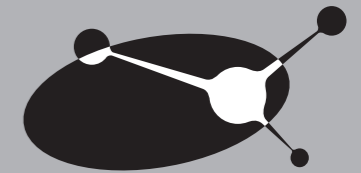


STRATEGIC PARTNERSHIP –  
PRODUCTIVITY OF SERVICES



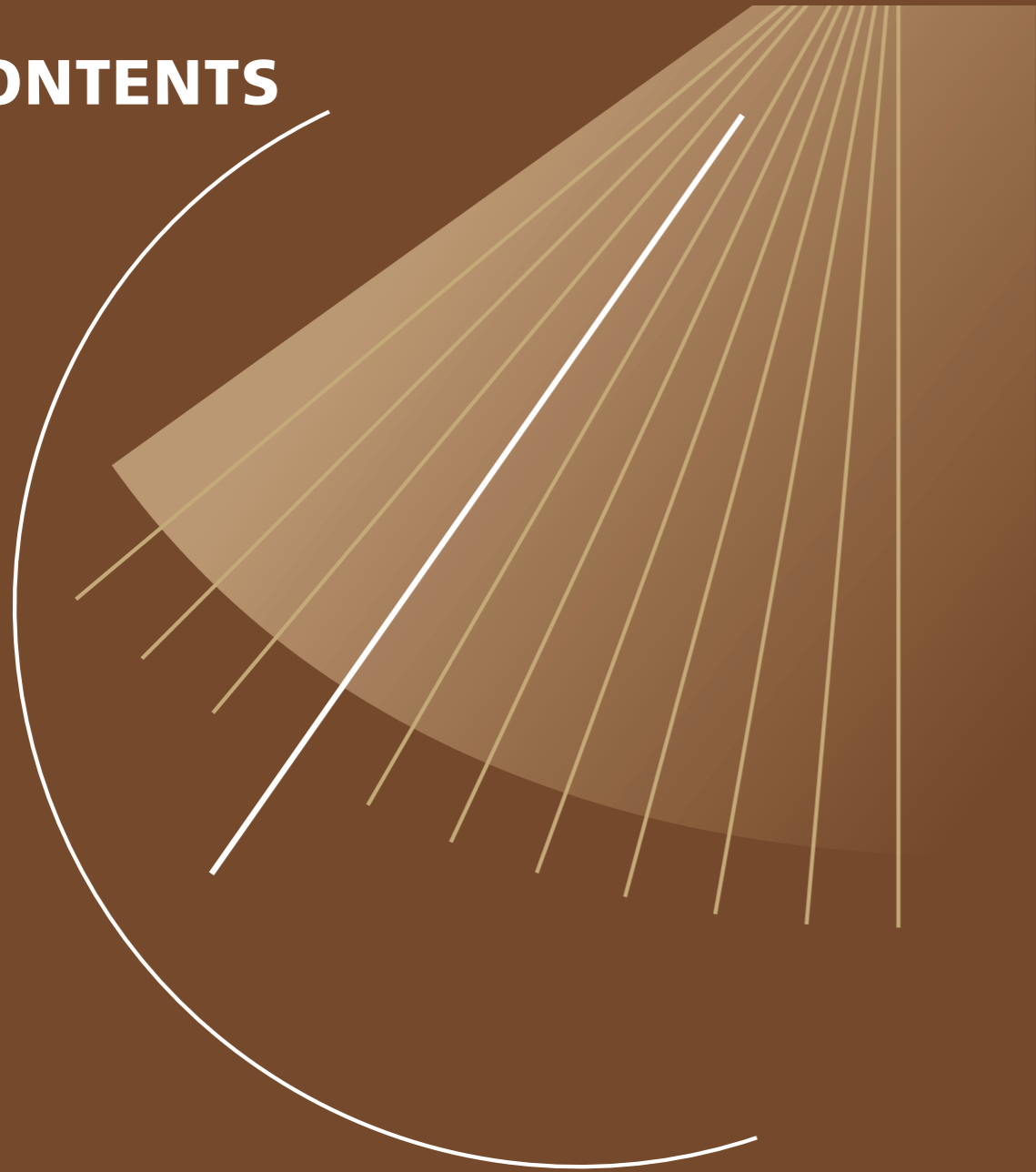
PRODUCTIVITY GUIDELINE

## SCIENTIFIC BASE AND SERVICE SCIENCE



FRAUNHOFER VERLAG

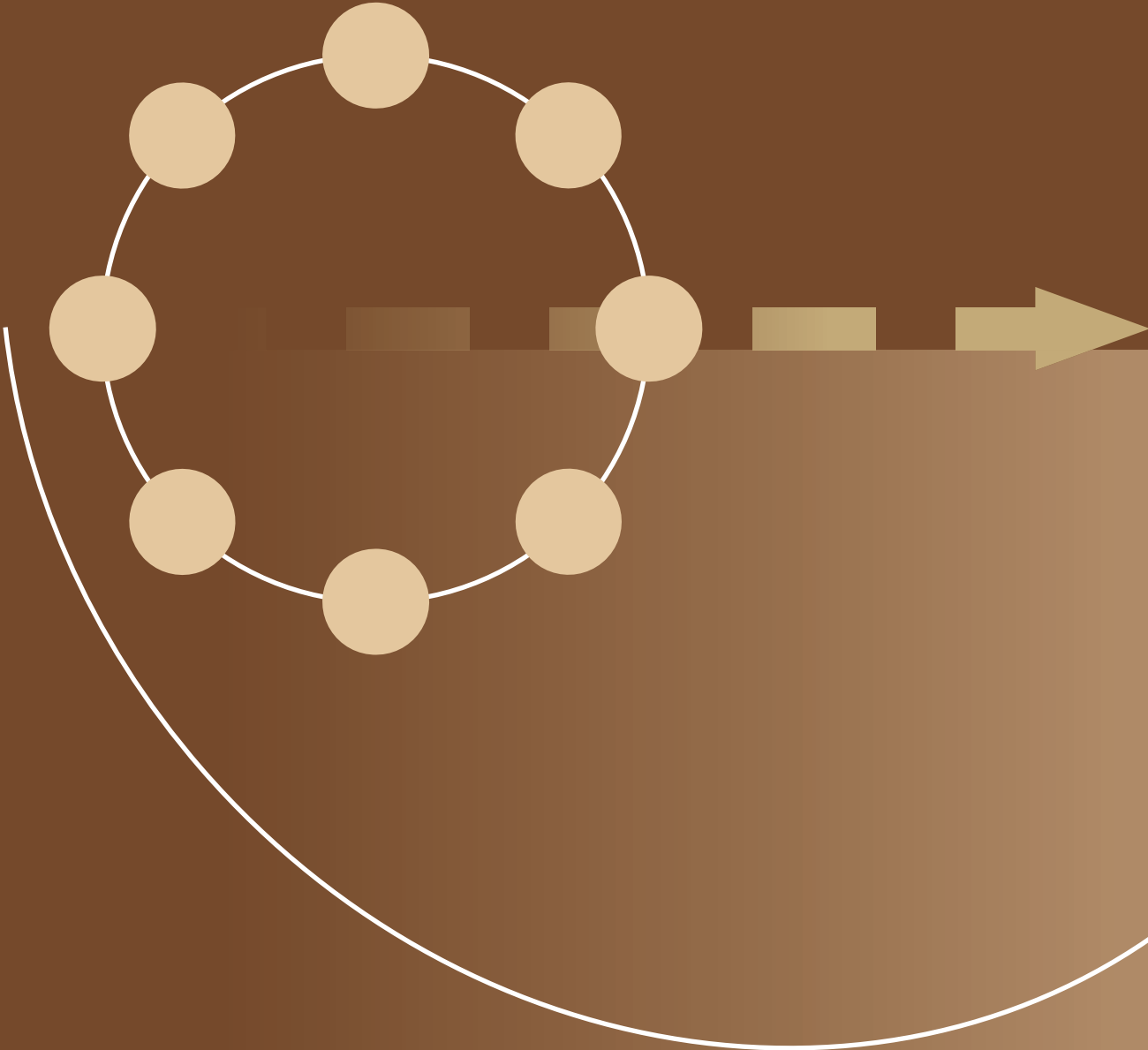
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# THE STRATEGIC PARTNERSHIP





## PRODUCTIVITY OF SERVICES

The strategic partnership »Productivity of Services« is a collaborative effort involving close cooperation between the industry, science and policy-making sectors. Initiated in 2009 by the Federal Ministry of Education and Research (BMBF), it provides impetus for the BMBF's funding priority of the same name. In that funding priority, which is part of the research program »Innovation with Services«, a total of 34 individual and collaborative research projects are working to develop strategies and instruments for measuring, structuring and improving service productivity. The strategic partnership is serving as a »meta«-project for the funding priority. Via a structured process, it facilitates comprehensive networking between the different research projects involved, as well as with additional experts. It thus provides valuable additional perspectives, both inward, within the group of the projects, and outward, toward a wider frame of reference. As a result, it helps to ensure that requirements from real-world practice enter readily into the ongoing development of the projects, that discussion between relevant stakeholders is initiated as necessary, that joint visions and solutions take shape and that valuable experience is exchanged.

