



Federal Ministry  
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and Research

# Innovation With Services

**BMBF-Funding Programme**



**RESEARCH**

**Igniting ideas!**

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# Innovation With Services

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Services have changed society profoundly. The services sector today is our largest value-added sector and generates the most jobs. This trend, all experts say, will be long-term, making services one of the great hopes of the 21st century in terms of innovation, growth potential and employment. The services sector rose to this position virtually unnoticed by the public. It therefore comes as no surprise that when asked what services are, people still cite traditional personal services. As important as these traditional fields may be, the lion's share of value added is generated by business-related services – logistics, remote maintenance, IT support – and new growth fields. Their development requires knowledge of and insight into the still largely uncharted specifics of the services sector. Regardless of whether it is productivity, management models, business models, network structures, innovation potential or innovation processes in the services sector – we need insights and findings from the field of research and development. What is currently available however is only rudimentary.

Service research that aims to help increase Germany's innovation capabilities and boost its competitive strength has yet to be established in many areas and closely meshed with its area of application – the services sector. The Innovation With Services programme targets this goal: "We want to help Germany achieve the same excellence in the services field as it exhibits in the field of industrial manufacturing. This applies to both service research and the services sector." Achieving this goal will not only benefit the services sector. Germany's overall innovative strength depends on its largest value-added sector becoming a driver in an increasingly globalized market.

The services sector and services science must be linked in such a way that they generate mutual impetus. Businesses must be able to draw on application-oriented research on a long-term basis and to test, introduce and implement research findings in actual operational practice. This is not knowledge transfer in the traditional sense. We are talking here about modern, integrated learning processes between research and industry, theory and practice.

Innovation management influences Germany's overall quality as an industrial location. The Innovation With Services programme will help to develop new tools and processes in this area. Priority here is being given to methods for engineering innovation processes in the services field and to the issue of technology engineering for new services – be it as a basis for complex simulations or for services that only modern technology makes possible in the first place.

Growth and employment effects are greatest in those areas where it is possible to expand one's own market share. Market growth and ever-larger market shares are levers for employment. This is why the Innovation With Services funding programme follows the strategy of strengthening these growth areas in particular.

Employment shapes and defines people's living conditions. It enables them to take part in society and opens up opportunities in life. Given its position within the overall economy, large segments of the services sector lack attractive, professionalised forms of work. This is particularly true of "skilled service work". Constitutive elements of skilled work, such as training, competence/professionalism and dedication, are factors for the success of the German innovation system. As such, they also have to be tapped into and developed for service innovations. Esteem and the appreciation of skilled service work and pride in one's own work are important motivation factors. For companies, they are also a key resource for innovation.

Basic characteristics of the services industry with its great heterogeneity are the structured orientation of its products towards specific target groups as well as processes and methods to accompany these target groups beyond the life cycle of the product and perhaps even beyond the life cycle of the client. Demographic factors are important criteria when forming target groups. How do demographic factors influence the formation of target groups and how are strategies for customer orientation and customer retention developed within these target groups? What does a society look like whose aim is for various demographic groups to live together in a solidary society whilst at the same time being able to shape their individual lives on the basis of their personal abilities and needs?

As a country of ideas, Germany not only has to generate good ideas. It must also once again start using these good ideas itself and make them marketable. We must go from being a country of ideas to being a country of deeds. Much of what the Innovation With Services programme is to and can achieve depends on the acceptance of research findings and new services. This requires that we initiate a dialogue that will bring the impetus arising from the "discussions that take place in everyday life" to service research and service development work. This too is a key task targeted by the Innovation With Services programme. The success of this dialogue will

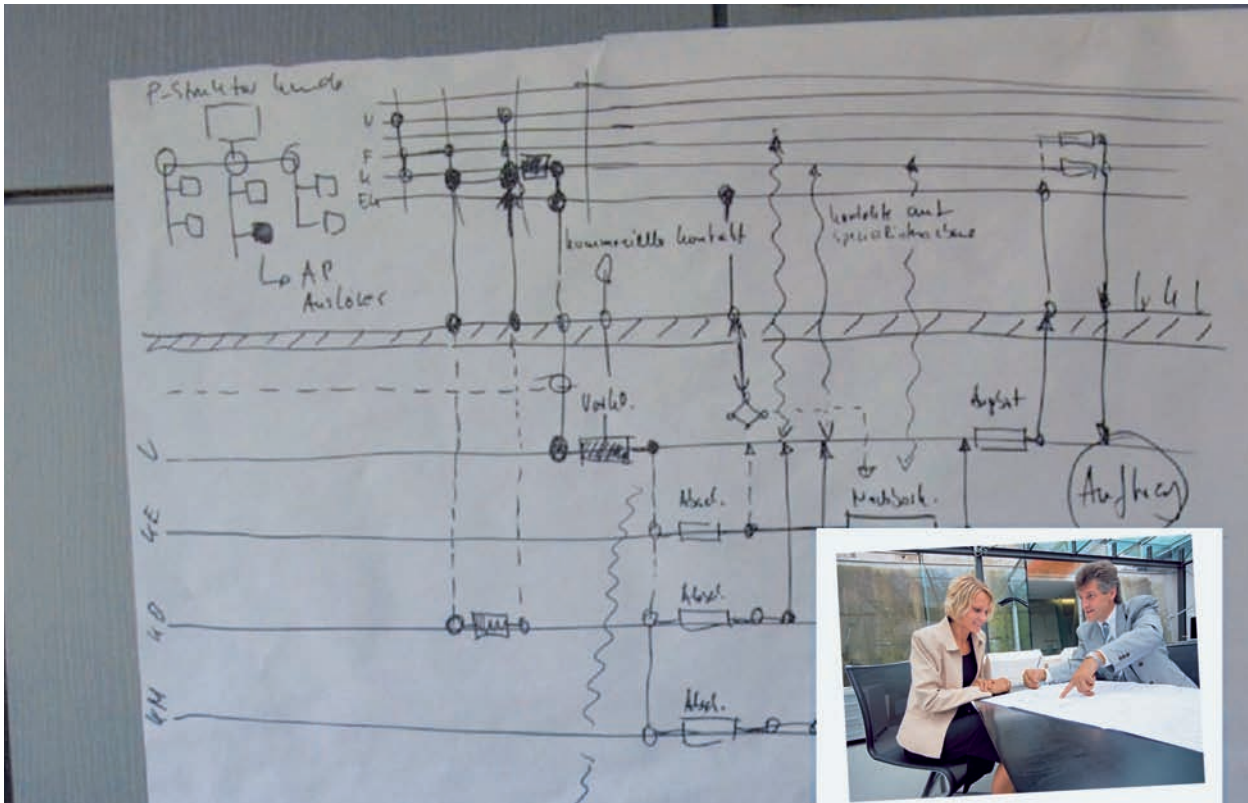
benefit all areas served by this programme: research, the services sector, manufacturing, high-tech developments within our society, which has already exhibited the traits of a service society for some time now.

