another catalyst for this rising and future-oriented sector. The biotechnology sector, which currently extends over two sectors of 12,000 square metres, is the hub of the cluster “BioRegio Regensburg”. While at the beginning the focus was mainly on biotechnology companies (according to the OECD definition) of the network, it was soon expanded to embrace the “Life Science Network”, integrating the fields of Analytics, Diagnostics and Medical Technology.
## Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>Biotechnology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>Southern Germany</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>1998</td>
</tr>
<tr>
<td>Branches</td>
<td>Life Science: Analytics, Diagnostics, Medical Technology and Renewable Energy (biogas, bio-diesel)</td>
</tr>
<tr>
<td>Number of members</td>
<td>72 members (in 2007)</td>
</tr>
<tr>
<td>Contact</td>
<td>BioRegio Regensburg</td>
</tr>
<tr>
<td></td>
<td>c/o BioPark Regensburg GmbH,</td>
</tr>
<tr>
<td></td>
<td>Josef-Engert-Str. 9, 93053 Regensburg</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.bioregio-regensburg.de">www.bioregio-regensburg.de</a></td>
</tr>
</tbody>
</table>

## Fact file of the network service

<table>
<thead>
<tr>
<th>Service category</th>
<th>Communication and exchange of experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group</td>
<td>Network members (internal players) and interdisciplinary members of the region</td>
</tr>
<tr>
<td>Service approach</td>
<td>Aimed at combining different technology fields in terms of a technology transformation</td>
</tr>
<tr>
<td>Transferability to other network</td>
<td>3 = good transferability – can be transferred to other branches and value creation chains after minor adaptations to individual problems.</td>
</tr>
</tbody>
</table>
5.5.2.2 Short description of the service “Interdisciplinarity Agency BIOTECH”

With the foundation of the Interdisciplinarity Agency BIOTECH (IA-BIOTECH) a cross-technology service was set up in the network of Eastern Bavaria. It is aimed at providing cooperations between biotechnology companies, academic working groups, and companies of other established branches in order to encourage the development of innovative products and of new fields of business. By “interdisciplinary application” we understand the interlinking of technologies from originally different branches of industry, which represents a significant innovative advance.

5.5.2.3 “Interdisciplinarity Agency BIOTECH”

5.5.2.3.1 Underlying problems

Instead of considering the cluster and the established economic branches of a region separately, the systematic interlinking of different branches allows developing future-oriented innovations and creating new and modern workplaces. The great challenge is to develop an interdisciplinary cooperation suited for practical needs, which means successfully interlinking clusters.

A detailed analysis of the biotechnology location in Regensburg and of the region of Eastern Bavaria, conducted with the help of the consulting firm CapGemini Deutschland GmbH in 2005, showed that there existed further potential in the interdisciplinary application field of biotechnology in the region. In consequence, a concept had to be developed for successfully using this potential in the region.

5.5.2.3.2 Strategic approach and implementation of the service

It is the main task of IA-BIOTECH to start, i.e. to initiate and moderate, interdisciplinary cooperations for promoting innovation and economic growth between biotechnology firms, academic establishments and companies of other established branches. In this process, themes that have already been dealt with are deepened further by involving new players (supra-regionally as well), and new themes are identified and treated which reflect the technological diversity of the region of Regensburg and Eastern Bavaria.

Target group:

- Biotechnology players seeking cooperation partners from other branches to implement their application or product ideas
- Players of an established branch (e.g. mechanical engineering, electrical engineering etc.) seeking novel innovative solutions to improve their products or methods
- Players who want to become familiar with biotechnology and its opportunities and potentials
- Players seeking contacts with academic working groups with specific technological competences and state-of-the-art know-how

IA-BIOTECH is engaged in the following activities:

- A) Maintaining the regional data bank
- B) Conducting focus interviews regularly
- C) Carrying out theme-related interdisciplinary workshops
- D) Alternative events such as bilateral partnering or "Innovation Day"
- E) Follow-up on cooperations initiated
- F) Coordination with technology transfer agencies of the universities in Regensburg