In addition to forging overarching links between central issues of service productivity, the strategic partnership »Productivity of Services« also works to raise awareness of »service productivity« issues among a broad professional audience. What is more, it seeks to advance research and development overall relative to productivity of services and to consolidate and integrate findings and knowledge in this topic area. It thus facilitates and supports active networking between national, European and international activities in the areas of service research and innovation policy.

The Knowledge Network is the central organ of the strategic partnership »Productivity of Services«. It consists of eight working groups:

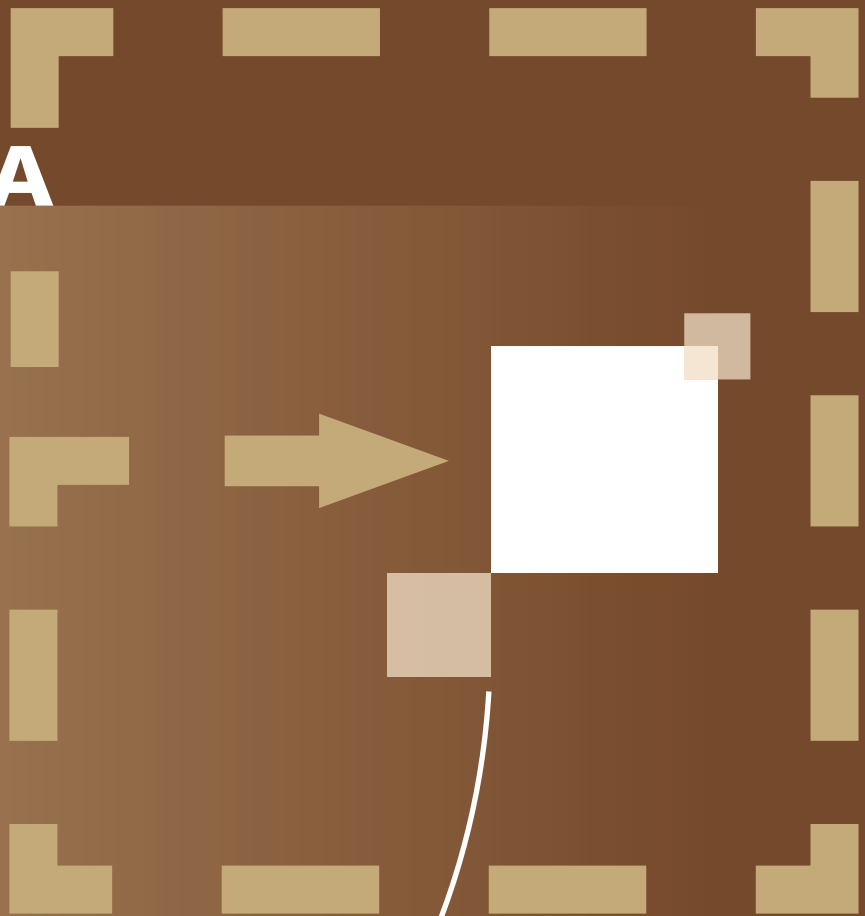
- Productivity of Service Systems,
- Productivity in Service Development,
- Productivity of Service Work,
- Service Productivity with Technologies,
- Controlling for Service Productivity,
- Service Productivity in SMEs,
- Micro-/Macroeconomic Aspects of Service Productivity,
- Scientific Base and Service Science.

The working groups are made up primarily of representatives of the industry and science sectors, of intermediary institutions and of the projects supported within the funding priority. A total of 160 partners are actively involved.

Each working group's central product is a productivity guideline, produced via intensive exchanges and interdisciplinary cooperation among the various stakeholders involved. In preparing such a guideline for its specific topic, each working group has developed productivity scenarios, identified relevant practice-oriented examples and derived recommendations for action.

The Innovation Office of the strategic partnership »Productivity of Services« wishes you enjoyable and informative reading.

# TOPIC AREA





## SCIENTIFIC BASE AND SERVICE SCIENCE

### Productivity aspects

The service sector plays a central role in the sustainable development of the German economy and of German technology. State-of-the-art information and communications technologies are profoundly changing the ways in which providers and customers interact in creating value. This is occurring throughout a broad spectrum of business action, from the structuring of individual transactions to the introduction of new business models. In this context, productivity is best understood in terms of the effectiveness with which internal and external production factors (input) are transformed into value for customers (external output) and providers (internal output). This interaction-based perspective, which is characteristic for the service sector, tends to be missing from existing productivity concepts and measurement instruments, however. To influence service productivity directly, one must understand not only service systems but also the ways in which their components interact and are interrelated overall. Considerable discussion is currently being focused on the need for a »service science« that would provide the basis for such a complete, innovative approach to understanding service systems. In the process, findings from a range of different research fields are being integrated, interdisciplinarily, in order to develop practice-suitable theories, concepts, methods and tools.

### Objectives of the working group

Applying an overarching perspective, the working group »Scientific Base and Service Science« focuses on research and study relative to service productivity overall, and on knowledge acquisition in terms of service productivity, and it seeks to obtain generalizable findings. It works to identify and combine scientifically founded and workable procedures, methods and tools for measuring, evaluating and enhancing the productivity of service systems. At its meetings, the group highlights implementation-oriented issues, and identifies gaps in existing research. Subsequently, such findings are communicated to the participating research projects and companies. Finally, the group develops

recommendations and methods – especially for small and medium-sized enterprises (SMEs) – for the implementation of its findings.

### Topic emphases

- Improvement of productivity in the service sector, via description of scientifically substantiated, but largely neglected, interdisciplinary interrelationships,
- (Further) development of service-productivity concepts, with respect to specific aspects of interactive value creation,
- (Further) development of service-productivity concepts, with respect to specific aspects of hybrid value creation,
- Review of neglected disciplinary perspectives whose integration promises to enhance understanding of the productivity of services – especially perspectives of law (institutionalization), design (visualization) and architecture (materialization),
- The working group is structured in accordance with the following emphases: focuses of productivity; measurement and enhancement of productivity; and productivity and innovation.

### The group's understanding of productivity

The working group »Scientific Base and Service Science« has used a basic understanding of interactive service productivity as the starting point for its work and discussion. In the process, it has applied the definition given by Gotsch/Hipp, 2012. In this view, services are transformation processes in which internal and external production factors are combined to yield a »total input«, and are converted into a final output (Corsten, 2001; Lasshof, 2006; Reichwald/Möslein, 1995).

At the same time, the transformation-process concept is expanded, and divided into categories of »orientation« – orientation to potential, to processes and to results (Meffert/Bruhn, 2009). The »potential dimension« of a company that provides a service describes the company's offered readiness to provide service. To be able to offer and sell a given service, a service provider has to maintain certain skills, competencies and resources, and he must be willing to actually carry out the service as offered. The

»process dimension« characterizes the process of providing the service. In this phase, the service provider is no longer the sole participant in creating and providing the service; a so-called »external factor« – the customer, for example – participates actively as well. The »results dimension« has to do with the result of the service. It describes the service’s value-creating effects as perceived by the customer.

To be able to assess the productivity of a given service meaningfully, one must have an understanding of the relevant service system, of the interrelationships between the various influencing factors and of the ways those factors affect productivity (Lehmann et al, 2011). Productivity thus depends not just on a single input factor or output factor; instead, it is influenced by numerous different factors, all of which interact. Productivity thus occurs via effects cycles. To understand and determine productivity in any given case, therefore, one must seek to illuminate such cycles – ideally, via innovative visualization strategies – with a view to revealing underlying complexity and any hidden service productivity.

