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The Steinbeis Magazine

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Dear readers,

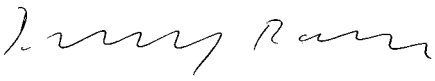
Doctors aren't the only ones to have worked out that life is healthier – and longer – when lived in moderation. Exercise, yes. But not too much and not too little. Sleep? Not too much, not too little. Drink? Not too much, not too little. Almost sounds boring. That's what lots of captains of industry and managers probably thought. Their motto was "growth to the max" – at any price. And if the long, hard slog to grow still didn't work: buy extra sales or buy someone else! Headlines were full of takeovers and mergers – a sign of the times, modern management practice. Even if it meant yet more credit.

Dizzy stuff. And risky. But what a ride! Now we can only look back at the mad scramble to be bigger and better and scratch our heads. We've all seen mergers go up in flames, especially those rooted in megalomania. We all know what happened to the dinosaurs. When companies reach a certain size – or, in crisis parlance, "critical magnitude" – failure is no longer an option, and statements like "too big to fail'" become a merciless maxim of rescue planning. Darwin's law, survival of the fittest, has mutated into its very opposite: survival of the fattest.

This isn't the law of nature. Unrestricted size is a rare thing. Small is beautiful – as in the case of countless highly specialized life forms, which live at one with their surroundings while remaining amazingly adept at adapting to change. No help from outside. No central coordination. Since the onset of industrialization, standardized, mass-produced goods were (and still are) a desirable end – because they're cheaper to make and thus affordable for most. So big companies did make sense. But even here, the paradigm is shifting. "Customizing" is no longer a buzzword used in marketing to hail the virtues of color variants or optional fittings. The way forward is genuine customizing, adapting highly flexible production configurations and processes, to make even the smallest of batches possible – at a reasonable price. So now we're in a much better position to fulfill individual client needs. The customer is once again the spotlight of product development and innovation. But beware: this approach should also be used in moderation. Excessive individualization waters down the identity of the product – which is vital to decision-making. Without an identity, what is a brand, a benefit, an image? Where does that leave expectations and affinity with peer groups? People will still need similarity and uniformity. It all comes back to the same maxim: everything in moderation.

Thinking beyond selling and making a quick buck is nothing to be ashamed of. Customer satisfaction, environmental friendliness, safety, staff motivation, quality, product durability, service excellence and mutual respect are all laudable aims in business. It's fine to reshuffle our values – in fact, now is the ideal time to do so. Let's be hungry for

knowledge, not hungry for more; level-headed, not big-headed; considerate, not condescending; candid, not complicated; conscientious, not covetous – values that should transcend every successful medium-sized enterprise in the long term.
Does that sound boring to you? Well maybe it is. But it's healthy!



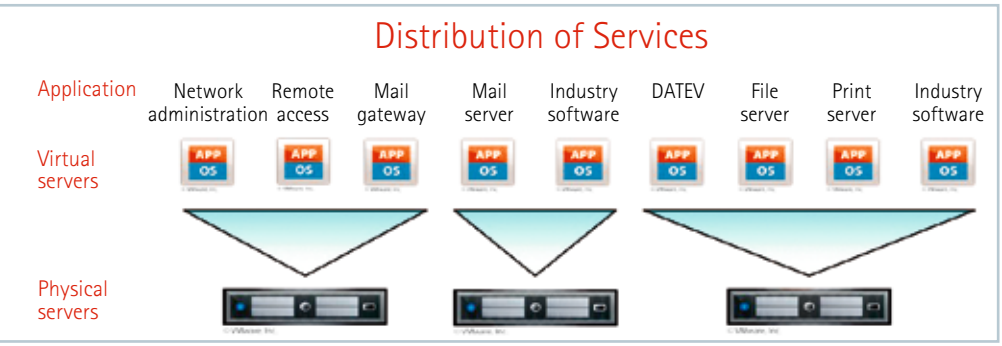
Professor Dipl.-Des. (FH) Detlef Rahe, MFA

Professor Dipl.-Des. (FH) Detlef Rahe, MFA heads up the i/i/d Steinbeis Transfer Center (the institute for integrated design) in Bremen. Read more about how he and his colleagues support innovation processes with early, user-oriented design on page 17.

Karl Westermann GmbH & Co. KG virtualizes its IT infrastructure with support from Steinbeis

Strategic infrastructure planning – virtualization for SMEs

Most SMEs face a similar IT situation to Karl Westermann GmbH & Co. KG in Denkendorf (Germany) – a heterogeneous infrastructure requiring cost-intensive service and support. But Westermann took the initiative, and decided to modernize and virtualize its IT infrastructure with support from the Filderstadt-based Steinbeis Transfer Center object-IT.



Server consolidation and migration to a virtual infrastructure

"Our existing IT infrastructure wasn't quite being pushed to its limits, but to expand a system, you have to know when to start laying the right foundations," reflects Frank Westermann, owner of the 60-strong company which focuses on contract business. The aim of the business overhaul at Karl Westermann? To improve reliability, fault tolerances, management processes and support, but also to reduce operational costs and optimize system resource utilization. "Not forgetting that virtualization makes it possible to reduce overall IT costs by up to 60 per cent", adds Peter Schupp, managing director at object-IT, partner in the project.

Westermann's existing IT infrastructure spanned a variety of servers of various ages, running a range of operating systems and an wide array of applications – from mail servers and DATEV to highly specialized software. The problems this lead to were all too familiar: different applications frequently run on different operating systems, and not all software is necessarily up to date. Software updates can have detrimental effects on other applications running on the same computer: for example, updating one application can cause others to become inoperable. What's more, it's almost impossible to predict or test the impact of an update, as companies rarely run standalone test servers. Additionally, software and hardware cycles are often intrinsically linked, so whenever companies replace an old server (ie. the physical hardware), the software on the new server must be reconfigured. More often than not, this means calling in the software supplier.

One solution to this problem is virtualization. Setting up a separate virtual machine for almost every application allows individual systems to be split. This also makes it possible to run lots of small applications separately on larger machines. Virtualization also separates hardware and software cycles – hardware is consolidated onto a few fail-safe servers. So even if an error does occur during operation or after an update, restoring the system or recovering data is straightforward. The idea is based on the old IT adage: one application, one machine. Thanks to virtualization, it's now much easier to put this principle into practice – and much less resource-intensive.

Another benefit of virtualization: improved business processes and workflows, allowing firms to make much better use of resources. For example, most people check their e-mails first thing in the morning when they start their PC. This places a significant burden on e-mail servers. Later in the day, things calm down – systems typically only run at 15 to 20 per cent capacity. This applies to other services, too. With virtualization, firms can separate software from hardware resources – the load is distributed "dynamically" within the server, or across several servers. This allows companies to use their servers more flexibly and rapidly, making better use of capacity and using less of their IT budget.

Virtualization is likely to have a major impact on the server market. Already an emerging trend for a couple of years, it is on course to dominate the infrastructure market by 2012/13 at the latest.

Dipl.-Ing. Marco Henry V. Neumueller
Dipl.-Ing. (FH) Alexander Brendel
Steinbeis Transfer Center object-IT
Filderstadt
stz475@stw.de

Computer-aided nucleic acid design for gene and cell therapy to treat type 2 Gaucher's disease

Molecule design for genetic therapy

Nucleic acid molecules which specifically deactivate, correct or encode human gene functions now play a fundamental role at every stage of the value chain for biotechnology products. Key applications for nucleic acids include validating unknown gene functions, genetic vaccination and somatic gene therapy. The Steinbeis Transfer Center for Nucleic Acids Design provides highly specialized services in the field of biotechnology and the development of active pharmaceutical ingredients. The center designs nucleic acid molecules tailored to individual requirements using powerful software developed in-house.

Gaucher's disease is a hereditary condition, and the commonest of the lysosomal storage diseases – a group of disorders which disrupt lipometabolism. Different subtypes of the disease exist: non-neuropathic (type 1) and neuropathic (types 2 and 3). All types lead to changes in internal organs which are characteristic of Gaucher's disease. Additionally, the two neuropathic forms cause serious and acute (type 2) or chronic changes (type 3) in the central nervous system.

The only treatment currently available is enzyme replacement therapy with imiglucerase – a chemically modified form of the human GCase enzyme which acts to replace the faulty enzyme. The replacement enzyme is administered intravenously and is absorbed well by the body's phagocytes. Therapy for one patient costs several hundred thousand euros per year, but its success in combating type 1 Gaucher's disease is undisputed. The therapy reduces damage to the spleen, liver and bones, and can even bring disease progression to a standstill. However, this therapy is ineffective in combating type 2 Gaucher's disease, as the replacement enzyme cannot penetrate the blood-brain barrier. As a result, causal treatment of brain damage in patients with type 2 Gaucher's disease is currently impossible.

To address this issue, the consortium "Innovative gene and cell therapy for Gaucher's Disease Type 2" was set up in Germany in 2009. Also known by the abbreviation In-

Photo: © iStockphoto.com/dem10

TherGD, the consortium is funded by the German Federal Ministry for Education and Research. To effectively treat type 2 Gaucher's disease, it must be made possible to introduce a functional form of the GCase enzyme into all bodily organs. The consortium is working towards this goal by developing innovative new gene therapy methods to treat the disease.

Instead of directly administering the replacement enzyme, these methods focus on introducing the enzyme's DNA to target cells – including in the brain – in a variety of ways. This "genetic blueprint" means the body's own cells can then produce the healthy enzyme on their own, on a long-term basis.

In the cell nucleus, the DNA "blueprint" is first transcribed into an mRNA (messenger ribonucleic acid) molecule, which exports the code from the cell nucleus into the surrounding cytoplasm. This mRNA then acts as the direct blueprint for protein biosynthesis of the healthy GCase enzyme. However, the poor efficiency of cellular infiltration presents a significant problem. To overcome this hurdle, the consortium is applying optimized viral and non-viral gene transfer methods to help introduce the genetic blueprint for GCase into muscle cells or hematopoietic stem cells, thereby ensuring ongoing production and secretion of GCase within the body. Two different strategies are also being applied to help reach a therapeutic level of GCase in the central nervous system. The first strategy exploits the retrograde transport mechanism of adeno-associated viruses by using them as gene vectors. Carrying the healthy GCase code, the viruses are injected into different muscles, where they are transported into peripheral nerve cells in the central nervous system. Here, the healthly GCase enzyme is separated and can enter the lysosomes of other cells. In the second strategy, hematopoietic stem cells are genetically manipulated using vectors based on transposons ("jumping genes") and minicircles (small circular DNA sequences) so that they can stably produce a soluble form of GCase which is able to penetrate the blood-brain barrier.

For this therapy to work, the GCase gene – after having been painstakingly introduced into the target cells – must be optimally exploited to ensure it releases the maximum possible amount of the healthy enzyme needed for therapy. The Steinbeis Transfer Center for Nucleic Acids Design in Berlin provides expert support in this area. The center specializes in modeling the molecular structure of mRNA using advanced bioinformatics methods, allowing cells to process the mRNA far more efficiently into the enzyme required for therapy. These methods have been proven experimentally, and some are even patented.

These methods exploit a variety of functional sections of the mRNA. As well as optimizing the section of the gene sequence which contains the code for the enzyme, these methods also focus on modulating the regulatory 5' and 3' untranslated regions (5' and 3'UTR). Using a new algorithm, molecules of functional RNA can be connected in a way which allows their individual structures – and thus their individual gene functions – to be retained. Based on this form of active fusion, structural domains can then be attached to the GCase mRNA to simplify its processing and its export from the cell nucleus into the cytoplasm. They also protect the processed mRNA from attack by decomposition enzymes. As an example, one particularly effective structure is the post-transcriptional regulatory element of the woodchuck Hepatitis B virus.

This RNA processing is also aided by an intron, which can be removing via splicing. This intron is a section of DNA which does not act as a blueprint for the enzyme, but rather modifies the structure of the artificial gene so that it behaves in a similar manner to most natural human genes. It also makes the 5' UTR of the mRNA more available to interact with ribosomes – complexes of RNA and protein which initiate the production of GCase in the cytoplasm. Although none of these methods actually alter the therapeutically active molecule, they can significantly boost its intracellular concentration. The potential for optimization by modifying the structure of the mRNA is one which has barely been exploited. As such, the expected results when this method is combined with other synergetic methods are highly anticipated. For gene therapy to be successful, the required level of GCase enzymes must be reached in the target cells. This strategy for producing healthy GCase enzymes can also be complemented by inhibiting the defective form of the enzyme in the patient, so that it cannot disrupt the functioning of the intact enzyme needed for therapy. The Steinbeis Transfer Center for Nucleic Acids Design in Berlin is currently developing a specific inhibitor for this purpose.

