Steinbeis

TRANSFER

The Steinbeis magazine

Knowledge – Technology – Application

Clean – without compromising quality
A cleaning system for CNC turned parts

Craftsmanship, made in Germany
German heating technology in the United States

Exporting energy efficiency
A study on energy-efficient technologies

The heart of the matter
Nano-analysis of material layers

02|2008

Editorial

News

Editorial

Dear Readers,

Baden-Württemberg is the most innovative region in Europe. It invests 4.2 per cent of its gross domestic product (GDP) in research and development. The state thus ranks highest among all federal states of Germany and the EU and is on target for fulfilling the aims of the Lisbon Strategy.

Being number one is an honor as much as a challenge. Not only do we have to be quicker translating new ideas into market-ready products, we need long-term strategies for innovation and the right processes to transfer technology to different areas. We also need to be open to international and, by implication, European collaboration, not just at the creative stage but also when we market products.

Steinbeis-Europa-Zentrum (SEZ) plays an important role in this regard for the state of Baden-Württemberg. It works on behalf of companies, universities and research organisations by forging links with European networks, sponsoring bodies and development partners. Simultaneously, SEZ is involved in issues surrounding innovation policy and the implementation of these policies within companies.

A good example of this is the "Enterprise Europe Network" which came into being earlier this year. It replaced the previous "Euro Info Centre" and "Innovation Relay Centre" networks. This new network provides small and medium-size enterprises throughout Europe with one point of contact on issues relating to boosting competitive-ness and innovation capacity. It encompasses more than 500 partners in more than 40 countries. SEZ is part of this network and plays a pivotal role in "innovation" issues.

The word "innovation" is not some abstract or "whacky" concept. More than anything, it is the ability to convert an idea into a tangible product that will succeed in the global market – and thus add value. If new products do not generate profits, you do not have the financial means to foster more ideas. Not only that, but in this federal state of Germany, "raw materials" such as creativity, knowledge and enthusiasm are just about the only natural resources we have. So we must build on them, sustainably. And that applies to everyone in the world of science, education, research, industry and politics. We all have a role to play.

Dear readers, draw upon as much experience as possible from this latest edition of Transfer Magazine – to benefit your individual innovation processes. Steinbeis is delighted to offer you some food for thought!

Sincerely,

Prof. Dr. Norbert Höptner
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Virtual technology brings factory planning to life

Digital manufacturing in the real world

Globalization is placing many companies under increasing competitive pressure. In the face of global competition, the most important leg a modern company has to stand on remains its production. As demands intensify, it is becoming increasingly important for companies to improve, continuously. Central to this are: high quality standards, the concept of living up to customer needs and doing what is best for one's own company by manufacturing products in the optimum way.

Virtual manufacturing site; real environment

Central to this are not just people's experience and previous knowledge, or continuous improvements in the way production is arranged, staff also need a solid grasp of the methods used to plan and organize factories. This all comes down to the overall view of the production process. For a company to react quickly to market fluctuations their view of production has to be holistic. This also applies to the layout of the factory.

A factory layout is based on the way functions such as departments, work stations, and equipment are arranged and how everything links together. The links are dictated by different flows within the system such as material, people, energy and information flows. Layouts work well when each functional area is geared to the systems underlying the flow and, with this, the flow of production.

Especially with factory buildings that have grown over many years without thinking about future needs, one of the most common problems is that the structure no longer bears any relation to the different flow systems. Once things have gone this far, it is time to draft a strategic general land use plan, which not only takes into account which areas and building units you need, it also looks at where they go, how they link up, and how they will be used, or adapted, in the long term. The aim with such a plan is to structure use of industrial land to match the flows, use space appropriately, and make it easy to expand in the long term. A variety of documents are drafted as part of the planning process, such as true-to-scale ground plans, surveys and functional specifications. These capture the overall layout of the plot of land being used, including existing and planned building projects. Constantly updating these documents makes it much easier to make changes or re-plan the area.

To accelerate the planning process and cut the overall timescale, factory and plant planning is undergoing a fundamental change. In the old days it was all about 2D layouts. These are being replaced by 3D factory modeling. Modern factory planning could not survive without core components such as computer simulation, digital modeling with integrated collision checking and virtual reality. These allow you to put complex relationships under the microscope and work out clashes within individual aspects of the planning process – the architecture, heating, ventilation, fittings, and logistics. Clashes are already pinpointed during planning and eradicated. Modern "digital factory planning" therefore safeguards the overall smooth functioning of the factory, as it goes through the paces in a virtual world long before the first foundation stone is laid.

However, planning in a virtual world only works properly if the planning data used is an exact reflection of reality. To make sure it is, virtual data has to be compared with the real situation. A key technology now established in this area is called "mixed reality", normally understood as synonymous with "augmented reality". Overlaying the real environment with virtual simulations provides another way to validate plans.

Based in Neu-Ulm, the Steinbeis Transfer Center for Factory Planning is a specialist in industrial planning and consulting. It also develops futuristic planning concepts and already makes intensive use of a variety of virtual technologies. The "Digital Factory" is now central to entire factory planning projects and as well as conventional tools, it has a variety of highly advanced technologies at its disposal.

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A cleaning system for CNC turned parts

Clean – without compromising quality

As a member of a working group (formed by an industrial research consortium that sponsors development projects), SOTEX worked with the Steinbeis Transfer Center for Drive Engineering and Robotics in Engineering and SIVUS, to develop a new machine technology that would make it possible to clean and dry turned parts immediately after they have been made on a high performance processing unit.

The problem with the cleaning technology used to date is that it interrupted production and material flow – with serious knock-on effects on quality. The new method makes it possible to achieve the desired surface finish quality. Components are carefully removed by a turning machine which hands them over to the cleaning unit. A suction/blow-dry unit then cleans and dries the part.

The alignment of each individual part, which has already been set by the mechanical process, is used to direct the stream of air onto the component. Each part is processed individually to reduce damage caused to surfaces by collisions during cleaning. To achieve the desired levels of cleanliness in keeping with the timing laid down by the processing system, cleaning and drying has to be spread over a number of cycles. At the first station, parts undergo wet cleaning. Then several blow-dry units are used to carry out the drying.

To generate enough energy to remove swarf from the surfaces small volumes of water are added to the suction air. To do this, the stream of air is temporarily diverted to a reservoir containing the detergent. The resulting air and water turbulence creates a high number of "phase boundaries" which significantly improve the effectiveness of the cleaning process. During testing, it was calculated that the detergent only needed sucking in for 0.5 seconds to remove all swarf sticking to the component. In the remaining time, while the part is moving to the next station, superfluous detergent is removed from the unit.

At the next blow-dry station, air is targeted at high speed onto the part to loosen and remove any liquid that remained after wet washing. This is especially effective if it is done at close proximity. The high speed of the air stream generated within the chambers of the cleaning unit lift the component, cleaning and drying it from all sides. Apart from cleaning the outer surfaces of the part, this makes it possible to clean right inside contours, holes and undercuts.

The cleaning unit has eight stations set around a rotary indexing table. The cycle time is dictated by the timing of the main processing unit. To link the cleaning unit into the production process it has to be placed where the parts come out of the processing unit. Cleaned and dried parts are then moved on for further processing or palletized by machine. To test the types of applications and components the cleaning process can be used on, a test station was linked up to a six spindle machining centre used at a leading local engineering tool manufacturer, successfully achieving cycle times of six seconds.

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Organizing continuous assembly operations on multi-variant machines

Going with the flow – perfectly in time

Final assembly of machines usually takes place along conventional lines, a bit like on a construction site. This may make it possible to accommodate lots of different formats – or product variants – but there is always plenty room for improvement with this construction site approach. Sometimes material provision is disorganized, as are tool supplies and staffing. One way to maximize productivity is to switch to cycle-driven (or timed) continuous assembly. Even with machine construction, continuous assembly is undergoing a renaissance, although adaptations are needed depending on the type of industry. It was with precisely this type of switch-over that printing machine maker Koenig & Bauer (KBA) asked the Dresden-based Steinbeis Transfer Center for Production Technology and Waste Handling Logistics to suggest a new way to organize its assembly – and minimize idle periods in production.

Assembling small and medium-size batches of machines (designed to accommodate plenty of variants) does not generally work well with continuous or "flow" production. The main reason for this: low volumes and high customization levels. These are high value products, so cycle times are much longer and "ease of assembly" is not always a central concern in production. There are major differences in technology and with huge numbers of variants, assembly times vary substantially. As a result, it had not been possible to use "traditional" continuous assembly production and maximize harmonization between production and the non-cyclical assembly process by using identical cycle times on all stations. Until now.

Assembly times vary according to the type of technology being used and the specific product variant. So with cycles normally lasting two to four hours, it is not possible to fill each cycle properly. There are similar variances in output. This leads to idle time between cycles which could be eradicated if assembly flows moved continuously. So the only way to benefit properly from continuous assembly is to change how the processes are organized and totally avoid idle times. The team working on this particular project consisted of experts from Steinbeis, KBA and Schönheit & Partner. They set the number of cycles to two per shift, dictated not by when the shift begins but by the end of each cycle.

Shortening assembly time during individual cycles means that shifts can start later to match individual cycles, or of course finish earlier. As a result KBA introduced flexitime and job rotation in assembly, making production much more flexible, and assembly costs now equate to the actual amount of time people are being productive. Organizing work processes in this way removes the normal problems encountered with new continuous assembly lines. There are also benefits to be gained by using innovative technology, logistical methods and organizational practices.

In the specific case of this printing machine manufacturer, KBA, where a flexible continuous assembly line was needed, there is plenty of room for innovative ideas: assembly consists of 14 linked work stations lined up in a row. Work volumes are predictable but do vary. Printing towers are pieced together on assembly platforms which travel independently, step by step through the work process on all 14 stations. The moving platforms are battery driven and steered by control wire and transponder.

This way material provision is tailored to requirements on each work station, exactly in time with each cycle. Large parts are handled with hoists which are linked to every work station, suspended from a crane arching over the assembly line. These make it possible for a single person to work on each part. Parts are recognized and large components

can be loaded automatically in a safe, ergonomic process.

Tools and equipment have also been tailored to the nature of the job on each cycle and are placed within reaching distance on tool trolleys linked to each cycle. The results of the restructuring speak for themselves: even during the ramp-up phase, KBA cut assembly times by 20 per cent. Throughput times have been shortened by 40 per cent. And the company is now working on extracting a further 10 per cent of potential from its serial production.

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Workshop on the VerMat sponsorship program

Gaining competitive advantage through material efficiency

As part of the "Competitive Advantage through Material Efficiency" workshop held in the Stuttgart House of Commerce, the Federal Ministry of Economics and Technology (BMWi) and the Steinbeis Transfer Center for Management Quality presented VerMat – a sponsorship program designed to improve material efficiency profitably. Gerhard Weindler, head of the Transfer Center and an accredited head consultant, spoke alongside BMWi on the different options for gaining sponsorship, ways to cut costs and how to save on materials.

To show how much potential there is to make savings, Gerhard Weindler took two case studies from medium-size companies. One was a Bavarian automotive supplier with eight employees. It identified savings in procurement, production start-ups, manufacturing processes and the supply chain. The company drafted an action plan based on data thrown up by a "potential analysis" and a business evaluation. The analysis pinpointed potential savings of 16.6 per cent of materials used and a payback period on the one-off investment of seven months. The other example involved a Baden-Württemberg company that processed metals and material surfaces. Here the analysis pinpointed potential savings of 48.9 per cent of materials used and a reduction in the time spent reworking materials. The payback period on the company's one-off investment was six months. Both companies saw the "profitable improvement of material efficiency" sponsorship program as a useful support in safeguarding their competitiveness as a manufacturing company.