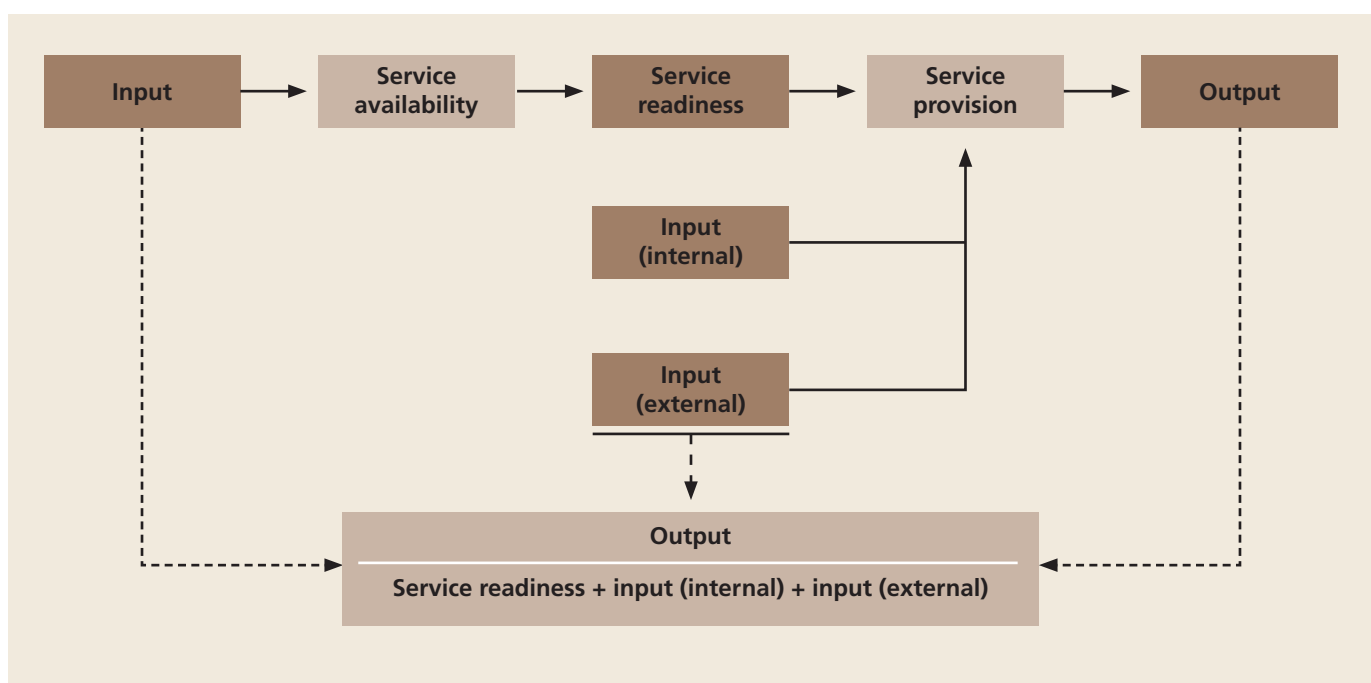


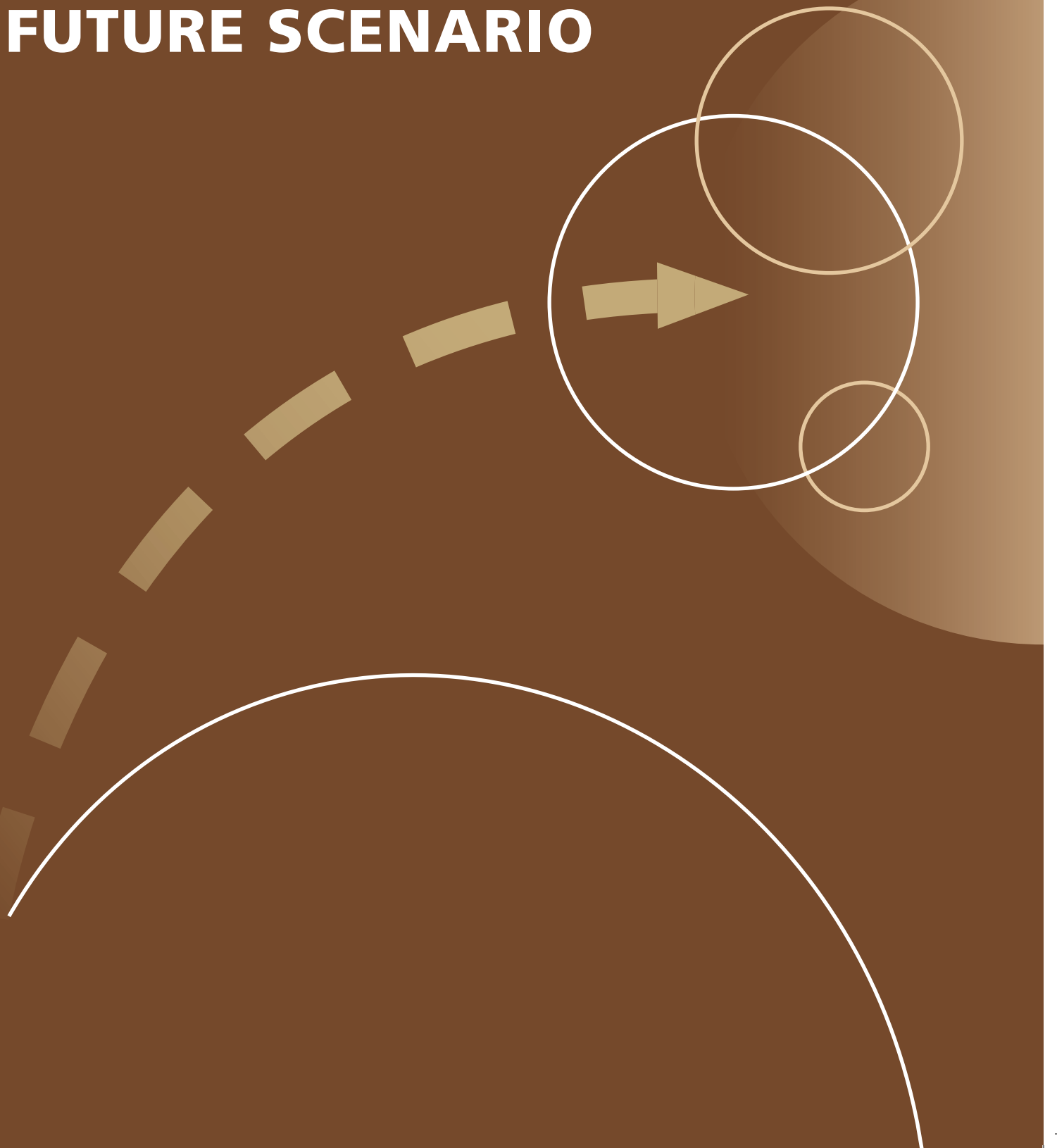
Figure 1: Effects cycle of service provision (Gotsch/Hipp, 2012)



STRATEGIC PARTNERSHIP –  
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# FUTURE SCENARIO





### THE AIRPORT OF THE FUTURE – A 15-MINUTE SCENARIO

The Millers – Mr. and Mrs. Miller and three children – are going on vacation. Just a few years earlier, such a vacation would have involved considerable stress and endless planning, but by the year 2020 the whole process is almost simplicity itself. The airport's own pick-up service collects the Miller family, excess baggage and all, at their house, and right on time. But what does »right on time« mean? It means that the Millers have to get to the airport only about 15 minutes before their flight is scheduled to depart. Out of habit, Mrs. Miller arranged for an earlier-than-necessary pickup, however. After all, what if everything takes longer than planned? Mr. Miller reassures her that they've never needed more than 15 minutes to get from check-in to their gate, security and all – even with their gang of rascals!

When they get to the airport, the driver handles their baggage, and the family waltzes right into the terminal. Mr. Miller is more than happy that he won't see all of those suitcases again until the family reaches its vacation hotel. No more waiting at baggage claim and no more dragging heavy suitcases around! Thanks to the pick-up vehicle's connected on-board computer, the Miller family was able to handle their check-in while they were en route to the airport. Once they are inside the terminal, the Millers board a special airport shuttle that takes them right to security and then right to their gate, all within just a few minutes. To reach those destinations, they enter a simple access code. Now, at the gate, the parents can relax. Their little ones are happy that their Mom always likes to allow a little extra time, since now they have a few minutes, before boarding, to try out the gate's »play and learn« corner. There, they find beautifully designed interactive quizzes and presentations that are both fun and educational ... Would you like to learn something about planes, or shall we have a look at the country you're going to visit?

Mr. Schmitz, a successful businessman, has no time, as usual. So he's actually looking forward to the short flight that is going to take him to a business meeting. He'll finally get a chance to relax. He drives right up to the terminal, gets out of his car and gives the valet-parking attendant his car keys. He knows that when he returns, he'll be able to pick up his car at the same spot, and it'll have been cleaned, inside and out. How could he use his time any more productively? And what's more, he even has time, before his flight, to have that crisis discussion with one of his department heads. They've arranged to meet for lunch in one of the airport restaurants. Fortunately, now even non-passengers can go through security and avail themselves of the many services in the airport's secure area. Mr. Schmitz stops at one of the automatic baggage drops with pre-check-in. He quickly checks-in, leaves off his bag and jumps into the shuttle. He presses the button for the restaurant, instead of entering his gate code. At the restaurant, waiters and his department head are both expecting him. He and his employee both preordered their food online, and now it appears within two minutes – and it's freshly cooked, healthy and gourmet delicious! About 30 minutes later, the waiter comes by to discreetly remind the gentlemen that Mr. Schmitz will need to catch the shuttle for his gate in about five minutes. In spite of the deliciousness of their lunch, Mr. Schmitz is a little sorry that they had to eat. That's because he usually likes to spend his last few preflight minutes in one of the great massage chairs the waiting lounges feature. The massages include integrated light and music therapy, and they leave him feeling power-nap refreshed.