Gaucher's disease

Due to a defect in the ß-glucocerebrosidase (GCase) enzyme in lysosomes – a type of cellular organelle – glucocerebrosides (a group of carbohydrate-attached lipids) are not metabolized in the body. Instead, they accumulate in macrophages – the body's scavenger cells – particularly in the spleen, liver and bone marrow. Here, they can disrupt organ functions, leading to symptoms which range from mild to life-threatening.

The first symptoms of type 2 Gaucher's disease (the acute form) include enlarged organs, and are seen at 3-4 months of age. Further symptoms primarily affect the central nervous system and normally lead to the death of the child by the age of 5.

Dr. rer. nat. Volker Patzel, MBA
Steinbeis Transfer Center for Nucleic Acids Design
Berlin
stz801@stw.de

An interview with Steinbeis University graduate Anja Glatzle

"I'm much more organized now when tackling problems, and I look at the bigger picture"

Anja Glatzle is a master's degree graduate on the General MBA program at the School of International Business and Entrepreneurship (SIBE) at Steinbeis University Berlin (SHB). Anja spoke to TRANSFER magazine about the challenges involved in completing company projects and her experiences during her studies.

Anja Glatzle

You completed your master's degree project at DEKRA Consulting, where you were working as an assistant in Sales and Service. What exactly did your project involve?

DEKRA Consulting is a consultancy with a focus on technical, organizational and business administration aspects of consulting. The area I worked in provided consulting services relating to sales and after-sales for carmakers and vehicle importers. The aim of my job was to provide the company with an off-the-shelf guideline on setting up a department from scratch and making it competitive, so that it would be profitable and well-established within a couple of years. In more precise terms, this meant generating a turnover of four million euros with a profit margin of 31 per cent, bolstering competitiveness by establishing a customer base centering on long-term, trust-based relationships, and increasing the level of organization by mapping processes and documenting knowledge management. Last but not least, employee satisfaction and motivation had to be improved by establishing clear career progression options.

That's no mean feat – especially if you're studying and reading up on the theory at the same time. How did you approach the project – what strategies did you apply, what steps did you take?

I began by conducting a detailed analysis of the company and its processes. The results of this analysis formed the basis for managing the project – from the original project brief to final implementation. To decide how to implement the strategy, I used the Six Loop Concept®, focusing on a differentiation strategy. The seminars at SHB were extremely useful, whether they were about knowledge management, practical business administration or strategy and change management. They gave me a strong theoretical grounding which I could build on.

So after two years of study, what were the results of the project?

In October 2008, my department won its first big contract: a project focusing on used car management for a major German car company. This gave us a solid basis for the next three years, as we strove to achieve our strategic goal of becoming a key performer by 2010. To differentiate ourselves properly, improvements were made to certain areas – pricing policies, marketing, and personnel policies. Several areas were key to our success: improving brand awareness, pinpointing our USPs and using them in a targeted manner, highlighting the value-added for the client, recruiting new clients, and ultimately growing turnover.

Tell us something about your overall experience as a student at SHB.

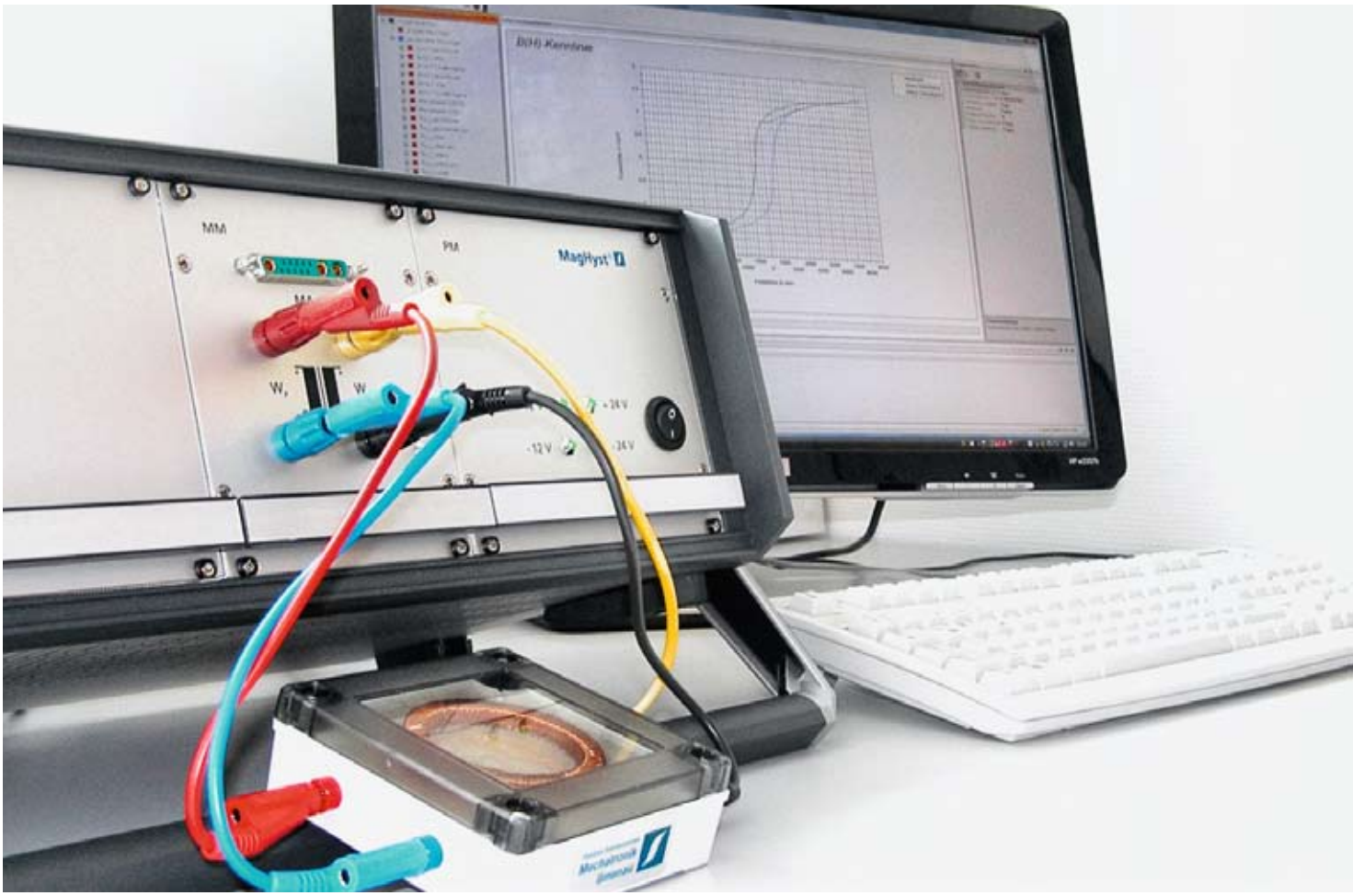
Studying with Steinbeis gave me the opportunity to examine a wide range of projects and gain detailed insights into a huge variety of totally different companies and very different ways of doing things. This helped me become more efficient in my own work. I'm much more organized now when tackling problems, and I look at the bigger picture rather than simply focusing on whichever small section I'm currently working on. I also established some really good friendships during the course of my studies, which mean a lot to me. And I also did voluntary work on the MBA guest lectures, which gave me the chance to meet some very interesting people.

Jens Mergenthaler
School of International Business and Entrepreneurship (SIBE)
Steinbeis University Berlin
Berlin/Herrenberg
stz1249@stw.de

Steinbeis Transfer Center develops system for measuring magnetic properties

Measuring and testing: an innovative approach

Magnetic actuators now provide an ever-increasing range of applications – thanks to technical improvements such as increased durability and improved tolerance of high temperatures. A mechatronic approach when designing magnetic actuators, as detailed in guideline VDI 2206 by the Association of German Engineers, ensures that optimal methods for closed-loop and open-loop control of the actuator factor into the design stage. However, this means magnetic properties need to be more stable than ever. Financial pressures and high material prices mean that magnetic actuators often use ferromagnetic materials, the magnetic properties of which have not been guaranteed by the manufacturer. In response to this, the team of experts at the Steinbeis Transfer Center for Mechatronics has developed a cost-effective measuring and testing method to characterize the magnetic properties of materials and actuators.



Devices for measuring magnetic flux – commonly known as fluxmeters – employ integrators which are complex and expensive. Now, the Steinbeis team in Ilmenau has successfully developed an alternative solution. MagHyst® is a modular measuring and testing system for determining magnetic properties, which is based on an innovative measuring method using a constant rate of flux change. This allows the voltage, which has a highly unpredictable amplitude and frequency range, to be integrated by calculating the sum of a constant voltage per time segment. As a result, this procedure can be carried out at low cost using a microcontroller.

The team in Ilmenau designed all software and hardware to be fully modular. Modular hardware makes it easy to vary the power, voltage and measuring speed – plus it allows the use of additional sensors to measure further physical variables in parallel. When it came to designing the software, the team created an interface which would allow us-

ers to operate a range of programs by programming a DLL module. This allows users to tailor the system to different applications – whether it is used as a full laboratory tool, or merely to monitor production by indicating whether materials are "good" or "bad".

MagHyst® offers a wide range of measuring applications. To name a few: analyzing the properties of raw materials, inspecting incoming goods, monitoring production, assessing the durability of used actuators, and condition monitoring. MagHyst® also measures the B(H) curves of materials in bar or ring form – using an adaptor in the case of bars. To measure rings directly, they must first be fitted with two measurement coils. These curves can then serve as material parameters in simulation programs, or alternatively, the material can simply be classified as "good" or "bad" by comparing the curve against a reference curve.

Using a reference magnetic circuit fitted with a coil or specially modified adapter, it is possible to easily integrate individual components such as armatures or conduits into the circuit, localize them in a fixed position, and record their characteristic $\Psi(i)$ curves for that position. By comparing these curves against a reference curve, the component can then easily be classified as "good" or "bad" without first having to integrate it into the magnetic system. This method has potential industrial applications for quality control of supplier parts. Another possible application is in production, to test components upon completion of critical process steps.

Monitoring polarized systems during production – a common practice in engine production, make-to-stock production and magnet production – remains a highly complex procedure. This new system developed by the Steinbeis Transfer Center in Ilmenau allows professionals to check whether a) magnetic components have been mounted in the correct position, b) they are sufficiently magnetized, and c) permanent magnets have been mounted with the poles correctly orientated. This method also makes it possible to check for short circuits or tears in a coil. Measurements can be conducted using either the system's own coils or special measuring circuits, although the two-coil method is best for measuring multi-phase systems. Using the new system, firms can slash costs by identifying and removing faulty components before or during production, instead of rejecting finished products during quality control.

The single-coil measuring technique of MagHyst® allows professionals to measure and test the switching behavior of electromagnetic components and actuators without destroying them. Mechanical effects can cause major changes to the switching behavior of electromagnetic actuators throughout a magnet's working life. Measuring $\Psi(i)$ curves and comparing them to a reference curve is an ideal way to appraise the switching behavior and overall quality of a magnetic system. This method makes it possible to estimate the component's working life.

The new system also allows professionals to non-destructively measure the quality of fully mounted systems – such as proportional magnets – based on their switching behavior. By analysing the $\Psi(i)$ curves, engineers can inspect these systems for mechanical and magnetic faults. A variety of factors can negatively affect the mechanical integrity of fully mounted systems, such as spring rigidity, friction, contamination, and incorrect mounting. Factors which may impair the magnetic quality include changes to materials, insufficient modulation and faulty permanent magnets.

MagHyst® is an innovative measuring system which offers a wide range of applications in quality monitoring and quality control. It allows professionals to measure the magnetic properties of materials, semi-finished products and actuators, while slashing the time and resources needed to prepare samples for measurement. One major benefit of MagHyst® is its ability to measure magnetic actuators using only the field coil, without the need for an additional measuring coil – resulting in a higher standard of production monitoring. Simplified measurement of magnetic properties (i.e., non-linear $\Psi(i,\delta)$-curves) also allows improved open-loop control of magnetic actuators.

The Steinbeis Transfer Center for Mechatronics in Ilmenau is an innovative technology transfer company specialized in mechatronic systems. The Center designs tailor-made customer solutions, as well as calculating, simulating and designing electromagnetic drive systems. Focusing on the coordinated development and optimization of actuators and their electronic systems, the Center creates solutions with outstanding technical properties: excellent dynamics, low levels of power dissipation, and optimal miniaturization.

