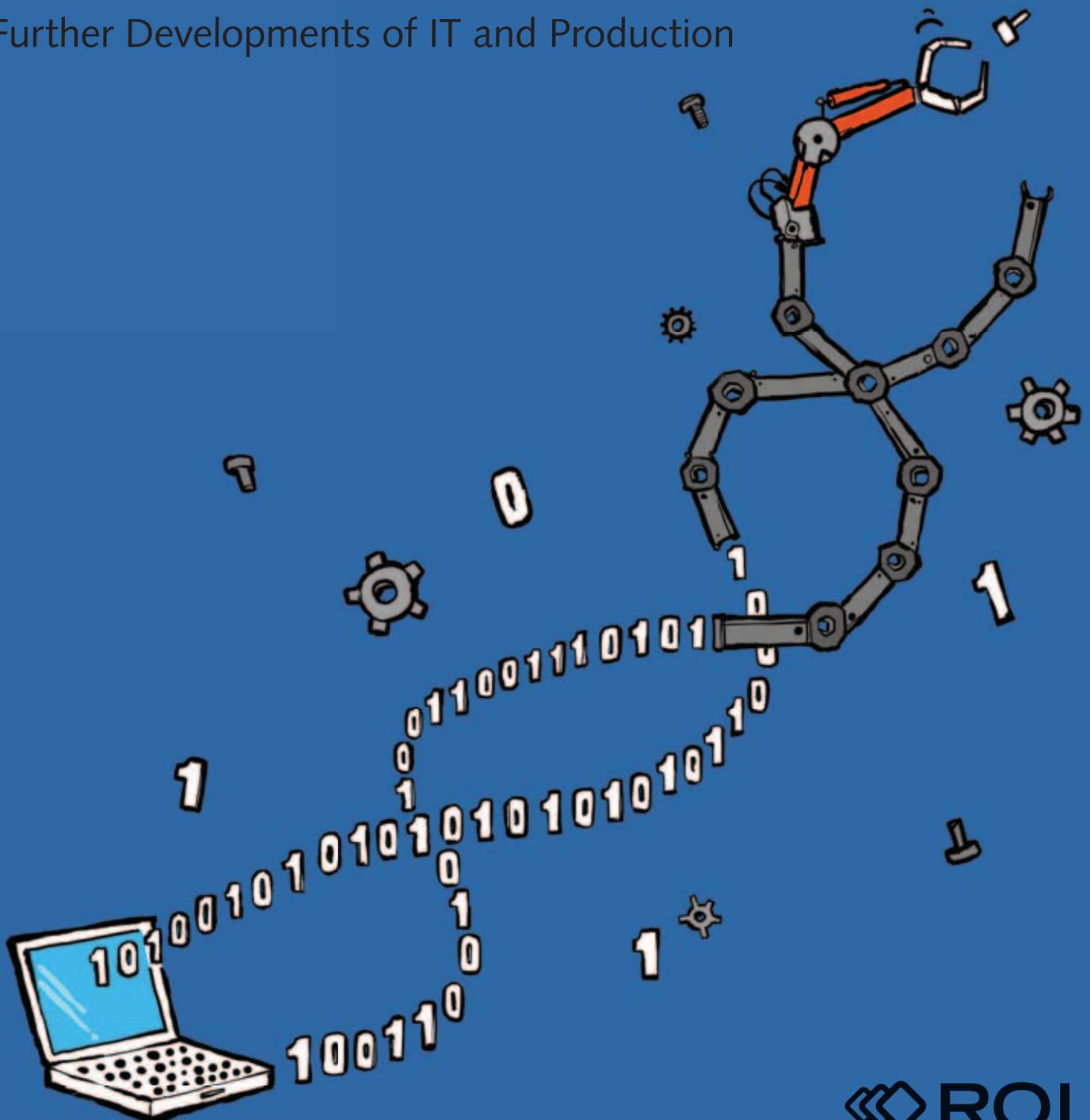


DIGITAL STEEL

Further Developments of IT and Production



ROI DIALOG OVERVIEW – ISSUE 43

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Digital Steel – What IT and production can achieve together

Increasing digital interconnectedness is likely to prove a game changer in the development, production and logistics activities of business in numerous industries. However, despite all the enthusiasm for technology we should not forget who, logically, is driving this process. Future solutions should be determined above all by market and customer requirements and not primarily by what is technically feasible.

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Are variant producers the pioneers?

Discussion about the potential of Industry 4.0 solutions in practice

The Industry 4.0 Award was presented for the first time at the end of 2013 – to SME Maschinenfabrik Reinhausen. ROI's Chief Operating Officer Prof. Dr. Werner Bick spoke with the 'spiritual father' of the prize-winning solution about pioneers in cyber-physical systems (CPS), the significance of lean principles and the role of employees in the Industry 4.0 environment.

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As precise as a laser sword – SCANLAB AG project report

In addition to the positive effects of fast growth, it frequently forces companies to revise their value creation processes and their corporate structures. Leading scanning technology solutions provider, SCANLAB, has initiated this very process and is adapting its processes and structures to match the increased demands of the market – starting with product development.

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Taking a look at 'Man-machine-co-evolution'

Interview with Heinrich Nottbohm, Volkswagen Sachsen GmbH, Head of the Chemnitz engine plant

It is not just the many individual steps on the way to the 'smart factory' that form the focus of the strategy for the future of the Chemnitz engine plant within the VW Group. Sustainability, the efficient use of resources and efficient collaboration in global networks also play an important role in the further development of this showcase location.