IA-BIOTECH offers those interested the following services:

- A) Contact agency for providing theme-specific contacts
- B) Initiating cooperation through theme-specific workshops and alternative events
C) Identifying and addressing new interdisciplinary themes

D) Coaching of players, e.g. giving assistance for cooperations, supporting applications for funding, offering neutral project management

5.5.2.3.3 Financing and sustainability of the service

Following a pilot phase in 2006 and in fiscal year 2007, the region boasts its first measurable results. Overall, IA-BIOTECH was able to launch 28 potential cooperations from a series of focused interviews and workshops. From the interdisciplinary cooperations identified in the region of Eastern Bavaria, it was possible to bring together BioRegio firms from the fields of analytics, diagnostics, active agents, and biosensorics with regional firms from the sectors of glass, plastics, instrumentation and surface technology. So far, four concrete product ideas have emerged, which have already been implemented in bi-and multilateral cooperations or are at the stage of prototype development.

The IA-BIOTECH service is free of charge and has caused great enthusiasm among participants. The project is currently being developed further with the help of other branches such as the textile and foodstuff industries. Inquiries are regularly addressed to the internet site www.bioregio-regensburg.de with an IA-BIOTECH section of its own, and processed there. The sustainable continuation of the agency by BioPark Regensburg GmbH is thus ensured.

5.5.3 Specialization and collaboration concept of NEMO VisQuaNet

5.5.3.1 Presentation of the network

The most important technical and social aim of NEMO VisQuaNet is creating the conditions, in terms of technology and personnel, for enabling the VisQuaNet community to strengthen and develop its voluntarily networked intelligence and economic power with a view to give a growth impetus to visual quality assurance with digital image processing in the fields of research and industry, food, health and environment as well as security and administration.

5.5.3.2 Brief description of the service “Specialized collaboration service VisQuaNet”

For research and industry, food, health and the environment as well as security and administration, NEMO VisQuaNet wants to make a contribution to ensuring that the subjective quality inspections, which are currently being conducted with qualified personnel on a massive scale, will be complemented and replaced with objective digital quality measurements.

5.5.3.3 “Specialized collaboration service VisQuaNet”

5.5.3.3.1 Underlying problems

The most recent practical experience in network activity shows that our network partners and customers

- consider homepages with a clear message as given,
- complement and increasingly replace classical reading, organize counselling and operative telephoning by rapid “googling”,
- network users are jumping from source to source to inform themselves rapidly,
- images are quickly accepted on account of their high information content, and
- dynamic images (films, videos) in short “youtube-compatible” sequences are gaining over-proportional importance for information, communication and collaboration.
### Fact file of competence network

<table>
<thead>
<tr>
<th>Innovation topic</th>
<th>Micro-Nano-Opto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation region</td>
<td>Middle Germany</td>
</tr>
<tr>
<td>Date of foundation</td>
<td>2004</td>
</tr>
<tr>
<td>Branches</td>
<td>Optical technologies, visual quality assurance and digital image processing</td>
</tr>
<tr>
<td>Number of members</td>
<td>22 members (in 2009)</td>
</tr>
</tbody>
</table>

### Fact file of the network service

<table>
<thead>
<tr>
<th>Service category</th>
<th>Networking and specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group</td>
<td>Network partners and customers of network partners</td>
</tr>
<tr>
<td>Service approach</td>
<td>Subjective quality inspections by skilled personnel are uncomfortable, unreliable and expensive. Objective digital quality measurements become comfortable, reliable and moderate.</td>
</tr>
<tr>
<td>Transferability to other network</td>
<td>3 = good transferability – can be transferred to other branches and value creation chains after minor adaptations to individual problems.</td>
</tr>
</tbody>
</table>
### Table 6: Media stages of development