An aluminum shrouding cover for transformers

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SHB student introduces new heating technology to the United States

Craftsmanship, made in Germany

While the German construction industry was slipping into decline around the beginning of the millennium, in the States everything was booming. This was partly due to US energy prices which contrasted to Germany where they had already been rising for years, sparking new energy-saving technology in the construction industry, especially alternative heating systems. Now the trend has reached the United States where there is strong demand for energy saving heating. Timo Spörl, a qualified heating and plumbing specialist and a graduate of Steinbeis University Berlin's Bachelor of Business Administration, rose to the challenge of transferring the technology from Germany to the States.

The American heating market is lagging several years behind the German market. One of the main reasons for this is the use of hot air heating systems which use several times the amount of energy. In California, they have to turn on the heating in the winter as the temperature can sink to zero but on hot summer days they need to keep buildings cool. It was this need that led to one and the same – albeit inefficient – system being used to heat and cool buildings with air. As the price of electricity, gas and oil is closely linked to the price of petroleum, an increasing number of Americans are being forced to rethink their energy consumption. On top of this there is another key aspect that makes the US market for energy-saving heating so lucrative: the population of California (and with it, energy consumption) has doubled since the mid 1970s. In the construction industry this equates to up to six per cent growth per year – in contrast to Germany where construction investment stagnated before actually going into 0.7 per cent decline.

To use energy efficiently (and maintain a healthy indoor climate), most German heating systems use hydraulic water pipes. Instead of pumping air around the system to transmit heat, water is used. Water heating uses a fraction of the energy needed in hot air heating. For example, to transport the same amount of heat, a hot air duct needs to be 20.32 x 35.56 cm (14 x 8 inches); the pipes used in hydraulic heating systems only need to be 1.9 cm in diameter (3/4 inch). Using the same insulation (one inch of mineral wool), in an hour a hot air duct loses 69 BTU/ft (British Thermal Units/foot); a hydraulic pump only loses seven per hour. In other words, hot air systems lose ten times the amount of heat, although this does not take into account the energy used to air a room. Another major disadvantage is the amount of room big air ducts take up and the detrimental effect such systems have on air quality, as air is pumped through filters which are often not replaced for years.

But the Californians and other Americans are reconsidering their options – literally creating an unlimited market for the Swabian Timo Spörl. As part of a bachelor project, he looked closely at the technical challenges faced in California and problems with the market as a whole. As a result of his business plan, a company based just outside San Francisco, Dale Plumbing Inc., is now forging ahead in the market. For Timo Spörl, the fact that German craftsmanship also enjoys an excellent reputation in the United States was a good reason for hydraulic heating technology to be used as a stepping stone into alternative energy systems such as solar energy or thermal heat pumps.

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Services start shifting center-stage

From manufacturer to service provider to the manufacturing industry

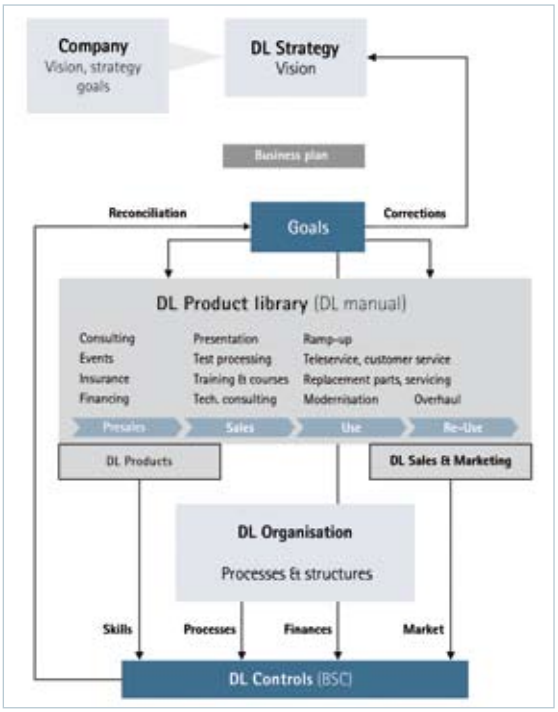
Traditionally, machine and equipment makers focused on selling the primary product. Classic after sales services were run as a sideline, in fact many companies deemed it no more than a necessary evil. But times have changed. These days the machine engineering industry is looking forward to a healthy hike in sales of up to 35 per cent of total company turnover, fuelled by business rooted in services.

VOLLMER is an international machine engineering company based in Biberach south of Stuttgart. Almost 100 years old, it specializes in tool processing and is the global leader in its field. Vollmer focuses closely on its customers and maximizing product benefits.

These days, many customers perceive product quality as a "given" – not necessarily a key criterion. So companies are often forced to differentiate themselves by offering a comprehensive range of services to match the product itself, tailored to customer needs. This also allows them to demonstrate how well they know the customer. But maintaining close relationships with the customer does sometimes run against the grain of maximizing service efficiency. This was the challenge facing VOLLMER. So Oliver Friz, MBA student at the School of Management and Technology at Steinbeis University Berlin and manager of the VOLLMER subsidiary in Dornhan, took a look at the issue as part of his studies.

The aim of Friz's "VOLLMER Services" project was to show in simple and comprehendible terms, how, and with which methods, the company could make the difficult transition from a manufacturer to a manufacturing service provider. Working with colleagues, Friz mapped out what was coined a "service control loop" (SCL) aimed at solving conflicts in terms of efficiency and effectiveness and providing a template for developing services. The cornerstones of the SCL: the company vision, strategy and overarching goals. The team also pinpointed further potential services, categorized clearly by unit and integrated into the global VOLLMER service and support organization as market-ready products.

A business plan was derived from the service strategy, tying into an environmental analysis, customer classifications, market segmentation and market potential, and forming the basis of the goals defined by the control loop. The work involved in providing the services would be intensive in terms of human resources, so the company's ability to raise sales would depend on its ability to find the right people. In the meantime, the company has initiated a program to provide people with the right training, offer apprenticeships and recruit new personnel. And Oliver Friz is looking forward to the results of the litmus test: how his project is working in practice.



SCL – The service control loop

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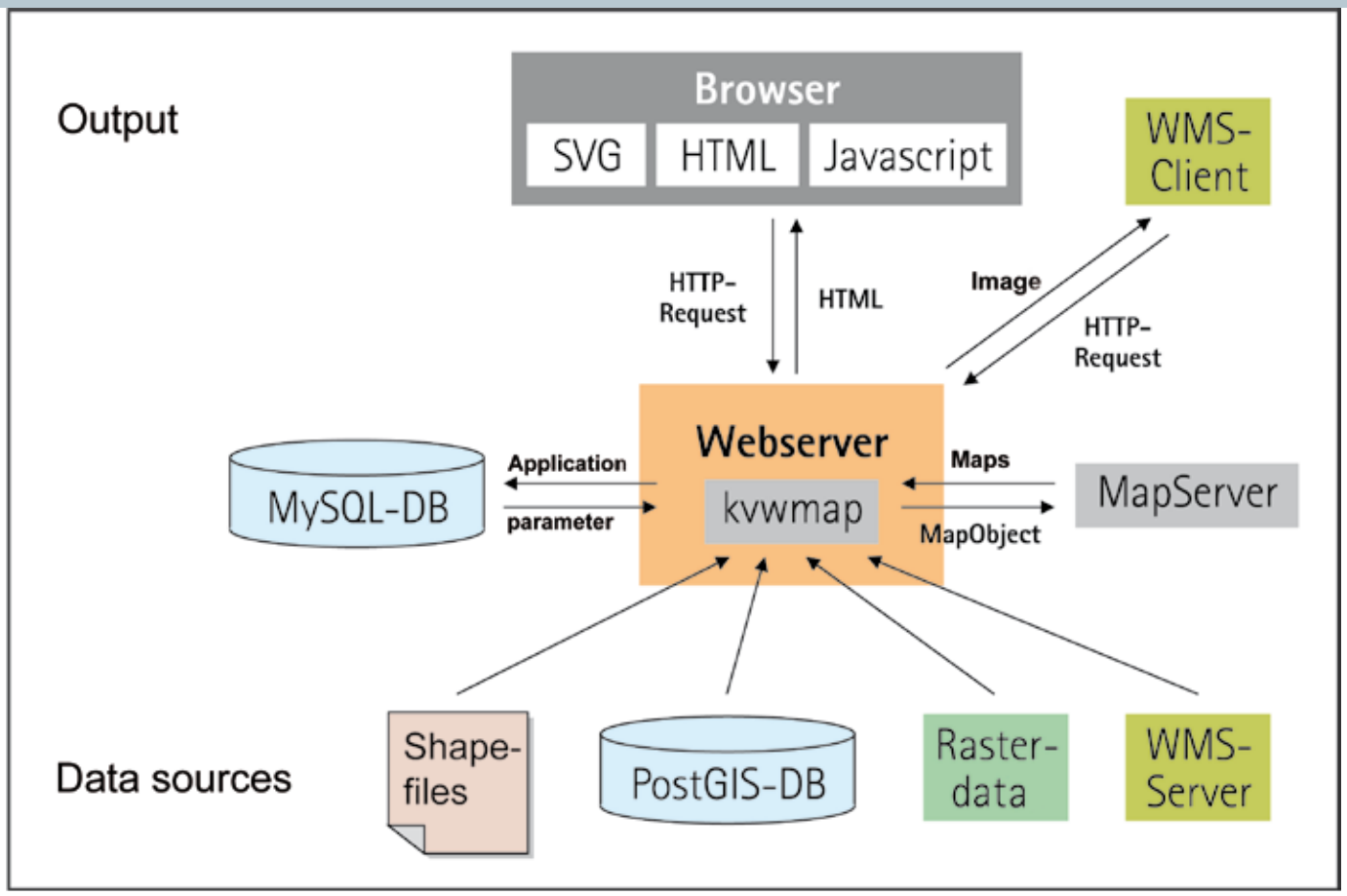
VOLLMER Werke Maschinenfabrik GmbH

Apart from its headquarters in Biberach, the VOLLMER Group encompasses production sites in Germany, France and China, as well as sales and service subsidiaries in Spain, Italy, the UK, the United States, Brazil and Japan. The Group currently employs more than 700 people worldwide.

The VOLLMER product portfolio ranges from sharpening and eroding machines for saw blades and tools used in the wood and metal processing sector to manual machines and fully automated sharpening and eroding units. VOLLMER machines are sold worldwide to tool makers, end users and sharpening services.



The kvwmap system architecture

Geodata geared to each user

kvwmap – GIS development for communities and district councils

As web technology develops at a faster and faster pace, Internet-based geographic information systems (or GIS for short) are offering more and more functions and are increasingly replacing desktop GIS applications. One example of a successful open source web-based GIS in public administration is kvwmap, a web-based GIS development platform managed by the Steinbeis Transfer Center for Geoinformatics. Originally designed as a prototype web-mapping application, over the last couple of years the system has been developed into a complex web GIS solution offering a comprehensive array of analytical, editing and presentation functions. Its growing functionality is making it more and more popular in public administration.

kvwmap is already being used successfully in a variety of administrative bodies in the German federal state of Mecklenburg-Vorpommern and several ministries and government agencies across Germany. A number of rural districts in Mecklenburg-Vorpommern have now formed an alliance called the "Mecklenburg-Vorpommern WebGIS Initiative" aimed at promoting the development of kvwmap together.

Compared to local desktop GIS solutions, web-based GIS solutions offer a huge number of advantages. The concept is based on non-redundant central data storage which allows each user to work on the very latest data. Another benefit with the Client Server Architecture of a web-based GIS is that administration tasks can be outsourced. The whole administration task centers on the server and is no longer dispersed across hundreds of workstations. The only way of working that users have to pick up on is how to use a browser and how the user interface works. Open source GIS solutions are an attractive alternative to commercial GIS products as there is no need to buy software licenses – the software is free. The only money you need is for developing the soft-

ware further and adapting it to your individual needs. kvwmap uses the open source system UMN Map Server, which also offers OGC conformity. Depending on your needs, this system can provide geodata in WMS, WCS, WFS and SOS format, or link up to distributed services used as data sources. This makes it possible to exchange data online between each of the data providers and make it available in one bundle for users.