A handwritten signature in black ink, appearing to read 'Annette Schavan', written in a cursive style.

Prof. Dr. Annette Schavan, MdB  
Federal Minister of Education and Research

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# 1 Background

## 1.1 Services – A factor behind innovation

The socio-economic parameters in modern society are presently experiencing rapid, profound change. A wide range of numerous trends have challenged well established social and economic institutions. A major challenge is on the social sector's agenda in the form of an overhaul of our various social security systems. The economy is in a process of globalization and tertiarisation. "Tertiarisation" is often cited in the same breath with other developments such as technological innovation, globalization and demographic change which pose fundamental challenges for modern societies.

The term "tertiarisation" describes the development from industrial society to service economy. Seen from an economic perspective, tertiarisation means that the services sector is becoming more important in relation to all other economic sectors. A glance at relevant statistics shows that this shift toward a service economy is not a vision of a remote future but already a reality:

Despite numerous economic difficulties, the services sector reported an overall increase in its gross value added between 1998 and 2005. This marks the continuation of a prolonged trend that has led to services constituting approximately 70 percent of Germany's gross value added (cf. National Accounts published in August 2005 by the Federal Statistical Office). This went hand-in-hand with an increase in employment in the services sector – particularly in the area of business-related services – to approximately 70 percent of total employment as well (source: Federal Statistical Office, Erwerbstätige im Inland, August 2005).

Rising shares of value added, the growing integration of services into the products of traditional industrial enterprises, and service firms' concomitant growing importance for the job market are clear indicators for tertiarisation. In view of its success, it can be assumed that the services sector has enormous innovative capability that makes

it a driving force for growth and jobs in a dynamic economy.

There are also clear signs however that there are large parts of the services sector where the requisite development has yet to take place. These signs consist of more than just the almost anecdotal examples of "Germany, the service desert" (be they from the realm of automated loops of notorious hotlines or everyday experience dealing with warranties or repair work). Which is why it is absolutely vital that Germany improves and – where necessary – creates the conditions the services sector requires so that it can function as an economic motor as well.

It is important to strengthen and mobilize the existing driving forces of innovation in the service sector. It is not enough to view services as an extension of technological research. What Germany needs is research that understands the specifics of the services sector and can respond to the services sector's needs and interests on a correspondingly customised basis. The following examples show just how urgently this type of research and development is needed:

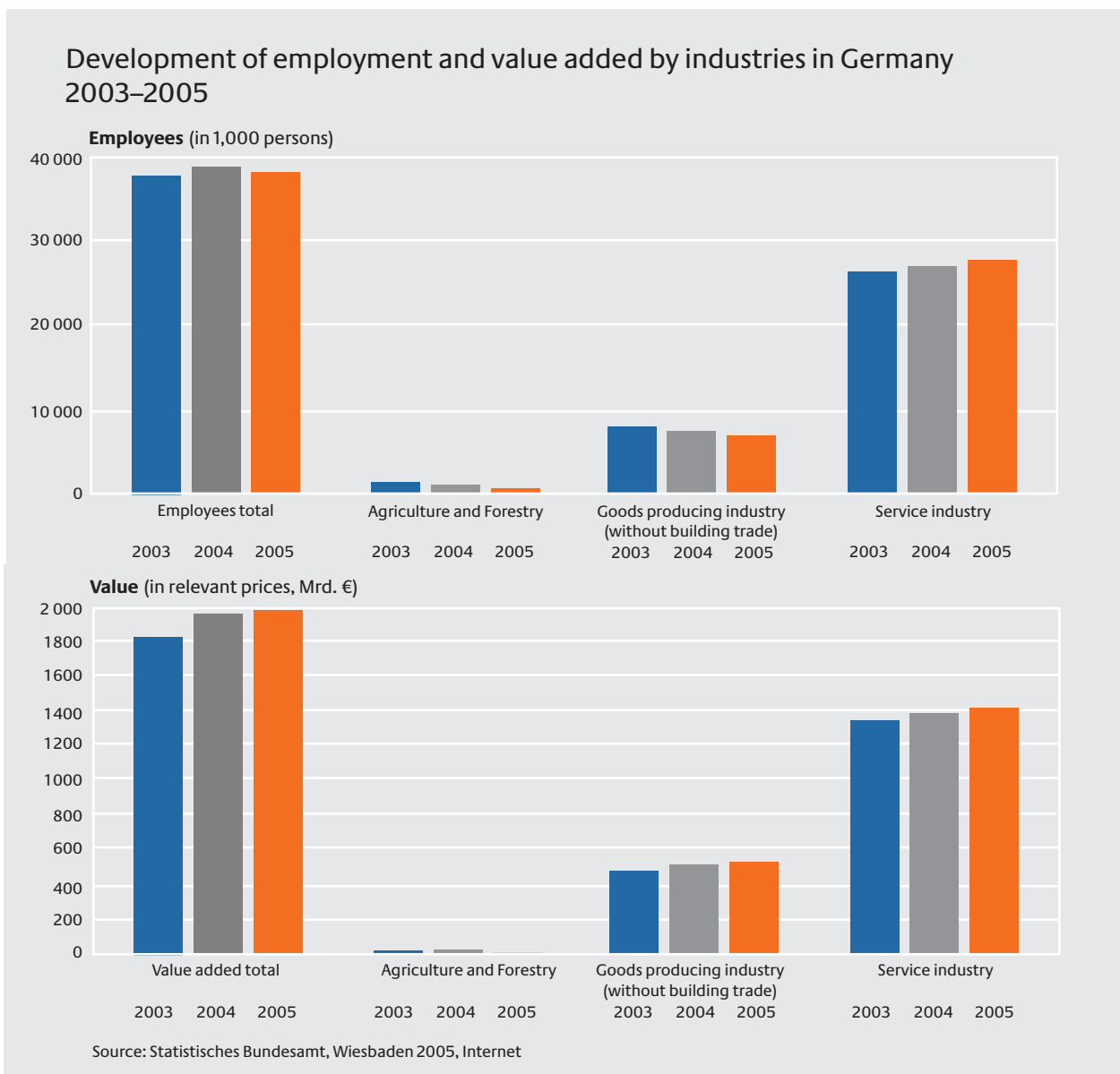
- + **Although the services sector has been the largest value-added sector for some time now, services are still defined in terms of and as something different from industrial manufacturing. "Services have traditionally been defined in negative terms, not by what they are, but what they are not (tangible, durable, storable, transportable, etc.). The services sector has been considered the residual activities of the economy – what is left after classifying agriculture and manufacturing." (from: Communication from the Commission, The competitiveness of business-related services and their contribution to the performance of European enterprises, December 2003).**
- + **As a rule, public discussions emphasise traditional personal services such as hairdressing, household services, nursing services, leisure-time offerings. The majority of business-related services – which account for the largest portion of value added in the services sector and help ensure the competitiveness of producing enterprises as well – are given little notice. The upshot of this "distorted perception" is that a large number of services do not enter the public awareness at all. These empirical facts demand that greater attention also be directed to those parts of the services sector that are not accessible to "everyday life".**
- + **The "entrenched point of view" – in other words, looking at services from the standpoint of producing**