The airport staff also love the airport's service concept, which is holistically oriented and seems to make everything run incredibly smoothly and efficiently. The concept has been designed with the interests of all of the airport's users in mind (i.e. including passengers, the airport's management, security personnel and the service crews of all service providers who have leased space at the airport). To get to the airport, passengers can use a) the airport's special pick-up service; b) public transportation, which is perfectly coordinated with all scheduled departures and arrivals; or c) their own cars.

Regardless of how they get there, once they are at the airport, it never takes them more than 15 minutes to reach their gates! In addition, passengers can choose to handle their baggage themselves or have it handled by the pick-up-service staff. They can also opt to use the fully automatic baggage-drop stations with pre-check-in – that’s actually the very fastest and easiest way to get past the check-in process. The airport still has old-style check-in counters with baggage drop-off, but because those counters are »generic«, i.e. used by all airlines, checking-in at them also only takes a few minutes.

Every passenger receives a destination code for the shuttle that takes him through security and on to his gate – or, if he wishes, to a number of other places, such as restaurants, shops or the airport’s hair and beauty salon (the shuttle’s control panel has buttons for such other destinations).

The lounges at the gates are nice places to spend the last few minutes prior to boarding. The seats have consoles with integrated digital catalogues of last-minute things that one can order, such as healthy fast food. The lounges also have chaise longue that provide last-minute massages. Those come in handy, since the waits at this airport are usually too short for a stop at the terminal’s wellness area. And kids usually have such a good time in the lounges’ play areas that they are reluctant to leave when it’s time to board.

## **THE BASIC PRINCIPLES OF THE NEW SERVICE PRODUCTIVITY – A SCIENTIFIC PERSPECTIVE**

The working group »Scientific Base and Service Science« considers basic conceptual and theoretical issues related to the productivity of services, such as the following:

- What are the internal driving forces for the new service economy?
- What are their key characteristics, and what implications do they have for our understanding of productivity?
- Under what conditions can services be productive and profitable even when offered for free?

The answers to these questions, and to other relevant questions, are multi-faceted and complex – as is the whole subject of services itself. A good way to begin tackling them is to consider what services actually are. Services may be either public or private. In their basic form, they are actions, applied either to people (e.g. customers) or objects (e.g. PCs), that are designed to generate value or benefits. In this regard, services, via communication, link people with people and with objects.

This concept of services is not fundamentally new. But the communicative, linking processes that are the basis for modern services have been enormously improved by technology. This of course refers to information and communications technologies, which have greatly multiplied the scope of application for services. Four points especially need to be emphasized in this regard:

- Firstly, digital communication, via networks, has been severing links between products and services; digital communication is not bound to products such as books, letters or computer disk drives. In other words, it has become possible, in an unprecedented turn of events, to organize communication as a service in its own right. A person who communicates via a smartphone needs the phone to conduct such communication, yes, but the services the person uses via the device are what counts. Because a whole range of other products also communicate digitally, such as cars, machine tools and electric meters, products are increasingly becoming platforms for communication-oriented services and for product-related services. The classical distinctions between production and services are thus breaking down.



- Secondly, information technology is creating new opportunities for networked interaction between service providers and service customers. For example, banking transactions can now be conducted around the clock. What is more, each such interaction with a bank creates digital tracks (records) that the bank (or other service providers) can use for the purpose of offering new services. In the health-care sector, increasing numbers of »intelligent« medical products are appearing that continually record and transmit data and information that doctors, manufacturers or pharmaceutical companies can use in providing services or creating new ones. Needless to say, these new developments present both risks and opportunities, and their data-privacy issues highlight the political relevance and potential hazards of innovations in services.
- Thirdly, information technology has made it possible to create networks linking formerly separate services, to produce »service systems«. Such systems are able to function because electronic payment systems make it possible to link individual services in ways that permit value-/use- based invoicing, on a per-service basis. Usage-based invoicing for services, which is now the norm in sectors such as cellular phone services, will expand into many other service areas, such as transport, retail and health care. Here again, both risks and opportunities abound, since networking of individual services can reduce, or even eliminate, price and service transparency for customers.
- Fourthly, social information and communications technologies – social networks – have created new spaces for collaborative service innovation, provision and consumption. With »crowd sourcing«, massive, yet finely grained, and highly integrative, networks of co-providers and co-consumers of public and private services can be created. The basic principles underlying this form of service exchange largely remain to be defined. The current discussion regarding intellectual property rights (such as copyrights) has revealed that the existing legal framework tends to hamper, rather than facilitate, such new approaches in services. Other issues having to do with equitable distribution of costs and benefits in the framework of crowd-sourcing-based service innovation, provision and consumption have not even begun to be solved.
- On the whole, it is hard to overestimate the significance of the pertinent changes accompanying, and being wrought by, the new information and communications technologies. The technologies are leading into a new type of service economy in which customers, companies and public service providers interact in completely new ways and jointly create value, in changing configurations. Such collaborative management of services will impart a new understanding of productivity and efficiency.

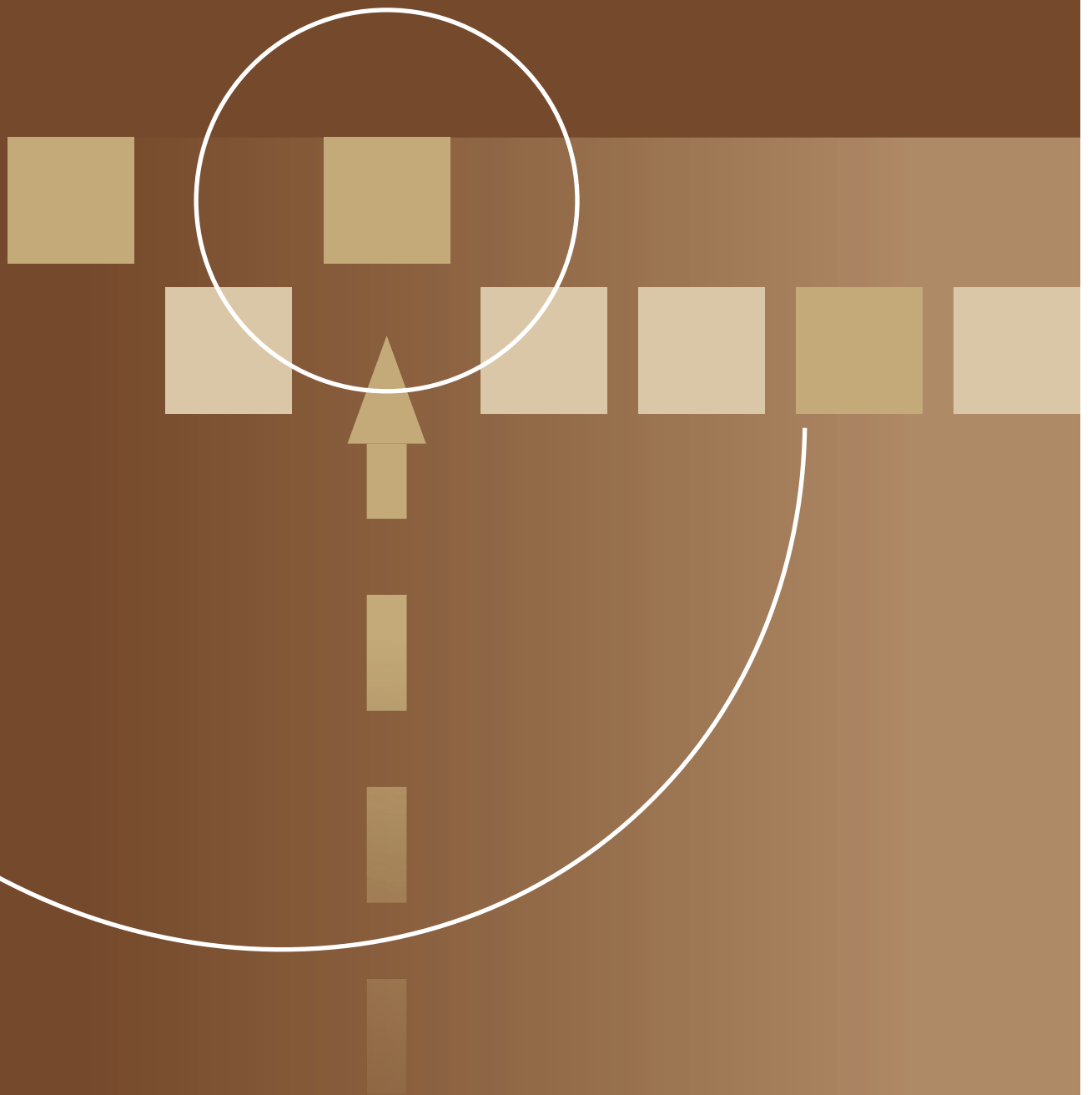
**Summary:**

**Understand productivity from a systemic perspective**

Productivity concepts focusing on value-creation processes that individual companies can directly control will be inadequate for describing and understanding productivity in the service economy of the future. It will be much more important to understand how business and economic factors affect emerging service systems – and how such impacts can be controlled. How do customers react when processes are designed or structured to become more efficient? How do customers of customers react, and how do such changes affect the private and social worlds of customers and employees?