Project kvwmap has already led to the founding of a community where system users keep the developments moving forward in keeping with common interests. They also help one another and talk about their experiences. Developers and users communicate through a wiki site and a mailing list. The Mecklenburg-Vorpommern WebGIS Initiative also has regular user meet-ups where they talk about new development needs and how best to address them.

One thing that is different about kvwmap is the "user-role" concept. By administering users according to their location or personal details, it is possible to provide any type of location information to the user individually, by place, time or topic. An instrument called a generic layer editor will allow users to create special applications by themselves in a series of simple steps. The geometric data can be polygon, line or point based and the attributes themselves do not matter: for each layer it is possible to generate new data straight away, edit existing data or carry out searches.

By using specialised branch solutions (SBS) integrated into the system, specialist tasks can be worked on directly within the system. This makes it possible to define and administer things like geographical reference points, verification documents or hunting areas. Many of the SBS interface with location-related data held in other software systems. For example, the hunting area SBS interfaces with the hunting administration system and allows district councils to capture and manage community and private hunting areas.

Central to every specialist application is how data is organized and managed, i.e. the data scheme and how this is mapped within the post-GIS database. This ties into the subsequent definition of layers which tap into the data scheme. The generic approach is to extract all of the information needed to plot maps, display or edit so-called feature data, edit the geometry and carry out searches from the data scheme and the layer definitions. None of these functions have to be programmed as they are generated and made available immediately while the system is running.

The system offers comprehensive user and rights management making it possible to define precise access rights by layer. Each user group can be given layer-dependent rights stipulating exactly whether data can be generated, deleted, or both, as well as which layer attributes can be concealed or displayed and which ones can be edited.

The layer editor can be given a variety of different entry fields. Which field is used for which type of attribute is dictated directly by the data scheme or meta-information which can be defined for each layer attribute.

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kvwmap functions at a glance

Navigation
- Zoom, pan, enter scale
- Zoom in on the object found
- Maximize extracts
- Reference map
- Save previous settings
- History/back function
- Save and add comments to extracts

Search functions
- Addresses, plots of land, name, land registry sheets, metadata, fixed points
- By feature across all post-GIS layers
- Property certification, construction files, hunting areas

Query functions
- Query feature data for all vector layers by point, a search radius around a point, box or freehand polygon

Digitizing functions
- Free points and polygons
- Different or combined polygons
- Selection of geometries from other vector layers for geometric operations

Printing functions
- Printing of ALB forms 25, 30, 35, 40
- Map prints with freely configurable print layouts
- Prints in PDF format with different screen definitions

Import/export
- WLDGE basic and ongoing inventory
- EDBS data
- MapFiles
- Shape files
- CSV files created by queries
- WMS and WFS

Measuring functions
- Display coordinates, measure distances
- Calculate areas defined by polygons

Administration
- Manage menus, users, locations and layers
- Manage rights and filters
- User stats by time, location and user
- GUI, window and projection selections

Photo: photocase.com/AndreasF.

Steinbeis helps companies identify potential partners outside Germany

Cross-border technology transfer

Steinbeis-Europa-Zentrum offers a consulting service called TechAlert to help identify partners beyond German borders and tap into innovative technology across Europe. Thanks to its support, HCM Customer Management GmbH found a new partner in Sweden, adding a powerful and highly successful project management tool to its portfolio. The name of the tool: ProjectCoordinator®.

Since 1999, HCM, a medium-sized company from Kornwestheim in Baden-Württemberg, has been providing specialist software systems and consulting services to the automotive sector, machine engineering companies and the service industry. Apart from software development and process management consulting services, the company also provides access to specialists, creates workflow systems and sets ups process and document management software. To expand its product portfolio in the "Software as a Service" area, HCM had already entered into a number of partnerships with companies from the region and elsewhere in Germany, but the software licensing agreements it made with German companies usually fell short of the territorial exclusivity it was looking for. To establish a strong position across the whole of Germany, HCM wanted license protection. One way to achieve this was to enter into a partnership with a software provider from outside Germany. It was therefore crucial to the company strategy – and its efforts to safeguard its competitive edge at home – to identify a suitable partner overseas.

HCM first contacted Steinbeis-Europa-Zentrum (SEZ) in 2005 after deciding to call on its expertise in this area and pinpoint a suitable partner outside Germany. There followed a series of meetings in which SEZ evaluated HCM's precise technology requirements. The center also helped the company analyze technology throughout the European market. Drawing on its TechAlert service, a thorough evaluation of European databases was carried out. Over the course of several months, HCM received details of technology offers and requests in the specific areas of technology defined by the medium-size company. This saved the company the task of going back to the drawing board (yet again), saved it time and money, and gave it access to rapidly changing international technology trends.

The targeted TechAlert search pointed HCM in the direction of a Swedish company called Designtech, which offers a variety of solutions including a web-based project management tool marketed in Sweden called ProjectCoordinator®. The tool is sold in other European countries via partnership agreements and at the time it was looking for a general representative for the whole of Germany. After a few phone calls between HCM and Designtech the two companies agreed that HCM would take over sales for Germany.

Thanks to the professional support of the staff at SEZ, HCM has now entered a successful partnership with the Swedish company allowing it to add effective project management to its product portfolio. Expanding its software portfolio not only allows HCM to provide its existing customers with new and efficient tools, it can now acquire new customers throughout Germany.

TechAlert, a service provided by Steinbeis-Europa-Zentrum (SEZ), searches for innovative technologies, emerging markets and new application areas throughout Europe. The service keeps customers informed about solutions already addressing a specific technological requirement and technologies being requested or offered throughout Europe. SEZ does this by tapping into the "Enterprise Europe Network" which involves over 500 partners in more than 40 countries. It is also an official partner within the network which is funded by the European Commission. Companies interested in the service register with SEZ which provides regular "TechAlerts" based on keywords and a customized profile. The profile allows SEZ to keep customers automatically informed about the latest technology offerings and searches across Europe. Alerts are sent as a summary by email with more detailed reports on request.

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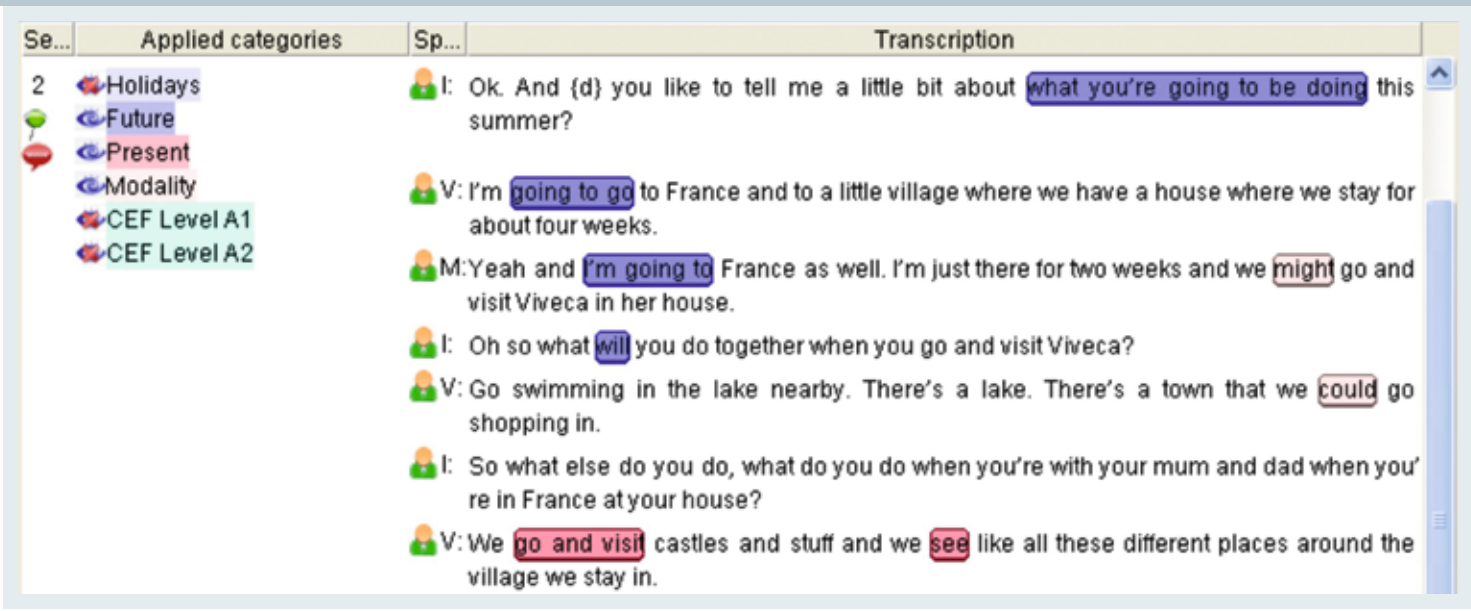

Annotation of an interview section in accordance with pedagogically relevant criteria

Modern corpus technologies for foreign language classes

Real Language – authentic learning

In correspondence with a communicative approach to foreign language learning, which had its beginnings in the early 1970s and has been prevalent ever since, the demand for authenticity and thus the need for access to real language has increased. From a language teaching perspective, this fact is anything but a novelty. Yet, the situation has changed profoundly insofar as the internet and the processing capacities of personal computers offer new opportunities for language teaching.

SACODEYL stands for "System Aided Compilation and Open Distribution of European Youth Language" and is a research and development project funded by the European Commission. It exploits the potential of computer- and web-based learning to expose pupils to language learning contents and activities that are directly relevant and therefore authentic to them. As opposed to engaging in vocabulary and grammar drilling exercises by means of specially designed language learning tasks, foreign language learners ought to be given the opportunity to develop their communicative competence in communicative contexts that are real and relevant to them.
To achieve this objective, foreign language learning should be embedded into cultural and subject-related communicative situations that the learners want to prepare for linguistically.

The basic materials for the Sacodeyl approach are digital language corpora, which can be used freely for non-commercial purposes. The Steinbeis transfer centre Language Learning Media uses its website (www.sprachlernmedien.de) to offer free access as well as advisory service to customers who are interested in making use of Sacodeyl's potential for creating and pedagogically implementing their own corpora.

The Sacodeyl language corpora are each constituted by video-recorded interviews with youths between 13 and 18 from seven European countries, namely Germany, England, France, Italy, Lithuania, Romania and Spain. The interviews are approximately ten minutes long. The youths talk about interests and hobbies, holidays, school and education as well as future private and vocational ambitions; they also state their opinions on various discussion topics. These interviews were transcribed orthographically and subsequently divided into shorter sections. Afterwards, these sections were individually annotated by means of a pedagogically motivated tool specifically developed in the Sacodeyl project. The different annotation categories can be flexibly defined by the teacher/user in accordance with the relevant language learning needs. Among other areas, they can concern information about the specific thematic direction, pedagogically relevant grammar structures as well as a classification of the required language competence according to the criteria of the Common European Framework (CEF).

From a technical point of view, the annotating process can be performed without any difficulty. The relevant annotation category must simply be dragged to the section of the interview that the chosen category applies to. In addition, it is possible to attach further resources to interview sections by means of a dynamic resource sheet. The addresses of these resources are stored in a virtual resource pool. In Sacodeyl, this

resource function is made use of in order to give teachers and learners access to video, audio and image files that relate the specific interview. Furthermore, this function is intended to integrate multimedia language learning modules, which are created with the authoring tool Telos Language Partner and pick up on the language learning opportunities that the relevant section offers. The focus can be on listening comprehension, grammar acquisition and the expansion of the learners' vocabulary. It is thus feasible to create pedagogically enriched web-based language corpora, which offer a rich reservoir of real language for relevant language learning exercises.

Pedagogic utilisation of these reservoirs is supported by a web-based search tool, which was also developed in the course of the Sacodeyl project. By using this software, teachers as well as learners can systematically search for interview sections and the related learning materials. In the browse mode, users can start by getting an overview of all the interviews the corpus contains. As a possible next step, the corresponding transcript or the video can be accessed. The search mode offers differentiated search processes, in which words and word groups can be connected with thematic and linguistic categories.