The center has a number of fields of expertise:

- Design of mechatronic systems
- Electromagnetic mini-actuators and micro-actuators
- Calibration of fast-acting electromagnetic systems
- Calibration of rotary, linear and multi-coordinate drive systems
- Design, testing and construction of special drive control systems with microcontrollers and DSPs
- Tools for measuring magnetic properties and curves, specially developed for use in industry

As a highly specialized service provider to a range of high-profile firms, and as a member of the VERDIAN growth core, the Steinbeis Transfer Center for Mechatronics in Ilmenau makes a key contribution to driving the innovation of its customers.

Dipl.-Ing. Ute Kucera
Dipl.-Ing. Jens Baumbach
Steinbeis Transfer Center for Mechatronics
Ilmenau
stz144@stw.de

Manufacturing individual items of furniture – cost-efficiently

A lounge chair made out of native natural materials

HL Kunststofftechnik (a company based in Germany's Saxony-Anhalt) and the Steinbeis Innovation Center Applied Material, Production and Process Technology recently co-designed a new and efficient way to manufacture a fiber composite component made out of native materials. To explore the component properties in use, the team fashioned a lounge chair out of it. The project is part of a research program sponsored by the working group of industrial research associations.

Made from sustainable raw materials, this lounge chair was designed with "2D thinking" to use materials with ultimate efficiency.

Halle-based mehrwerk designlabor produced a prototype lounge chair designed to be lightweight and adapt to the needs of tomorrow while retaining a premium look and feel. The underlying idea: design 3D objects on right angles. This reduces material waste in production. Weighing just 5 kg, the chair holds up to 120 kg. The secret behind this is the innovative use of "sandwiched" paper honeycomb with bolstering natural fibers. No decorative exteriors are needed as the textile makeup of the reinforcement is an integral component of the material's design.

The research program stipulated two objectives for the lounge chair. First: use the materials in such a way that people can truly sit back and relax in the chair. Second: develop a production technology that not only makes this possible, but proves cost-efficient and can accommodate existing budgets.

To accomplish this, the team chose a native resin matrix and a native fiber reinforcement. While acting as a bolster and bearing the load, the fibers set and adjust the springs and dampers to makes the seat more comfortable. The experts will also devise out a special design and folding technology that uses the natural fibers sparingly. In fact, the fibers will double as the chair's "decorative" finish. One way this could work is by using semi-finished textile products in different ways. The research program, however, is primarily interested in investigating how machine finishing (such as milling or grinding) affects the surface. At the same time, the team will look into developing a suitable and economical mode of production.

The lounge chair will play a key role in the development of a technology that makes it feasible to manufacture individual items of furniture. It will also help usher in a special folding technology that uses as few materials and resources as necessary – and its fabrics will be put to use in both seating and upholstery.

Dipl.-Ing. (FH) Oliver Hecht
Dipl.-Ing. Alexandru Söver
Prof. Dr.-Ing. Lars Frormann
Steinbeis Innovation Center Applied Material, Production and Process Technology
Zwickau
stz1145@stw.de

Dipl.-Ing. Armin Hlady
HL Kunststofftechnik GmbH
Queis

Dipl.-Designer Stefan Oßwald
mehrwerk designlabor
Halle

A Steinbeis study investigates whether school fees limit school choice in Germany

Schools for the rich, schools for the poor?

A school education does not come for free. This applies to all schools, of course, but is felt particularly by schools which are not state-funded. Unlike state schools, private schools are responsible for their own funding and cannot rely on money provided by the state. A team of experts at the Steinbeis Transfer Center for Economic and Social Management in Heidenheim have completed an in-depth study on school fees and their implications.

Percentage of households with a negative balance after paying 120 euros in school fees

	Single-parent families			Couples			
	1 child	2 children	3 or more children	1 child	2 children	3 children	4 or more children
Scenario I	75.00 %	63.21 %	85.00 %	14.18 %	10.40 %	20.10 %	19.03 %
Scenario II	77.00 %	79.48 %	87.00 %	36.22 %	27.09 %	42.01 %	21.52 %
Scenario III	77.82 %	82.68 %	92.00 %	45.10 %	50.31 %	52.01 %	48.36 %

As long as private schools only have limited access to public funding, parental contributions – in the form of school fees – will remain crucial to the financial structures of these schools, alongside funding from the school board. But for schools, asking parents for financial support is far from ideal – in fact, it is little more than an emergency solution. For private schools, finding a way to cover their costs is a matter of sheer economic necessity. This difficult situation not only introduces a number of social issues, it also brings the fundamental role of the state into question. The constitutional ban on segregating students based on their family's financial situation severely limits the amount of school fees which private schools can demand. The German constitution clearly states that any situation which leads to students being segregated based on their family's financial situation "must not be encouraged".

Education is unlike other publicly funded services in one central aspect: namely, schools which provide pupils with a general education must be founded and organized primarily, if not entirely, by the state. This situation is often overlooked – and has in fact been expressly forbidden by the Federal Constitutional Court. This state of affairs is historically rooted in an absolutist understanding of the state which does not reflect current social realities, and is in fact far older than the Federal Republic of Germany itself.

By way of contrast, the German constitution limits the role of the state to a mere supervisory function over the school system as a whole, and expressly grants the right to found private schools. The state constitution of Baden-Württemberg contains a similar clause, and also grants schools the right to claim public funding to cover their costs.

In legal terms, this still does not definitively answer the question of whether private

schools have the right to claim public funding to cover their running costs. This is because the existing adjudication stipulates that the current situation of partial funding is legally acceptable as long as it does not jeopardize the existence of the private school system as a whole. This ignores the substantial body of evidence that financial pressures have a significant effect on pupils' school careers. For example, this was observed on a wide scale in the German school system 50 years ago, when secondary school fees were successively reduced and abolished in each federal state. This resulted in a significant rise in the proportion of pupils entering secondary school (an increase which was even larger for boys than for girls).

It remains unclear where lines should be drawn in individual cases. The constitutional ban on financial segregation, which governs the amount of school fees considered legally acceptable, has been substantiated by a ruling by the Federal Constitutional Court. This ruling stipulates that school fees of up to 101.99 euros are an acceptable financial burden for households – as adjusted for the level of inflation in 2005, the year of the ruling. In another recent decision, the VGH Baden-Württemberg has ruled that school fees of up to 120 euros are not in violation of the constitutional ban on financial segregation, once other factors are considered – for instance, that school fees are tax-deductible as they constitute an incidental expenditure.

The study conducted by the Steinbeis Transfer Center for Economic and Social Management aimed to establish a basis for making a rational decision on the levying of school fees. This information is needed to make a definitive statement on whether or not school fees violate the constitutional ban on financial segregation. Answering this question conclusively is the responsibility of the judiciary and legislators. As such, the study presented a variety of models and discussed their implications in detail without recommending any particular decision.

The Steinbeis team began the study by analyzing existing data, including income statistics and data from the German microcensus, socioeconomic panel and sample survey of income and expenditure. The study authors extracted data pertaining to the types of household under investigation, and entered it into a series of models used to measure absolute and relative poverty. The team also used various models to calculate the amount of school fees which would constitute an acceptable financial burden. This was achieved by conducting a three-stage scenario analysis based on regional, legal and bank-related considerations. The study examined the different amounts of school fees considered acceptable and their implications for the remaining available net income per household.

- In scenario I, the expenditure necessary for survival as defined by § 27 of the German Code of Social Law (SGB) was subtracted from the net household income to see what proportion of households would be able to afford school fees.
- In scenario II, other unavoidable living costs were also subtracted from the net household income, as well as additional expenses such as insurance policies.
- In addition to the expenses subtracted in scenarios I and II, scenario III accounted for the fact that in future, the state pension scheme (financed by social security contributions) will no longer be sufficient to ensure an acceptable quality of life after retirement. This is a consequence of demographic change. In this scenario, additional retirement provisions were therefore subtracted from the net household income based on actuarial calculations.

After evaluating the data using these three scenarios, the Steinbeis team concluded that children in single-parent families and families in the lowest income brackets are extremely limited in their choice of school due to financial reasons. In practice, when schools levy a fee of 120 euros, well over half of all households are unable to exercise their right to choose which school they want their children to attend. For instance, 77.82 per cent of single-parent households and 50.31 per cent of two-parent, two-child households are unable to finance the maximum legally acceptable school fee of 120 euros as defined by the VGH Baden-Württemberg. However, defining an acceptable limit for school fees at federal or national level which does not violate the constitutional ban on financial segregation is impossible for a number of reasons – such as regional variation in income and expenditure structures.

The Steinbeis study concluded that in practice, levying school fees means families with low to average incomes can no longer freely choose their children's school. At the same time, the current financing situation has forced private schools into a constitutional grey area merely to ensure their survival. In light of this predicament, simply questioning the acceptable level of school fees is not enough – to do so would mean ignoring the bigger picture.

This issue is one of major importance for the nation as a whole, particularly in light of the conclusions reached by this comprehensive, methodologically complex study. As such, the debate regarding school fees should not be reduced in the mid-term to a mere matter of "hammering out" a legally acceptable limit to school fees, or agreeing on a (legally and politically) acceptable proportion of the population subject to de facto financial segregation. Instead, it would be expedient to consider alternative financing models.

Prof. Dr. Bernd Eisinger
Prof. Dr. Peter K. Warndorf
Steinbeis Transfer Center for Economic and Social Management
Heidenheim
stz503@stw.de

SHB spotlight

Certified training at the School GRC

Training to be a Certified Compliance Expert

The School of Governance, Risk & Compliance (School GRC) is now offering a one-year certified training to help students learn more about compliance. On completion of their studies, participants can be officially called Certified Compliance Experts (CCEs).

This part-time course involves 35 days of attendance, during which students can share ideas with and learn from industry experts. After completion, students can also continue with the MBA by specializing in Governance, Risk, Compliance & Fraud Management (parts of the training course counts towards the MBA program). "The participants really appreciate the flexibility," explains Birgit Galley, Director of the School GRC. "This is because most employees responsible for compliance within companies have to follow very rigid career paths."

Each round of the certified training course starts in October. As it is interdisciplinary in nature, specialists and senior managers at companies and in public administration are encouraged to attend as well as external consultants and experts from a number of backgrounds, such as auditing, fraud management, and compliance.

Melanie Reichelt
School of Governance Risk & Compliance
Steinbeis University Berlin
Berlin
stz1142@stw.de

Specialist seminars at the Steinbeis Business Academy

Seminar series: health care in the spotlight

As part of its degree program, the Steinbeis Business Academy (SBA) offers a variety of specialist seminars to other interested parties. The focus for the second half of 2009: health care.

The idea for the seminars stems from the complexity of the German health care system and the changes it is undergoing. The first SBA seminar, at its site in Kuppenheim in November, looks at a topical issue: quality according to Sections 114-117 of Germany's long-term insurance law (part of the country's larger Social Security Code).

The series in November will also address "Financial Streams in Health Care" and "Steering Instruments in Health Care". "Project Management" – an issue that many can relate to – is also scheduled. Seminars will be held in Kuppenheim, Berlin and Stuttgart.

Katrin Ziem
Steinbeis Business Academy
Steinbeis University Berlin
Berlin/Kuppenheim
stz599@stw.de

SCMT kicks off new program

Executive MBA Global Leadership

In association with Gallup, the Steinbeis Center of Management and Technology (SCMT) is launching its Executive MBA Global Leadership degree program, targeted at students in full-time employment. Gallup is one of the world's largest and oldest polling, market research and management consulting companies. In the past 70 years, Gallup has developed a unique insight into human nature and behavior. It also boasts an unrivaled understanding of the interplay between economics and psychology.

This joint MBA program helps students hone their leadership skills and find ways to drive business growth. As well as conventional general management topics, the program centers on three main areas: Behavioral Economics, Lean Thinking and HumanSigma®.

Half of the lectures are held at SCMT partner universities outside Germany, in places such as Washington and Princeton. Guest lecturers include Prof. Daniel Kahnemann, a Nobel Laureate in Economics for 2002.

Anita Ritter
Steinbeis Center of Management and Technology (SCMT)
Steinbeis University Berlin
Berlin/Filderstadt
stz1274@stw.de

MSc degree program for transport and logistics

SHB shapes the minds of tomorrow's logistics managers

Logistics play a central role in any economy, transcending all areas of business. In Germany alone, more than 10 per cent of economic output is attributed to transport and logistics. In fact, this is one of the fastest-moving sectors in the country. In November 2009, the School of International Business and Entrepreneurship (SIBE) launches its Master of Science degree program in international management, with a focus on global logistics.