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Tiles with a system – Schlüter-Systems KG project report

A clearly defined product development process (PDP) with validity across national boundaries was the centerpiece of the project at systems supplier Schlüter. The overall aim was to drive product development at a global level and at the same time integrate the comprehensive experience of employees in order to safeguard the company's status as quality and market leader.

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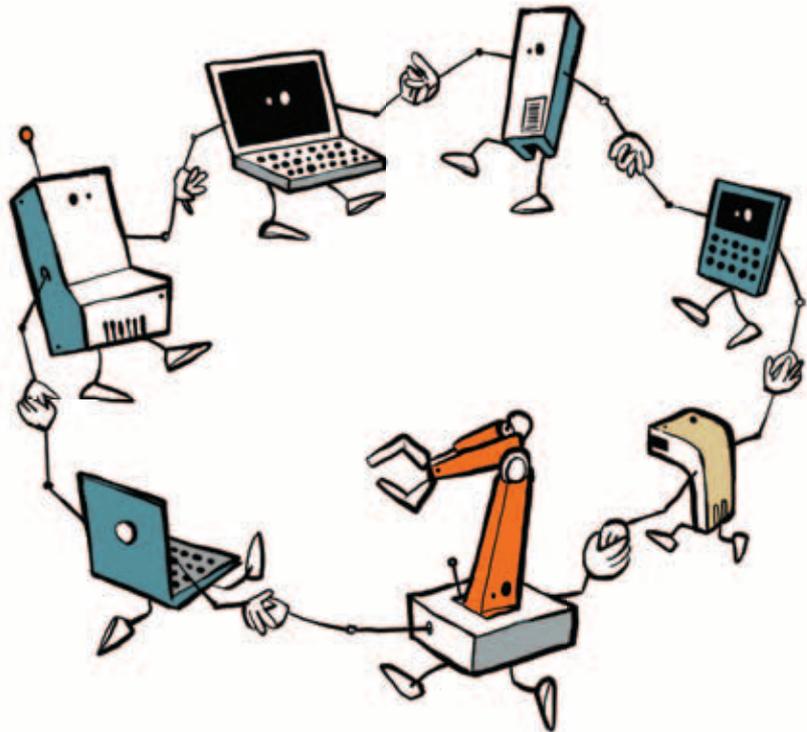
What industrial companies expect from their consulting partners – A study by Lünendonk

Industrial companies attach greater significance to achieving and safeguarding innovative capabilities when a longer-term perspective is chosen. It is therefore hardly surprising that companies tend to seek advice from specialist management consultants who are at home in these topics.

DIGITAL STEEL

What IT and production can achieve together

By Hans-Georg Scheibe, Member of the Management Board, ROI Management Consulting AG



Let's conduct a little test. What do most technological and organizational developments of the last few years have in common? I would say convergence. Convergence, from the Latin word 'convergere' – to incline together – is what we can observe in many areas and what is both an opportunity and a problem at the same time. It is an opportunity because the combination of known elements gives rise to something new – new products, new solutions, new business models. It is a problem because the complexity that arises from the integration of what were hitherto independent

"As with the Internet, we will experience a great many flops and only a few models for success in the coming years. However, these will radically change the rules of the game in industry."

elements is huge – at a strategic, technological, procedural and ultimately cultural level. This development is particularly severe with regard to the fusion of digital and analog elements, when ones and zeros are combined with steel.

What we can see today is the likely large-scale deployment of cyber-physical systems (CPS) in development, industrialization and production that has the potential to be a game changer in a large number of industries. As a kind of 'spiritual successor' to the Internet and to computer-integrated manufacturing (CIM) in particular, CPS will open up a whole new

level of integration by providing analog structures with intelligence and communication capabilities and linking heterogeneous production and logistics environments with remote networks.



Hans-Georg Scheibe,
Member of the Management
Board, ROI Management
Consulting AG

tomization and market fluctuations. The role of IT in this is pivotal since without it the Internet of Things is not possible. The technologies that are available today can overcome the restrictions that hampered the CIM solutions of the 1980s and 1990s and that ultimately prevented their universal deployment.

As with Internet-based business models, proof must also be provided in this instance that a fascinating base technology is also capable of satisfying concrete requirements and enabling new process landscapes that actually pay off for businesses and customers alike. And as with the Internet, we will experience a great many flops and only a few models for success in the coming years. However, these will be of such transformative nature that they will radically change the rules of the game in manufacturing industry.

network at the speed of Twitter. Savings in terms of time and cost and the increase in process transparency are huge. The relevance of this development for the future – particularly in a high-wage country like Germany – is obvious. When deployed correctly, cyber-physical systems enable a jump in productivity, especially with regard to small batch runs and product customization.

CPS at Maschinenfabrik Reinhausen also illustrates the fundamental structure of Industry 4.0. It includes manufacturing execution systems (MES) that control operational order workflow and thereby the exchange of information between the elements of the production network. This is the area that is today often the focus when dealing with Industry 4.0 at a practical level. The second fundamental area is that of production planning and management systems (PP / PPM), which constitute not just a technological but also in particular a procedural challenge. The principles of lean logic must be applied in order to avoid creating an IT monster. As many areas of production as possible must function under autonomous control using basic data and enable a production facility to optimize itself. However important this

The network paradigm

This results in a process for dealing with the overall application that is distributed and networked rather than being based on centralized management from production control centers as is the case with CIM. It enables objects in the network to manage themselves and thus allows not only the integration but also the distribution of management tasks. A network develops that in comparison to conventional process and structural models of the organization allows a faster and more flexible response to changing customer expectations, increasing demand for cus-

Internet of things

A marvelous example of this is provided by Maschinenfabrik Reinhausen (MR), winner of the current Industry 4.0 Award presented by the trade journal 'Produktion'. MR has actually succeeded in generating long-term competitive advantages from the

integration of formerly separate units. As Johann Hofmann, MR's CAM Business

Unit Manager relates in this issue of DIALOG, the company has developed an intelligent system that interconnects the different production plants with each other enabling them to communicate and exchange information. This unique network is not organized along centralized lines but instead allows local data storage. And the other elements in the network can fetch the information from where it is stored – a CPS and Internet of Things in the purest of forms. Modifications and adjustments that are initiated at a certain point in the network take effect throughout the

"It is advisable to choose an approach that is guided by a pragmatic vision."

planning tier is, Industry 4.0 takes place primarily in the field. It requires a lean and flexible control logic but must in all other respects rely on the intelligence of the network.