It is thus possible to find interview sections that deal with specific topics and at the same time contain certain grammatical structures as well as words that are thematically relevant. Additionally, the website addresses of the video and audio files or the multimedia-based language learning modules which are attached to an interview section through the resource sheet are accessible; they can thus be made available for embedding into various learning contexts.

The interviews and all related resources can be used very effectively in the course rooms of the e-Learning platform Moodle. Without undue effort, teachers can create motivating learning units that are linked to selected interview sections, video and audio clips as well as learning modules. Moreover, communicative model exercises support utilisation of the interview materials in Moodle. These exercises make use of communicative and collaborative activities like chat, forum and wiki. In this connection and guided by specific instructions, learners can use the Sacodeyl search tool themselves to explore certain topics or engage in lexical and grammar-oriented research.

This method of corpus-based language learning offers new opportunities for pedagogically accessing and exploring real language with the express purpose of supporting authentic and motivating language learning activities. It can easily be transferred to other languages, language varieties, subject areas and target groups. This transfer may be achieved with even more ease in collaborative teacher networks.

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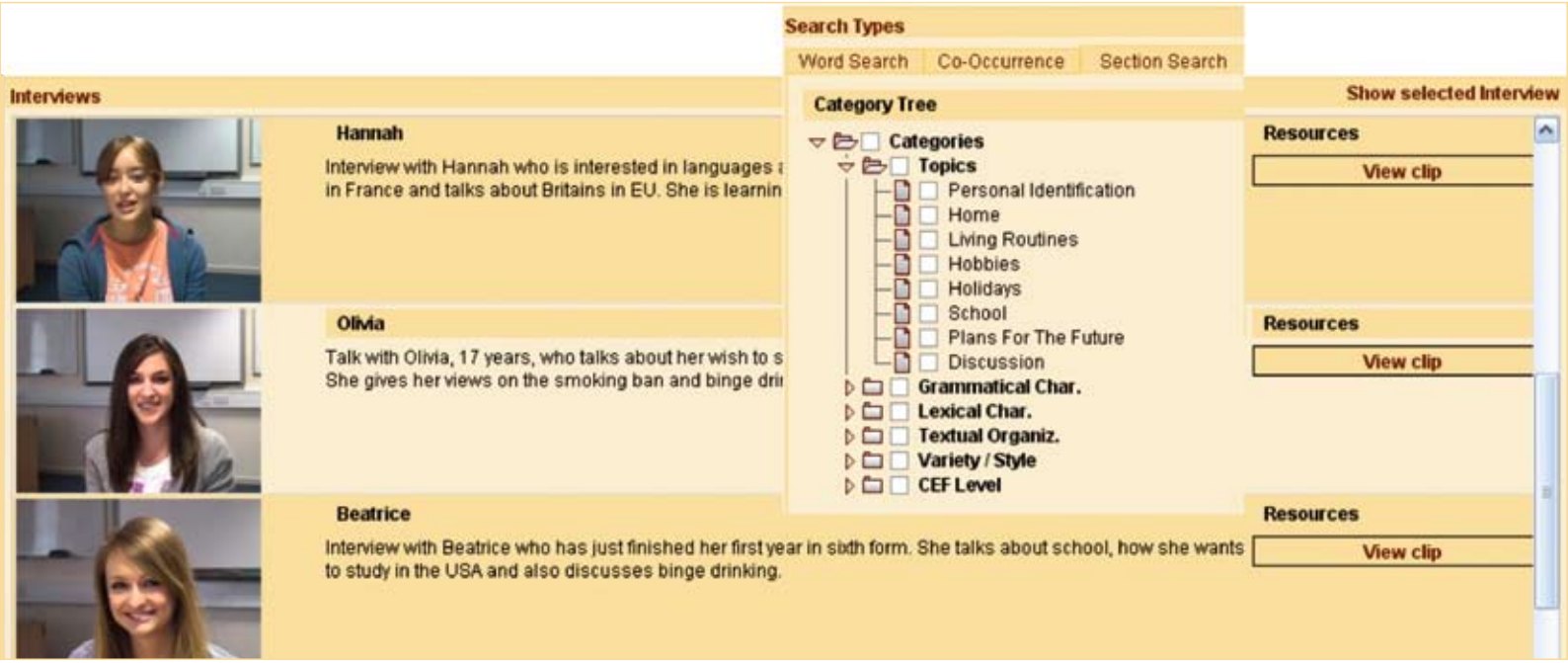
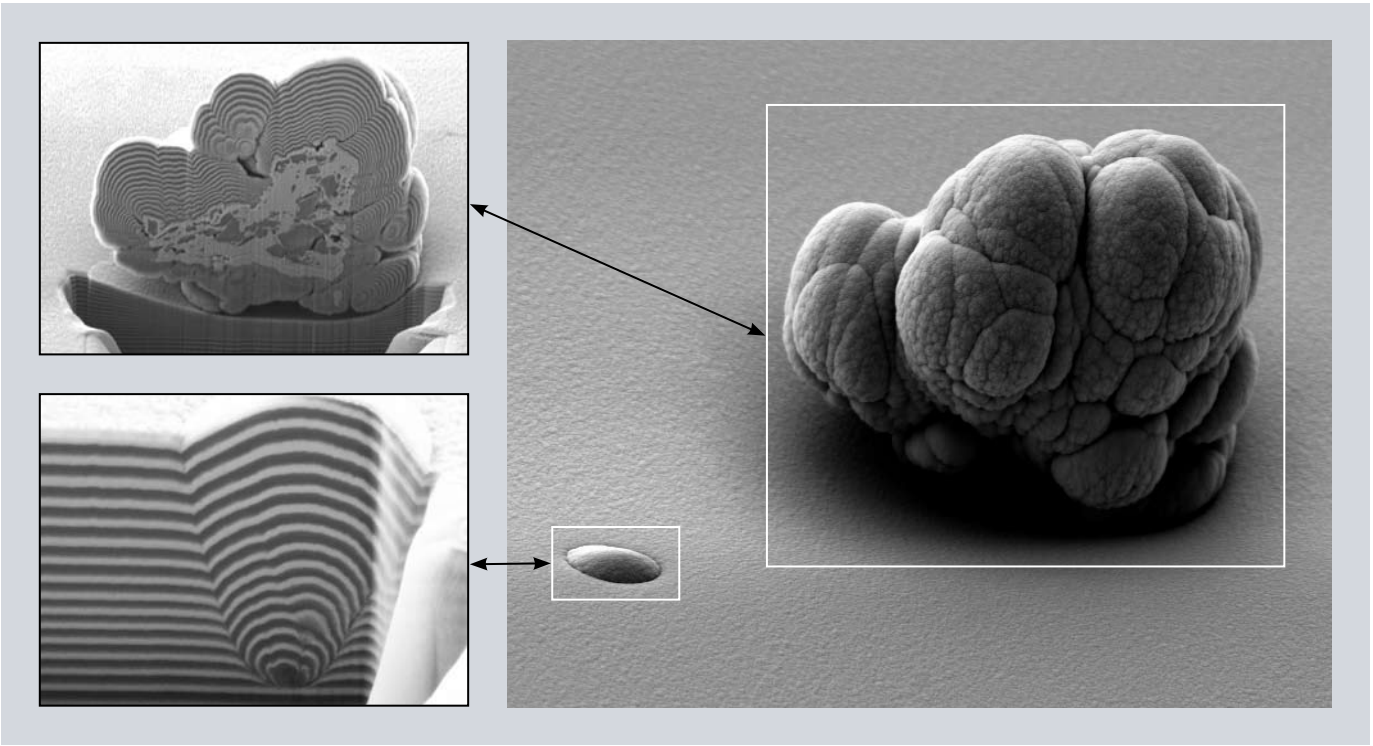


By using the Sacodeyl search tool, teachers and learners can systematically search for authentic learning resources.

Analyzing material layers using nanotechnology

Getting to the heart of the matter

Many everyday objects and working materials have special surface finishes. Typically these come in the form of an added layer. Often defects arise when the layer is being made – to the detriment of function and durability. Thanks to modern "nano-analysis", we can now explain the origin of these defects.



The surface of an object containing two defects.
Top: the defect is a speck of steel measuring approx. 15 µm enveloped in several layers of material
Bottom: a grain of lanthanum oxide approx. 200 nm in size, burried under several layers of material

Despite the variety of materials available to us these days, almost all coating processes have problems getting layers to adhere to the base material. A number of processes can lead to a layer separating from the base, and sooner or later this will result in a component becoming faulty or breaking. Once a component is broken it is rarely possible to pinpoint the cause of the adherence problem. A new technique based on nano-analysis now makes it possible to examine adherence problems before components become faulty.

Based in Constance, the Steinbeis Transfer Center for Nano Structures and Solid State Analytics has been working on a joint project with Oerlikon from Liechtenstein to examine multi-layer optical coatings. Once a multi-layer optical coating has been applied, each layer may be no thicker than 100 nm and although everything seems right, the coating contains tiny defects. The task lies in identifying the cause of these defects.

Defects can be found quickly using an electron microscope. Then a layer is carefully removed using a focused ion beam (FIB) which slices through the material. The images above show a section of material with two defects. The small defect on the left looked

Energy dispersive X-ray spectroscopy (EDX)

When you fire ultra-high energy electrons at a sample, atoms are ionized. This leads to the production of holes within the inner electron shells which are then refilled by an electron on the outside.

Differences in the level of energy between an atom in an excited state and its normal state lead to the release of characteristic x-ray emissions.

By looking at the lines of x-rays across the spectrum you can quickly make a positive identification of elements within the material (qualitative analysis) and by examining the number of x-rays (= intensity) you can work out the concentration of elements (quantitative analysis).

Depending on the diameter of the electron beam, materials ranging from several nanometers to several micrometers can be analyzed for their chemical composition.

like a flat molehill. The one on the right looked like a speck sitting on the surface. Both were sliced open to look at the precise make-up inside the defect.

It turned out that both particles were on the component before it was coated as the layers added to the material could still be made out. The flat defect turned out to be a small speck measuring around 200 nm on the surface of the substrate. An EDX elemental analysis showed that it was a tiny grain of polish made out of lanthanum oxide that had not come off properly during cleaning.

An EDX analysis of the inside of the big defect uncovered a speck of steel. Bits of steel sometimes fly around when vacuum chambers are being produced. Slicing up small particles with an FIB makes it possible to analyze defects and take preventative measures.