<table>
<thead>
<tr>
<th>Informative (classical) media</th>
<th>Communicative (new) media</th>
<th>Collaborative (social) media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analogous information</td>
<td>Digital monologous</td>
<td>Digital dialogous</td>
</tr>
<tr>
<td></td>
<td>communication</td>
<td>cooperation</td>
</tr>
<tr>
<td>Analogous reality</td>
<td>Analogous &amp; virtual reality</td>
<td>Analogous and digital reality</td>
</tr>
<tr>
<td>Walkman</td>
<td>Discman</td>
<td>iPod, Storm</td>
</tr>
<tr>
<td>Desk</td>
<td>Desktop &amp; external memory</td>
<td>Netbook and web memory</td>
</tr>
<tr>
<td>Personal know-how</td>
<td>Personal &amp; external know-how</td>
<td>Dynamic group know-how</td>
</tr>
<tr>
<td>Person</td>
<td>Group</td>
<td>Society</td>
</tr>
<tr>
<td>Newspaper &amp; catalogue</td>
<td>Website &amp; CD-ROM</td>
<td>Weblog and Wiki</td>
</tr>
<tr>
<td>Mechanics</td>
<td>Microelectronics</td>
<td>Platform as a service, software</td>
</tr>
<tr>
<td>Trade</td>
<td>e-commerce (ebay, amazon)</td>
<td>s-commerce (social commerce)</td>
</tr>
</tbody>
</table>

Source: NEMO-VisQuaNet

Recent practical experiences also show that there are no patent recipes for solving the current structural and confidence crisis caused by companies and the financial sector. In the quasi self-regulatory structures of small and medium-sized companies and research institutions with flat hierarchies and short ways of decision-making, the following ways and goals are believed to apply:

- Strengthening core competences
- Increasing innovative power
- Expanding customer base
- Developing new markets.

#### 5.5.3.3.2 Strategic approach and implementation

For the practical implementation of its tasks, NEMO VisQuaNet makes use of the most advanced information, communication and collaboration technologies to create, through digital image processing (dBV), the informational and personal preconditions for visual quality assurance, so that

- specialized competence agencies are recognized and interlinked,
- hardware typical for dBV is miniaturized and standardized for quality assurance,
- software typical for dBV is simplified and harmonized for quality assurance, and
- mobile and individualized qualifications can be made according to what is needed.
The most important technical measures were and are:

- Creating the specialized network platform www.visquanet.de as a modern service entity with prompt and authentic, highly visualized publication of reports on experience in the special discipline, and
- linking the platform with advanced free communication media such as skype for the low-priced digital transmission of language, images and jointly used screens (screen sharing) independent of time and location.

The most important measures in terms of personnel were and are conducting regular collaboration forums in the companies of the network partners for

- mutual personal confidence building,
- inter-company optimal networking of resources, and
- mutually interlinked development and qualification.

The most important organizational measures were and are in the external part of the collaboration platform

- regular collection and publication of topical news and special contributions from conferences, meetings, workshops, etc. in the speciality,
- digitalized open and free provision of special reports with passport photos and addresses of key personnel,
- gradual development of a specialized web academy for the autonomous qualification of network partners and customers oriented on situations and requirements,
- as well as in the internal part of the collaboration platform the digitalized provision of internal reports and protocols on

- fixing tasks, dates and deadlines and responsibilities in network management,
- presenting participants in the collaboration and their work results, and
- ensuring traceability in network activity.

5.5.3.3 Financing and sustainability of the service

Network management is financially guaranteed from the network partners’ own funds and funds of the Federal Ministry of Economics and Technology obtained in funding competitions. Future major areas of network management are:

- profiling of the collaboration network as a specialist for visual quality assurance with digital coloured image processing and spectral imaging,
- developing objectively matured, but previously untapped, large growth reserves of visual quality assurance with digital coloured image processing and spectral imaging in domestic and foreign markets, and
- winning new companies and research institutions for collaboration with a view to increase the efficiency and robustness of the collaboration network.
Apart from profiling, the international perception of the relevant locations is a prerequisite for a successful positioning in the international competition between different industrial locations. The German industrial location must focus in this process on themes and technologies where it can exhaust its existing innovation potential optimally in order to produce outstanding innovations in increasingly shorter cycles.