Delving into projects that aim to grow business, students will confront the types of challenges common to an industry striving to bring about change and innovation. The projects up-and-coming logistics managers carry out range from cutting freight costs to restructuring logistical units, deploying IT solutions and telematics applications, overhauling a company's entire logistics setup, and more.

Beyond pure "logistics" projects, students can look at interdisciplinary issues such as planning and executing product launches, designing and introducing KPI systems or benchmarks connected to a specific logistics issue. Students acquire the necessary project skills as part of their studies, which focus strongly on actual practice and knowledge transfer.

Patricia Mezger
School of International Business and Entrepreneurship (SIBE)
Steinbeis University Berlin
Berlin/Herrenberg
stz1249@stw.de

Bachelors degrees for specialists and senior managers in public service

Employee and financial management in public service

Today's civil servants need to know how to work with citizens and customers – and they need to be able to think and act like businesspeople. A work environment that embraces change and lays the foundation for employees to grow is key to helping administrative professionals stay flexible. Being open to change also translates into quality and cost-efficiency in the long run, both for the government and its citizens.

To tackle the challenges of public management, the Academy of Public Administration has created two bachelors degree programs: Employee Management in Government Agencies as well as Financial Management and Review at the Local Government Level. Both programs launch in October 2009 and are geared to the next generation of specialists and senior managers keen to understand what it takes to play an active role in effecting change within government bodies.

The courses will be of special interest to employees in the middle to upper echelons of civil service, middle managers in government agencies or public corporations and agencies, public-owned companies and NPOs. The "Financial Management and Review at the Local Government Level" program teaches students everything they need to know about twenty-first century budgets and finance. They also learn the fundamentals of auditing and financial management. The "Employee Management in Government Agencies" program provides detailed insights into managing personnel, from reforms in employment terms to employee information systems, team-building, and conflict management.

Ramona Groneberg
Steinbeis Transfer Institute
Academy of Public Administration
Steinbeis University Berlin
Berlin
stz1039@stw.de

Steinbeis Hacettepe Technology Transfer Center

Hacettepe University in Ankara is one of Turkey's largest public universities, with over 30,000 registered students enrolled in around 300 degree programs, and more than 5,000 professors and academic staff. Hacettepe recently entered into a technology transfer partnership with Steinbeis.

Hacettepe University now coordinates projects with industry using the recently founded Steinbeis Hacettepe Technology Transfer Center (SHTTC). The center builds on previous work carried out by Hacettepe Technology Transfer Center, which was founded in 2008.

The center carries out technology evaluations, promotes partnerships between industry, science and politics, and helps organizations access international technology sources, which are of particular benefit to Turkish SMEs. A variety of experienced specialists from trade and industry work at SHTTC alongside academics and specialists in technology transfer. Depending on the project, the center works with experts from a variety of disciplines ranging from information technology to medicine.

A number of successful technology transfers have already been implemented in Ankara. For example, a durable polymer material was developed for use in rail construction. Other projects include a hyperbaric oxygen organ preservation system and an intelligent SME evaluation system.

SHTTC acts as a contact point of call for technology advice in Turkey. Together with Steinbeis, its mission is to monitor the technology requirements of industry and promote technological standards, through targeted projects with trade and industry.

Ilyas Yilmazyildiz
Prof. Selçuk Geçim
Steinbeis Hacettepe Technology Transfer Center
Ankara (TR)
stz1342@stw.de

Steinbeis Center for Technology Transfer India

The Steinbeis Center for Technology Transfer India (SCTI) was founded earlier this year in the Indian city of Hyderabad. The center, based on a partnership with research provider 2E Knowledge Ventures Pvt Ltd, aims to promote an environment for technology development, technology transfer and the implementation of innovations through technical bodies and research institutions.

The research and development environment in India is improving by the day, as organizations push ahead with innovation after innovation. The latest Global Competitiveness report confirms that India boasts a comparatively high proportion of researchers per head of population, as well as a significant number of research institutes. The Indian government offers a variety of support programs to promote research projects. As a result, India's competitive advantage is gradually shifting away from its former image as an outsourcing location for low-cost production – and the country is now increasingly respected for its high standards in technology and innovation. Indian technology centers are accelerating market-based research – and an increasing number of companies are turning to them as research partners.

At the moment, SCTI's primary aim is to forge links with potential partners and establish Steinbeis transfer centers in a variety of fields of expertise. Talks are already underway with the Indian Institute of Technology, the National Institute of Design, Delhi University and the International Institute of Information Technology. The SCTI is also already working with transfer centers based in Germany, and helping to establish partnership between German transfer centers and Indian enterprises.

Vineet Kumar Goyal
Steinbeis Center for Technology Transfer India
Hyderabad (IND)
stz1291@stw.de

Care-providing robot to work in patient recovery

A helping hand

How easy it is to take the simple things in life for granted. Like fetching something from the kitchen, or eating when you're hungry – or scratching an irritating itch. For most people, all it takes is a quick sequence of movements. But for some disabled people, nothing can be taken for granted – not without a helping hand. For many disabled people, relying on others to assist in everyday tasks is a daily reality. The Bremen-based Steinbeis Transfer Center i/i/d (Institute of Integrated Design) collaborated in a joint research project to develop a new type of "care-providing robot".

To enable severely handicapped people to complete part of their daily routine alone, without help from others, a number of research and development bodies have joined forces with leading companies as part of a research network project spearheaded by the Institute of Automation (IAT) at the University of Bremen. The result: a care-providing robot that can perform a number of elementary tasks. The invention consists of a robot arm (the "manipulator"), mounted on a wheelchair unit and operated using a computerized control panel. The arm, affectionately termed "Friend" by its developers, was born out of a number of earlier projects which the IAT has been working on since 1997.

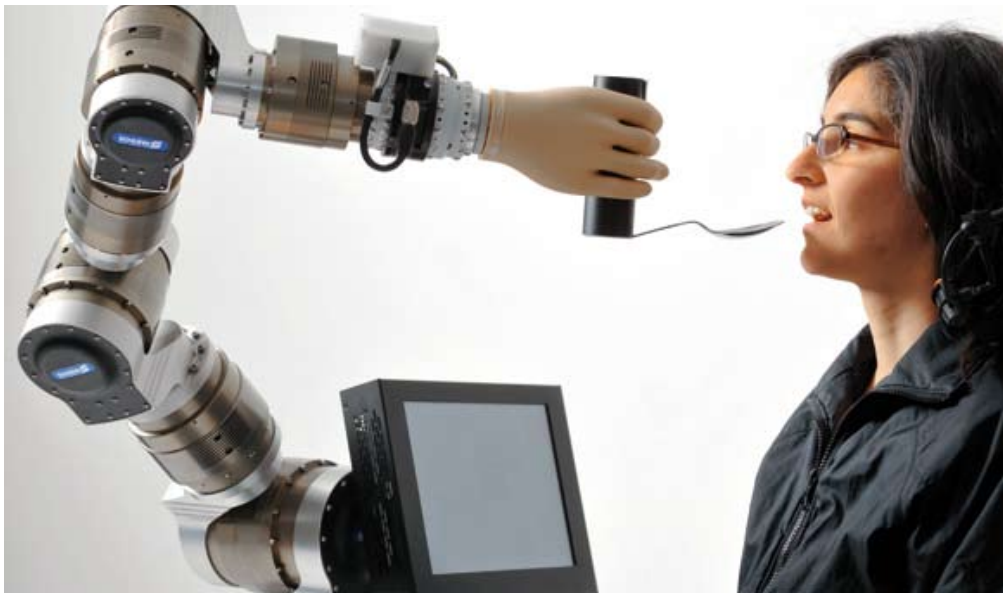


Photo: Frank Pusch

With help from the care-providing robot, disabled people can now carry out general household tasks by themselves, such as preparing meals and eating. The robot can even help people return to work, by performing sequences of tasks in the office or workshop. The arm can be operated in a number of ways: using a hand or chin-operated joystick, by speech or eye control or using a brain-computer interface (BCI). Although it is the robot arm which performs the tasks, it is controlled entirely by the user – a key difference between the care-providing robot and personal assistants, who at best will do as they are requested but are unable to leave people to do things by themselves.

The role of the i/i/d in the project is to research user needs (user-centered research, user behavior, user needs/profiles/requirement/scenarios) and work out, conceive and draft possible designs for the recovery robot, its "intelligent environment" and the user interfaces needed. Working in close collaboration with other project partners, the i/i/d drafted a design which accounted for user requirements and the different degrees of disability. The design had to work perfectly in practice and be easy to use, while remaining fully flexible, technically superior, and taking formal and aesthetic factors into account.

The research project was sponsored by the German Federal Ministry of Education and Research. The system is currently being put through its paces by therapists and patients in the Friedehorst neurological recovery center – an ideal way to assess Friend's usefulness on a day-to-day basis.

The i/i/d Steinbeis Transfer Center has already participated in a variety of successful research projects, both within Germany and overseas. Incorporating and addressing design issues early in the development process can lead to long-term improvements in the finished product – in terms of quality, user-friendliness, ergonomics and function. It also increases user acceptance and makes products easier to market. A major advantage of this interdisciplinary approach is that each of these factors becomes an integral part of the development process.

Dipl.-Ing. Arch. Melanie J. Köhler
Steinbeis Transfer Center
i/i/d Institute of Integrated Design
Bremen
stz417@stw.de

The Steinbeis University Berlin lecture series

Innovations and non-violence – different facets of life

In collaboration with the economic development department for the town of Rottweil, Steinbeis University's Alb-Schwarzwald Business School organizes discussions with successful business leaders, politicians and philosophers as part of its general studies program. Two recent speakers were Thomas Vetter, a physicist and member of the board at ARADEX in Lorch, and Arun Gandhi, grandson of the Indian politician and philosopher Mahatma Gandhi.

Arun Gandhi

There wasn't an empty seat in the house. Little wonder: the hall in the old grammar school in Rottweil had opened its doors to Arun Gandhi. The audience was captivated by his presence. As an Indian growing up in South Africa under apartheid, Gandhi experienced violence first-hand – he was attacked by blacks for being "white" and by whites for being "black". Because of this, he decided as a young man to begin formal training in combat skills. To prevent this, his parents sent him to his grandfather Mahatma Gandhi in India, where he learnt through many lectures and practical exercises what it means to adopt an attitude of non-violence in one's own life. In Gandhi's teachings, violence has a much broader definition than mere physical violence – extending to include verbal violence, the wasting of resources, environmental damage, inconsiderate attitudes, and self-interest.

As Arun Gandhi explained to the audience in the hall in Rottweil in May, many people all over the world use non-violent methods. One example: passive resistance. This is not the only lesson from Mahatma Gandhi's teachings: the most important is to find "inner peace". This means working on yourself – only then is it possible to live with less violence. Arun Gandhi provided some inspiring examples of this. Anger and wrath are sources of energy – so they need to be used positively and translated into solutions and helpful actions. For example, Arun and his late wife helped many penniless children in India gain an education.

A month later, in June, Thomas Vetter visited the Old Town Hall in Rottweil to provide the audience with some fascinating insights into his technical innovation hotbed. As a student and young entrepreneur, he already set his sights on making the technically impossible possible. His success story spans years of ignoring the defined (and often "scientifically proven") boundaries of science – expanding the boundaries whenever possible using imaginative engineers and scientists of his own.

Thomas Vetter

Just some of the projects that have made Thomas Vetter successful: enhancing fuel cell performance, the replacement of magnets, protecting technical products from unauthorized imitation, and a special financial accounting system for companies normally considered "unaccountable". His methods: getting adults to play, freeing your mind of old ideas to make space for new ones, and allowing enough room for creativity. Yes, this sometimes means acting "weird" when tackling the impossible – and as Vetter emphasized, that doesn't just apply to technical problems.

The talk stimulated a lively discussion, confirming the level of interest in the subject – and in Vetter himself, a successful entrepreneur and member of the Steinbeis Foundation Board of Trustees.

Berthold Villing
Business School Alb-Schwarzwald
Steinbeis University Berlin
Berlin/Gosheim
stz774@stw.de

The 2009 Stuttgart Competence Day

Talent.Competence.Management – local.global

A financial crisis is not a good time to start thinking about saving money. In fact, it is the worst time: especially in the current business and financial situation, it is vital to stay focused on the future and seize new opportunities. Essential novelty and, linked to this, "creative destruction" of the old (Schumpeter), or, in a nutshell: "innovations" – this is what fuels long-term economic growth. But to innovate, you need skilled workers with the innovative flair. This is the issue being discussed by experts from business and academia at this year's second Stuttgart Competence Day, due to be held on 25 November in Stuttgart's "Haus der Wirtschaft" (House of Commerce). After last year's success, Steinbeis University Berlin is opening its doors again to students, alumni and full-time employees to think about the challenges posed by a society focused on "competence".