**enterprises – overlooks the special features of the services sector. Consequently, traditional indicators do not work for the research and development activities pursued in the services sector. These indicators are also geared to conditions in the manufacturing sector and treat innovation work, for instance, as the equivalent to spending on research and development. What appears to be a practical yardstick in an industrial context because it provides a good picture of spending based on relatively large shares of tangible investments (laboratories, research personnel, serial studies, etc.) doesn't work when the basis is intangible. Due to this, expenditure on research and development that is reported for the services sector falls significantly short of the amount reported by industry. This does not however mean that there is a lack of research and development activity in the services sector or that its innovation capabilities are insignificant.**

"Service-sector companies are innovative in a different way. Clearly, they invest heavily to develop new services in response to changes in the market, but only a small proportion of this investment is in conventional research and development of the kind picked up by official statistics." (quotation: Ronald Mackay, European Commission, report by the Enterprise DG, excerpted from Innovation & Technology Transfer, newsletter on innovation of the European Commission's Enterprise DG). The special dynamics of innovation in the services sector will first be the object of research which aims to reach a better understanding of the impetus for innovation arising from communicative and social competences. The findings from this research will then provide the foundation for developing and implementing new concepts for designing and engineering services, service organisations, business models, management methods and the like. The matter at issue therefore is "to establish a service science that makes the specific know-how requirements of knowledge-intensive organisations the focus of scientific attention. The services sector needs its own innovation base in order to be able to keep pace with the internationalized competition of ideas. For this reason, it is important for Germany to establish a prominent service science that draws its strength from the close collaboration between practice (service providers) and theory (research institutes)." (quotation excerpted from: Partner für Innovation, Impulskreis Dienstleistungen [Partners for Innovation, Services Impetus Group], 2005).

The German services sector is dominated by industrial concepts. As a consequence, industrial manufacturing strongly influences work structures and education and research strat-

The following figure shows structural change still goes on: The employment in agriculture and forestry remains on a low level at 2,2% (2005), the percentage of the value added accounts for only 0,9%. In 2005 the number of employees in the goods producing sector (not including the building industry) the percentage of employees declined to 20,3%. Nevertheless, the value added raised up to 25,8%, which is due to the high productivity of the German goods producing industry and their high export rates. According to all statistical and economic forecasts the trend of tertiarisation will continue, even if a few experts doubt, whether the positive growth rates in the service sector will be also reflected by an increase of employment.



egies. And today, work in the German services sector is largely associated with two very different levels of training: On the one hand, there are jobs that require high levels of academic

training. On the other hand, the services sector offers a wealth of low-skill jobs. However, the "middle level" – skilled work – is virtually non-existent. As a result, there is not enough accept-

ance of the skilled work in service occupations. This can also be observed to a great extent in trade associations and organisations as well as among enterprises and the parties to collective wage agreements.

## 1.2 Objectives

### 1.2.1 Central theme

The strong interaction of service research and service practice must be viewed as a driving force for innovativeness in the services sector. The Innovation With Services programme consequently places this strong interaction in front of its considerations. The strong interaction between service research and service practice ensures knowledge and insights that can be used in practice, their direct transfer and, consequently, simultaneous learning effects for science and industry. The Innovation With Services programme wants to contribute to this. The prerequisite for success is excellence in service research and the services sector.

**The programme's central theme is therefore:**

**With research and development help Germany achieve the same excellence in the service field as it exhibits in the field of industrial production. This applies to both service research and the services sector.**

Strengthening the services sector will at the same time generate impetus for industrial manufacturing because production and services are interlinked in modern value-added chains in a variety of ways. The programme will use pinpointed research funding to gear research and development to the objective of awakening potential for innovation in the area of the services sector and overcoming possible impediments.

The necessary activities require a simultaneous integration of players from research and service industry to ensure that the generated findings and results are implemented.

In this process, policy-making is essential, because various interests have to be taken into consideration and must be integrated. It cannot be expected that these interests find an equilibrium on their own. In a field where competitive relations often dominate necessary cooperation even in basic and market-unrelated matters (such as the development of broadly applicable tools and methods for generating innovation, the development of a suitable framework, the setting up of networks, and the building of cooperation between industry and research), it is evident that political initiatives are necessary in order to realize these "collective assets". This comprises the central political function of the Innovation With Services funding programme.

### 1.2.2 Overview of the programme's funding objectives

Funding will be provided in pre-defined thematic fields of action. The following project funding objectives were drawn up in cooperation with representatives of research, industry and the social partners integrating the recommendations issued by the Partners For Innovation campaign (Initiative Partner für Innovation). These objectives substantiates the focus and the aims of the research being funded:

- + **Improve the German services sector's market position by systematically developing new services and ensuring the quality of existing services.**
- + **Establish the conditions necessary for attractive jobs at various levels.**
- + **Realign service research on the basis of economic, social and technological developments.**

## 2 Areas of action

### 2.1 Megatrends and general conditions

Tertiarisation is a megatrend that is occurring and represents a challenge together with other radical changes. Research funding must therefore take these changes into account as part of the general environment. For this reason, a central task will be to align service research to these trends. Of particular importance for the Innovation With Services funding programme are those trends that enable tertiarisation in the first place or that give rise to new services. These trends are:

#### + Internationalization and globalization

The internationalization of the German service sector was pushed by modern, networked information and communication technologies. This process is still ongoing. The associated increase in global business interdependence brings more opportunities for cooperation but also creates the risk of dependency. New automation technologies – such as those that enable remote maintenance services – have also led to another wave of internationalization. This increases the pressure on enterprises not only to modernise their internal processes and develop new business models but also to push ahead with internationalization.