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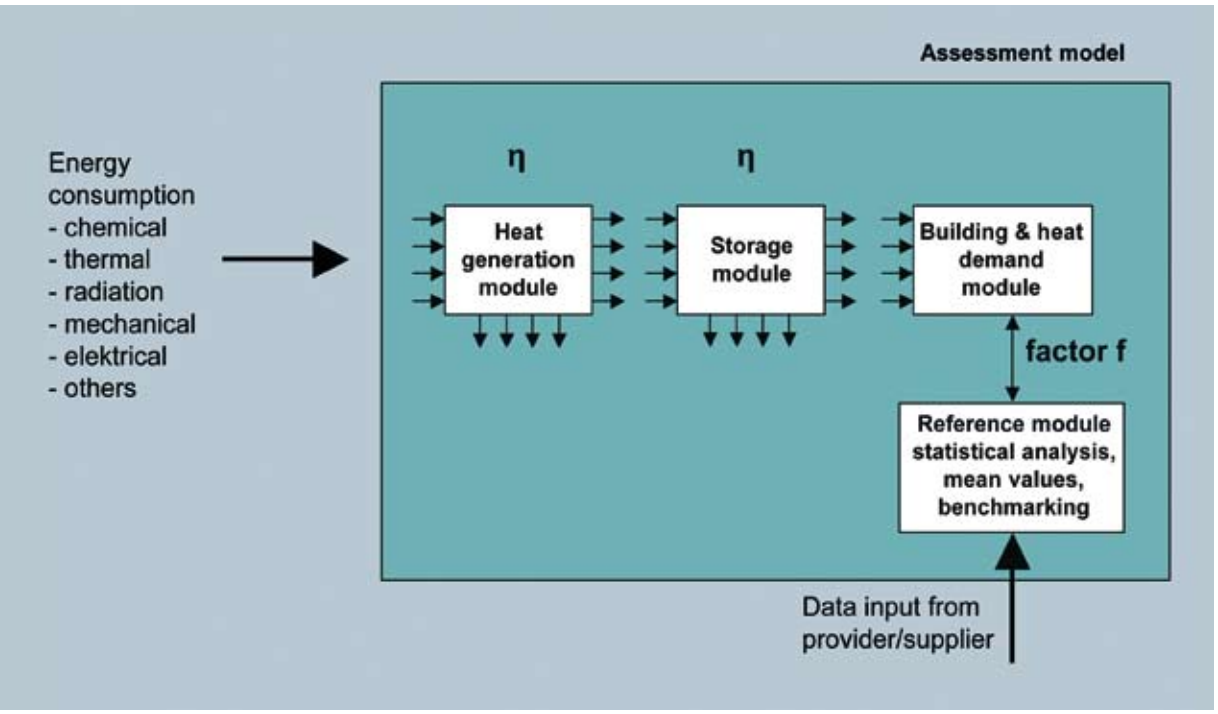
Examining energy-efficient technologies and services for export

Exporting energy efficiency

Global energy consumption is rising and fossil fuels are becoming more scarce forcing us to look for alternative energy sources and create strategies to generate and consume energy more efficiently. The subsequent rise in global demand for "energy-efficient technologies" was to be expected and it has created new business opportunities. Against this background, the "Gesellschaft für Innovationsforschung und Beratung" (GIB) carried out a study with four Steinbeis transfer centers into products and services offered by German companies. After capturing the scope of services on offer, the team developed a process for gauging the suitability of services for different scenarios and markets.



The aim of the joint study was to examine the scope of energy-efficient products and services supplied by German companies, and categorize them systematically. The team was also keen to work up a catalog of questions for capturing the data needed to assess the energy efficiency of individual types of products and services culminating in suggested processes for evaluating and comparing business solutions.

In the first phase, the GIB worked up different categories to break down the broad range of energy-efficient technologies and services into relevant groups. The main areas of application turned out to be:

Reference systems

A reference system can be:

- a reference product or process identified directly by the provider
- fixed reference values identified by the people carrying out the evaluation (this makes sense when there is already a suitable standard or statutory guideline which could be used as a reference)
- a variable reference model that can be adapted to the facts ascertained by the people carrying out the evaluation after conducting a statistical evaluation and analysis of enough products or services

Reference systems must match the main application areas defined in the first stage of a project. There may also be different priorities and issues relating to the current situation in the target market under consideration. This is why the model allows for separate reference systems to be defined for each market and product category. By allowing for the possibility to tap into existing reference systems used by suppliers, there is also the option to adapt reference systems over time to market developments. Capturing and evaluating the parameters used for each reference system or real system also needs to allow for the specific application area as well as the target market. This is why the study defined evaluation systems that established calculation routines for evaluating providers and also took into account standard question catalogs needed to capture data.

- Industrial manufacturing
- Buildings
- Transport and mobility
- End users/consumers
- Energy provision (electricity and thermal energy)
- Technology

In parallel with the quantitative assessment, the team pulled out all of the products and services with a high level of significance with respect to energy efficiency. This could be because they make a tangible difference to the energy consumption of an industrial country or because they reduce the energy consumption in another key field. Services were given a particularly high rating as in many areas the energy efficiency of an entire system could be improved just by linking up certain technologies.

In the second phase, the Steinbeis partners worked out assessment methods and made recommendations on the best way to evaluate the energy efficiency of the key product and service categories. A technology can be deemed energy-efficient if it uses less energy than a currently available technology (or the most commonly used technology) with the same (or even better) results in terms of product quality or quantity, availability, convenience, or user-friendliness.

The energy efficiency evaluation makes it possible to assess the extent to which a product saves energy versus typical products within a category. As a rule, products are assessed against reference products and a so-called efficiency factor that captures the relationship between the energy consumption of the conventional technology and the new technology. This is based on the assumption that the conventional technology can be substituted in its entirety by the new energy-efficient technology, i.e. the output is identical.

Specific evaluation profiles were drafted for around 50 different product and service categories. A list of special questions was used to check the plausibility of information provided by the supplier. Apart from technical qualities, each product was rated for its innovative value, business development and the export standing of the provider. The evaluation model also poses questions about where the product is used, how easy it is to adapt or replace it, and overall reliability. The overall product score pulls together all points and weightings. The criteria are summarized, too, with a total made up of the individual scores and the weightings.

At the end of the assessment each product is given a total score in the form of an index number. This index number can be used for an initial ranking of different products destined to be used in a market, based on assumptions captured beforehand with respect to important product attributes. The evaluation system has been specially designed so that it can be adapted to market factors. The system developed by the team is a useful tool for assessing the spectrum of energy-saving products and services now on offer in Germany.

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Evaluating and developing a business in the software industry

Moderated workshops help improve efficiency

Companies often complain about workshops taking up too much time for too little benefit. One solution: moderation techniques – although moderation in itself is not a general panacea. It's simply a methodical approach that allows moderators to maintain an overview of entire tasks. Of course one needs to define what input the company can expect from a moderator. According to experts at the Winnenden-based Steinbeis Transfer Center for Advisory Services for Small and Medium-Sized Businesses, these are professionalism, being results orientated, efficiency and neutrality. The experts helped a software company specializing in doctors' practices to run a moderated workshop aimed at analyzing the company and its business development.

Photo: Thomas Berg

The company was founded several years ago with only three employees. The recent upturn in the German economy led to a rise in business and now the company employs eight people – two project managers, a secretary and five programmers – plus the managing director.

Without a doubt, the small software company is doing well. But even companies that are flourishing have problems and the potential to do better. For example, neither project manager had had management experience in their previous jobs. Their management style was considered slightly unprofessional by the managing director and other employees. Also, the company had grown so rapidly it had not had time to capture business processes clearly as they had mostly grown disproportionately to the turnover. The company also saw sales potential in other customer sectors but it had never carried out a market analysis or developed marketing strategies.

The managing director decided it was time to run a one-day workshop with all employees, naturally including both project managers. The aim of the workshop would be to analyze the current situation and work out ways for the company to move forward from here. They had no set ideas about who should moderate the workshop, although

the managing director had toyed with the idea of moderating it himself as up until this point he managed all meetings. Meetings tended to be short, however, with only one or two people involved and a clear agenda. For the content of the workshop, one of the key issues was whether the managing director would be unbiased and objective enough to run it. He was also worried about how he would deal with conflicts within the group and never-ending discussion.

One of the benefits with external moderators is that they are impartial, unbiased and unaffected by conflicts within the group. Because they do not need to become intensely involved in the topic or content of the workshop, they can focus better on the core task than somebody who works for the company.

For this reason, the managing director of the software company decided to bring in outside help. In selecting a moderator, it was important for the "chemistry" to be right, and he also placed emphasis on good qualifications and plenty of experience with similar types of companies. He came with his wish-list to the Winnenden-based Steinbeis Transfer Center who took on the task of moderation for him.

The aim of the moderated workshop was to look at the company's strengths, weaknesses, opportunities, and threats based on the tried and tested SWOT analysis. With this, the group should work up solutions to existing problems and ways to keep the company moving forward. A useful and equally reliable tool for organizing a moderated workshop is to break it down into stages. So the software company's workshop was divided into five parts: preparation, the introduction, a work phase, conclusions and follow-up.

The workshop uncovered the company's key strengths as: "programming skills" and "customer loyalty". Its weaknesses were identified as "management", "working processes", "entering new markets" and "the accounting system". There was intensive discussion among participants about the strengths and weaknesses they identified as well as the opportunities and threats but it culminated in tangible next steps which were captured in binding action plans.

The core task of a moderator

Moderators support the group in analyzing problems and their origins. They also help participants formulate goals. By helping people to pull together their ideas and providing structure, they allow teams to pinpoint solutions to each problem – thus supporting the joint decision and solution process.

Moderators should build on the resulting tasks, laying down binding commitments by content, time and person. A key feature of the task of the moderator is therefore to focus on results. Their job ranges from bringing the group together in gaining a joint understanding of problems to agreeing action plans.

For instance, "management" weakness was addressed by agreeing to lay down management principles, create an organization chart, and draft and implement an employee questionnaire. They would also introduce regular Monday morning meetings. The participants also decided to send the two project managers on a management seminar.

Over and above the moderated workshop, the software company was given coaching sessions organized by the Steinbeis Transfer Center to provide on-going support while each action was being implemented.

The type of moderated workshop run for the software company – to analyze the company and look at its development – is just one example of moderation techniques. Moderators are normally used in quality circles, working sessions involving managers, sessions looking at ways to solve communication problems between departments, defining and allocating assignments in development departments, discussions and meetings in production teams and following through decisions.

With the right moderation techniques, company workshops become a lot more efficient and provide more benefit to the participants. It also helps avoid endless discussions, slow progress, one-upmanship, and events just staged to create a good impression. Badly managed meetings and painfully slow working sessions become a thing of the past. As well as inspiring others, sharing ideas can be extremely constructive. The result: specific actions that are achievable and binding.

Further, moderated workshops allow people to work out next steps together. This is reflected in motivation when they implement these next steps. Involve people in a decision and you gain more buy-in than if you just tell them about a decision: people who would otherwise just be affected by a decision are now involved in the decision. So the benefits of moderation techniques can be leveraged. And levers are there to be used!

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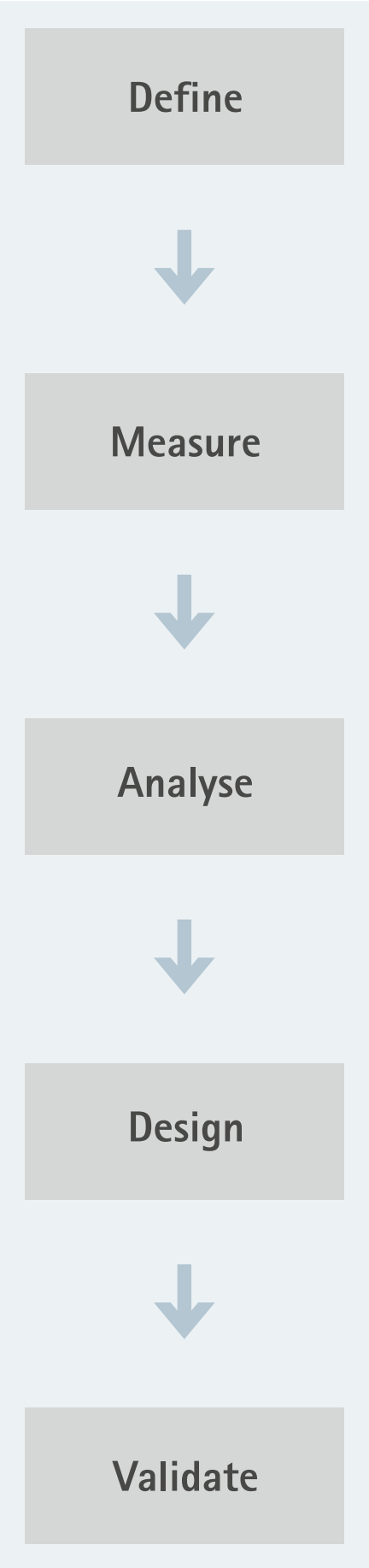

The different phases of the development process

Creativity and discipline – successful innovation management calls for both

Design for Six Sigma

Innovation has always dictated the pace of the economy. In keeping with Schumpeter's theories, "creative destruction and creation of the new" change markets, products, and companies at breakneck speed. According to recent surveys, almost half of all chief executive officers see the ability to innovate as particularly crucial to the future of the company. Yet more than forty per cent of respondents complain that the results of their innovation projects fall short of the business goals they set.