All theory is gray

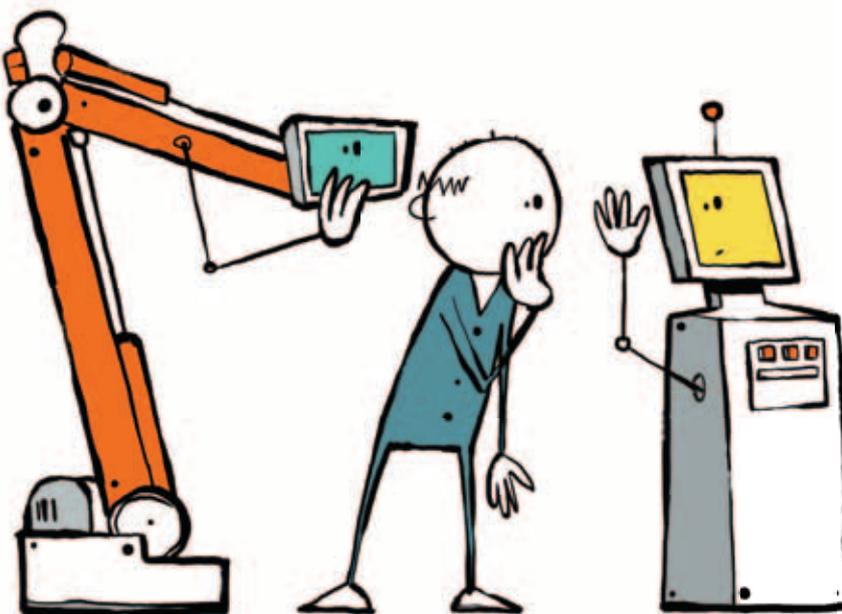
However, as is so often the case, this is more easily said than done, since the organizational as well as cultural consequences of an extensive Industry 4.0 implementation are huge. A large proportion of conventional business processes are turned on their head, especially as departmental and even corporate boundaries may continue to function as the limits of communication. Vertical as well as horizontal integration is the prerequisite for an organization that has a decentralized structure and distributes intelligence throughout the network. There is probably no decision-maker who would not subscribe to this view. There are, however, probably few companies that have managed to implement this type of collaboration and distribution of competences without any problem. Network organizations are indispensable for managing increasing complexity and in particular volatility. However, they contradict almost our entire professional socialization, our learned patterns of interaction and the forms of work and organization that derive from them – provided employees are older than 20.

A further significant factor is the fragmentary and heterogeneous IT landscapes with which most companies still

"In the coming years industry 4.0 will continue to be primarily an experimental field at the interface between technologies, processes, the exigencies of business and inspiration."

have to struggle. And not just companies. A glance at the market for IT service providers reveals first and foremost a picture shaped by insular solutions and 'best-of-breed' approaches. None is currently suited to meeting all the technological requirements for company-specific cyber-physical systems.

Against this background it is advisable to choose an approach that is guided by a pragmatic vision. This means, above all, not putting the cart before the horse. The crucial question is about what technological architecture is to be developed to cope with concrete market and customer requirements and how extensive it needs to be – and not about how existing technologies can be harnessed. As at Maschinenfabrik Reinhausen, implementation often has to be based on in-house developments and creative solutions. For this reason in the coming years Industry 4.0 will continue to be primarily an experimental field at the interface between technologies, processes, the exigencies of business and inspiration.



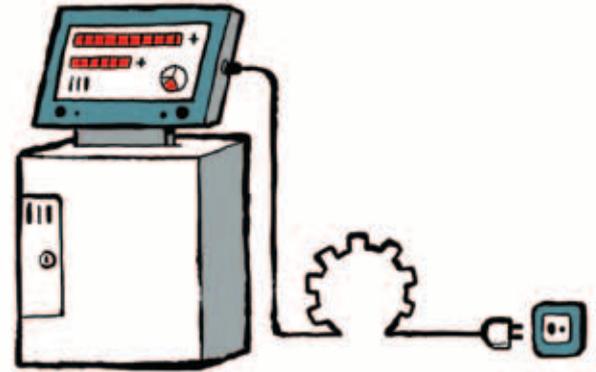
ARE VARIANT PRODUCERS THE PIONEERS?

Discussion between Johann Hofmann and Prof. Dr. Werner Bick
about the potential of Industry 4.0 solutions in practice



Johann Hofmann, CAM
Business Unit Manager,
Maschinenfabrik
Reinhausen
www.johannhofmann.info

A



A competition was organized for the first time by the trade journal Produktion and ROI Management Consulting AG in 2013 evaluating and rewarding practical Industry 4.0 solutions. ROI DIALOG spoke with the winner of the Industry 4.0 Award, Johann Hofmann, CAM Business Unit Manager at Maschinenfabrik Reinhausen and ROI's Chief Executive Officer Prof. Dr. Werner Bick, about business realities, IT strategies in production and the further evolution of Industry 4.0.