In this regard, the Federal Ministry of Economics and Technology has set itself the task to create the best possible framework conditions for developing new technologies, so that research institutions and economic enterprises are able to strengthen their research activities continuously. One important concern of the innovation policy of the Federal Ministry of Economics and Technology is to interlink the economy, science and research because high-quality innovations can be generated through this close cooperation along the value creation chain.

Thus the Federal Ministry of Economics and Technology in its Kompetenznetze Deutschland Initiative on the national level unites the most innovative and efficient national networks of Germany with technological orientation. Within the Kompetenznetze Deutschland Initiative, some 110 competence networks from nine innovation fields and eight regions are currently operating, where all important high-tech domains are represented by competent networks. The classification of the Federal Republic of Germany into eight innovation regions is not based on the administrative division into federal states, but clearly indicates regions spanning administrative districts and federal states, which have various economic and geographical features in common, particularly with a typical focus in their economic structure that has developed over decades.

Broken down into different economic entities, the following establishments are engaged in the Kompetenznetze Deutschland Initiative:

- over 450 big enterprises,
- over 6,000 small and medium-sized companies,
- over 1,600 research institutions, and
- over 1,000 other service providers.

As a result of the claim of the Kompetenznetze Deutschland Initiative to represent, on the one hand, the German innovation location nationally and internationally and, on the other hand, to support the competence networks involved in their developments and activities, there are two key complexes of tasks focused on different goals:

1. **External impact/externally oriented action channels:**
   The initiative pools information about the most efficient competence networks of Germany, about fields of innovation and about innovative regions and assumes the task of presenting them in the public eye.

2. **Internal impact/internally oriented action channels:**
   The initiative supports the networks represented in their further development and transformation, gives assistance in the horizontal interlinking of the networks both within the same and between the different innovation fields, opens up access to innovative information and communication structures and allows its presentation to the relevant target groups via platforms such as fairs, meetings and publications and organizes seminars on the mutual exchange of experiences between members, with some of the workshops, open to initiatives, addressing all interested players.

In keeping with its externally and internally oriented aims, the Kompetenznetze Deutschland Initiative is addressing both internal and external target groups with different offers.
The following target groups of the initiative should be mentioned particularly:

- National innovation networks
- Investors and business starters seeking business locations
- Decision-makers from companies, politics and administration
- The present and the young generation of scientists
- Media and the interested public.

As the most efficient and economical networks are affiliated to it, the initiative represents the “Club of the best innovation networks” of the Federal Republic of Germany so that admission to the “Kompetenznetze Deutschland” is considered a seal of quality. Therefore, admission of new competence networks to the initiative is based on the fulfillment of criteria of requirements defined accordingly in order to keep up the initiative’s high standards. An independent scientific advisory council, in close coordination with the Federal Ministry of Economics and Technology and the initiative’s office, decides on the admission of networks applying for membership.

The scientific advisory council is a group of renowned representatives of science and economy from the German competence network community appointed by the German Ministry of Economics and Technology, which does not only decide on the admission of new networks, but also determines the strategic orientation of the initiative.

In addition to that, the Kompetenznetze Deutschland Initiative acts through an external office established with VDI/VDE Innovation + Technik GmbH in Berlin on 1 May 2007. The office is primarily responsible for giving advice to interested networks, for quality assurance and for the representativeness of its membership. Furthermore, the office is in charge of intensive cooperation with the competence networks involved, offering, among others, the following services for its members (selection based on examples):

- Exchange and initiation of cooperation with other national and international cluster initiatives;

- Marketing and public relations: besides annual reports, online newsletters and annual meetings, also in charge of the edition of network-specific brief studies, trend reports and analyses as well as conduct of thematic workshops and joint stands at fairs;

- Support for internationalization efforts of affiliated networks: i.a. through the development of strategies, the organization of trips by delegations or information about instruments designed to intensify internationalization activities

- Operation of the internet platform www.kompetenznetze.de, target group-specific presentation of relevant contents and of the possibility of accessing and placing information for the affiliated networks;

- Offers of support for network managers and/or network management: for example with the conduct of theme-related workshops for heads of office of networks involved for the joint further development of the network, as, for example, on network-specific themes like new financing models, need-oriented basic and further training in networks, public relations or ensuring sustainability;

- Offer of individual services: The Kompetenznetze Deutschland Initiative develops, if required and in close cooperation with the affiliated networks, need-oriented offers for individual networks and/or individual fields of subjects, implementing them jointly with the networks.