According to J. Schumpeter, innovation is the development and introduction of new products, services, organizational structures, business processes, entering new markets, and the establishment of new international supplier relationships, or new sources of materials or semi-finished products. The competitive advantage this creates enables companies to stand their ground against a multitude of competitors in constantly evolving markets.

Innovation is not an abstract process. To correctly manage projects and translate them into reality, it is essential for companies to focus on their key success factor in moving forward: namely, skilled staff able to apply their knowledge to unfamiliar scenarios and create innovations – new products, new services, new answers to problems. But resources have always been in short supply – especially skilled workers – and they are becoming scarcer.

Companies that want to stay successful tomorrow should invest in "open innovation" today. They should also include environmental considerations in innovation processes, think about global delivery, and encourage the use of global "competence networks". Ultimately, this allows successful companies to uncover human resources in every corner of the globe and discover "global competence" for themselves. At the same time, though, companies must continue to react to local needs and invest in skilled workers at home.

The more companies apply global integration models to their business, the Open Innovation paradigm, or both, the more competition there will be for the innovative flair of skilled employees. Further still: these trends seem to be intensifying the "war for talents", as it is not just "western" companies that are discovering these business models – an increasing number of firms in emerging markets are, too.

We have a fascinating spider's web of issues to talk about at the next Stuttgart Competence Day and we look forward to seeing you there!

Speakers and speeches at the 2009 Stuttgart Competence Day (As of Sept 09)

- Talent.Competence.Management – local.global
  Prof. Dr. Werner G. Faix, School of International Business and Entrepreneurship (SIBE), Steinbeis University Berlin
- The BDI Knowledge and Skills Management Initiative
  Prof. Dr. Utz Claassen, Initiative Chairman [tbc]
- Global Delivery and Global Competence Networks
  Rainer Heck, IBM Germany
- Innovation competence management at Siemens
  Dr. Ing. Stephan Szuppa, Siemens Corporate Technology, Dr. Johanna Anzengruber, Siemens Corporate Technology
- Intercultural skills
  Prof. Dr. John Erpenbeck, School of International Business and Entrepreneurship (SIBE), Steinbeis University Berlin
- Competence development and competence management in Brazil. Fostering and retaining talent
  Prof. Dr. Nazem Nascimento, UNESP (São Paulo State University)
- Competence development and competence management in Egypt. Fostering and retaining talent
  Ahmed Elshahat Hassan, Cairo
- Success Factor: First-Class Jobs and First-Class Applicants. Talent Pools in the Era of the War for Talents
  Dr. Wolfgang Achilles, Jobware Online-Service
- Global Competence management in Logistics
  Prof. Dr. Dirk Engelhardt, Raiffeisen Good - Central Rhine-Main, Stefanie Kisgen, School of International Business and Entrepreneurship (SIBE), Steinbeis University Berlin
- International management development
  Wilfried Telkämper, InWent International Employee Training and Development
- International Competence Management
  Annette Schulten, Corporate and International Programs Steinbeis Transfer Institute
- International Project Management Competence, Drawing on the Example of the Organisation of the Football World Cup in Brazil, Dr. Gerhard Keck, School of International Business and Entrepreneurship (SIBE), Steinbeis University Berlin

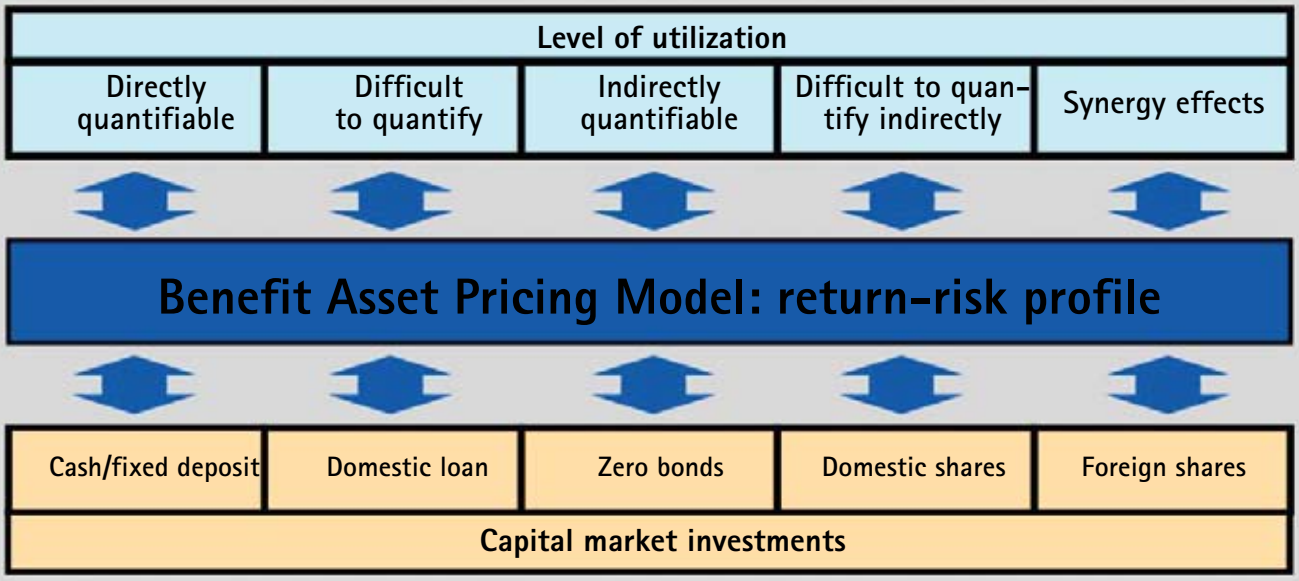
Prof. Dr. Werner G. Faix
Steinbeis School of International Business and Entrepreneurship (SIBE)
Steinbeis University Berlin
Berlin/Herrenberg
stz1249@stw.de

www.stuttgarter-kompetenztag.de

Help with the assessment of long-term investments: the Benefit Asset Pricing Model

Outcomes: seeing the bigger picture

Past experience has taught us that conventional methods for assessing investments usually only take into account direct outcomes. The Steinbeis Transfer Center for Consulting of Medium-Sized Businesses now supports companies by providing its Benefit Asset Pricing Model (BAPM®) as a tool for decision-making. The model looks at the overall outcomes of an investment – which, as we know from experience, paints a more accurate picture.



The new model is closely based on a technique used by Dr.-Ing. Michael Schabacker of Otto-von-Guericke University in Magdeburg to assess capital market investments. It is a useful tool for evaluating the utilization of investments and process changes at a holistic level and is accurate to more then 90 per cent.

The model works by calculating different levels of utilization, quantifying these and combining them with the corresponding cost in something called a "dynamic investment process". This shows in unequivocal terms, and in detail, which returns can be expected from which level of utilization. The Benefit Asset Pricing Model improves the quality of decision-making, especially with important investments and procedural changes under extreme uncertainty. They also help companies monitor subsequent progress.

Customers of HSi, a company from Erfurt, invited Steinbeis project manager Klaus Manzke to help them use the model to assess their utilization of a calculation program. To do this, they analyzed individual parts of the existing planning process before launching software with an assessment of the associated resource implications (such as personnel). The team then worked out which of the software's applications would be needed and how much investment this would entail (licensing, maintenance costs, third-party and in-house implementation expenses). The functions offered by the software changed the overall process, culminating in quantitative savings and a variety of qualitative improvements. These were then examined in more detail, estimating the return on each utilization as a function of each defined utilization variable. Quantifiable outcomes when using the software (such as much shorter planning cycles), and qualitative benefits (e.g. precise production times, clarity, traceability) were then pinpointed precisely, thus confirming the usefulness of the software.

Klaus Manzke
Steinbeis Transfer Center Consulting of Medium-Sized Businesses
Bischweier
stz556@stw.de

The new risk management standard: ISO 31000

Risk management – without risk management systems

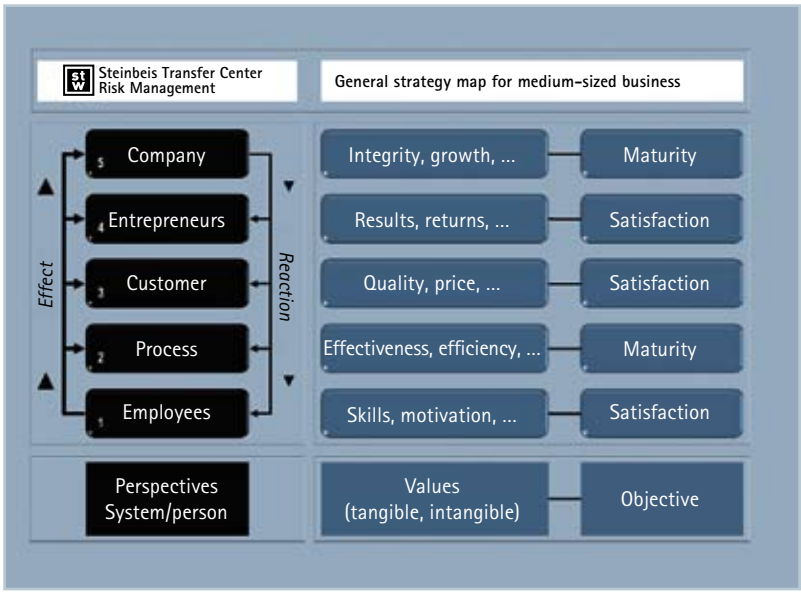
The International Organization for Standardization (ISO) has spent years developing the ISO 31000 family as a top-level standard for monitoring risk management processes. The Aachen-based Steinbeis Transfer Center for Risk Management is now combining the concept of "standards as new business standards" with businesses' future needs to manage risk. How? With its own innovation: "risk management without a risk management system".

The ISO 31000 standard comes into effect in autumn 2009. It is by no means compulsory, but it does act as a guideline – albeit one expressly unsuited to use in certification. The standard makes recommendations as a general template for all risk management activities undertaken in a business. This includes a general risk management process, a toolkit and standard vocabulary. If necessary, specific risk management activities can still be certified.

ISO 31000 is a new type of standard – a kind of "entrepreneurial standard". Companies can decided for themselves whether to use it, and if so, how – making decisions based to their own individual criteria, in light of and in line with ISO 31000. The benefit which this standard brings to companies is the impetus it provides to both strategic and operational levels.

Based on specific requirements, companies often use risk management on a stand-alone basis – such as for finance or certain products. They generally do not want to invest too much time and money in a system for managing risk throughout the whole company. They prefer to conduct their own evaluation rather than rely on third-party certification of their management system.

The Steinbeis Transfer Center for Risk Management has based its concept of "risk management without a risk management system" on the definition of risk given by ISO 31000: "the effect of uncertainty on objectives". This interpretation of risk provides an approach for integrating risk management into a company's objective management system. All risks are matched to the objectives of the company. The objectives and corresponding risks are not just of a financial or material nature – they also include strategic risks. The concept suggests that firms use risk management as part of overall objective management, based on balanced scorecard techniques.



General objectives on the strategy map for medium-sized businesses

Based on this approach, the Steinbeis Transfer Center for Risk Management provides a variety of services centering on the new ISO 31000 risk management norm. This includes consultation and implementation for all types of companies and organizations, plus training and courses, and publications.

The Steinbeis specialists believe that the ISO 31000 standard will encapsulate companies' understanding of risk and opportunity: ensuring that a company achieves its objectives, and safeguarding the values underpinning company objectives. The standard will help companies overcome the problem of specialization and fragmentation associated with risk management within a company, offering businesses a framework for risks and all kinds of requirements to be placed on risk management. Matching objectives with risks defines ownership of the risk. The standard will make it easier for companies to simplify risk management for customers and other parties placing requirements on the business. Focusing on objectives and processes provides a simple basis for integration into the company, deliver maximum benefit from the standard.

