Issue 46

ROI DIALOG

NEW OLD ECONOMY

Surviving in an Age of Convergence

ROI
MANAGEMENT CONSULTANTS

ROI DIALOG OVERVIEW – ISSUE 46

NEW OLD ECONOMY

Surviving in an Age of Convergence

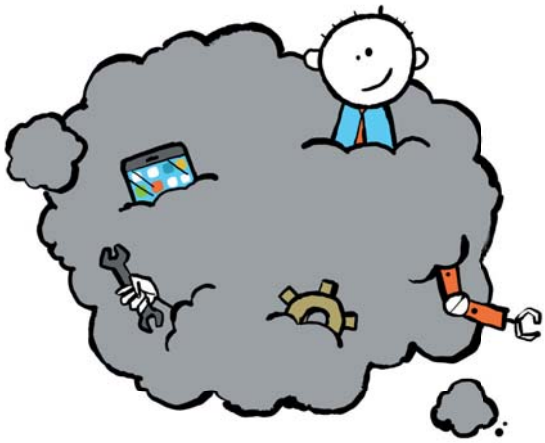
By Professor Werner Bick, Chief Representative of ROI Management Consulting AG

What we today call convergence began back at the end of the last century – the boundaries between industries and therefore established market contours started to move and became indistinct. This heralded a turning point for the TIME industries, which were the first to be affected. The potential market increased, but so did the risk of being attacked in one's own market by previously completely unknown competitors. Business models established over decades were suddenly put into question, and new products, services and strategies were urgently required in order to deal with the uncertainty, opportunities and threats. This transformation, which is still continuing today, brought fundamental changes to the IT, telecommunications and media industries and altered the equilibrium of markets to a historic degree. In this process, the "old economy" remained at first an interested onlooker – it took another ten years until the mists of digitalization engulfed the factories of the carmakers and engineering firms.

> "Knowledge would be fatal. It is the uncertainty that charmes one. A mist makes things wonderful."
>
> *Oscar Wilde, The Picture of Dorian Gray*

The key role of Industry 4.0

Today convergence has become a core strategic factor for both industries at two levels. How can product- and production-specific challenges be efficiently mastered through the integration of technologies from other industries and how can new business models be developed from cross-industry approaches? The development of Industry 4.0 plays a central role when answering these questions – it is not only a powerful lever used to increase efficiency but, above all, a channel for the transmission of cross-technology and cross-industry business models. The analysts from Experton Group go even as far as to define Industry 4.0 primarily as the extension of the service offering of classical industries.



This allows a sheer unlimited number of opportunities for classical industries to emerge from the mists of convergence that blur the contours of existing areas and enable new paths to be identified. For the first time in their history they are in a position to sell their customers not products but solutions for complex questions. How can I organize a completely mobile lifestyle instead of selling cell phones or cars? How can comprehensive energy management be guaranteed instead of sending kilowatt-hours down high-voltage lines? How can resilient, efficient and highly profitable production be set up instead of simply furnishing production machinery?

Convergence also means cooperation and competition

The potential associated with this extension of target markets is huge, but it does place the most exacting demands on a company's strategic, technological and also cultural competence. When companies from different industries are able to launch a certain offering, the intensity and complexity of both a competitive "free-for-all" as well as new forms of cross-sector models of cooperation are enormous.

"Industry 4.0 is not only a powerful lever used to increase efficiency but, above all, a channel for the transmissionof cross-technology and cross-industry business models."

The challenges that result from this are explosive for those companies in particular that, first, failed to adapt to this development years ago and, second, do not have the market power and resources of large ITC, logistics, power or automotive groups – a situation that is also typical of engineering and the automotive supply industry.

Professor Werner Bick,
Chief Executive Officer, ROI
Management Consulting AG

Convergence roadmap – Six steps to the digital future

What is needed, therefore, is a digital roadmap, a chart leading the way through the mists of overlapping industries, technologies and business models that at the same time goes beyond old certainties and methodologies and helps to develop robust strategies for a digital age. ROI has identified six decisive factors that can serve as guidelines for a structured strategy.

1. **Scenario Management and Trend Monitoring**
   If a trend can be clearly identified, it is often already too late to turn it into a sustainable advantage. Companies therefore need a so-called "before-fact approach" in order to identify and interpret weak signals. The keys to this are provided by cultural and structural openness that allow the expertise and intelligence of widely differing network partners and external knowledge players to be included and other industries and markets to be systematically observed.

2. **Technology Radar and Technology Strategy**
   At the same time, in the course of convergence many questions relating to technologies aimed at increasing digitalization and using and processing data need to be answered. Which technologies are mature but uninteresting? Which ones have not yet matured but are especially interesting? Which ones can we ourselves influence and which ones can we not influence?

3. **Business Model Portfolio Review**
   Economic, social and technological trends can have massive implications for existing as well as for potential business models. It is therefore important to develop a systematic and pragmatic approach to continually reviewing strategy. How modular, scalable and transferable to new markets emerging as a result of convergence and macro trends are our business models? Will it be possible to maintain our competitive position and profitability and achieve growth with them in future, too? What needs to be changed?

4. **Technology Strategy Development**
   The future structure of business models will form the framework for technology strategy. How will the company be technologically aligned? Which technologies are required and what is their relationship to today's core competences? Can access to the relevant technologies best be achieved through acquisition, cooperation or in-house development?