This was the situation facing a client of the Steinbeis company TQU my big apple GmbH. An international producer of mechatronic instruments, the company was forging ahead with its extremely technical, highly creative product development process, based on classic innovation processes covering several separate stages.

But as the client noticed, creativity alone is no guarantee that a new product will succeed. After scrutinizing the results of analysis carried out by experts at TQU my big apple into the current situation and the performance of individual departments, the company realized that its products and services did not exactly match up to customer requirements. Customers found the technology too complicated and as a result of this, slightly unreliable.

Directly after the analysis, development at the most successful innovators was benchmarked, showing that they were using standard, lean and powerful innovation and development processes. They also implemented internal processes in a highly disciplined manner. Standardized innovation processes allow a company to achieve its corporate goals and keep project teams disciplined, raising the probability that the innovation will succeed and improving the efficiency of innovation by accelerating processes, using resources more effectively and reducing the risk of making wrong decisions. Furthermore, they help coordinate activities across project teams throughout the organization, making it possible to measure innovation activities. Thus obliging people to improve innovation processes on an ongoing basis.

TQU introduced the client to a method called Design for Six Sigma, a useful technique for transforming existing development processes into a successful innovation management system. The project involved restructuring the development process into five phases: Define, Measure, Analyze, Design and Validate.

During the Define phase the task in development is to define the top level business case, lay down the project scope and formalize measurable project goals. This phase also involves pulling together teams. In the second phase, Measure, underlying customer needs and requirements are captured and analyzed, and market gaps in demand are mapped through "voice of the customer" studies. During this analysis, all possible solutions are worked up and gauged in terms of performance versus customer requirements. This analysis brings the best concept to the fore, based on the fulfillment of customer expectations, and taking into account costs and production feasibility. The chosen solution, which now becomes more concrete for the customer and the company, moves into development in the Design phase. In the last phase, Validate, performance criteria are compared to the original goals and fulfillment of tangible customer requirements.

By adhering strictly to each phase of the process, the company benefits from a powerful and disciplined framework within which to work, which includes a series of pragmatic tools for efficient and effective innovation management. It helped the client of TQU my big apple GmbH achieve a healthy balance between creativity and discipline and has now laid the foundations for developing future products and services – in keeping with customer needs and requirements.

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Design for Six Sigma

This method is based on a procedure model covering Define, Measure, Analyze, Design and Validate. It adheres to the seven principles of successful innovation management:

- **Principle 1 – Understand the customer**
  Products and services are developed in keeping with the demands and price expectations of customers. The aim: to solve their fundamental problems.
- **Principle 2 – Prepare to innovate**
  Invest sufficient time and resources to prepare for innovation. What is the market doing, what business model fits best, what technical capabilities are needed? Based on preparations, the "Voice of the Customer" is echoed in a meaningful product and service specification.
- **Principle 3 – Listen to the customer**
  Customers usually cannot express exactly what they want until they see it and can "grasp" it. Early prototypes are made and discussed directly with potential customers. The company listens carefully to its customers from the beginning to the end of the entire process. Structured innovation processes are based on the following premise: implement – test – feedback – refine.
- **Principle 4 – Activate resources**
  Innovation is not just the responsibility of the development department. Product and service development spans a number of departments and affects all company resources. So suppliers, key stakeholders, staff and customers are involved early in the innovation process.
- **Principle 5 – Avoid wasteful practices**
  During development, people must make sure early on that the design of a product or service prevents any form of wasteful activity in production and distribution.
- **Principle 6 – Safeguard quality**
  During the entire development process, identify all possible causes of faults, defects or quality problems. Helpful in this respect is the strict application of Six Sigma tools such as House of Quality, Conjoint Analysis etc. The focus is on the development of an innovation offering "practical", fault-free use to the customer.
- **Principle 7 – A balance between creativity and discipline**
  Creativity is derived from the disciplined implementation of the idea through lean, well functioning innovation processes. The art is to strike a healthy balance between creativity and discipline.

The 2008 Steinbeis Day

The Steinbeis Day is a forum for finding out more about the Steinbeis network and meeting people. This year it takes place on Friday, 19 September in Stuttgart's Alte Reithalle. As in previous years, the day allows a variety of Steinbeis Enterprises to talk about their services. It is also a palpable demonstration of the power of our Network, and Steinbeis' technology and management capabilities.

Transfer centers, consulting and research centers, and transfer institutes will present projects and research findings at the 2008 Steinbeis Day. The one day event provides guests with an opportunity to speak to experts, learn about new products, new business processes and innovative strategies. Short lectures in the afternoon will highlight examples and discuss the issues raised by current Steinbeis services, consulting, research and development, training, employee development, expert evaluations and reports. Already something of a tradition, the Steinbeis Day is an excellent opportunity to meet Steinbeis experts and representatives of industry and science, discuss fascinating issues, and learn about partnership opportunities.

In the morning the 2008 Prof. Adalbert Seifriz Prize will be awarded. Free entry to the exhibition and award ceremony. Please ask about registration.

For more information and to register:

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High-speed test machine from Coesfeld GmbH & Co. KG, Germany

High-speed test machine for investigation of elastomers

Testing high loads

Modern materials such as elastomers and their compounds are becoming increasingly important in many aspects of day-to-day life. In other areas such as machine engineering, the automotive industry and aerospace, they have been used for years. The reason for this is that these polymers can withstand huge, non-linear physical strain without plastic deformation. Elastomer components are often used in areas where they will be subjected to major dynamic loads. So it is crucial to evaluate the characteristics and properties of this material before it enters the development process.

Materials have developed so quickly in recent years that the existing analyses and test machines are no longer up to the job, especially when trying to understand impact behavior. This applies as much to damage analysis as the design of components. We already know a great deal about mechanical material properties under slow strain, but the picture is still very vague with respect to fast speeds and high deformation rates which can only be looked at using expensive crash test stands with highly elaborate equipment. Understanding material properties in detail at high test speeds allows you to improve components in a targeted manner and thus make them much safer and more reliable. The data generated during testing is also needed to establish the parameters of FEM calculations used to design components for high load rates.

As part of a research project, Coesfeld GmbH & Co. KG and the Westsächsische Hochschule Zwickau in the west of Saxony developed a new, ground-breaking, high-speed test stand for capturing the impact properties of elastic materials. In partnership with the Steinbeis Research Center Application-oriented Material-, Production-, and Process-Technology, the company has been examining a variety of elastomer materials made by European producers.

The new testing machine makes it possible to test materials at speeds between 2 and 50 m/s releasing energy between 10 and 4500 J. At the same time, samples can be tempered to examine the influence of temperature on material properties. The company is currently taking live measurements of a broad variety of elastomers to gain a comprehensive understanding of impact behavior at high rates of loading.

For example, conventional elastomer compounds with a variety of properties were examined at a test speed of 30 m/s to check their falling weight impact properties. A number of the elastomers examined, such as natural rubber (NR) or thermoplastic elastomers (TPE) are more elastic and the direction of the force adheres to excellent linearity. Nitrile rubber/Styrene-butadiene rubber or ethylene propylene diene monomer rubber (EPDM) can take higher loads than TPE and NR before giving way to the impact although elasticity is around half the level of the other samples.

Instrument-based checking of material reactions to falling weight impact on the new machine makes it possible to capture the impact behavior of elastomer materials in detail and thus provide new insights into the development of advanced, premium quality materials – opening the door to new applications.

Of course the mechanical properties of synthetic materials are strongly influenced by their close dependence on other testing constraints, such as the phasing of the load, the rate of the load, temperature and time. The test method outlined here allows you to examine the deformation properties of materials offering high distensibility in conditions very similar to actual strain environments.

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An HR concept is translated into practice

Barriers and open doors with "HR Business Partners"

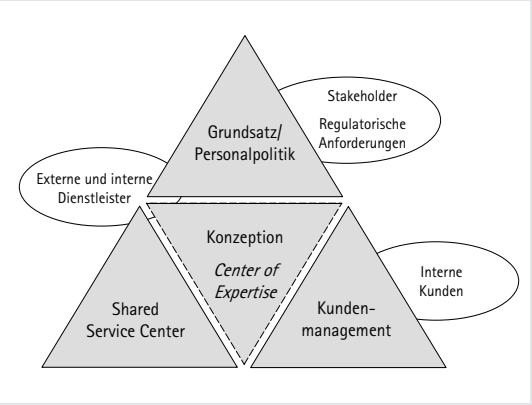
HR managers who like to think they're something special sometimes call themselves the "HR Business Partner". It may sound like a snazzy buzzword, but is there more to this new-fangled American term than meets the eye? Is it just one of those abstract management terms designed to line the pockets of consultants? Edmund Haupenthal and Dr. Viktor Lau discuss their standpoint.

The HR Business Partner (based on an idea by Dave Ulrich, 1997)

No topic has been more hotly debated by HR managers and caused so much controversy in recent years than the term "HR Business Partner". The debate has been documented by countless conferences, speeches, studies, articles and books. And now we're beginning to go in circles. But the postmodern shine of this concept begins to fade when people finally start translating it into practice.

Dave Ulrich, the originator of the concept, owns his fair share of the blame for this. His basic model takes what is actually a complex reality and reduces it to a small number of simple components. By doing so, Ulrich made an important contribution to focusing on the key issues. But lots of other issues are left open, especially whether an HR Business Partner constitutes an "assembly of required skills", the "role definition of individual employees in the HR department" or an "HR organization" as a whole.

Visit the personnel departments of leading companies listed on the German stock exchange (and even "larger" medium-size companies), and you'll find people busily working away at the concept, but almost everyone sees the term differently. Individual HR managers will describe themselves with every confidence as an HR Business Partner, yet the department's role as an HR Business Partner tends to be more abstract within the hierarchy. Companies place recruitment ads in national newspapers for HR Business Partners while at the same time talking about their group-wide service portfolio – an organizational unit called the HR Business Partner. Things are confused. And we need clarity and transparency.



The HR Business Partner organization

Between the two extremes – service offering and the role as a "sovereign function" – modern HR management should, first and foremost,

- steer the HR processes that are "taken for granted" – accounts, payments, HR recruitment, administration, labor law-related procedures, etc – and take into account process and cost efficiency norms

- empower staff and managers to perform adequately within the business, in keeping with their role, by making available suitable processes, instruments and systems

- act as a professional advisor to senior managers on all issues relating to the planning and answering of business demands, making full use of common instruments, financial accounting methods and reporting processes

- make available the infrastructures and services required to steer activities (cost effectively) to change processes with a bearing on personnel management

- exchange information in a systematic manner with all interested parties, internal and external (the employment market, workers' representatives, etc) on all personnel related demands and requirements as well as ways to solve problems.

This portfolio of processes and services falls within the remit of the entire HR organization. It reflects functional issues, not personal competences. Only this way can the model of an HR Business Partner be used as a (theoretical) orientation framework for the actual organization of processes and structures within the HR department.

In doing so, the individual roles of the HR Business Partner must not be valued differently in terms of "important" or "not-so-important" tasks. This keeps happening in business, always to the detriment of the "administrative expert". Businesses should take heed of warnings not to play down the value of certain tasks: without professional routine tasks, HR Business Partners would not exist. If personnel departments cannot administer pay slips and seminars regularly in a defined quantity and quality, then they shouldn't be taking on ambitious tasks such as demography programs or diversity plans.

This brings us to some of the organizational principles central to the effective implementation of the HR Business Partner model. Based upon these, the process of injecting organizational professionalism into the HR function can move forward. The following organizational concept can thus be considered directly derived from the HR Business Partner concept. It encompasses key "components" consisting of:
Customer Management, Principles, Concept Development, and the (internal) Shared Service Center. This framework allows you to map the Ulrich model at an operational level:

- Customer Management – called, somewhat confusingly in many organizations, the "Business Partner". This establishes and develops relationships with internal customers, logs requirements and ensures sufficient resources are made available.