DIALOG: *Mr Hofmann, congratulations on winning the Industry 4.0 Award 2013. What are the reasons for your success? Did you have a strategic vision and a roadmap for developing your Industry 4.0 solution? If so, what exactly did it look like?*

JH: The vision originated back in 1989 during the 'CIM euphoria' and over the first 17 years was only used in production at Maschinenfabrik Reinhausen. In 2000 it first became possible to connect NC machines using networking and browser technology. This was the signal to transfer industry-tested processes to web-based technology and to offer them as fully scalable MR-CM® product to other companies. It is interesting to note that many of the characteristics of our solution can be found in the definition of Industry 4.0.

The special features of the intelligent manufacturing process in use with us today include the in-house developed data hub, full vertical and horizontal integration, complete digitalization of equipment and tools and the provision of all required data direct to the workplace such as tooling drawings, setup instructions, etc.

DIALOG: *Are 'smart factory' and networked production topics for all industries to the same degree or are there exceptions? What is your experience in this area, Professor Bick?*

WB: Digital interconnectedness is of particular benefit when it involves the discrete production of extremely customized, generally high-value articles, i.e. typically those that are in serial production but subject to large fluctuations in terms of volume and production mix where supplier and customer data systems need to be integrated into the value chain.

The main industries where this applies are, logically, the automotive and automotive supply industries as well as high-variant manufacturers in the mechanical engineering and electrical industries. Process-oriented businesses with less freedom of movement benefit less from Industry 4.0 solutions in the first step. This assessment also corresponds to the spread of highly innovative companies that took part in the Industry 4.0 Award. 40 % of businesses came from mechanical engineering, 30 % from the automotive field and 20 % from electrical engineering.

DIALOG: Can we therefore say that it is mechanical engineering with its wealth of product variants that will be – or must be – a pioneer and forerunner for Industry 4.0?

JH: Yes, because it is the wealth of product variants that results in frequent and costly retooling costs. Cost pressures, competition from low-wage economies, ever shorter product life cycles and increasing quality demands from customers coupled to the growing variety of variants among end products are turning the management and continuous improvement of their production processes into core competitive factors for manufacturing companies. The vision of Industry 4.0 takes on particular significance in this respect.

Production at Maschinenfabrik Reinhausen for the core business of tap-changers for regulating transformers includes high-performance production and assembly. Production is characterized by a large spread of customer requirements and low volumes. The main motivation for developing the award-winning solution were inefficiencies in the setup process, where the particular problem that occurred – not just at Maschinenfabrik Reinhausen – and what is generally encountered in any manufacturing using NC machines, was that the different machines involved in the production process, for example NC machines, tool presetters and storage systems, all use proprietary data formats making it impossible to provide standard process data across all machines on a regular basis.

DIALOG: How 'lean' are successful Industry 4.0 solutions then, or is there actually a contradiction here?

WB: There is no contradiction. 'Lean' is the basis for efficient value chains for companies. You can automate poorly coordinated processes but they will remain permanently poor and existing potential savings and productivity increases will not be achieved while costs for the automated solution will also rise.

This is very well illustrated by the example of Maschinenfabrik Reinhausen, where we find a very high degree of implementation of lean principles, from systematic reductions in lead times and zero defects (thanks to poka-yoke) to robust processes.



Prof. Werner Bick,
Chief Executive Officer, ROI
Management Consulting AG

DIALOG: One of the assessment criteria for the Industry 4.0 Award was also the benefits for customers, employees and society as a whole, for example through the more efficient use of resources or improved working processes. What was the experience you gained with regard to these topics?

JH: Our award-winning solution is a system from everyday practice for everyday practice, i.e. it was developed in collaboration with the machine operators. It frees up workers from error-prone and non-value-adding work and thus improves their daily work. Our solution creates happier and more satisfied employees

DIALOG: Let us take a look into the future – what will be the next steps in the evolution of Industry 4.0? And when will we start talking about Industry 5.0?

JH: The scope of Industry 4.0 is so broad that much of it will work while much of it will not and some of it will be implemented in a totally different way from what is forecast today. For example, the vision of a 'cyber-physical system' first requires 'cyber-physical logistics'. Before a workpiece can navigate its way

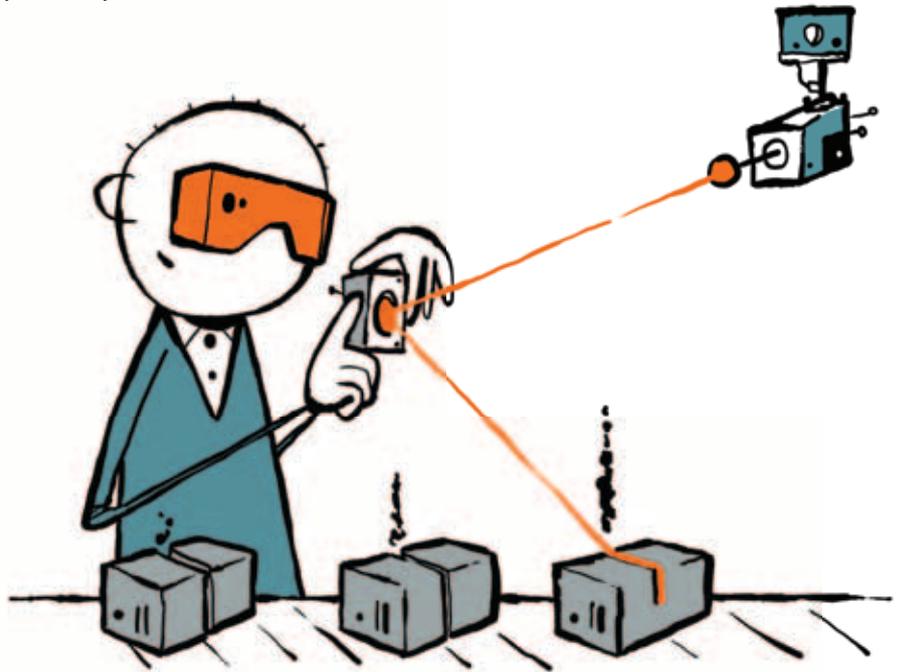
"Our solution creates happier and more satisfied employees"