In the past, productivity has tended to be seen mostly as the ratio of measurable input to measurable output. As time goes by, it will become increasingly important to determine service productivity in terms of interactive components of value creation, i.e. of the functional and effects-related interrelationships in value-creation systems. This will also involve taking account of such factors as health, subjective well-being and long-term social and ecological consequences, which are virtually impossible to quantify in terms of indicators.

# EXAMPLES FROM PRACTICE





## EXAMPLES ILLUSTRATING THE PRODUCTIVITY OF SERVICE WORK

The working group »Scientific Base and Service Science« is composed of representatives of the science sector and of the service sector. The following section presents the group's four representative collaborative research projects, along with their research focuses. The »PROSET« project is studying ways of optimizing service productivity throughout the spectrum ranging from marketing (benefits) to operations management (costs). The »Fre(E)S« project is working to develop a theoretically and empirically grounded concept for measuring, structuring and enhancing the productivity of free services in the Internet. Working on the basis of interviews with experts, the collaborative research project »CustomB2B« is developing a model for measuring service productivity – a model that merges customer and provider perspectives and that could help improve the market position of German service industries. The research »workshop« »Productivity of Services« (ServProd) is aimed at studying overarching questions relating to service productivity, at developing new models for measuring the productivity of services and concepts for increasing such productivity.

The companies participating in the working group already have a range of methods and tools in service for the purpose of measuring the productivity of services and increasing it where possible. In the following, the requirements pertaining to the relevant methods and tools are described for each project. Then, we present the example of »industrialized analysis of claims data« (industrialisierte Schadendatenanalyse – ISDA), a method that has emerged from the »ServProd« project and that is now being used in practice.

»PROSET«: Enhancing productivity in the context of interaction with customers, via service experience management (project head: Prof. Dr. Florian von Wangenheim)

In many service companies, the time at which interaction with customers occurs is determined solely by customer demand. Such dependency often leads to strong seasonalities in numbers of customers. And such seasonalities, in turn, can present major challenges for service companies. In times of peak demand, customers often have to endure long waits. This can have a significantly negative impact on customer satisfaction, with potentially serious consequences (e.g. customers take their business elsewhere). In times of low demand, companies can find themselves saddled with overcapacities.

One way of addressing such capacity utilization problems is to use a control tool known as a »capacity planner«. The tool helps to smooth out customer volume, with a view to both minimizing overcapacities and undercapacities and enhancing customer satisfaction.

The following example, drawn from the food retail sector, illustrates how the capacity planner is used:

- Identification of peak times, and of customers who are flexible in terms of their shopping hours, on the basis of shopping-history data
- Development of a customer-focused incentive campaign designed to influence customer behavior
- Determination of the status quo with regard to service experience
- Running of the campaign
- Evaluation

**Fre(E)S: The productivity of free eServices (project head: Prof. Dr. Jan H. Schumann)**

More and more online services are being offered free of charge for end users. Among such services are e-mail services, search engines, social networks and information platforms. Numerous business models have become established that prove that it can be economically feasible to offer free services. At the same time, the marginal revenues experienced by many companies indicate that free services confront providers with new challenges – especially with regard to measuring, structuring and enhancing productivity. In the context of the project »Fre(E)S – the productivity of free eServices«, the company ValueClick Deutschland GmbH, working in cooperation with the Technical University of Munich (Chair of Service and Technology Marketing, and Junior Professorship for Marketing), is developing an IT tool for measuring the productivity of free eServices. The IT tool will make it possible to collect, aggregate and evaluate transaction and behavioral data on customers of free eServices. The aims being pursued in development of the tool are to make it possible to a) analyze the productivity of free eServices and b) to generate indicators that can be used to enhance the productivity of such eServices. For example, the tool is expected to be able to produce useful information about customers' movements in the Internet. This will enhance companies' ability to analyze relevant marketing measures, IT investments and financial requirements. Ultimately, the IT tool is expected to improve the ability of free-service providers to thrive in the highly competitive online-service market.

**CustomB2B: Customizing as a B2B service that supports customers' competitiveness (project head: Prof. Dr. Harald F. O. von Kortzfleisch)**

A shift toward service-dominated logic has been occurring in the mechanical engineering sector. As a result, the sector's service spectrum is increasingly moving beyond product-related services (such as maintenance, repair, etc.) and adding services that address customers' overall needs (such as outsourcing services). The latter type of services becomes especially significant when customers operate in highly dynamic environments in which they need to be flexible and able to react quickly. In such environments, customers often face added uncertainties, and have to make especially frequent adjustments and adaptations. They then often expect their providers of mechanical engineering services to provide services that enhance flexibility. In such cases, the basis for the provider-customer relationship broadens from provision of machine-related services to provision of services that enhance the customer's overall competitiveness.

This development creates new challenges for mechanical engineering companies that measure their productivity in the standard fashion. Suddenly, they have to learn to calculate their productivity in ways that take account of services and, thus, that take account of the customer's own productivity. Many companies address this challenge with project management methods – for example, by carrying out target-actual comparisons for various productivity-related indicators at every relevant point in time. They have difficulty in taking account of customer productivity, however, since that entails taking account of difficult-to-measure factors such as customer satisfaction. Companies often circumvent this problem by abstracting from concrete indicators and then simply determining calculated and actual costs at various times, for project-management purposes. Such strategies subordinate measurement of service productivity to the aim of project management, however.





ServProd – Research workshop: The productivity of services  
(project head: Prof. Dr. Kathrin M. Möslein)

### **ISDA – AN INNOVATION IN ANALYSIS OF CLAIMS DATA**

Insurance companies today face numerous challenges – competition, of course, but also ongoing industrialization in the sector. Such challenges leave insurance companies with no alternative but to constantly strive to increase their productivity and to improve their underwriting results. And claims processing is among the key areas in which such efforts must take place, since claims are any insurer's largest expenditure category. Reviews often find insurers' claims processing to be less than optimal, in terms of quality, and thus a source of avoidable costs. In this context, claims-data analysis focuses on identifying the potential savings found in such opportunity costs (lost economic benefits), as well as on deriving suitable measures for realizing such savings.

#### **What is ISDA?**

Industrialized claims-data analysis (industrialisierte Schaden-datenanalyse – ISDA) is a new, innovative product developed for the purpose of carrying out precise, standardized analysis of insurance companies' electronic databases of claims data. ISDA is used to derive detailed measures and recommendations relative to reducing opportunity costs, as well as to identify operational risks at their early stages. Examples of pertinent risks include potential losses resulting from failures of internal procedures, systems and staff – or from use of inappropriate internal procedures, systems and staff – or from external events.

ISDA's central functionality consists of mass data analysis, covering large numbers of claims and combining technical aspects of claims processing with a range of tested, state-of-the-art data-mining procedures. ISDA can rapidly analyze claims databases automatically, with relatively little input from specially trained personnel. ISDA thus makes it possible to study entire databases regularly and comprehensively, over prolonged periods. As a result, ISDA is a tool that can support insurers' claims controlling on an ongoing, long-term basis.

#### **How does ISDA work?**

ISDA is designed to analyze data in two successive phases: determination of the opportunity costs (OC) per claim, and detection of patterns in OC generation throughout a set of claims.

### Phase 1: Determination

The OC are determined via two parallel analyses. With the help of a catalogue of suitable specialized questions, the OC criteria, overpayments are identified that result from erroneous or less-than-optimal claims processing (such as double-assigned policy; incorrect deduction of deductible (i.e. co-payment)). OC are determined for each claim, in light of the OC criteria.

An analytical procedure for estimating overpayments is also carried out. This procedure, a form of similarity analysis, is based on the simple principle that similar claims should generate similar costs (claims expenditure, claims structure). Where this is not the case – i.e. where the costs for a claim differ significantly from those of similar claims – OC for the claim are estimated.

By combining the results of these two separate analyses, one obtains the OC for individual claims. This, in turn, provides the basis for the next phase of the process, pattern recognition.

### Phase 2: Pattern recognition

Innovative pattern-recognition procedures are used in order to identify the systematic interrelationships that can reveal the causes of OC. With the help of a search algorithm, patterns (of characteristics) are identified that are likely to induce OC.

On the basis of the patterns of causes identified in the previous phase, then, measures and recommendations are derived that can help prevent future overpayments.