#### + Customer Orientation

This new focus in the provision of services – which in turn is largely the product of tertiarisation – creates new types of products ("hybrid products") where distinctions between the manufacturing of products and the rendering of services are no longer appropriate or even possible. Companies that want to maintain their market position and will have to develop new processes and business models for product development and marketing and new forms of customer relations and ways of maintaining customer loyalty.

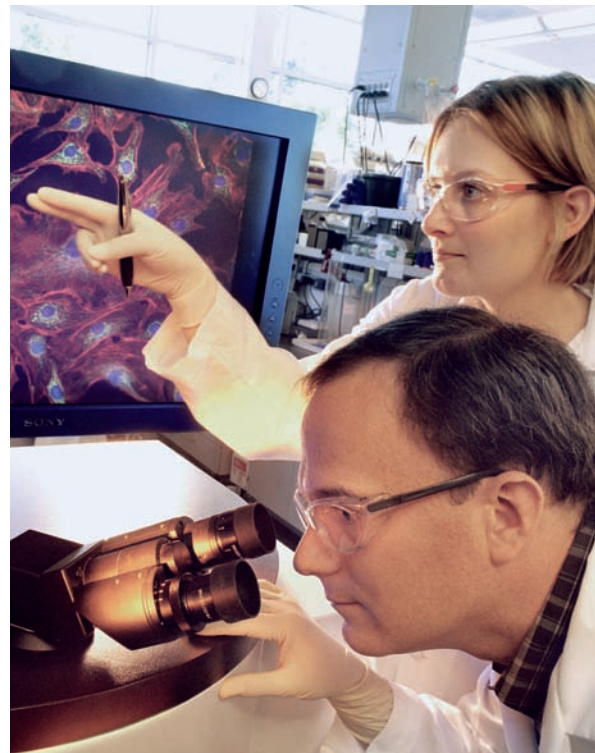
In today's highly competitive global markets, customer orientation, customer acquisition, customer loyalty

and comprehensive service are decisive factors for success in the marketplace. Precisely these factors are the special strength of a networked, tertiarised economy.

#### + Growing importance of human resources and knowledge

Success in a service economy demands targeted human resource development – in other words: purposeful personnel development, new models of employee participation (e.g. organisation, business processes etc.) and the intensive use and assessment of knowledge.

The shortage of qualified workers, particularly in the area of knowledge-intensive business-related services, is problematic. Only companies with qualified, motivated workers are in a position to take advantage of their high investments in innovative technologies and put them to profitable use. Interaction with customers, the knowledge-intensity of numerous services and the importance of implicit knowledge are further reasons why business success will be possible in the future only when there is an adequate supply of skilled, qualified and motivated workers.



## 2.2 Reflections defining the fields of action

The success of this programme will depend, on the one hand, on whether relevant thematic priorities can be established. On the other hand, in a rapidly changing environment, it is indispensable that the planning, implementation and control processes used during programme implementation ensure that the programme itself can respond to change. Therefore, the programme itself must be capable of learning. The Innovation With Services programme was created as a learning programme.

Working closely with the research field, industry and the social partners and with an eye to the recommendations issued by the participants in the Partners for Innovation campaign, funding policy objectives were translated into the following thematic fields of action. These fields of action provide the starting point for the funding provided through this learning programme:

- + **Innovation management,**
- + **Innovation in fast-growing fields,**
- + **People in service companies.**

In order to ensure the quality of funding in the thematic fields of action, it will be absolutely necessary that the programme ensures sustained cooperation between theory and practice and that it ensures public debate. These transversal tasks arise in every field of action and are constituting the interface between a well structured funding by research contents and a continuous early detection of important changes embedded in the framework of a learning programme.



## 2.3 The fields of action in detail

### 2.3.1 Innovation management

Many other sectors – and concomitantly a country's attractiveness as a location for business, research and industry – are dependent on the quality, flexibility and innovativeness of customer-focused, knowledge-oriented service companies. The overall innovation development process entails a number of phases that are interlinked and interact with one another in a variety of ways. Planning, organising and monitoring service innovations is a correspondingly complex process. The most important sub-processes in this connection are:

- + **Market analysis and customer demand surveys,**
- + **Human resources development,**
- + **Knowledge generation and knowledge work,**
- + **The engineering of interactive work,**
- + **Development and use of information and communication technologies,**
- + **Automation strategies,**
- + **Service Engineering.**

#### 2.3.1.1 Methods for engineering service innovations

Systematic business segment development is an important prerequisite for ensuring that innovations can successfully develop and be implemented in the service field. Research activities have to be initiated and expanded for this.

A central task here must be to develop instruments that make it possible to understand, describe, measure and consequently engineer service processes (better than in the past). The traditional indicator systems – which were borrowed from industry – are only partially able to do this.

The level of customer service is rising continually in the face of competitive pressure. For example, in the past it was enough to offer skeletal standby service. Today, customers expect full, 24-hour availability with the shortest possible response times.

Furthermore, experience shows that building regional, international and global collaboration in networks offers small and medium-sized enterprises in particular the oppor-

tunity to operate successfully in highly dynamic markets through variable types of cooperative arrangements. Regional innovation cluster that work together with numerous affiliated collaborative partners offer a successful organisation model, and not just in the IT sector. For this reason, the emergence of regional service cluster will be a fundamental factor in the success of the German services sector as a whole. Correspondingly, the management of collaborative activities in the innovation process will be a key competence found in successful businesses and networks.

Standardisation, quality assurance and certification of services will be a decisive competitive factor in the services sector as well in the future. In spite of all the individualization that services have seen, customers still expect them to comply with certain standards. This fact will become even more apparent in networks that offer services on a collaborative basis. Businesses that want to offer their services on such a basis have to agree on common standards.

Therefore new infrastructures, organisational models and process models have to be designed and new testing and certification procedures have to be developed.

Examples of research could include following questions:

- + **Which new business models and product development processes can meet the new conditions in the services sector and open up new market opportunities?**
- + **What tools (such as concepts for measuring service productivity or suitable service-life-cycle management systems) have to be developed that would make it possible to understand, describe and measure service processes and concomitantly make them "engineerable"?**
- + **How does integrating services into production change companies' business models, product development and management?**

### 2.3.1.2 Technology engineering for successful service innovations

Services are using to a steadily growing extent modern technologies. Accordingly, they are making demands on how technology is engineered. A special feature of the services sector is that it assesses technology from a variety of angles. Successful service companies have to take the viewpoints of

their customers, their own company and their employees into account when assessing technologies. This is because regardless of how much technology they apply, services are always labour-intensive and rendering them requires relatively immediate contact with the respective customer.