All the competence networks involved in the Kompetenznetze Deutschland Initiative are characterized by intensive interaction between all network partners, jointly defined objectives and a very close proximity to the market and to industry, making them a core element of technological efficiency, economic growth and competitiveness, in consequence of which they represent Germany’s concentrated power in numerous technological and economic fields.
Chart 12: Regional distribution of the Networks of the Initiative (office headquarters)

Source: Agency of the Kompetenznetze Deutschland Initiative
Contact:
Agency of the Kompetenznetze Deutschland Initiative
c/o VDI/VDE Innovation + Technik GmbH
Steinplatz 1
10623 Berlin
Phone: +49 30 310078-219
Fax: +49 30 310078-222
Email: kompetenznetze@vdivde-it.de
www.kompetenznetze.de
Claudia Martina Buhl
Claudia M. Buhl studied political sciences and has been working as a scientific assistant for VDI/VDE Innovation + Technik GmbH in the section “International Technology Cooperations and Clusters” since 2007. The focus of her responsibility is the analysis and evaluation of networks and/or clusters and network/clusters structures as well as the analysis of federal state-specific economic and innovation systems and of the resulting classification of recommendations for action in the fields of economic and innovation policies. In addition, she works for the office of the Kompetenznetze Deutschland Initiative and is in charge of strategic cluster development, innovation- and cluster-specific issues and of the network/cluster policies by the German federal states.

Dr. Gerd Meier zu Köcker
Dr. Gerd Meier zu Köcker has been working with VDI/VDE Technik + Innovation GmbH since 1999, where he heads the section “International Technology Cooperations and Clusters”. He acts in an advisory and expert capacity on various research and innovation programmes at regional, national and international level. Apart from his scientific activity, a major and important part of his work is devoted to various project managements in the field of cluster policy and cluster development. He has been directing the office of the Kompetenznetze Deutschland Initiative on behalf of the Federal Ministry of Economics and Technology since 2007. In the past, he also advised the European commission as a member of the “High Level Advisory Group on Clusters” on questions of cluster policy.

Contact:
Agency of the Kompetenznetze Deutschland Initiative c/o VDI/VDE Innovation + Technik GmbH Steinplatz 1 10623 Berlin Phone: +49 30 310078-219 Fax: +49 30 310078-222 Email: buhl@vdivde-it.de mzk@vdivde-it.de

Prof. Dr. Jörg Sydow
Dr. Jörg Sydow is professor for General Business Management, especially for business cooperation, at the Freie Universität Berlin and guest professor at the Graduate School of Business of the University of Strathclyde. Jörg Sydow is the author and editor of numerous books as well as co-founder/editor not only of “Management Research”, but also of “Industrial Relations”. In addition, he is a member of the editorial advisory councils of “Organization Studies”, “Organization Science” and “Scandinavian Journal of Management”. His research interests are focused, among other things, on management and organization theory as well as on questions relating to strategic business cooperation and networking, project and innovation management and industrial relations.

For further information: www.wiwiss.fu-berlin.de/institute/management/sydow/index.html

Rainer Zeichhardt
MBA Rainer Zeichhardt is a scientific assistant and doctoral candidate at the Institute of Management of the Freie Universität Berlin. His research interests are focused, among other things, on the subjects of conflicts in organizations as well as management and development of managerial personnel in networks and clusters. As an assistant professor and advisor, he is especially engaged in conflict management, decision-making behaviour as well as the training of key qualifications.

Contact:
Freie Universität Berlin Institut für Management Lehrstuhl Unternehmenskooperation Boltzmannstrasse 20 14195 Berlin Phone: +49(0)30838-53783 Fax: +49(0)30838-56808 Email: joerg.sydow@fu-berlin.de rainer.zeichhardt@fu-berlin.de
8. Literature


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