- An area called Principles and Concept Development, pulling together all activities connected to the establishment of HR frameworks (management instruments, salary systems, HR development) as well as the development and introduction of strategic HR initiatives. These cover HR marketing, management remuneration or development of the most senior managers.

- The Shared Service Center which is responsible for the effective and efficient management of all routine processes, from contract management to pay slips and even seminar administration. There are a number of ways to organize this function and the technological infrastructure, including shifting services currently provided internally (outsourcing). This depends on the extent to which processes are formalized and the role played by these services in adding value. What is important is that the processes are carried out professionally and provide a quality service. The same applies to the procurement and steering of external resources (IT and HR consulting, coaches and course providers, etc).

Overall, this provides us with an organization model that translates Ulrich's initial idea into actionable reality. During the transition from a personnel administration function to a management-oriented HR Business Partner, Steinbeis can provide the necessary expertise in the form of market data, examples of best practice, organizational research and preliminary studies. It also acts as a sparring partner in defining, implementing and steering projects. Steinbeis consultants will focus clearly on processes and organizational models that make sense as well as the methods and instruments of HR management needed to support employees and managers efficiently in performing their task within the company.

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TQU runs task forces for developing Management System 2.0

Cue... action!

Web 2.0 is on everyone's lips these days. First coined by Tim O'Reilly, the term refers to technology and user-based changes to the world wide web. Its advocates describe Web 2.0 as a paradigm change to the Internet. Management System 2.0 is a term coined by Steinbeis experts working at TQU International GmbH to describe a combination of the technology and principle of Web 2.0 and the shaping of management systems.

A Steinbeis project team has tapped into the advantages of Web 2.0 technology – such as wikis, a collection of microsites that can be edited online jointly by users – to the benefit of management systems, making dynamic changes to systems via software.

But what exactly is a Management System 2.0? For a start, it allows you to find your bearings within a system, reflected by wikis and connections via links. By involving users, the system becomes dynamic and allows people to shape the system themselves. Another aim is to motivate users to place knowledge onto a system and link up with other colleagues. This makes it easier to distribute knowledge.

Staff at TQU International worked in a task force to develop a company-specific Management System 2.0 for several customers. None of the companies had the same goals, but they were all seeking a new, dynamic solution to redesign their management system.

DGQ Regionalkreis Ulm

The goal at DGQ was to link up its members and set up an information and scheduling system for regional group meetings and other events in the area. It was also keen to promote the exchange of information on quality-related issues and allow people to support one another through a forum. The solution provided to the DGQ was a mediawiki as a platform for its community.

Hirschmann Automotive GmbH

Hirschmann wanted to overhaul and redesign its existing quality management system. Key influencers should be trained, with some of them being people working at its three European factories. The Intranet should be discontinued step by step and integrated into the wiki. With the help of TQU, Hirschmann developed its own "QWiki", a quality management system, and gradually integrated its existing Intranet solution across three European sites into a wiki.

Kräss GlasCon GmbH

This company wanted to reduce fault levels and improve quality by setting up a knowledge library. Work-related standards should be stored centrally and become transparent, thus improving work processes. Project management and financial accounting should be coordinated through a wiki. TQU developed an integrated quality, knowledge management and project monitoring system, based on Confluence (Enterprise wiki).

None of the management systems could be duplicated and used like for like in a different company. Each wiki has its own finger print, created by the specific goals laid down by the company and the people who designed the Management System 2.0. As a result of the work carried out by the task force, not only did the companies benefit from a new management system, they also established a network within the group and gained some useful insights into the management systems used by other companies. TQU expertise also accelerated implementation and the identification of solutions within the group. The task force concept proved valuable and a second task force is already under way. A third will start working in September.

Landing page of the TQU wiki: components of the process model are reflected by the structure of the wiki

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Solving Problems Successfully with Dynamic Standards

Ready for matrix management?

Which structures do organizations need to function properly? Line organizations map social hierarchies and, in the past, have solved a number of problems. But complexity and rapid response times call for something different. Enter the matrix organization – it sheds an entirely new perspective on leadership and processes by, among other things, standardizing two specific management processes: taking decisions and coping with conflicts. In addition, knowing specific characteristics such as human traits help handle the issues that arise between matrices and lines.

An important decision: line organization or matrix? Photo: photocase.com/madochab

Which structure do organizations need to work properly? Line organization reflects social hierarchy and, in the past, has solved a number of problems. But complexity and rapid response times call for an additional model. The matrix organization – also known as cross-functional management -requires alignment in horizontal dimension and an entirely new perspective on leadership and processes.

In this context working on standardization of the two specific management processes decision-making and conflict is of high value. Knowing about specific capacities such as human characteristics simplify solving the problems arising between matrix and line.

Experts at the Steinbeis Transfer Center Strategic Management – Innovation – Cooperation observe the social hierarchical behaviour that emerged out of the human adaptability on challenges during evolution. The human characteristics to process are a basic issue to understand human action in its context. Humans own a big range of possibilities to behave and within this range there are more or less clear tendencies to behave in a determined way. This demands conscious decision-making to avoid specific traps.

The matrix views the management processes decision-making and conflict as specific ways of problem-solving. Here, the focus shifts from issues such as who took the "better" decision or how to avoid or resolve conflicts.

Conscious decision-making and an open minded, positive approach to conflicts drive innovation. This kind of thinking keeps organizations attentive, agile, flexible – in other words: a continuously learning process.

The challenge the matrix poses is that it forces employees to relate to the substance of objectives. In the matrix organisation people have to relate themselves to the defined objectives. That is the challenge, to assign and to subordinate oneself to the objective and to give precedence over the question of power. The combination of problems and their relations, different paths towards solution have to be discussed broadly to gain an idea of the situation with all the opportunities, chances and risks. Devoting greater attention to an objective's substance and paying less attention to human hierarchies pushes people in a state of uncertainty. A properly working organization owns a strong and positive engagement of all members. Developing and cultivating an awareness of conflict management forces this aim. That´s easier said than done.

The key to this is a high regarding, esteeming communication style that delivers acknowledgement and certainty to all team members – regardless of hierarchy. Opposing views and interests may be expressed without damaging personal relationships. On the level of facts conflicts are to be managed and can be used for innovation processes. Esteeming communication liberates the conflict solving process from the chains of hierarchy.

The coming into being and the course of a conflict is observed as a process of communication. As soon as conflict is seen as its own system, causes and environment are different systems. This strategic separation as a useful technique and also a pragmatic handling opens several new views – from inside the system and from outside the system. If in a communication the reciprocal expectations do not fit to each other, the communicators are in contradiction to each other, conflict to each other. Several contradictions bring linear communication to an end. Communication leaves the level of evidence, is cut or escalates. Dysfunctional communication leads to personal conflicts, even inner dismissal.

Line organization emphasizes the role of individual decision-makers to keep the hierarchy stable. In matrix organization, this behaviour is counterproductive. It is not only inefficient but also uneconomic. It is not sustainable if essential decisions are not prepared by well-informed cross-functional teams who continuously improve their processes – and being accountable to the quality of the decisions.

The organization has to adapt the standardized management processes decision and conflict to its individual needs. The processes have to be conforme to the resources on each level and to changing objectives.

The Steinbeis Transfer Center Strategic Management – Innovation – Cooperation has launched workshops to initiate and oversee the development of these standards and to help organizations become more responsive. These workshops give participants the opportunity to see how conflict and decision evolve and to experience their own conflict and decision-making situations and patterns through the lens of a process.

A live project at a public organization demonstrates this approach. Conflicts in various departments appeared impossible to resolve, so the organization turned to the Steinbeis Transfer Center. Early discussions showed that employees had trained themselves to seek consensus when dealing with others. The first gathering of managers explored conflict and decision-making in a systematic manner. This revealed two things: a) decisions were often avoided to maintain the friendly team atmosphere, and b) team leaders attempted to redirect decisions to the hierarchy. Another finding: by working to prevent conflict, managers were neither taking their part nor accepting their responsibility.

The Steinbeis experts ran a workshop to address the issue. The "Conflict as potential added value" module taught participants that conflicts can have a positive impact, and how employees can leverage this impact to help move the organization forward and boost the quality of service. The "Decision-making in teams" module analyzed strengths and weaknesses of taking decisions in teams and worked out models to communicate decisions within the hierarchy.

Organizations can also take advantage of other modules tailored to the specific need of organizational learning. The "Traps of decision" module, for example, aims to help participants not only to be aware of the threat of traps on the way to sustainable decisions, but to be proactive – within the team and the hierarchy. The "Conversation with idea" module focuses on achieving common goals using esteeming communication. In a final module the participants compile the different options of action in the processes of decision and conflict into a guideline.

The issues and methods described here are also included in the "Leadership and organizational _consultancy_" degree program at the Steinbeis Transfer Institute Systems Science, Leadership and Organisational Development, part of the Steinbeis University Berlin.

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New Steinbeis Enterprises

Abbreviations:
SCC: Steinbeis Consulting Center
SRC: Steinbeis Research Center
SIC: Steinbeis Innovation Center
STI: Steinbeis Transfer Institute
STC: Steinbeis Transfer Center
FTC: Focos Transfer Center

The following Steinbeis Enterprises have been founded as of February 2008:

SCC Conference Organisation, Östringen
Directors: Dr. Uwe Riedel
Dipl.-Dolm. Andrea Wilming

SRC Experimental Film, Würzburg
Director: Prof. Dr. Ingo Petzke

STI Business Administration and Management, Stuttgart
Directors: Dipl.-Ing. (FH) Peter Schupp
Bernd Schimek

STC Ferdinand-Steinbeis-Institute, Stuttgart
Director: Dipl.-Volkswirt Max Pfeiffer, MBA

STI International Management & Innovation, Stuttgart
Director: Dipl.-Ing. (FH) Rainer Gehrung

STI Risk Management and Prevention, Berlin
Directors: Birgit Gaida
Heinz Rinas, BBA

STC Microelectronics and Sensor Systems, Ketsch
Director: Prof. Dr. Peter Fischer

SRC 3D-Fluid Dynamic Simulation, Optimization and Visualization, Karlsruhe
Director: Prof. Dr. Ralph Lausen

STC IT-Business Consulting, Zürich
Director: Dipl.-Betriebswirt (BA) Jürgen Hausin

STI Information Ethics, Berlin
Director: Prof. Dr. Rafael Capurro

STI Cardiological Technology, Berlin
Director: Dipl.-Med. Päd. Frank Merkle

SCC Optimized Product and Process Development, Aalen
Director: Prof. Dr.-Ing. Florian Kauf

STI IBR Institute of International Business Relations, Berlin
Director: Dr. Andreas Kelling

STI School of Renewable Energy, Technology and Global Management, Berlin
Director: Prof. Dr. Friedhelm Gehrmann

STI Institute for Renewable Energy, Technology and Global Management, Berlin
Director: Prof. Dr. Friedhelm Gehrmann

SCC Logistic Systems, Ulm
Director: Prof. Dr.-Ing. Klaus-Peter Franke

STC Molecular Oncology and Immune Therapy, Rostock
Director: Prof. Dr. med. Ernst Klar

STC Clinical Biomechanics - Sport Technology - Training, Bad Wiessee
Directors: Prof. Dr. med. Thomas Horstmann
Dr. Stefan Grau

SCC Health Management, Berlin
Directors: Dr. Michael Meetz
Dr. Hamid Saberi

SCC Documentation and Usability – EVIDOC, Aalen
Director: Prof. Dr. Gertrud Grünwied

Continuation: New Steinbeis Enterprises

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FTC: Focos Transfer Center

STC IKU - Seminars for Innovation, Communication and Companies, Konstanz
Director: Anna Falduto, M.A.