autonomously through the production shops we must first clarify who will move the workpiece. In any case, Industry 4.0 will have a significant effect and bring about major changes – just like CIM. CIM is generally considered to have failed but I am still convinced that CIM has had a significant effect. Without the 'CIM wave' we at Maschinenfabrik Reinhausen would not be where we are today. Franz Kafka once said, "Paths are made by walking". That also holds true for Industry 4.0.

WB: I fully concur with you, Mr Hofmann. As long as Industry 4.0 remains just a vision in many areas and industries we do not need to speculate about '5.0'.

AS PRECISE AS A LASER SWORD

SCANLAB gears its product development process towards global growth



Lasers have fired people's dreams for decades. Hardly any other technology has shaped our image of the future so much as the highly concentrated beam of light. And lasers have enormous potential even beyond the realms of science fiction. Laser technology has become an enormously important cross-sectional technology – from highly efficient lighting systems and medical and physical applications to solutions in mechanical engineering, for example for cutting and welding. As a tool, light offers seemingly inexhaustible areas of application, where its speed and precision play the leading role. SCANLAB AG, founded in 1990, is part of this development. The company from the greater Munich region is primarily concerned with the development and production of galvanometer scanners, scanning heads and scan solutions for industrial laser material processing and for biotechnology and medical devices.

Rapid growth puts structures to the test

The quality of SCANLAB's products and its high innovative capacity have ensured the company's rapid global

growth over recent years but now call for existing company structures to be reconsidered. With this in mind, the company's management decided on a comprehensive revision of SCANLAB's processes and organizational structures in order to make it fit for further growth. "In the last few years SCANLAB has become an international supplier that has been con-

fronted with increasing organizational complexity – in particular in production and development," explains Ernst Wilhelm Böckler, who is responsible for the area of application within the development department as well as for the project management. "We

were faced with the task of ensuring smooth communications processes and minimizing foreseeable disruptions and inefficiencies. We also recognized the need to match processes and structures within individual departments and throughout the company to future requirements in the best possible way. In short – we needed to gain foresight."

"In the last few years SCANLAB has become an international supplier that is confronted with increasing organizational complexity – above all in production and development."



Ernst Wilhelm Böckler,
Head of Applications,
SCANLAB AG

Product development process as the basis for change

The product development process was chosen as the pilot project, which was systematically restructured and reconstructed with newly defined roles, responsibilities and interface description with the support of ROI consulting from November 2012 onwards. The aim was to create the procedural basis for efficient product development and launch focusing on four topics.

First, it was important to secure the timely involvement of the function concerned via the process structure. The measures aimed to introduce a phase model for work packages and decision points for approving project phases and to implement binding reviews of the quality assurance results achieved – important steps in the foresighted 'handling' of growth.

The second topic was efficient project management with a manager for each project taken from the project manager pool and with a team put together specifically for each project. This resulted in goals being pursued cross-functionally and in relief for the line functions. Collaboration was also to be simplified by the introduction of standards, in particular through clear and explicit role definitions, process descriptions, tools, checklists and filing structures. And finally, the project

was to enable continuous process improvement, which was to be achieved principally through the specification of clear process and tool responsibilities and the central maintenance and provision of tools.

"The product development process is an essentially critical discipline for a technology company such as SCANLAB that plays a major role in its future success," explains Ernst Wilhelm Böckler. "We wanted to become the benchmark in this field – with efficient multi-project management, smooth, cross-functional collaboration, excellent quality management and the ability to further develop and optimize the newly established structures on a continuous basis."

Four steps to process excellence

The first phase of the project involved an analysis of the existing development process. An area of focus here was an analysis of orders (categorization, number, size, characteristics) together with an analysis of current processes based on a sample of representative projects. There was also an assessment of current strengths and weaknesses which formed the basis for the definition of key areas for action.

This was combined with plans for a target product development process for both internal development projects as well as for customer projects. It involved the preparation of a draft design for the project organization and the formulation of an implementation plan. In addition, resilient team structures were set up. Then began the pilot phase for selected projects where the newly created structures were tried out and the new tools and methods subjected to testing in everyday practice. The company-wide roll-out commenced after the successful completion of the pilot phase and is likely to conclude in March 2014.

"The measures supporting the project were of great importance for its success," states Ernst Wilhelm Böckler. "They were used to inform sales and development staff about the progress of the project and to solicit feedback. Furthermore, ROI consultants trained the nominated project managers and provided

coaching for the pilot projects. Our intention was not only to secure the long-term efficacy of the organizational changes and the permanent transfer of knowledge but also to achieve a high level of acceptance for the changes."

Between best practice and individuality

The tasks and challenges faced by SCANLAB are not unique. They are typical of any expanding technology company. This is why it is vital to address the organizational and procedural implications of growth and the use of industry-wide process benchmarks at an early stage in order to make the necessary 'culture change' possible.

"However, the project team was conscious of the fact that our individual and evolved success factors had to be integrated with the development of the future process," sums up Ernst Wilhelm Böckler.