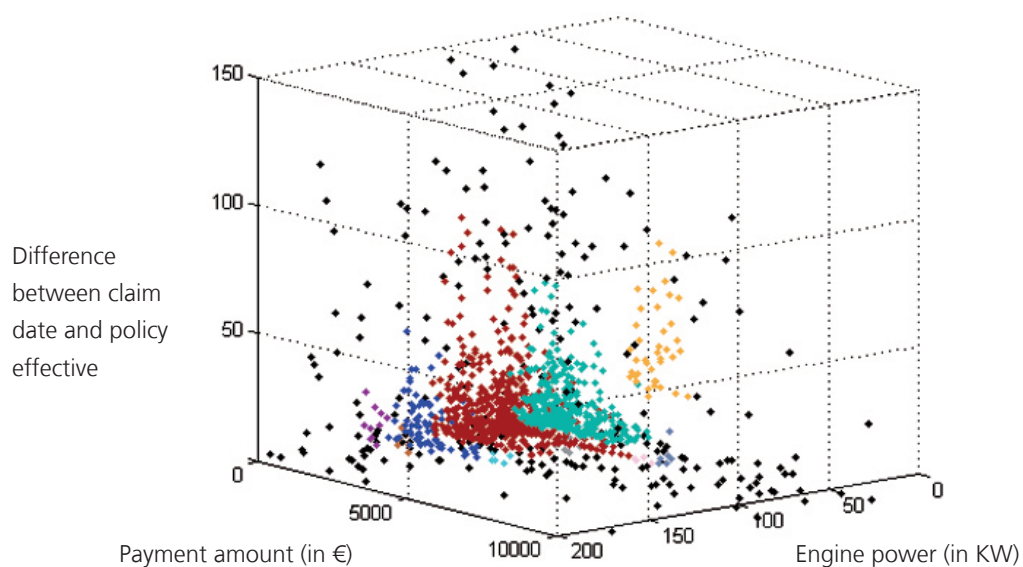


Figure 2: Illustration of similarity analysis



**What sorts of results can ISDA be expected to produce?**

By carrying out mass data analysis throughout entire databases of claims data, ISDA can reveal data inconsistencies and can identify clear-cut errors and deficiencies in processing. In addition, at an aggregated level, it analyzes data for improvement potential and compares them with pertinent market data. For example, it can be used to study the suitability of reserves within an overall portfolio and in sub-portfolios, and it can produce benchmarks for market data.

Its statistical and analytical procedures – similarity analysis and pattern recognition – identify key areas in which errors occur.

From the information gained through such analysis, specific measures and recommendations can be derived that an insurance company can implement for the purposes of permanently eliminating sources of error and of reducing OC.

Insurers have traditionally analyzed historical mass data for the purpose of setting insurance rates. Now, ISDA offers customers the opportunity to use such mass data for comprehensive claims controlling – and thereby, within the meaning of the »six sigma« approach, to improve their processes in lasting ways and to reduce their OC. Six sigma is both a statistical quality objective and a quality-management method. As a method, it uses statistical tools to describe, measure, analyze, improve and monitor business processes. In each case, the aims pursued with the method will be oriented to the company’s key financial indicators and to the requirements of its customers.

Thanks to the completeness of ISDA’s data analysis and processing, every instance of selective evaluation can be traced back directly to the claim numbers involved. This advantage is of especially great use with regard to subsequent operational measures taken in claims departments.

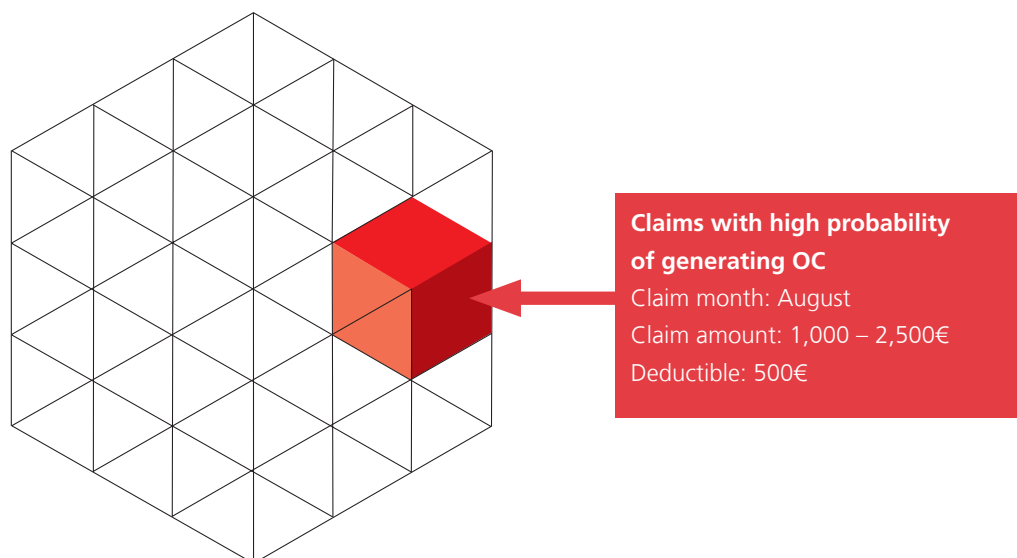


Figure 3: Multi-dimensional pattern of OC occurrence

### **What steps are next?**

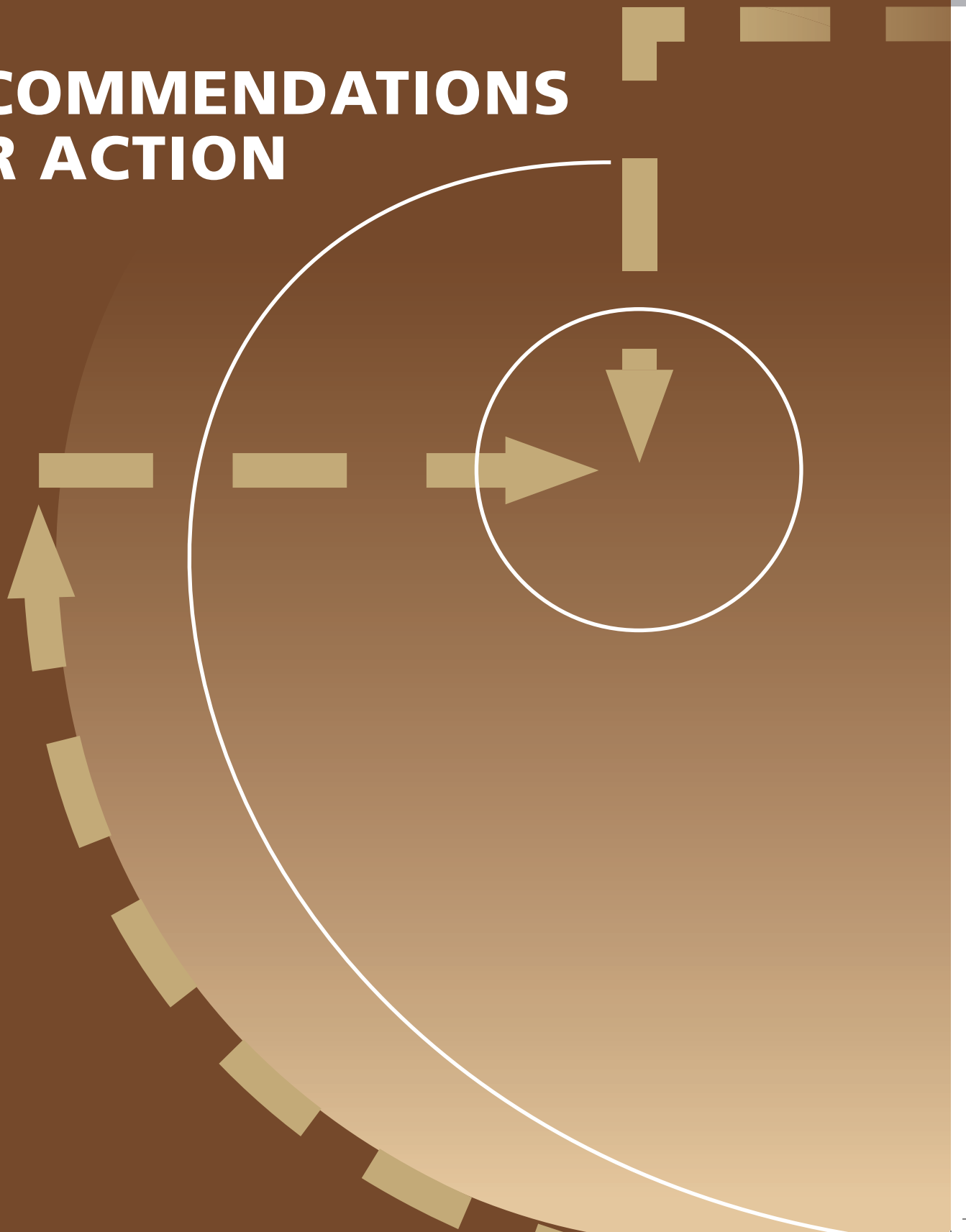
ISDA is being continually improved via ongoing analysis of large databases of various insurance companies. In addition, it is being continually refined as necessary, to take account of ongoing changes in customers' products and structures, and to ensure that it can support high-quality claims controlling with lasting results. The technical issues covered, and mathematical procedures applied, are continually being expanded, from ISDA edition to ISDA edition, in light of the individual sets of results obtained through different studies. ISDA thus undergoes continual cycles of innovation, driven by a great diversity of analyses and supported by truly valuable feedback from the insurance and science sectors. Working groups bringing together representatives of science and industry play a key role in advancing knowledge in the area of service productivity and in generating relevant generalizable findings.