Technology engineering has the following two core tasks:

- + **New technologies and equipment enables companies to generate new services. For example, some services (remote services) can be realized only with the help of cutting-edge IT infrastructures and, to an extent, only through the use of robots. In such cases, the control centre can be located several hundred kilometres away from the site where the services are being provided.**
- + **Modern technologies improve the quality of existing services and make it possible to completely re-engineer actual service work. New concepts for the interaction between work design and technology engineering have to be explored. As a rule, modern information and communication technologies and the next generation of these technologies (mobile communications) are among those technologies that have definitely found their way into service firms on a large scale. Moreover, automation technologies became considerably important in recent years. In many cases, the success of a particular technology also depends on the development of innovative services that make its use easy and comfortable and therefore commercially viable in the first place.**

Examples of research questions in this connection include:

- + **Under what conditions can new technologies enable new services?**
- + **What contributions do new technologies make toward facilitating service work and/or improving the quality of services?**
- + **Looking at the integration of services into products and vice-versa, what role do technologies play for business models and product development processes in businesses? Which innovation management methods are required in this connection?**

### 2.3.2 Innovation in fast-growing areas of the services sector

Growth and employment effects are greatest where it is possible to expand one's own market share in growth markets. Market growth and increasing market shares create leverage which also manifests itself often in remarkable employment effects. This is the reason, why the Innovation With Services funding programme follows the strategy of strengthening these growth areas in particular.

Examples of research questions for all growth areas in this connection:

- + **How can new growth areas be identified and what criteria can be used for this?**
- + **Which growth areas require research and development in order to exploit the full potential?**
- + **What opportunities and obstacles exist (in various growth areas)?**

Varying combinations of these research questions take centre stage in the following areas. The growth areas listed here serve as examples. A final and definitive list is not possible here.

#### 2.3.2.1 Business-related services

"Traditional" industrial products are increasingly merging with services, particularly in the area of business-related services. Many industrial enterprises no longer offer machines and equipment as products in and of themselves today. Instead, they go a step further and guarantee specific amounts of output. This is possible only when diverse services have been integrated into the particular product. It is not yet clear at this time what role service firms – as independent service providers – could play in this process.

Changes in "marketing behaviour" are not the only consequence of this. The entire production development process, business models, manpower planning and the like have to be re-designed. Today's new "hybrid" products which incorporate services into material products to create customer-oriented solutions pose new tasks for management in all corporate areas.

#### 2.3.2.2 Services in the wake of demographic change

The demographic data are unambiguous about the road to take: Current demographic trends can open up new opportunities for Germany's economic development and the creation of new jobs when we succeed in enabling older elderly people to play an active, self-confident part in society, trade and industry.

For the economy, the older generation represents a largely untapped market for new products and services. The change of the self-perception of the older generation requires, not only a change of government action but more importantly private initiatives, and makes the development of new services and technologies both a wise idea and possible. The question of how the opportunities arising from this trend could be used should be thoroughly examined. Special attention should be given to services that help people remain independent long into their old age and that foster opportunities for older individuals to take part in, for example, technological advances.

Personal services will become increasingly important in the wake of changes in employment patterns (increase of female work and part-time employment) and demographic changes in society. However, services of this type are not especially developed or have not been professionalized to any great degree due to their provision and cost structures. In this connection, new kinds of funding body/sponsor, operator and financing models should particularly be investigated.



Social services are also an important location factor. New service models that effectively and efficiently strengthen this sector must be developed and tested in the future – with the participation of the private sector. A demand is seen in inter alia the early development of integrated service packages that customers can order as needed. Since the growth area is located along the interface between the private and public sector, questions about pricing and financing have to be asked here. There is often a lack of experience with and information on how alternative financing models influence the marketability of the particular services. The same applies to the question of which budget effects such models could cause in the public sector.

### 2.3.3 People in service companies

Employment opens up opportunities in life (income, self esteem) and chances to take part in society. As a result, it has a decisive impact on the individual's living conditions. Looking at the area of service work, the question of how the quality of service workers' employment and lives is changing and how it can be improved must therefore also be raised. An examination of this question must take into account possible conflicts between the aims of international competitiveness, employee and corporate flexibility and stable employment.

Employee satisfaction and motivation, particularly in the work-intensive, customer-oriented services sector, has a direct impact on overall business performance and consequently on the individual company's anticipated business performance. Research funding in modern times have to consider especially the principles of equal participation of both sexes. Modern research funding must pay special attention to it.

#### 2.3.3.1 Designing skilled service work

The level of qualification and motivation of a company's employees is decisive for innovation and success in the services sector and therefore also influences the chances for additional growth and employment. Given the sector's position within the overall economy, large segments of the services sector lack attractive, professionalized forms of work. This is true first and foremost of the non-academically trained part of "skilled service work". For this reason, training and work development activities should not be restricted to service occupations that require academic training. Constitutive elements of skilled work, such as training, competence/professionalism and dedication, are factors for the success of the German innovation system. As such, they also have to be opened up and developed for targeted service innovations.



The campaign "Partners For Innovation" delineated a promising avenue for this. The development of a "blue collar pride" – as it is known in the manufacturing industry and vocational trade – provided the point of departure here. Esteem and appreciation of skilled service work and pride in one's own excellent job performance are important motivation. For companies, they are also a key resource for innovation.

The concept of skilled services is a prerequisite for respect and appreciation. Interactive work and knowledge work constitute service-specific forms of skilled labour. Skilled labour stands not only for occupational identity and self-confident work but also for economic, innovative and customer-oriented activity. Both the professionalization of "unskilled service work" through corresponding training options and the need for a new, gender-spanning model for skilled work in the services sector should be examined in this connection.

Service work is interactive work and this interaction begins with the intensive relation between the customer and the person rendering the particular service. This gives rise to special requirements being made of employees, in terms of, for example, their ability to communicate and collaborate, their level of process competency and their understanding of value-added activities in the services sector. Training and personnel development activities must correspondingly reflect this because service work is always a social process as well.

There is presently little well-founded research or findings on the important social phenomenon known as interactive work. Relevant research is needed in order to be able to describe and measure developments. Such research would also enable the use of targeted indicators and activities for ensuring the employability of a company's workforce and the company's own productivity on a long-term basis.

Examples of research questions in this connection include:

- + **What correlations exist between the requirements and special operative mechanisms of service production on the one hand and the development of appreciation for and pride in service work on the other?**
- + **How are the new job requirements that skilled service work places on employees being covered by available training options?**
- + **What new models are needed for skilled service work?**
- + **What interplay takes place between service work and service quality?**
- + **Which work-life balance concepts can be implemented in the services sector with its large share of female employees and its high level of customer intensity?**

### **2.3.3.2 Employment trends in a modern service economy**

Funding research on development of employment additionally always serves the objective of generating jobs that are economically useful and, at the same time, acceptable for society. This general aspiration also applies to funding provided in connection with the Innovation With Services campaign. Regional and international employment policy activities to foster innovation in the services sector are to be analyzed and examined to determine whether and how they could be applied elsewhere.