Dr. Peter Meier
Steinbeis Transfer Center for Risk Management
Aachen
stz657@stw.de

SME associations forge links with European Technology Platforms

Dialog between research community and SMEs

Small and medium-sized enterprise (SME) networks and associations play already a relevant role on influencing desicion-makers involved in European politics. However they are still limited in their ability to communicate the full extent of their members' needs at EU level. Only few SME associations have the capacities to effectively influence European Technology Platforms (ETP). Bearing this in mind Steinbeis-Europa-Zentrum started the EU project PRESTO. Its aim: to improve the collaboration among ETPs and SME associations and to enhance the leverage of SME associations as far as the definition of European research priorities is concerned.

PRESTO supports SMEs in the building and construction industry

As coordinator of the European project PRESTO, Steinbeis-Europa-Zentrum fosters a dialogue between European Technology Platforms (ETP) and small and medium-sized enterprises associations (SMEsAs) in the construction industry, with a particular focus on energy, ICT and new materials technologies. The project is co-financed by the EU and has an overall budget of 556,000 Euros. The project will run until January 2010, and involves partners in Germany, Spain, Poland, UK and Italy.

As a first step, a Core Group of SMEsAs and ETPs was formed. Eight key SMEsAs and eight ETP agreed to collaborate with PRESTO consortium in the implementation of project activities. One of these is the Baden-Württemberg construction industry federation, which as umbrella organisation includes eight other member associations; the second organisation is the German Society for Wood Research in Bavaria. Together with the associations and their members, the PRESTO consortium assessed the strengths, opportunites,weaknesses and threats (SWOT Analysis) of companies working on new materials (especially wood), ICT and energy efficiency, in particular examining the specific priorities of research and development mentioned by SMEsAs and their members. The findings were validated by a panel of experts.

The survey identified that 54 per cent of SMEs carry out research themselves, or intend to set up a research department. The majority of SMEs consider new technology and research findings as highly relevant. One third of all respondents describe themselves as innovative. SMEs and associations consider partnerships with universities and research bodies a key success factor.

However, the analysis also uncovered weaknesses. Compared to other sectors, the building and construction industry is neither fast moving nor open to innovation. In general, SMEs tend to plan in the short term, looking for quick solutions for their problems with no long-term strategy regarding research and development. In most of the cases they do not have the right knowledge to identify relevant technology and benefit of it. There is also a general lack of information on funding options. Although the majority of SMEs find innovation important, they do not allocate time for it. To make matters worse, the associations frequently underestimate the innovation potential of their members. Conversely, SMEs do not always consult the associations to find out more about innovative solutions.

Despite this, one positive trend emerges clearly: a growing number of SMEs want to become involved in research projects, especially as they grow in size and become stronger. Innovation is seen as positive and good for their image. These enterprises clearly recognise the need to work more closely with research partners, business

clusters, technology transfer organisations and other companies.

In parallel to the SWOT Analysis, PRESTO contacted the ETPpart of the PRESTO Core Group in order to ask them about their expectations on SMEsAs towards establishing a sustainable collaboration with SMEsAs. They were also informed about the results of the SWOT Analysis. The platforms feel that SMEsAs should be closer involved and have a stronger interest in getting involved in ETPs activities. A desirable goal would be a higher level of strategic input into the platforms' research planning and closer involvement in joint EU research projects. Practice has shown that language barriers and intercultural misunderstandings can get in the way of cooperation.

The Steinbeis-Europa-Zentrum and the partners of PRESTO are now working up a strategy for establishing a sustainable collaboration between SMEsAs and ETPs. The aim is to enhance the influence of SMEs on decision-makers within the platforms and allow them some say in the formulation of strategic research and development priorities. In October 2009, representatives of the European Commission, ETPs and SMEsAs met in Bilbao to agree further cooperation measures. Among the options for intensifying cooperation between ETPs, SMEsAs and SMEs include the joint submission of EU projects and mutual participation in of events and workshops. The Steinbeis-Europa-Zentrum is already active on a number of fronts. On the one hand, it is engaged in permanent dialogue with SMEs in Baden-Württemberg and people in politics and research. On the other, it provides expert input on a variety of EU committees regarding technology transfer, business cluster development, and research and innovation policy.

European Technology Platforms

European Technology Platforms are an initiative set up by the European Commission. More than 30 platforms have been created since 2004 with the support of major companies, research bodies and the European Commission itself. Platforms bring a diversity of interested parties working in a specific field around one table, pooling available capabilities across a variety of technology fields.

ETPs have quickly evolved into drivers of growth. They play a decisive role in the realisation of the European Commission's Lisbon Agenda, which aims to place Europe at the forefront of growth and innovation. The aim of ETPs is to bring about effective partnerships between public bodies and private organisations, to enter new markets and strengthen competitiveness and sustainability through a clear focus on collaboration.

Prof. Dr. Norbert Höptner
Dr. rer. nat. Jonathan Loeffler
Eduardo Herrmann
Steinbeis-Europa-Zentrum
Stuttgart/Karlsruhe
stz1217@stw.de

A recipe for success in cross-media publishing

Convergence in the TIME industry (the merging of four separate sectors: telecommunications, information technology, media and entertainment) has brought about sweeping changes in cross-media publishing. Andrea Müller, a Steinbeis University Berlin PhD graduate, conducted a detailed scientific investigation into German brand manufacturers and examined and evaluated a strategic approach to managing cross-media publishing service portfolios.

Products and services in the TIME industry are overlapping more and more, and being updated and embellished by novel functions. To succeed with their clients in the long term, service providers in this expanding field of industry must watch this trend closer by the day – especially when planning their service portfolio strategy.

Andrea Müller completed her PhD as part of a BMWi research project called M3V, a German acronym for "mobile multimedia multi-supplier sales information systems". The project was supported by e-pro solutions, a spin-off company of the Fraunhofer-Society. As part of its "Transfer-oriented business administration research" series, Steinbeis has now published a book through Berlin-based publisher Logos: "Erfolgsfaktoren im Crossmedia-Publishing" (Success Factors In Cross-Media Publishing). The book outlines the results of empirical studies with some specific recommended actions – potentially valuable, future-proof inspiration for senior management and marketing managers, against the backdrop of a converging TIME industry.

Andrea Müller
Steinbeis University Berlin
Berlin/Stuttgart
andrea.mueller@e-pro.de

A powerful data management system goes live in the Central Baden Fertility Center

Processing data in modern medical practice

Family planning and data processing are not the sort of terms you'd expect to hear in the same breath, at least not in everyday conversation. But the two can be closely connected, as the Steinbeis Transfer Center for Technology Consultancy at the University of Karlsruhe can confirm. The center recently set up a customized data management system at the Central Baden Fertility Center, which will shortly be opening its doors in Rastatt.

Photo: © iStockphoto.com/Alina Isakovich

The Central Baden Fertility Center has set itself a clear goal: to provide patients with ongoing support in fulfilling their desire to have children, through state-of-the-art medicine. To assess the realistic likelihood of successful treatment, doctors and scientists use some of the most modern laboratory equipment in the world. Yet the technology is not still far from ideal, as the underlying software typically used in medical establishments is not designed to store the type of detailed data required by doctors and physicians. Not only must the system store data on individual patients, the rest of the team needs access to general information. At the same time, however, respecting patient confidentiality is paramount.

The fertility clinic took its problem to the Steinbeis Transfer Center for Technology Consultancy, based at Karlsruhe University. To capture the type of data processing and information management actually needed, the Steinbeis experts organized a series of workshops with staff from the clinic. The result was a detailed specification list, ranking each item by priority. This formed the basis of a road map for organizing fertility clinic procedures. The team also laid down data hierarchies which met the staff's need to share as much information as possible without violating patient confidentiality.

Armed with the workshop results, the Steinbeis Transfer Center set about identifying a partner capable of addressing the specific requirements of the Central Baden Fertility Center. The solution had to be based closely on systems currently used in clinic administration. Management was also keen to work with a regional supplier in a position to provide hardware and software support. Three companies made comprehensive presentations to the clinic, carefully addressing its specific requirements based on standard applications. After examining reference customers, the team eventually chose Setronic from Waldbronn.

Project managers from the Steinbeis transfer center are currently installing the hardware in clinic consulting rooms. They are also installing the software, capturing master data and putting the system through its paces, with early involvement of fertility center staff to ensure that they know how to use the system. By the time the clinic opens its doors, staff at the Central Baden Fertility Center will have a powerful data processing system at their fingertips.

Dipl.-Ing. (FH) Ingo Tillhon
Steinbeis Transfer Center for Technology Consultancy at the University of Karlsruhe
Karlsruhe
stz25@stw.de

Dr. med. Markus Knoll
Kinderwunschzentrum Mittelbaden
Rastatt

Banks are already using their powers to transfer bad commitments

Bad banks are here to stay

The talk on everyone's lips is of the global economic crisis and its effect on companies, consumers and politics. People are still keen to find a definitive solution to the financial crisis that would allow banks to hand on problem investments to a "bad bank". This approach allows bank to separate themselves from problematical commitments. But for customers, it could become even more difficult to survive and recover from what are already difficult times. The Steinbeis Consulting Center for Concepts and Solutions for Medium-Sized Enterprises specializes in providing small and medium-sized companies with professional advice.

Several months ago, a medium-sized car dealership asked Steinbeis to help it prepare for a meeting with its bank. The dealer had been in the red for a number of years and had used up all its remaining capital. Its books showed "negative equity". The upshot: ongoing liquidity problems, which were constantly being made up for with loans or yet more credit extensions on its current account.

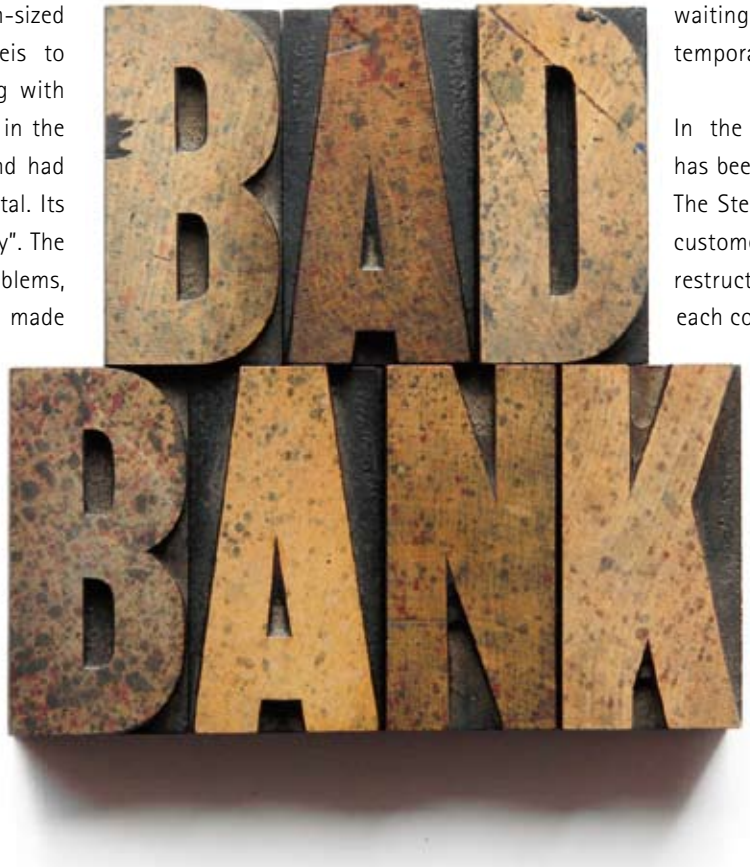


Photo: © iStockphoto.com/nebari

During the meeting it emerged that the bank had already passed its commitment on to another bank within the corporation, a bank specialized in taking on and managing such problem loans. This bad bank is now responsible for all decision-making relating to any future dealings with the customer. The dealer's bank had been forced to transfer its involvement as it was no longer in a position to solve existing financial problems with the customer.

To create clarity for all parties, the Steinbeis Consulting Center carried out a business analysis on the merits and feasibility of the company staying in business. The Steinbeis experts were also asked to implement a restructuring of the business after the analysis and provide the company with ongoing support.

After the Steinbeis experts had carried out a detailed continuation assessment and talking through various courses of action for the banks, all parties created a clear road map defining responsibilities for the planned restructuring. To complement the analysis, a refinancing proposal was drafted and tabled before both banks. The decision-making process was coordinated by the Steinbeis Consulting Center which managed the flow of information between all parties. To ensure that the company remained able to do business while it was waiting for the decision, Steinbeis temporarily managed its cash flow.

In the meantime, a financing deal has been struck in favor of the client. The Steinbeis experts will provide the customer with close support during restructuring and help it implement each course of action on site.