Ongoing development of applicable procedures, along with continual improvement of such procedures, can be expected to enhance ISDA's level of automation, analysis speed and reliability with regard to results. In future steps, now that ISDA has been successfully applied in the auto insurance sector, it will be applied to other insurance sectors as well.

STRATEGIC PARTNERSHIP –  
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# RECOMMENDATIONS FOR ACTION





## RECOMMENDATIONS FROM SUB-PROJECTS

The working group »Scientific Base and Service Science« combines sub-projects with highly differing emphases, throughout a broad range of applications. This approach provides the opportunity to gain a broad perspective – which plays a necessary role in any discussion of the pertinent scientific base. At the same time, the diversity involved presents certain challenges with regard to any systematizing summary of recommendations. Those challenges have proved relatively easy to overcome. Via its discussions, the working group was able to derive coherent recommendations, in three overarching areas of requirements and tasks.

### **Use multi-perspective approaches throughout**

In all of the working group's sub-projects, service productivity has been understood as a systemic factor. Any further scientific development of this concept – and any practical use of the concept, if it is to be effective – thus needs to proceed on the basis of multi-perspective approaches. Consequently, the recommendations for scientific stakeholders can be summarized, on all levels, in terms of a call for intensified networking between different disciplines – in research projects, in academic teaching and in continuing scientific education and training. Furthermore, networking at the inter-university level – for example, via interdisciplinary research training groups – should also be pursued.

Development of innovative, service-oriented and complementary business models, on the basis of state-of-the-art technologies/platforms (cloud computing, software as a service, etc.), has been identified as a central area in which action is needed, and as an area that directly benefits practical implementation. A second, practice-oriented recommendation has to do with companies' structures for managing service productivity. In this area, the group proposes that companies add additional interfaces, between departments, for the purpose of improving cooperation and exchanges, both subject-related and general.

### **Systematically design a concrete framework for productivity research in service industries**

The working group's current results impressively demonstrate that the service-productivity gap that has opened up in recent years between Germany and the U.S. cannot be closed simply through »wage dumping«. And in any case, systematic research into the concept of service productivity, and oriented to both value and technological advances, provides a socially compatible alternative that will do more for competitiveness in the long term. Such research can be carried out only by interdisciplinary collaborative-research alliances oriented equally to basic research and to practical implementation. Our call for large, heavily networked consortia highlights one of the special aspects of such networks, one that has received relatively little attention to date. Research oriented to systems and to systemic factors needs to have the latitude required to integrate all key stakeholders. Consequently, stakeholders in both industry and the policy-making sector are called on to support relevant approaches in this area, by providing suitable formats and incentives. What is more, intensified support of interdisciplinary networking, and of networking between the pure-research and practical-implementation spheres, can have positive impacts per se. Here as well, the issue of suitable formats arises, an issue that needs to be addressed via cooperation between the political, industry and science sectors.

A third central approach has to do with assuring the international visibility of current scientific findings, and of examples of pertinent practical success, from a perspective of service productivity. Germany currently holds a leading international position in the area of service-productivity research. To ensure that this research field remains attractive in the long term, systematic efforts need to be made to integrate internationally prominent, leading researchers within existing regional and national networks. This is an aim that can be achieved only by promoting international visibility, supporting international research projects and funding research stays for visiting foreign researchers. Systematic internationalization of German corporate networks (of people) would have similarly positive impacts.

German industry networks need to greatly intensify their adoption of European and global best practices. With regard to the topic of service productivity, for example, service practices in emerging countries could prove instructive, because service providers in such countries often provide knowledge-intensive and technology-intensive services in spite of facing extreme shortages of resources. Prof. John Bessant, working in the framework of a ServProd analysis, has compiled and analyzed relevant examples. In one such example, an Indian eye doctor has been able to reduce the costs for a standard refractive-surgery procedure from \$ 5,000 to \$ 50, without significantly increasing the attendant operative risks. Such examples highlight the potential inherent in systematically internationalized service-productivity networks.

**A call for more effective transfer concepts and more comprehensive transfer measures – especially for traditional sectors and for SMEs**

The aforementioned recommendations imply central recommendations relative to effective knowledge transfer in the area of service productivity. To begin with, knowledge transfer needs to have a multi-perspective orientation, since concepts for improving service productivity link new technological foundations with an overarching focus on stakeholders and with management knowledge that touches on numerous different functional areas of business administration. What is more, the systemic nature of the concept makes it necessary to carry out knowledge transfer throughout entire service systems. New productivity approaches will not achieve breakthroughs if key knowledge is provided only to just a few service-system stakeholders.

And existing transfer formats need to be enriched, systematically, with findings from service-productivity research. Such efforts should especially include the following actions:

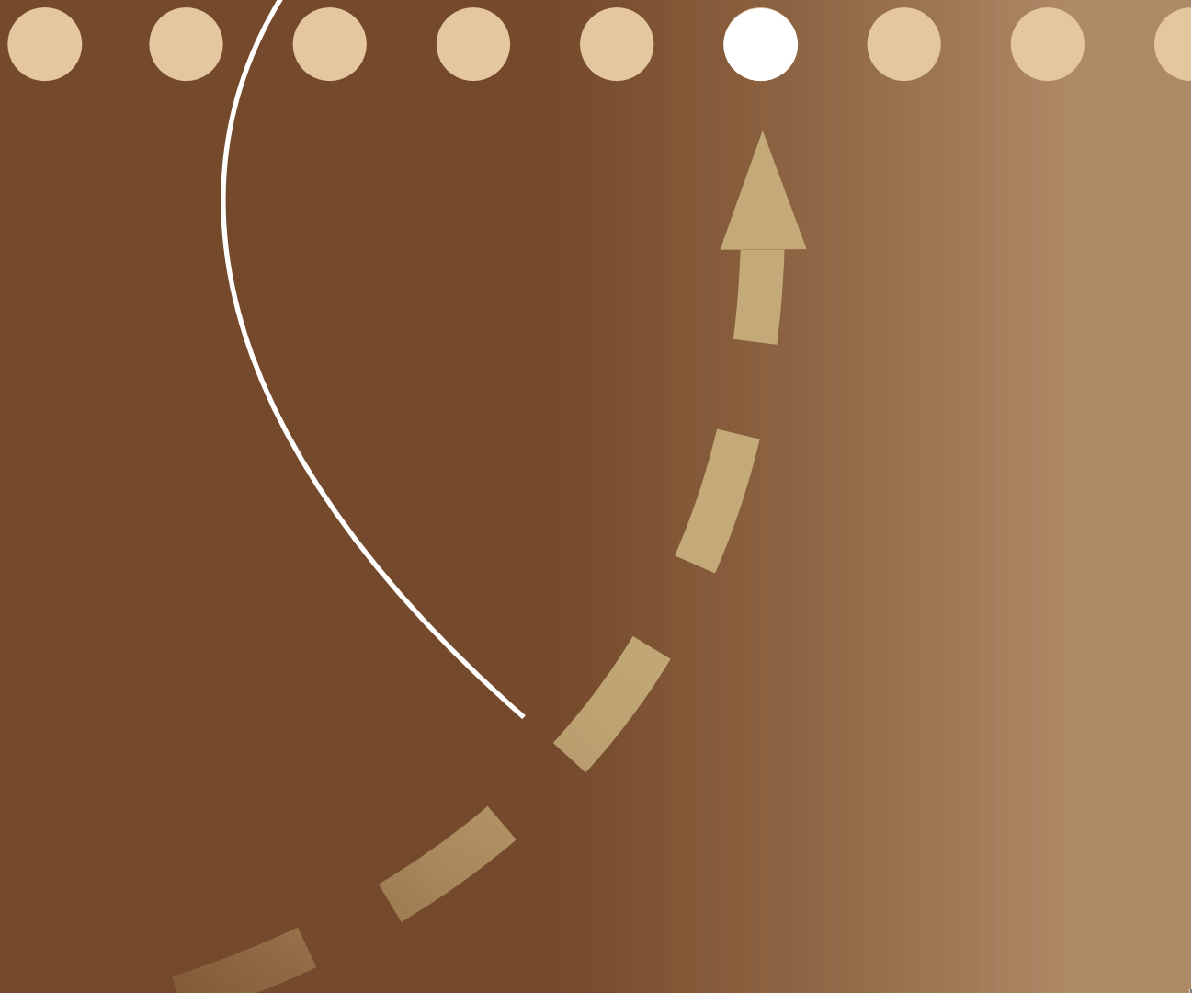
- Communication of the latest findings from service-productivity research via training and teaching,
- Assuring an interdisciplinary orientation for academic and vocational teaching and training,
- Revision of existing curricula – especially in the area of service management,
- Promoting awareness of the need for service science, especially among traditional industries (such as the mechanical engineering sector), and also throughout all SME sectors,
- Orientation of transfer of service-research findings to SMEs and young companies.