Examples of research questions in this connection include:

- + **Will the services sector meet the demand for suitable jobs that are acceptable for society and the individual?**
- + **What obstacles to and opportunities for realising this exist at present?**
- + **Could models that have proven themselves at regional or international level be used in other regions?**
- + **What are the critical factors in this process?**

## 3 Transversal measures and instruments for programme implementation

The interface between topic-driven funding and "traditional instruments for research funding" determines the programme's ability to learn. Transversal measures and instruments for ensuring the learning process have been set up along this interface.

### 3.1 Transversal measures

Transversal measures address two levels:

- + **Sustained cooperation between research and practice,**
- + **Public debate.**

#### 3.1.1 Sustained cooperation between research and practice

The main element of cooperation will continue to be research and development projects that are jointly supported by industry and the scientific community and examine central issues seen in the services sector. International networks can supplement this work in important ways and make use of the funding opportunities offered by the EUREKA programme. In addition to this, there must also be research projects that deal with fundamental issues of the services sector. These would include studies that contribute to the methodical substantiation or systematisation of the area under study and help improve Germany's position in comparison to other countries. Collaborative activities with actual practice are also targeted.

The services sector has a prevalence of small and medium-sized enterprises. Additional support in the form of appropriate research and development measures that take into account the sector's characteristic value-added conditions is necessary if such firms are to develop and implement innovative service ideas and strategies.

#### 3.1.2 Service innovations and public debate

A main driving power to generate service innovations and to increase the public awareness and public esteem of service work is the initiation of a broad public debate about development trajectories and options. As a rule, only inventions with a broad public support are succeeding in the market and can be considered as economically important innovations. This rule is particularly true in regard to services:

- + **Services are developed and rendered in close contact with the particular customer. Therefore, the rendering of a service is in itself a "social process" that cannot dispense with debate (for example, about data protection or personal rights).**
- + **The "German industrial model" still defines our society to a large degree at institutional level. The services sector has developed at a very rapid pace which has not been adequately reflected in societal development to date. For this reason, the services sector's potential is often underestimated. As a result, there is a lack of appreciation and esteem within society for service work and for the people working in the services sector. A participatory societal debate is necessary for Germany's development into a service society.**





### 3.2 Instruments for programme implementation

A broad public debate will provide the foundation for the progressive development of the Innovation With Services programme. This debate is being supported by the work and experience of focus groups and by annual status reports and meetings of experts.

- + **Focus groups consisting of funding recipients and parties interested in a particular funding priority will be used, inter alia, to ensure internal networking, increase visibility and develop recommendations for research activities and future action.**
- + **A conference lasting several days will be held approximately every two years with the aim of presenting and widely discussing in various forums the current findings from funded projects.**

#### 3.2.1 Advisory bodies (programme advisory board)

The programme advisory board is comprised of representatives from the research field, trade and industry, and the social partners. The board advises on matters involving the development, elaboration and implementation of the Innovation With Services funding programme being conducted by the Federal Ministry of Education and Research, particularly in regard to the development of new funding priorities and the

assessment and control of ongoing funding activities and new programme developments.

#### 3.2.2 Programme evaluation

Open programme structures are absolutely indispensable for a learning programme. Open programme structures also require learning loops in order to ensure, for example, the progressive development of suitable funding instruments or content priorities. As a consequence, a number of activities will be carried out, including:

- + **Meta studies on individual funding priorities. The findings from these studies will be incorporated into the respective ongoing research funding activities.**
- + **Regular international monitoring activities that are used to give domestic funding activities an international perspective and which provide a platform for critical discussions (with the advisory board, for example) on the progressive development of the Ministry's Innovation With Services funding programme.**
- + **Impact analyses and strategic audits that target the Innovation With Services funding programme as a whole (after about five years) and contribute to the overall assessment of funding measures with regard to their direct and indirect effects and the programme's progressive strategic development.**

## 4 Links to other funding measures

### 4.1 Innovation With Services – International experience

Research and development must deal with internationalization in two different ways. On the one hand, trade and industry are internationally active as customers for research findings. On the other hand, however, there is competition within the research community for international reputation and the integration into international research networks.

This also applies to service research which is still a relatively new field in Germany. The international research arena registers Germany with its tradition and strengths in the production research field. Today, German service research still lags behind German production research in the international research arena. It has caught up somewhat in recent years, due not only to German service research's forward-looking focus on nationally and internationally relevant research topics but also to the need for services in the European Union. Internationally relevant research topics have been tapped by projects (such as the Fit For Service project) that were funded through the Innovative Services research programme of the Federal Ministry of Education and Research. These projects took stock of international service research, giving special attention to Germany's role. They identified trends with longer-term impacts and pointed out deficits in current research. Experts from North and South America, Asia, Australia and Europe estimate the greatest need for research in the future will be in connection with the inter-related themes of practical-methodological fields of application and megatrends in the areas "service innovation", "internationalization of the services sector" and "service management". There was a considerable increase in how important experts felt relevant research is to the quality of service jobs and service work. The European Commission also feels that the European economy can become one of the world's most innovative and competitive knowledge-based economies only when it succeeds in strengthening the services sector as a whole. Europe's potential in this connection derives from its increased awareness of the importance of service innovations, its good educa-

tion infrastructure and its strong position in certain areas of service research (such as standardisation, service engineering, service work design) to which German service research has made contributions that have received notice throughout Europe.

Weaknesses include the public's lack of understanding for the services sector's value creation and society's lack of appreciation of and esteem for services and service work. These two areas are a focal point of the new Innovation With Services programme which has designated them as topics for research.

Europe has the opportunity to "bundle" European service research and assume the role of world leader in innovation. This is particularly necessary in order to strengthen trade in services within Europe. Important areas are the development of service innovations and the continued internationalization of services.

### 4.2 Other funding activities conducted by the Federal Ministry of Education and Research

The following short survey points out important connections between the Innovation With Services programme and other research programmes and measures conducted by the Federal Ministry of Education and Research. At the same time, it aims to encourage potential applicants and interested parties to carry on where existing findings has left off and get in touch with other thematic areas and groups of players with the object of interdisciplinary, customer-oriented and networked work.