STC Technology Innovation Business, Leipzig
Director: Dr. Karl-Michael Meiss

SCC Human Resources and Personality Development, Korntal-Münchingen
Director: Dipl.-Ök. Heike Felbecker-Janho

SRC Electromagnetic Compatibility, Bannewitz
Director: Prof. Dr.-Ing. Ralf Vick

Young researchers swot up on management

This May, more than 60 scientists from 13 European countries attended a week-long seminar series on knowledge management in Erkner, Germany. The workshops formed the core of the EU project TRAYSS PRIME and gave participants valuable insight into management and leadership skills. The Steinbeis Research Center Technology Management North East in Rostock coordinated the program for rising talent.

Zuzana Hugonin, PhD student at the University of Stockholm

Aside from project management in research, workshops focused on ways to use intellectual property, how to apply for EU research funds, and how to manage time and conflicts. Visits to Bayer Health Care and the research committee of the Lower House of German Parliament took learning outside the classroom. Participants also had an opportunity to network and propose ideas for partnerships further down the road. The week-long seminar was organized by ProSciencia Beratung (in Lübeck, Germany) with assistance from project partners Steinbeis Research Center Technology Management North East and ScanBalt, the international biotechnology network.

A Slovakian PhD candidate, Zuzana Hugonin is doing research in inorganic chemistry at the University of Stockholm. The benefit of the seminar is obvious: "I had no idea that I could have prevented so many mistakes throughout my projects. I'll see my scientific work in a new light now, and I'm sure that these skills – like better organization and preparation – will free up more time and help me, and my work, stay flexible."

Frank Graage, Director of the Steinbeis Research Center Technology Management North East, sums up: "The feedback from seminar participants and just talking with up-and-coming talent in life sciences proves that the idea of management seminars really has its finger on today's pulse." The next step: launch the seminar at graduate schools and research institutions.

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Gründler GmbH captures high-tech CyberOne Award

Space in Gründler's trophy case is slowly becoming tight. After winning last year's award celebrating innovation in Baden-Württemberg (please see Transfer Magazine 4/07), the young, Freudenstadt-based company with Steinbeis equity holding was recently awarded second place in the bwcon: Hightech Award CyberOne competition.

Gründler develops, produces and markets systems used in intensive care medicine. Founded in 2000, the head office at the edge of the German Black Forest employs 15 people. Gründler was recognized for its achievement, creating the patient gas humidifier HumiCare® 200. This device adjusts artificial respiration to normal physiological conditions – it's a true breakthrough in intensive care medicine. Using the HumiCare® 200 drastically reduces harmful side effects and complications in artificial respiration, and the device also guarantees a more constant and reliable air flow.

The Hightech Award CyberOne is the technology award bestowed by the Business Initiative Baden-Württemberg: Connected e. V. (bwcon). It recognizes innovative and successful solutions and business models proposed by new and growing companies in Baden-Württemberg. The aim is twofold: promote up-and-coming companies and make it easier for them to reach venture capital organizations.

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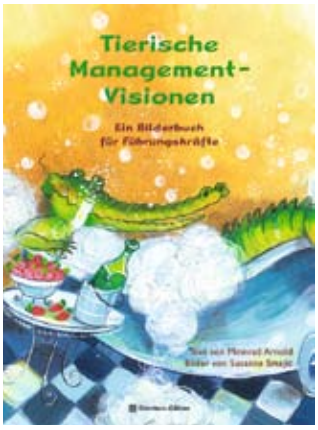
New releases from Steinbeis-Edition

Steinbeis-Edition publishes works mirroring the scope of the Steinbeis Network expertise – one of the many ways we share what we've learned. Our range of titles spans a broad spectrum of excellent single volumes and series on management and technology.

Tierische Managementvisionen – Ein Bilderbuch für Führungskräfte
ISBN 978-3-938062-60-9



Author Meinrad Arnold and illustrator Susanne Smajic provide a delightfully refreshing caricature of managers in search of vision. Every drawing on the page has its equal out in the real world of work. Guaranteed to make you smile. (Available in German only)

Strategic Policy Intelligent Tools – A Guide
Publisher: Steinbeis-Europa-Zentrum
ISBN 978-3-938062-64-7

The goals of the Guide and Compendium include, inter alia, to support decision-makers in both the public and the private domain to design and implement better RTDI investment strategies in Europe's regions. They can thus contribute to the EU's Lisbon Strategy to become a competitive knowledge-based economy, and to the Barcelona target of investing 3% of GDP in RTDI. In developing their networks and gaining the strategic knowledge from their individual SPI-based exercises, decision-makers can fashion their preferred strategies in a way that also contributes to the achievement of overall EU programmes and priorities.

The Proceedings of the "Electronics in Automobiles" Symposium
Topic: Energy and cost-efficient electronics systems, ISBN 978-3-938062-25-8

The proceedings of the "Electronics in Automobiles" symposium, held by Steinbeis between 8-10 April – now in bound form. This work contains abstracts of lectures as well as short biogs of each speaker. (Available in German only)

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In remembrance

Professor Dr.-Ing. Walter Kuntz

Born in 1938, Professor Walter Kuntz was a part of the Steinbeis Foundation since it was re-founded in 1983. With the Steinbeis Transfer Center Microelecronics in Furtwangen, he founded the Foundation's first specialized Transfer Center and was involved with it until his death this April.

In 1988, Walter Kuntz founded the Freiburg Transfer Center Medical Electronics. Its focus: electronics and software in medicine. He lent his expertise to Steinbeis University Berlin as an adjunct instructor and also represented Steinbeis interests in the MicroTEC Südwest 'technology cluster of excellence'.

Prof. Kuntz embodied the Steinbeis principle: he believed that the genuine applicability of his scientific findings was anchored in business and real-life professional and vocational training. In 2004, the Steinbeis Foundation awarded Walter Kuntz the Löhn Award in recognition of outstanding achievement in technology transfer and his dedication to Steinbeis.

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New media update: Holtzbrinck and SUB launch 'New Media Campus'

Publishing house Georg von Holtzbrinck has just issued a new employee development series specifically designed for new media. Academic partner and program co-developer: the School of Management and Innovation (SMI) at Steinbeis University Berlin.

"New Media Campus topics are a way for us to explore the most important innovations and developments going on in today's media. We are taking up the cause of new technology and responding to how users' habits have changed. Ultimately, we aim to position ourselves as the go-to leader when it comes to new media projects," explains Dr. Stefan von Holtzbrinck, partner and Chairman of the Executive Board.

New Media Campus targets employees in every company within the Georg von Holtzbrinck publishing house: from fresh startups and established new media companies to traditional book and magazine publishers. The series provides every interested person with precisely the information needed to stay abreast of fast-paced developments in the media world. What's more, this educational initiative aims to foster a better understanding of customers. The outcome: recognize pertinent market developments and drive innovation.

"The New Media Campus intentionally turns right where traditional executive education concepts turn left. Here the focus is on new trends and timely issues. And we want to help develop expertise in innovative ways, in ways that allow employees and senior managers at the publishing company learn from and with one another," explains Carsten Rasner, Director of the School of Management and Innovation. Some formats include training sessions on management and leadership or new media markets and technologies. Others entail experiential workshops with peer groups designed to help understand the customer better. Networking events and interactive platforms help participates share work-related ideas with one another – and with competitors as well as experts in other industries. Hailing from Germany and around the world, New Media Campus instructors are experts in academia and the media business.

For the past few years, the SMI has worked as the academic partner to the Stuttgart-based publishing company and has founded a number of research centers dedicated to innovation management as well as media and convergence management. What prompted the decision makers at Holtzbrinck? The marriage of academia and business. "The SMI is well-versed in what business needs and can answer those needs with top-notch instructors who take a pragmatic approach. The SMI makes a perfect partner," emphasizes Cathrin Vischer, Head of Staff Development and Marketing, and the publishing company's representative for New Media Campus.

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State Medal for Merit goes to Johann Löhn

This past April, Baden-Württemberg's Prime Minister Günther Oettinger awarded the State Medal for Merit to Prof. Dr. Dr. h.c. mult. Johann Löhn. The ceremony was part of a program and welcomed Löhn as one of 26 new recipients. Until 2004, Löhn served as Chairman of the Board of the Steinbeis Foundation and is the acting president of the Steinbeis University Berlin. The award was bestowed on him to honor his commitment to Baden-Württemberg as a center of technology.

Source: Ministry of State Baden-Wuerttemberg

The Medal for Merit recognizes outstanding achievements in service to one's state and its citizens. The award is "a sign of great appreciation and gratitude for your exceptional service. And it's a reflection of your strong ties to Baden-Württemberg [...] Thanks to your efforts and your dedication, your character and your charisma, your sense of duty and your professional ethics, you've truly done us – and our community – a great service," said Oettinger in welcoming the new recipients.

The medal is bestowed based on the nominations of the Baden-Wuerttemberg Parliament President and government officials, and the Prime Minister makes the final decision. Foundation policy dictates that the number of recipients may not exceed 1000 living recipients at a time.

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Steinbeis project captures innovation award

In June 2008, Bavaria's Prime Minister Dr. Günther Beckstein conferred the 2008 Bavarian Innovation Award on Continental and Ingolstadt University of Applied Sciences. One of the ten achievement awards went to Prof. Dr. Christian Kipfelsberger, Director of the Steinbeis Transfer Center Plastics and Composites Technology in Naila, Germany and to his partners: SGL Technologies and Saint-Gobain Rigips.

With his partners, Kipfelsberger developed a plasterboard that conducts heat as though it were water. This new material also protects against electromagnetic radiation. Beckstein noted that all recipients "displayed an exceptional talent for taking outstanding ideas and joining forces with intrepid partners to design new kinds of products."

Introduced in 1996, the Bavarian Innovation Award carries the second-highest state endowment for innovation. The Bavarian government aims to position groundbreaking technical innovation as a worthy, achievable goal throughout the state. This approach should also encourage Bavarians to show initiative and take more risks. The jury includes members of the Academic and Technical Advisory Council (part of the Bavarian state government) and the Bavarian Academy of Sciences.

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High-profile textbook prize goes to SUB professor Helmut Schneider

High honors for Professor Helmut Schneider, Marketing and Dialogue Marketing Chair at the School of Management and Innovation, part of Steinbeis University Berlin: together with Professor Klaus Backhaus (University of Münster), Schneider was awarded the Textbook Prize by the German Association of University Teachers of Business Administration (VHB in German).

Professor Helmut Schneider (l.) receiving his award

Published by Schäffer-Poeschel, Professor Schneider's book Strategic Marketing was awarded the prize for 2007. The award ceremony was part of the association's conference held during a German holiday in May. This year's location: the Free University of Berlin. This conferral is the fifth time the VHB has recognized the importance of scholarly instruction in business administration.

In his speech, presenter Professor Michael Kleinaltenkamp (Free University Berlin) praised the book for its structure clearly designed to educate: "The authors have managed to explain strategic marketing clearly and thoroughly, drawing on consistent and relevant analogies to competitive sports."

The VHB is dedicated to promoting research, instruction, and skills development within business administration. It also acts as the glue between its members, professionals in the field as well as related institutions within Germany and abroad. International in focus, the association consists of over 1600 members who are involved with business administration at an academic level.

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Master seeks professor: Prof. Adalbert Seifriz Award 2008

In 2008, the Baden-Württemberg Crafts Congress and the German Confederation of Skilled Crafts (ZDH in German) are announcing the 20th anniversary of the Prof. Adalbert Seifriz Award for Technology Transfer in Crafts. The competition co-sponsors are: handwerk magazin (trade publication), the Signal Iduna Group (Insurance & Finance), the Association for Technology Transfer in Crafts and Steinbeis.

TECHNOLOGIE TRANSFER HANDWERK
PROF.-ADALBERT-SEIFRIZ-PREIS

This award recognizes exemplary technology transfer from science and academia to skilled crafts. Endowed with €25,000, the award will be bestowed during the Steinbeis Day on Friday, 19 September in Stuttgart.

Candidates for this award must demonstrate a working partnership between at least one skilled craftsperson and one scholar. This collaboration may entail developing products and processes as well as providing services or putting new structures into practice within day-to-day operations. The Baden-Württemberg Crafts Congress has set the beginning of July as the deadline for entry.

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