"It is because we succeeded in combining the specific qualities and strengths of SCANLAB's development culture, the trusting interaction with our customers and the balance between technology pull and push that we have been able to create the stable basis for sustained and structured growth."

SCANLAB

SCANLAB AG is an OEM manufacturer that develops and produces scan solutions that deflect and position laser beams. The company is a leading international supplier producing over 15,000 scanning solutions each year. Its innovative products turn lasers into highly dynamic and flexible tools for materials processing. This is achieved via moving mirrors and optical elements that quickly, precisely and reliably position laser beams in three dimensions.
www.scanlab.de

TAKING A LOOK AT 'MAN-MACHINE-CO-EVOLUTION'

Interview with Heinrich Nottbohm, Head of the Chemnitz engine plant, Volkswagen Sachsen GmbH



DIALOG: *Mr Nottbohm, your plant in Chemnitz has a first-mover function within the Volkswagen Group. This also involves keeping a lookout for the opportunities presented by new technological developments. How high do you estimate the as yet unrealized potential of networked intelligent production for your factory?*

HN: We have already implemented the initial building blocks for the fields of action for Industry 4.0. We have already reached a reasonable level and are moving in the right direction. This, together with other unique features, justifies our first-mover role as worldwide type leader for Volkswagen's new generation of petrol engines.

The potential of Industry 4.0 is huge but not exactly predictable since it largely depends on the level of interconnectivity. While academic studies indicate a potential of 50 % for savings in development times and costs as well as for production costs, we estimate a somewhat more moderate potential, still in the double-digit percentage range, for our factory as an autonomous unit. It is a different picture when seen from a global perspective covering the entire production network, for example at Volkswagen. Here we expect a significantly higher benefit from networking thanks to an increased collaborative capability.

"The Chemnitz facility is 'on course' to becoming a smart factory"

DIALOG: *The path from a successful prototype to commercial series production is long. How do you currently assess the maturity of solutions that are being discussed under the term Industry 4.0? In which areas of the automotive industry do you expect its introduction*

first and where do you see the greatest obstacles to implementation?

HN: I already consider the maturity of individual solutions to be very high but I

see deficits in their interconnectedness. Generally speaking, some approaches that have been subsumed under the term 'Industry 4.0' are rather questionable and it is important to prevent the term being used in an inflationary manner and consequently with an increasing lack of transparency. This would dilute the subject matter and prevent the effective use of expertise.

The Chemnitz facility has set itself the goal of achieving universal implementation over the next five years. It is for this reason that we have embarked on a research project with a number of partners such as Chemnitz Technical University, machine tool manufacturers and other associated partners. We are planning additional sub-projects with academic partners and companies. I see the greatest challenge in preparing the 'flood of data' to be suitable for users in order to be able to have a positive influence on processes. This means, therefore, making relevant data available in real time and optimizing IT and infrastructure as services ('basis').

A global company also faces challenges in harmonizing and synchronizing systems and processes across locations. In addition, customized capacity planning and tailored staff flexibility are an important and yet difficult topic. We have, however, already begun to focus on these subjects.



DIALOG: *With all this in mind, is the Chemnitz engine plant already a 'smart factory'? What concrete examples can you draw on to back this up?*

HN: Here, too, I would ask for caution when using these concepts and first raise the question about the definition of 'smart factory'. A 'smart factory' has a number of dimensions such as smart products, smart buildings, smart logistics, etc. Thus 'smart' first of all means horizontal integration across value creation networks, and secondly the digital pervasiveness of engineering over the entire value chain, and thirdly, vertical integration and interconnected production systems.

I therefore stick to my statement that the Chemnitz facility is 'on course' to becoming a smart factory, which does not mean that all the aspects have yet been implemented from start to finish. The initial starting points at the Chemnitz location that in some respects give the factory the appearance of being 'smart' include the pervasive planning of processes using digital factory tools (such as ergonomic optimization tools), real-time monitoring of production equipment and the availability of production data for each engine and component or for all manufacturing processes

DIALOG: *Environmentally friendly and resource-efficient production is becoming necessary for the long-term viability of an industry, not just for social reasons but increasingly for commercial reasons. A great deal of work is being performed on this subject in the VW Group – and especially in your facility in Chemnitz. Where do you see further possibilities for improvement and what strategy do you intend to use to realize them?*

HN: Our company placed a strong focus on resource and energy efficiency at an

early stage with its 'Think Blue.' strategy. In this context it is worth noting that these efforts are not restricted just to our environmentally friendly, fuel-efficient products. Our focus also intentionally covers our operational locations. 'Think Blue. Factory.' is the name of the Volkswagen's program that is intended to reduce environmental impact in production on a sustained and continuous basis. With 'Think Blue. Factory.' we accept ecological responsibility and also achieve clear competitive advantage with sustainable production.

There are also additional pro-

"We make every effort to organize the connected and pervasive interaction of 'man and machine' efficiently around the world."

grams in the Chemnitz facility such as the so-called 'Total Energy Management' program as a holistic approach to factory planning and operation or the 'Clean Factory' concept that covers technical cleanliness and the use of resources.

I see the main potential of Industry 4.0 in the following areas: in pervasive transparency over consumption, for example electricity and water, in optimized monitoring and production processes – all the way through to the efficient use of resources – as well as in production technology all the way through to more efficient processing of e.g. the feed rate. This will allow the energy consumed for each operation to be reduced.