#### 4.2.1 Potential For Innovation In A Modern Working Environment

When our notion of innovation becomes too technology-centric – which even today still occasionally happens in the public debate – we tend to forget the fact that there can be no innovation without people who through their research work develop findings, translate existing knowledge into products or processes, and produce, buy or use new products. In other words: The "human side of innovation" is neglected far too often. Wherever people are involved, social processes are also at play. Inventions by themselves are not innovations.

This is particularly evident in the working world because innovation dynamics are driven by the interplay between technological/technical developments and socio-economic conditions. For example, companies can implement new production processes successfully only when their employees have the motivation and competence needed for acquiring

new skills and performing new tasks. Corporate culture and work engineering play a decisive role in this.

The programme's central theme – "strengthening innovation capability by linking work development with personnel development" – shows that its focus will continue to be on the linking of employee interests with company interests or, in other words: The focus will continue to be just as much on individuals as on organisations or (increasingly) networks. The following fields of action provide the starting point for the funding activities that began in 2006:

- + **Value-added partnerships: relations between businesses and their customers,**
- + **Innovation partnerships: the networking of small and medium-sized enterprises,**
- + **The ability to change: the balance between flexibility and stability,**
- + **Innovators: people in the innovation process,**
- + **The balance between new modes of work and education and training structures.**

#### 4.2.2 Research For Tomorrow's Production

With this programme, the Federal Ministry of Education and Research fosters and supports the active shaping of technological, social and ecological change. Its aim here is to contribute to the German economy's long-term success in globalized markets. The project is distinguished by its openness for current problems and its use of nationwide idea competitions. Working together on an ongoing basis in the four areas

- + **Market orientation, strategic product planning and production-related services,**
- + **Technology and production equipment,**
- + **Cooperation between producers,**
- + **Men and the adaptable enterprise.**

groups of experts, working groups, organisations and scientific associations examine the problems facing manufacturing companies and identify the respective need for research and development.



#### 4.2.3 Microsystems technology

In Germany, microsystems technology plays a key role in growth and employment. The number of jobs that are directly attributable to microsystems technology is currently 680,000 – and growing. In order for the German economy to maintain and strengthen its leading position, new developments in microsystems technology have to be quickly translated into products and marketed.

All microsystems have a common feature: They all integrate different functions, materials, components and technologies into one system. Microsystems technology combines different basic technologies such as mechanics, optics, fluidics, polymer electronics and new materials. Furthermore, microsystems technology provides the necessary interfaces for integrating innovative developments from new fields of technology such as biotechnology and nanotechnology into new products.

Given its integrative nature, microsystems technology requires a high degree of interdisciplinary cooperation. For this reason, funding concentrates on collaborative projects that tap into the scientific capabilities of research and development institutes and, additionally, set up networks between businesses. The Federal Ministry of Education and Research supports microsystems technology in four areas of

innovations that are important for industrial and social policy:

- + **Life sciences,**
- + **industrial manufacturing,**
- + **Mobility,**
- + **System integration.**

#### 4.2.4 e-Science

With its e-Science campaign, the Federal Ministry of Education and Research aims to optimise knowledge transfer activities in their function as a motor for innovation. Knowledge has become a production factor. As a consequence, access to information and the exchange of knowledge are decisive competitive factors. Today, the internet is the infrastructure for accessing global knowledge. This is particularly true for science and research. Participants in the e-Science campaign are analyzing, developing and testing tomorrow's technologies, processes and applications with the help of Next Generation Internet. Major international corporations have already begun to strategically gear themselves to these new developments.

The design and organisation of high-performance networks for education, science and research is of critical importance for this vanguard development. The Federal Ministry of Education and Research is currently supporting the development of what will one day be a knowledge network that offers schools, universities, research institutes, businesses and government agencies tailor-made processes and services for organising and developing their stocks of knowledge.

#### 4.2.5 Competence development and lifelong learning

Important research questions that are being examined in the Potential For Innovation In A Modern Working Environment programme draw on and move forward from the findings from and groundwork laid by the Learning Cultures And Competence Development programme which gives centre stage to two trends that will be decisive for the future:

- + **The expansion of the continuous learning perspective with its linear instructional and learning relations into a "culture-of-learning perspective" with different instruction and learning strategies – something that is particularly important with regard to the subject of innovation and learning.**

- + **The transition from a focus on formal qualifications to a more dynamic way of viewing skills and competences because qualifications are a static reflection of the individual's level of knowledge or competence at a certain point in time whereas skills and competences help people deal with and manage change.**

The Learning Cultures And Competence Development programme is divided into the following segments:

- + **Basic research,**
- + **Learning in the work process,**
- + **Learning in a social environment,**
- + **Learning in and from continuing vocational training centres,**
- + **Learning online and with multimedia,**
- + **Support functions (international monitoring, post-graduate study network, the KomNetz project).**

Work on topics that go beyond the area covered by the Potential For Innovation In A Modern Working Environment programme will be continued in separate funding activities set up for them.

Today, learning as a life-long process is breaching the boundaries of traditional education structures and the long-standing division of qualification pathways into a strict sequence of segments that often ends with a school-leaving certificate or university degree. Learning as a life-long process means more: On the one hand, it means making it possible for individuals to re-enter qualification pathways, on the other hand, it means having skills and competences certified that have been acquired through occupational experience but are not formally confirmed and offering new forms of instruction and learning for this. Lifelong learning however also means offering education as a path to more personal responsibility in life. Thus it comprises as a whole all formal, non-formal and informal learning that takes place over the course of a lifetime.

As part of its Lifelong Learning For All action programme, the Federal Ministry of Education and Research identified in 2001 concrete areas for action and bundled corresponding measures aimed at putting Germany on the road to becoming a "learning society". With these activities, the Ministry wants to make a long-term contribution to fostering lifelong learning for all individuals and to a forward-looking reform of Germany's education structures.

The fundamental aim here is to:

- + **Boost learners' personal responsibility and self-direction,**
- + **Ensure equal opportunities,**
- + **Foster cooperation between users and suppliers of training programmes,**
- + **Strengthen the links between all levels of education.**

#### **4.2.6 New Media In Education**

The Federal Ministry of Education and Research is pushing the reform process in the German education system forward with its New Media In Education funding programme. The objective of this programme is to ensure the transfer of project findings obtained to date.

As part of this programme, ways of working with computers in schools have been tested in various school projects over the past four years. A comprehensive reform of the country's education system would today target the use of computers into all schools around the country which would also

mean: Doing away with the 45-minute rhythm, using cross-curricular instruction, combining instruction during the morning with study time and homework during the afternoon and fostering self-directed learning. The use of computers at schools and other educational institutions has also had a positive effect on quality. Studies in the wake of the PISA study show that pupils who intensively use new information and communication technologies also have good to very good reading skills.