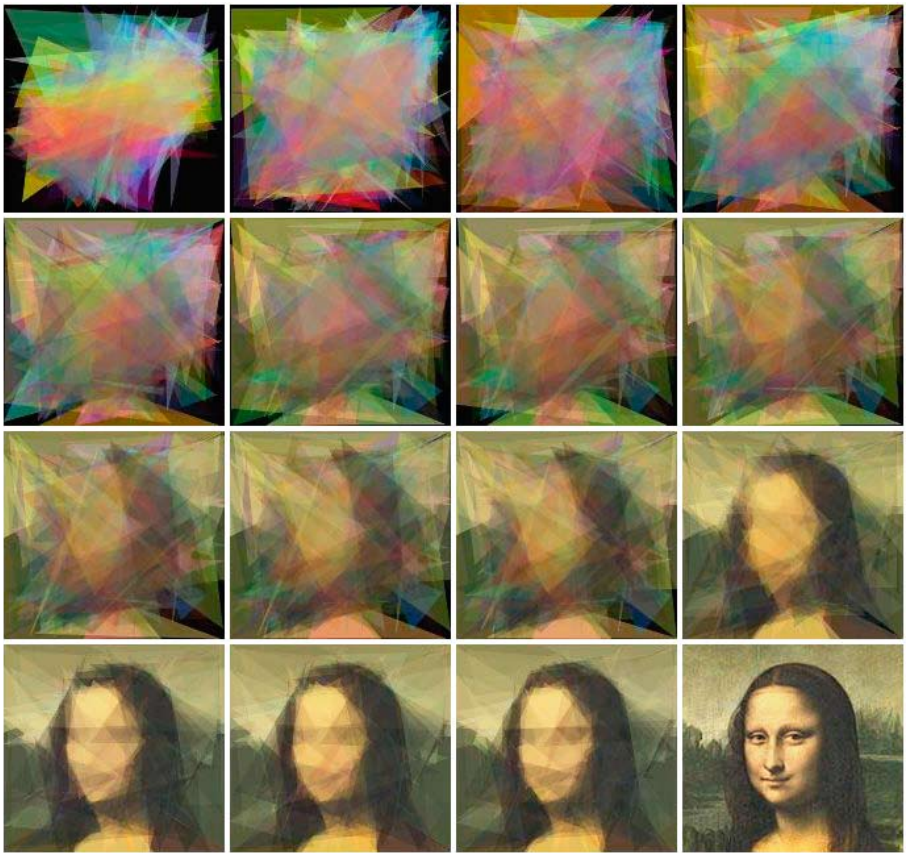
The German government has introduced a variety of measure to help companies, but as things currently stand the full negative impact of the financial crisis has yet to fun its full course. There are fears that a large number of small and medium-sized enterprises will run into liquidity and profit problems. When they do, help must be swift and free from red tape. Businesses will need a professional financial expert at their side to provide well-founded advice and support.

Oliver Mohr
Steinbeis Consulting Center for Concepts and Solutions for Medium-Sized Enterprises
Horgau near Augsburg, Erlenbach near Würzburg
stz1127@stw.de

Steinbeis University Student investigates open source business model

Access permitted!

Gemfony scientific – a spin-off just about to be launched by the Karlsuhe Institute of Technology (KIT) – will base its business plans on open source. As part of his master's degree at the Steinbeis Business Academy, part of the Steinbeis University in Berlin, MBA graduate Dr. Rüdiger Berlich examined a range of different business models. Expertise and business application have always made good partners, and soon the SteinbeisMBA program will have made a direct contribution to the success of Gemfony scientific.



Geneva software shifts around 150 semi-transparent triangles – by coordinates and color – to produce the closest possible replica of the Mona Lisa.

Open source development has had a strong and lasting impact on IT in recent years. The term "open source" is generally used to refer to free access to the source code of software and an almost unlimited right to distribute and modify it. As part of his master's degree project, Rüdiger Berlich studied the pros and cons of open source business models and the current level of technology.

In general, open source business models tend to be based on a large number of users to keep the software freely available and free of charge. One way to compensate for low or even non-existent license revenues is to offer alternatives based on the number of users – so even with "free" software, it is still possible to generate license revenues. Many open source programs are now released under "viral" licenses, one example being the GNU General Public License (GPL) – which, under certain circumstances, can even cover "derivative works". Sometimes, a client application based on GPL software has to be made freely accessible under the same license terms. Under these circumstances, developers opt for dual licensing, making it possible to earn money through commercial licenses on the same code.

Providers of open source can gain high numbers of users, albeit at a price: added complexity. With the traditional approach, all that needs to be taken care of is the relationship between the software developer and the customer. When firms have to launch the sort of user groups – or "communities" – required by open source solutions (to discuss the solution), they immediately become involved in two more communication channels: developer/community and indirectly customer/community. Setting up these communication platforms results in additional cost. Another point worth considering is who owns the rights to code snippets developed by the community.

While researching suitable business models for Gemfony scientific, Rüdiger Berlich also had to take technical specifications into account, such as technical improvements and distributed computation. He addressed these aspects with an optimization environment called Geneva, which stands for grid-enabled evolutionary algorithms (to find out more, visit www.gemfony.com). Geneva is freely available as open-source software under certain conditions. Geneva can find solutions of highly complex optimization problems in parallel on devices ranging from multi-core machines to clusters and Grids, thus significantly accelerating the computation.

Katrin Ziem
Steinbeis Transfer Center Site Management and Business Development
Berlin/Kuppenheim
stz599@stw.de

MFG Baden-Württemberg fosters "clustering" expertise with Steinbeis

Managing business clusters – innovatively

To manage industry clusters in the long term, businesses need to keep a close eye on the overall reason for using clusters – and monitor progress. MFG, a media and film company in Baden-Württemberg, supports companies in launching business clusters, especially in IT, creative and knowledge-based branches. It does this by promoting professional cluster management. MFG recently started using an online balanced scorecard developed by the Steinbeis Transfer Center for Site Management and Business Development.

As business becomes ever more global, German companies are increasingly having to compete against international competitors. Not only is there intense competition between regions for research and production facilities, they also fight for skilled workers. Salary growth, employment, and future living standards will all be dictated by a region's ability to position itself against competitors. To succeed, a region must recognize its strengths and carefully address its weaknesses. This is where successful "cluster management" comes into play. As management processes become more and more complex, clusters of locations need to have access to reliable information so they can plan their next steps. Today, online tools have almost near-indispensable when it comes to providing up-to-the-minute information.

A balanced scorecard can provide cluster managers and other key stakeholders with an outline of key issues which need to be addressed and a clear overview of progress. To do this, the program has to be available online in real-time for an unlimited number of people in each cluster, without having to install complex software. The MFG solution uses the Steinbeis balanced scorecard, based on a web-based tool developed by the Steinbeis Transfer Center for Site Management and Business Development. Thomas Hundt, board member at bwcon:kreativ, is impressed with the new application: "The MFG solution allows me to enter into strategic dialog with the rest of the board and track network progress precisely." Work is already underway to combine this balanced scorecard method with benchmarks of the most important cluster management success factors. It could even be integrated into quality management methods such as EFQM.

When using balanced scorecards, it is important not to just list objectives, key indicators and actions. The best approach is an overall strategic concept and measurable steps to achieve objectives. Users need to capture interrelated causes and effects and adapt to constant changes in competition as part of an ongoing learning process. The only way to achieve this is through openness and clear communication – the recipe of success for any successful industry cluster. The Steinbeis balanced scorecard plays an important role in shaping success, as will online benchmarking.

MFG Baden-Württemberg

MFG (full name: Medien- und Filmgesellschaft Baden-Württemberg mbH) encourages and financially supports industrial regions' involvement in computing, the media and the film industry – as well as other related areas of industry. The company employs more than 60 people, broken down into following divisions: MFG Media Development, MFG Film Advancement and the MFG Foundation. As an innovation agency for IT and the media under the auspices of the State of Baden-Württemberg, MFG's services include the promotion of innovation, technology management, business cluster/network management, and "do it", an IT and media initiative.

The Steinbeis Transfer Center for Site Management and Business Development

Now based in Bad Krozingen, the center was founded in Freiburg around 10 years ago as a "Balanced Scorecard Institute". Its central focus: regional economic development. The STC was quick to adapt balanced scorecard methods to the specific needs of regional development, and first started using its own online balanced scorecard in 2005. Applications developed by the center are already in use in a variety of organisations and companies in Germany and Switzerland. The BSC is currently being linked to an Online Benchmarking system to provide real-time data as a basis for BSC target setting.

Dr. Wilhelm Peters
Steinbeis Transfer Center Site Management and Business Development
Bad Krozingen
stz594@stw.de

How can a crisis be turned into an opportunity?

Protecting margins during a crisis

Some industries, such as pharmaceuticals, have been little affected, if not left totally unscathed, by the current economic crisis. Others, such as the engineering sector, have to cope with a sales plunges of up to 40 per cent. Even within industries there are winners and losers. The impacts appear to be highly selective. Professor Roland Heger, PhD, head of the Steinbeis Transfer Center for Business Development in Reutlingen, showed managers what they can do to protect margins during a crisis when he gave a talk at a client meeting of an industrial service provider.

Heger's invitation to present at a client meeting came from Stuttgart-based mateco AG, whose main business is renting and leasing access platforms and service cranes. For mateco's customers, mainly industrial service providers for the construction and building services industry, he exposed how the current crisis also provides for opportunities to move business forward. Most companies react to a crisis by putting their prices down, in order to hold on to their markets. After all, that´s what their customers expect. But they don't always stop to check whether this is really necessary, or estimate the effect of price cuts on volumes and margins. When volumes go down and price cuts lead to tighter margins, companies suffer twofold: Not only do margins drop – so does supplier credibility. It is difficult to explain that it can lower prices during a crisis, but it cannot when orders are buoyant.

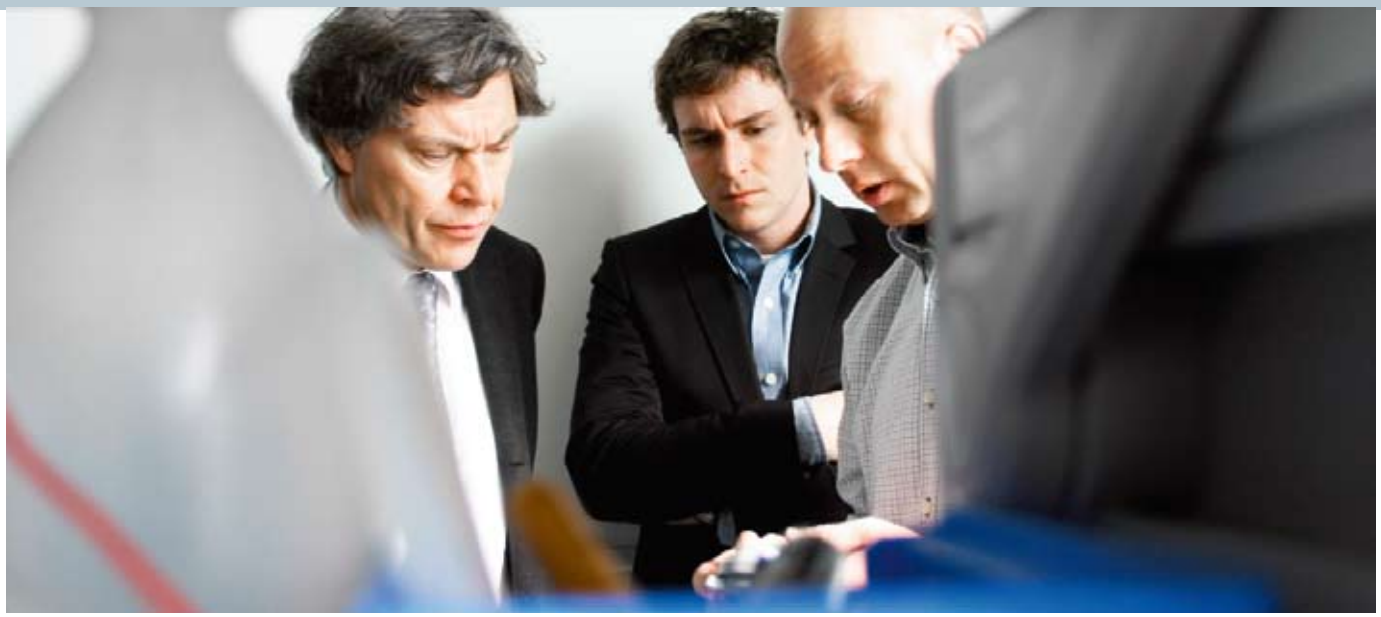
Mateco is not the only company to discover that there are alternatives. Right in the middle of the crisis, a welding technology supplier is currently introducing a new pricing structure, another is working on a new one for next year. These companies are going against the grain by deliberately reacting to sweeping price cuts in their markets, and more specifically addressing customer requirements.