STRATEGIC PARTNERSHIP –  
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# REFERENCES





Corsten, H.: Dienstleistungsmanagement. München: Oldenburg. 2001.

Gotsch, M., Hipp, C.: Produktivität von Dienstleistungen.  
In: CLIC Executive Briefing 2012, Nr. 022, pp. 8-10. 2012.

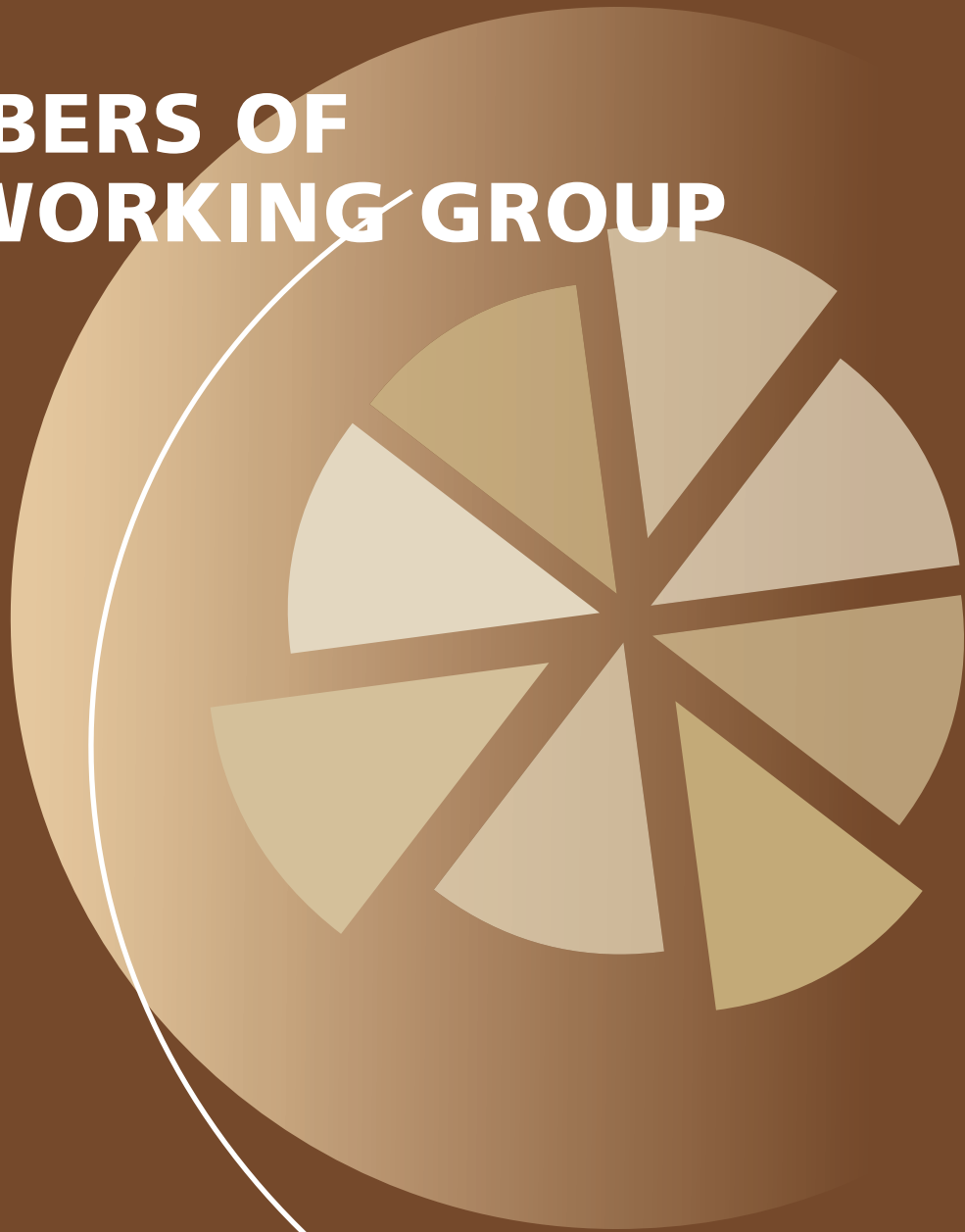
Lasshof, B.: Produktivität von Dienstleistungen. Mitwirkung und Einfluss des Kunden. Wiesbaden: Deutscher Universitäts-Verlag. 2006.

Lehmann, C., Neyer, A.-K., Möslein, K.: Service productivity – Towards an understanding of performance determinants in services. Paper presented at the 21th RESER-Conference, 7-10. Oktober 2011, Hamburg. 2011.

Meffert, H., Bruhn, M.: Dienstleistungsmarketing: Grundlagen – Konzepte – Methoden. Wiesbaden: Gabler Verlag. 2009.

Reichwald, R., Möslein, K.: Wertschöpfung und Produktivität von Dienstleistungen? – Innovationsstrategien für die Standortsicherung. H.-J. Bullinger (Hrsg.): Dienstleistung der Zukunft: Märkte, Unternehmen und Infrastrukturen im Wandel. Wiesbaden: Gabler, 1995, pp. 324-376. 1995.

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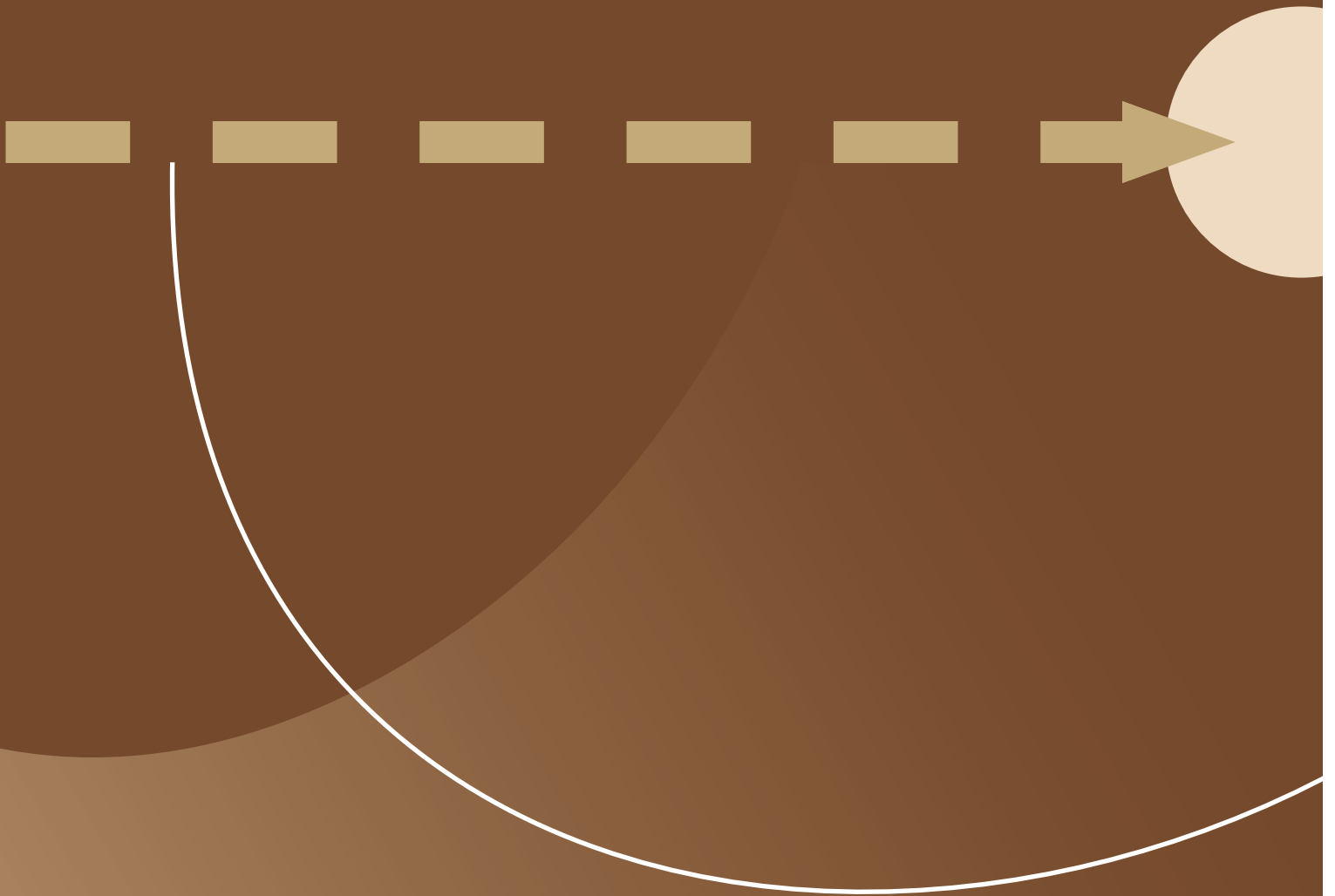
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