In the area of vocational education and training, worker employability is to be improved with the help of initial and continuing vocational training that uses computers and the internet and is tailored to the needs of the market. This approach makes it easier to link work with training. Forms of in-service training that are more efficient and cost-effective are also to be systematically developed and implemented on a broad basis. Modular training software is to be incorporated into initial and continuing vocational training on a general basis.

In the university sector, the German government aims to firmly embed the use of new information and communication technologies and their potential applications in the training provided at the country's universities. With this in mind, it is giving priority support to the development of content and comprehensive strategies for the use of new information and communication technologies at universities.

## 5 Services Impetus Group – The Campaign „Partners For Innovation“

The Partners For Innovation campaign brings together players from trade, industry, the science community, associations and the social partners with the aim of generating impetus for action on the part of the political sector, trade, industry and the science community in important fields of innovation. Processes and requirements for service innovations were the focus of the Services Impetus Group. Service innovations and the supply of new services, it was found, will be a decisive factor for success in global markets and thus a particularly relevant locational factor in determining attractiveness as a site for business, research and industry.

The Partners for Innovation campaign chose an approach that first illustrated the innovativeness of individual areas with the help of examples – so-called pioneer activities – in order to then use the experience gained from and prerequisites for these activities to infer general conditions that would be conducive to innovation in the respective field. Nineteen pioneer activities were presented in the Services Impetus Group which used them to analyze:

- + **Which general conditions are needed for the creation of service innovations,**
- + **How technological innovations and service innovations are mutually conditional on each other and enrich one another,**
- + **How to raise the status of internal and external services to reflect their actual importance, and**
- + **How the many and diverse changes (such as current demographic changes) taking place today act as a catalyst for service innovations.**

The pioneer activities themselves ranged from, for example, gearing new service products to social and consumption-related trends, developing new organisational and business models, intermeshing technology innovations with service innovations all the way to organising and structuring general

conditions so that they reflect the needs of services. Drawing on the actual measures conducted by the pioneer activities, the Services Impetus Group defined fields for shaping and organising the innovation environment and outlined recommendations for action:

- + **Create enthusiasm for services among our citizens and government bodies.**
- + **Boost companies' innovation capabilities.**
- + **Improve the technological and financial context.**

Looking at service research, the Services Impetus Group noted: "The services sector needs its own innovation base in order to be able to keep pace with the international competition in the ideas arena. For this reason, it is important that Germany quickly establish a prominent service science that draws its strength from the close collaboration between practice (service providers) and theory (research institutes). Service science provides the foundation not only for research that is of relevance to services but also for new education products for initial academic training and continuing education. ... For this reason, financial and structural priorities have to be set in the service research field. Pinpointed government assistance for activities that drive innovations can be useful for this, whereby greater consideration is to be given to economic conditions."



The funding provided by the Ministry of Education and Research in recent years already anticipated a large part of the measures deemed necessary by the Services Impetus Group. This is shown by the pioneer activities – some of which would not have been possible without research funding. The

Innovation With Services programme is another important milestone toward strengthening Germany's service research and services sector and thus also constitutes a contribution toward realising the recommendations developed by the Services Impetus Group.

## 6 Implementation of the Funding Programme „Innovation With Services“

The Innovation With Services programme funds research and development in a dynamic and heterogeneous field. Given its dynamic nature, it is evident that the services sector will change considerably during the course of the programme. This programme was designed as a "learning" programme so that it can quickly respond to these change processes. It offers an open research framework in which fields of action and funding measures can be successively proposed, assessed and implemented. The need for action and research is systematically analysed with the help of experts and the programme's advisory board with an eye to identifying new thematic areas and concrete projects. Proposals and priorities for the necessary work are developed from this in the course of a discussion process with the programme's advisory board and representatives of all areas involved. Based on this and in close coordination with other activities, the Federal Ministry of Education and Research then publicly announces its funding measures.

The method of using a broad debate as a basis for developing fields for action already proved its worth during the programme development phase: The Innovation With Services funding programme has been developed through an intensive discussion process with representatives of research, trade and industry, intermediary and government organizations, and the social partners.

The Federal Ministry of Education and Research will continue this discussion process. An advisory board consisting of members of the above-mentioned bodies will assist the Ministry in intensifying and making an ongoing activity of the discussion process (which also covers changes in trade and industry and necessary transfer activities) and help it elaborate announcements.

Once an announcement has been published in the Federal Gazette, outlines for projects may be submitted to the project management agency. Project proposals have to be based on the latest developments in research and development (R&D) work being done in the respective thematic field. These would also include international R&D findings along with findings and insights from earlier programmes and ongoing projects.

Developed around the programme's central theme (please see section 1.2.1), the following general criteria are used to assess project proposals:

- + **Novelty of the research question and the targeted innovative solution high-risk project,**
- + **Interdisciplinarity and cooperation between research, trade and industry,**
- + **Contribution to achieving a sustained improvement in the innovation capabilities of businesses in general and small, medium-sized and young enterprises in particular,**
- + **Contribution to safeguarding existing jobs and creating new ones,**
- + **Convincing plans for the commercialization and exploitation of the results,**
- + **Opportunities for businesses of various sizes and from different sectors to use the findings,**
- + **Knowledge transfer.**

Other criteria for the specific fields of action are published with the respective announcement.

Participation is open to research and development institutions as well as businesses and organizations that operate in the fields being targeted.

Approved projects will receive funding subject to the current budget situation.

Funding for commercial enterprises is subject to the regulations for cost-based grant applications. Therefore, a funding rate of up to 50 percent is the rule for commercial businesses. Small and medium-sized enterprises may be granted another ten per cent on top of the first 50 percent.

Another ten percentage points may be added to the funding rate for projects to be conducted by applicants in eastern Germany.

Detailed information and contents about funding activities in service innovation are available on websites:

[www.kp.dlr.de/profi/easy/index.htm](http://www.kp.dlr.de/profi/easy/index.htm)

[www.pt-ad.pt-dlr.de](http://www.pt-ad.pt-dlr.de)

[www.dl2100.de](http://www.dl2100.de)

The easy website is updated daily.

The project management agency in charge of conducting the Innovation With Services funding programme is your point of contact for all questions regarding the programme. It advises applicants and provides information regarding ongoing R&D measures and R&D measures that have been concluded.

The project management agency is also responsible, in close coordination with the Federal Ministry of Education and Research, for organising, preparing and following up advisory board meetings, workshops and conferences that serve, inter alia, the programme's progressive development. It is therefore recommended that prospective applicants contact the project management agency prior to submitting their application.

Address of the project management agency:

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