DIALOG: *The interaction between steel and IT works remarkably well in the final product such as the car. What do you see when you think of the associated forms of production in 2025 and what are you doing to become a pioneer of this vision.*

HN: This depends primarily on overriding social trends. In the same way that we have to effectively transfer the trend towards personalization and new patterns of mobility into our products, it will be similarly important to design production to

conform to the trends. We talk of so-called 'Man-machine-co-evolution' in the production world. What is meant is the interaction between employees and technical plant in the sense that the two aspects cease to develop independently of each other. Instead transformation will in future be subject much more to joint – as it were interactive – evolution.

In this respect we will do everything it takes, first, to design our products to be sustainable for the future – for the group as a whole – and second, to effectively organize the connected and pervasive interaction of 'man and machine' in cooperation with our more than 100 production locations. In the Chemnitz facility we are already making a groundbreaking contribution to this that is intended to secure our pioneer role over the long term.



Heinrich Nottbohm, Head of the Chemnitz engine plant, Volkswagen Sachsen GmbH

TILES WITH A SYSTEM

New development organization at Schlüter-Systems KG



"If you do not keep up with the time you will be left behind" is one of the most popular sayings of the last few years. Or even centuries, since one of the authors it has been ascribed to is Friedrich Schiller. The imperative of permanent change may by now sound trite but its implementation is all the more demanding. How demanding this can be is illustrated by the experience of Schlüter-Systems KG, a family-run business located in Iserlohn that is an international leader in products for tiling.

With over 800 employees in Europe and North America the company supplies a range of around 10,000 system solutions for laying tiles and natural stone. However, the company's market environment has changed irreversibly in recent years. As market and quality leader Schlüter-Systems must nowadays not only supply increasingly complex products but also meet ever higher expectations with regard to quality. This is the only way for it to maintain its current competitive position as well as to secure its leadership in a globalized market.

The changing requirements can be seen not just in marketing but also in development and production at its locations in Germany and North America. It is against this background that the company decided to undertake radical process restructuring as part of a project supported by ROI consulting. Particular focus was placed on a clear definition and implemen-

tation of the product development process (PDP) in order to be able to drive product development in a locally and globally structured manner.

Product development across the Atlantic

"Our product innovation and development are primarily based on the problems of the tiling industry, which are growing increasingly complex. We are being asked more and more to supply system solutions that have to meet the standards and regulations of different countries," explains Marc Schlüter, Managing Director of the family business. "This is where our evolved organizational forms and processes came up against their limits." For this reason a two-year project was initiated with ROI in October 2012 aimed at creating the basis for a sustainable structure.

There was no question of introducing a neutral best practice solution for the PDP since ultimately the knowledge and experience of the employees in Iserlohn and the North American locations in Plattsburgh and Montreal were to be optimally com-



Marc Schlüter
Managing Director,
Schlüter-Systems KG

"Collaboration in an international team and the choice of a methodology that satisfied the different development cultures in both Germany and North America were particular challenges."

bined in the future structure. The basic requirements for the project therefore called for the close involvement of the departments affected by the changes. A further success factor was systematic support and backing for project staff by senior management, which has always emphasized the central role of change in project work. "Collaboration in an international team and the choice of a methodology that satisfied the different development cultures in both Germany and North America were particular challenges that we paid a lot of attention to from the outset," says Marc Schlüter. Besides the precise definition and subsequent introduction of the PDP, the aim was also to integrate the required methods for product development and project management and, where these did not already exist, to develop them.

From flagship project to global roll-out

The redesign of the PDP followed a proven methodology that was to a large extent developed by ROI. Following a detailed situation analysis, the complete process design and the required PDP methods for two different types of product development were developed in several project steps. The aim was to handle the two types of processes developed with a single process description in order to maintain the same underlying system. Flagship projects were then defined and implemented on the basis of this. "The flagship projects demanded a great deal from all those involved but were the necessary baptism of fire for the new concept," reports Marc Schlüter. "The pilot projects proved to us that we had a solution that would actually be feasible in the company's everyday practice. This applies across national and departmental boundaries."

ROI provided support for the Schlüter team in particular in the pilot phase. Regular training sessions and workshops were held in Germany and North America and targeted project marketing was undertaken. For example, a flyer was created and the regular training sessions were used to ease familiarization with the new structures. A PDP manual was prepared as a supporting measure and process documentation was set up in the customer process management system.

Stable processes develop when people act together

The experience gathered in the pilot phase and the best practices provided by ROI ultimately formed the basis for the roll-out of the new process design and the newly defined PDP organization. This phase of the project was also accompanied by ROI with

"Paper is patient. Something really new only comes about when people act."



Schlüter-Systems KG:

Schlüter-Systems offers a comprehensive range of practice-tested system solutions for laying tiles and natural stone. These include the Schlüter®-SCHIENE - the original edge protection and transition profile for floors - as well as solutions for waterproofing, drainage and uncoupling insulation, heated ceramic-tile flooring and state-of-the-art LED lighting technology. www.schlueter.de

training and coaching, with special focus being placed on the management of the process interfaces. The next few months will now see comprehensive training for all

employees involved in the PDP. The training modules developed for the various process roles will then be used to introduce the new methodology to further employees who deal with product development. There are also plans

to set up global and local product management and to define the development organization. As a final step, it is intended to provide for a continuous improvement process so that the new structure can grow with changing demands. "The fact that we were able to realize such a comprehensive concept that radically changed the processes that we had grown accustomed to over the years, is largely due to the constructive collaboration with the team and to the consultants from ROI," sums up Marc Schlüter. "Paper is patient. Something really new only comes about when people act."