The current economic situation opens up opportunities especially for those who do the right positioning. Solutions that reduce energy consumption, such as hybrid technology in the automotive industry, are more likely to attract attention, now, even though they are no cheaper than conventional technology – not for customers to acquire, nor for companies to produce. The crisis accelerates shifts in consumer behavior: For a number of years we've been observing meat consumption decline, now with increasing speed. At the same time, spending on eco-produce, eco-technology, or products that embellish the home is up. Solar panel mechanics have plenty to do, and interior fittings are booming, while new private home building applications are approaching historic lows.

If your company does have market-ready products up its sleeves, do launch them, now. If you are developping new products and technologies, and still have the power to finance them, do not slam on the brakes. A crisis intensifies customers' craving for alternative providers, reinforces their willingness to try out new technologies, and raises the propensity to switch partners. During a crisis, people within companies are also more willing to strike new paths.

The Steinbeis Transfer Center for Business Development helps companies develop pricing models that match the needs of target groups, helps pinpoint growth strategies, especially for overseas expansions and the migration of business processes to the internet.

Professor Roland H. Heger, PhD
Steinbeis Transfer Center for Business Development
Reutlingen
stz470@stw.de



Small and medium-sized enterprises reap the benefits of knowledge sharing

The cross-sector Wissmark project goes from strength to strength

Putting companies from different sectors of industry in the same room creates plenty of room for new momentum and exchanging experiences. The Infothek Steinbeis Transfer Center in Villingen-Schwenningen has started a benchmark project coined Wissmark to provide a channel for companies keen to think outside the box to showcase their strengths – and learn from the strengths of others.

Entrepreneurs learns many lessons during their career, each shaped by their sector of industry. The lessons can be extremely useful for other companies, as many cross-sector difficulties are impossible to overcome without outside support, or without the treasure trove of experience gained by others. One issue for companies is: how to access such experience.

The Steinbeis Transfer Center teamed up with the Baden-Württemberg Ministry for Economic Affairs and embarked on a project to address this issue: Wissmark, a benchmark initiative with backing from the ESF. The project involves several meetings with companies, normally on-site, to map out their key strengths. These are then summarized as a best-practice case study and stored in a database accessible to all participants.

The topics to be looked at are always chosen by the participating companies themselves to make sure that they remain true to entrepreneurial practice. The database allows companies to search for practical solutions to their questions that worked well in other companies.

In parallel to the meetings, the Infothek Steinbeis Transfer Center can (if requested by participants) invite experts to talk about special topics. There have already been seminars on business etiquette and "food for thought" workshops on body language and knowledge management.

One positive side-effect of the project: some of the companies introduced to each other have turned into long-term partners. One example is a successful partnership between three companies from different industries who are currently starting a joint development project, impossible without the others, due to the size of the undertaking.

Wissmark is going down very well and is now in its third successful year. Thomas Holfeld, Technical Director at STEIN Automation describes the benefits of the project as, "Expanding your own horizons, learning new things, hearing how others do it – combining that with the 'food for thought' workshops provides valuable insights for the companies."

Best practice examples from the Wissmark project:

- **Project management/management of industrial design projects**
  How to manage complex development processes
- **Communicating to the world outside the company**
  Targeted development of a corporate design
- **Financial accounting**
  Making successful use of accounting tools in the architect's office
- **Leadership**
  Leadership strategies in a sales company
- **Accessing new markets**
  Expanding the portfolio of services and products in an engineering office

Wolfgang Müller
Steinbeis Transfer Center Infothek
Villingen-Schwenningen
stz252@stw.de

State-funded vocational training

Employee development, both measurable and targeted

When the going gets tough, you need the right skills, and an ability to adapt. You also need plenty of support. The state is already offering companies 160 million Euros to train staff currently working "short time" – as long as the instructors have AZWV certification issued by the Federal Ministry of Economy and Employment. The TQU Akademie GmbH does – in fact 96 of its courses are AZWV-certified.

Business and managers are currently under a great deal of pressure to "think solution" in order to overcome the challenges posed by plummeting orders and turnover. Change is a must. Companies have to gear themselves to new market conditions, motivate staff and engender loyalty to the company – even if wages are dipping and lots of people are on short time.

One useful tool: state support, in the form of training. Since February 2009, AZWV support – in the form of a up to 80% subsidy – has been available for all staff on short time. The WeGebAU program, funds courses for workers who have had no training for four years and have not been in state education during this time. It's a classic training voucher, available to the unemployed or people under threat of unemployment.

Almost all courses offered by the TQU Akademie are now AZWV-certified. It was a highly complex process gaining certification, but having ISO 9000 certification since 1993 and previous AZWV accreditation helped. The approved seminars meet the quality, curriculum, method and duration standards required for the courses.

Out of the 160 million euros made available for courses, according to the Federal Employment Agency only 6.5 million euros has been used until now. The reason for this is clear: negotiating your way through the labyrinth of funding programs is a laborious task. Many providers fall foul at the first hurdle when trying to fulfill subsidy conditions. Not only is the system horrendously bureaucratic, you need intimate knowledge of the infrastructure and working methods of public and political bodies. Having already familiarized itself with the system during certification, the TQU Akademie therefore also provides support on such issues to help companies seek funding.

Around 95 per cent of the money made available for training is still waiting to be used, so it is certainly worth arranging an appointment with the Employment Agency. It should not be underestimated what this could do to improve your company's chances of returning to profitable growth.

Daniela Laubmeier
TQU Akademie GmbH
Ulm
stz645@stw.de

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 July 2009:

SCC Land-Use Planning and Structure Development, Meiningen
Director: Dipl.-Ing. Lutz Gaspers

SCC Vehicle Safety and CAE, Ulm
Director: Prof. Dr.-Ing. Dietmar Imbsweiler

STC Innovation and Sustainable Leadership (ISL), Pähl am Ammersee
Director: Prof. Dr. Wolfgang Stark

STC IT-Safety and Computer Networks, Aalen
Director: Prof. Dr. Christoph Karg

STI Logistics Management, Herrenberg
Director: Prof. Dr. Dirk Engelhardt

STC Organic Electronics Consulting, Mannheim
Director: Prof. Dr. med. Norbert Gretz

SCC International Technical Assistance (SITA), Stuttgart
Directors: Dipl.-Wirt.-Ing. August Musch
Dipl.-Kfm. Angelika Meier

Steinbeis-Haus Projekt Zwei Ilmenau GmbH, Stuttgart
Director: Prof. Dr. Dr. h. c. mult. Johann Löhn

Steinbeis Hacettepe Technology Transfer Center, Ankara (TR)
Directors: Ilyas Yilmazyildiz
Ahmet Riza Balim
Dr. Sanem Yalcintas Gülbas

STC Quantitative Finance, Berlin
Director: Prof. Dr. Dietmar Hillebrand

SIC IT-based Processes of virtual Organizations (IVO), Bretten
Director: Prof. Dr.-Ing. Heiko Thimm

STC METEOR 21, Chemnitz
Director: Prof. Dr. habil. Dr.-Ing. Birgit Spanner-Ulmer

Recommended by consumer test organization Stiftung Warentest: start-up portal NewCome.de

Online portals for entrepreneurs provide information on special-interest topics – useful for certain types of entrepreneurs as a supportive companion during start-ups or when taking over a business. Consumer test organization Stiftung Warentest took a close look at 14 start-up portals throughout Germany. Among the front runners: Newcome.de, a website run by the Pforzheimbased Steinbeis Transfer Center for Business Development by order of the Baden-Württemberg Ministry of Economic Affairs.

Entrepreneurs and recently appointed CEOs will find a wealth of regional content and services on the Baden-Württemberg portal, covering a diversity of industries, special interests and audiences. Newcome.de is thus becoming a pivotal point of online interest for the target group, not only because it provides timely and independent advice on start-ups and management succession, it is also an excellent point of reference.

The quality of the content on the website received particular praise from Stiftung Warentest, notching up the highest possible score for its "exemplary support for start-ups, comprehensive coverage of current issues, and excellent content".

The website offers much more than conventional editorial content. For instance there is current news, a regional events calendar, new project lists, useful addresses, and other interesting media such as vodcasts, podcasts, downloads, and an online poll for "entrepreneur of the month". Newcome.de was also the only website in the review with an example of Web 2.0 solutions in the form of a entrepreneurs' wiki, a fountain of knowledge pool that can even be topped up by users.

The "from entrepreneurs, for entrepreneurs" network officially went live in late 2001. Since then, it has become a flagship for all entrepreneurial and management succession activity, in a state already known as a hotbed of German start-ups.

Anja Späte
Steinbeis Transfer Center
Business Development
Pforzheim
stz587@stw.de

Making better use of EU INTERREG programs: advice from the Steinbeis-Europa-Zentrum

On 1 June 2009, the Baden-Württemberg Ministry of Economics appointed the Steinbeis-Europa-Zentrum (SEZ) as a regional advisory body for the European INTERREG programs of the European Territorial Cooperation

As part of the project, the SEZ will advise and supervise prospective applicants, and update expert audiences on INTERREG issues in Baden-Württemberg. One of the Ministry of Economics' aims is to make EU grants more accessible to companies, local authorities, towns and cities, regional development sponsors, universities and research institutes. The focus of the INTERREG programs:

- IV B – transnational cooperation in three areas: North-West Europe, Central Europe and the Alpine Space.
- IV C – interregional cooperation.

A central priority of SEZ on all of the programs is the fostering of innovation. Innovation projects can relate to anything from setting up and expanding science and technology networks, to enhancing regional research, technology development, and innovation capacity. "Innovation" is also pivotal to fostering development in three other key areas – sustainable transportation and ICT solutions, environmental protection and energy efficiency – as well as stronger cities and regions.

Magdalena Buczek
Robert Gohla
Steinbeis-Europa-Zentrum
Stuttgart/Karlsruhe
stz1216@stw.de

New releases from Steinbeis-Edition

Reading – Learning – Understanding
Steinbeis-Edition publishes works mirroring the scope of the Steinbeis Network expertise. All titles can be easily ordered via our online shop, at www.Steinbeis-Edition.de

The CAx Scientific Series – Volume 1
Optik Simulation – Einführung in LucidShape & LucidDrive
Frank Friedrich, Stefan Wendhausen
Alexander von Hoffmann (Ed.)
ISBN 978-3-941417-03-8 (German)

Working as an engineer in motor vehicle lighting requires a firm grasp of computer-aided technology, or "CAx" applications, which are crucial for evaluating every stage of the development process and making quick adjustments. The CAx scientific series complements the manuals issued by software providers to help users gain a fast-track understanding of different CAx applications, drawing on lifelike projects from business. In the first volume of the series, sample CAD data is taken from a vehicle headlamp to demonstrate the most important functions needed to use the light simulation program LucidShape:

- How to model light sources
- How to assign optical properties
- How to evaluate the distribution of luminous intensity
- How to illustrate night-time designs

The volume concludes by showing how LucidDrive software can be used to put simulation results though a virtual night-time journey.

Steinbeis 1983–2008
Sigrid Friedrichs, Steinbeis Foundation
ISBN 978-3-938062-94-4 (German, English version soon to be published)

At the 2008 Steinbeis Day, the Steinbeis Foundation published a review of the last quarter of a century in its book Steinbeis 1983-2008. In 1983, Professor Dr. Löhn became Foundation chairman, building the Steinbeis Network into what it has become today. This second edition of the book includes updated information to the end of 2008. The publication provides a fascinating insight into knowledge and technology transfer à la Steinbeis, defining the key success factors of the Network with a potted history of the foundation until 2008. Leading individuals who joined the Foundation on its journey explain their role in the Steinbeis story, often with personal anecdotes. The appendix provides a comprehensive overview of the people, centers and milestones of the Foundation since its inauguration.

Yvonne Hübner
Steinbeis-Edition
Stuttgart
yvonne.huebner@stw.de

Steinbeis

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Steinbeis GmbH & Co. KG für Technologietransfer
Willi-Bleicher-Str. 19
70174 Stuttgart
Germany
Phone: 0711 – 18 39-5
Fax: 0711 – 18 39-7 00
E-mail: stw@stw.de
Web: www.stw.de

Editorial coordinators:
Anja Reinhardt
Marina Tiourmina
E-mail: transfermagazin@stw.de

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