WHAT INDUSTRIAL COMPANIES EXPECT FROM THEIR CONSULTING PARTNERS

By Mario Zillmann, Head Professional Services, Lünendonk GmbH

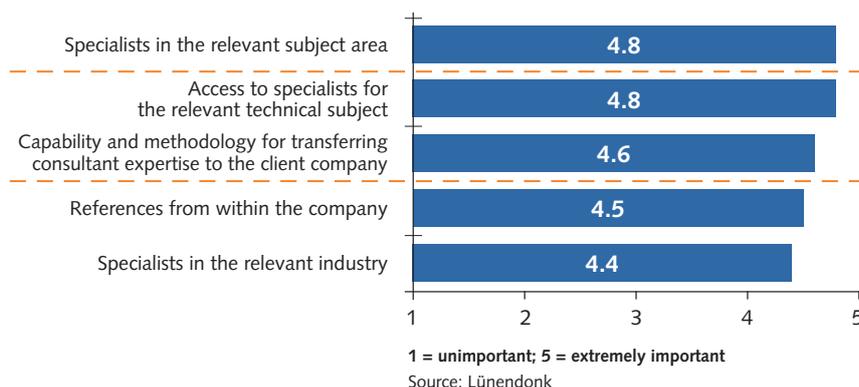
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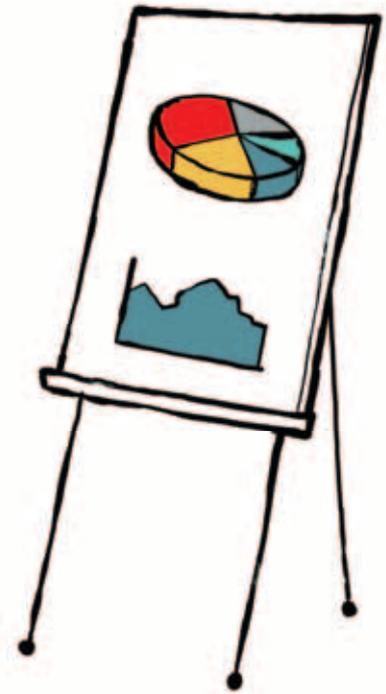
The need for transformation is huge. There is hardly any internationally active company that can nowadays afford to take its process and structures, its HR management or its supply chain for granted for any length of time. The faster market requirements and basic conditions change, the more frequent the adjustments that must be made to the organization. This requires a process of continuous improvement that can only seldom be established single-handedly. For this reason it is the duty of management consultants to support their customers with innovative processes and the introduction of best practice solutions – from strategy development to operational implementation. The pressure to adapt is especially great in manufacturing industry. The high level of technical and organizational complexity, cost-intensive structures and supply chains spread around the globe



Mario Zillmann,
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The five most important factors for the basic purchasing decision for external management consulting from the perspective of industrial companies





lead to demanding requirements being placed on the problem-solving skills of consulting partners.

But what do industrial companies in Germany expect from their management consultants? What are the essential competences and forms of collaboration? And what concrete challenges does the industry see itself having to face in the future? These were the questions that market researchers from Lünendonk sought answers to in a recent intersectoral study that also analyzed the degree to which answers given by industrial companies differed from the average of all respondents.

Specialists are the consultants of tomorrow

The results show that two criteria in particular are of paramount importance when it comes to selecting a consulting partner. A high degree of specialist expertise in the relevant subject area and access to specialists for the relevant technical subject were each given a rating of 4.8 out of 5 (1 = unimportant, 5 = extremely important). The capability and methodology for transferring consultant expertise to the client company was also given a prominent score of 4.6. The ratings and the requirements for the five main criteria are also fascinating. When it comes to competence in change management, industrial companies place higher demands than the average of all respondents. Moreover, the ability to adopt a goal-oriented, analytical approach is rated as important.

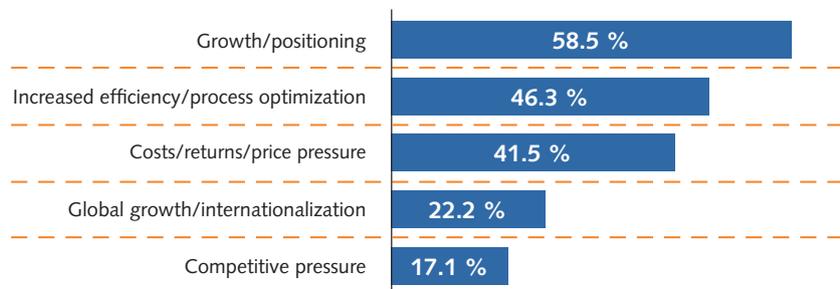
Maintaining market position is on top of the list

The focus on the above mentioned qualifications becomes more understandable when we take a look at the challenges that industrial companies in Germany face today and in the medium term. Besides growth and positioning (58.5 %), more than 46 % of respondents see the topics of increasing efficiency and optimizing processes as particularly crucial challenges – which is significantly above the average of 37 % for all companies interviewed. As far as the medium-term perspective is concerned, there is a clear dif-

ference with regard to increased innovative capacity (34 %) compared to the average (22 %). This result is not entirely surprising given the rapidly increasing R&D requirements among industrial companies and their desire to maintain their position as innovation leaders.

On the whole the study clearly sets out the framework for cooperation between industrial companies and their consulting partners – and defines the requirements profile that management consultants must meet if they wish to act as industry's transformation partners on an equal footing with their customers.

The five currently most pressing challenges from the perspective of industrial companies



Source: Lünendonk

The five medium-term most pressing challenges from the perspective of industrial companies



Source: Lünendonk

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About ROI

With over 1,000 successful projects, ROI Management Consulting AG is one of the most prominent specialists in the planning, development and management of global value chains. ROI supports large corporations and leading family-led companies, especially with the integration and optimization of development, production and logistics, in supply chain management and in the company-wide implementation of lean management principles.

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