5. **Strategic HR Management and Continuous Qualification**
   The question about existing expertise and expertise required in the future leads to the question whether qualification and staff development are understood and set up as a permanent and professionally organized process. In addition, dealing with the issues of convergence, digitalization and hence also with the transformation of the company calls for a pragmatical and honest view of recruitment. Are we in a position to inspire the people that we need for our company? Can we hold our own against the career offers of cross-sector competitors?

6. **Strengthening and Adapting Production Supply Networks**
   It is in the automotive and engineering industries in particular that no serious strategic decision can be made without a comprehensive analysis of value-generating network. The question about what the consequences a future strategy will have on production and supply chain and how the existing partner network must be extended horizontally, vertically and into other industries is therefore critical to the success of the transformation process and the development of new business models.

However, navigating safely though the uncertainties of convergence requires more than stringent planning and organization. The examples of success of recent years show that it is above all the joy of discovery and the willingness to occasionally take the wrong path that give rise to something great.

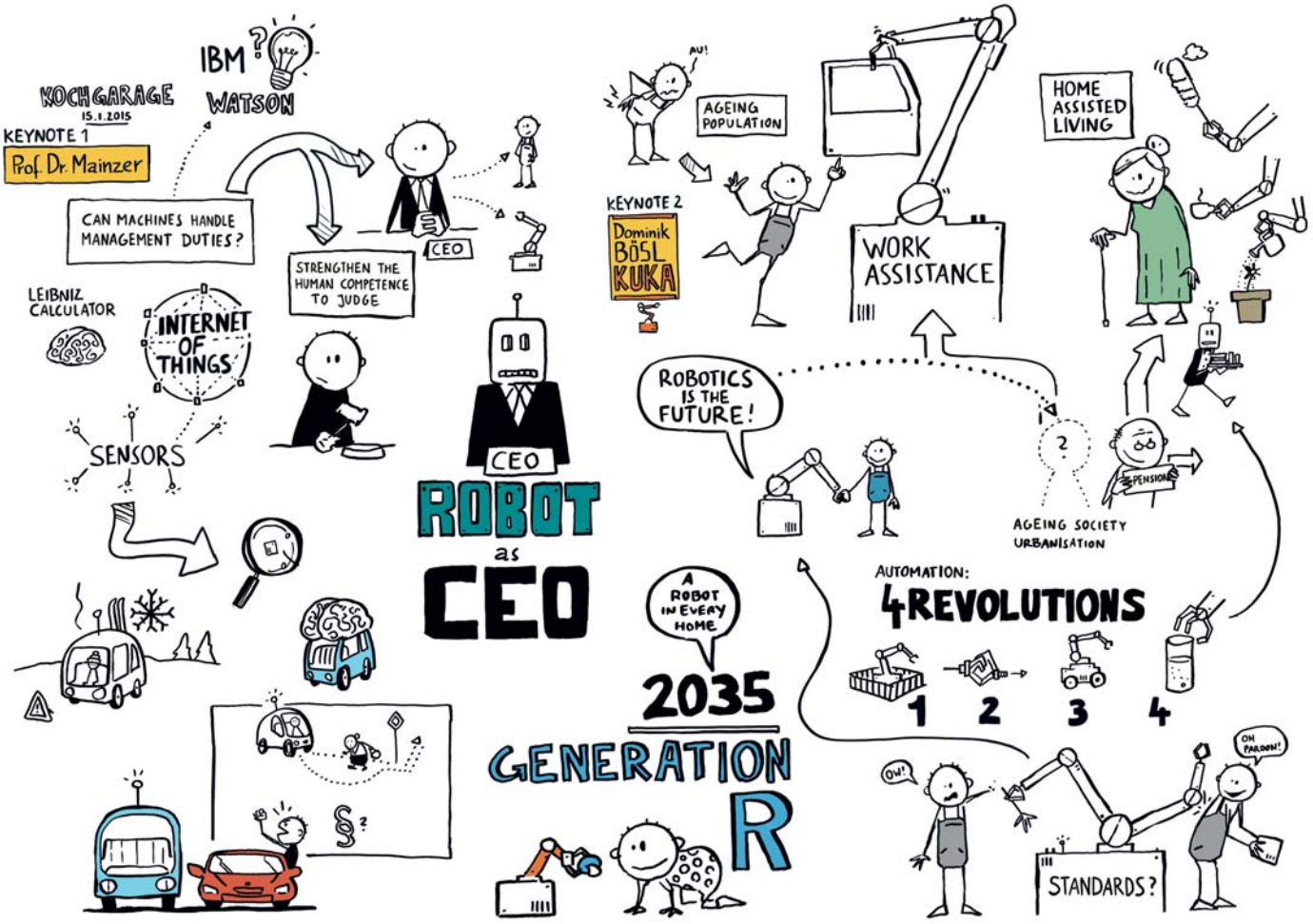
FROM THE ASSEMBLY LINE TO THE BOARDROOM?

Perspectives on the Development of Robotics at the DIALOG DINNER

Industry 4.0 is more than just a portfolio of technologies and methods. The intelligence and the ability of systems to communicate as well as their close integration with humans have far-reaching implications for strategy, management processes, personnel management and corporate culture.

We discuss what implications these can be and how companies can deal with them with participants from industry and research at our DIALOG DINNER held at regular intervals. The central theme of the evening at the first dinner in 2015 was entitled the "The Robot as CEO?" and addressed the question of what the arrival of intelligent machines means for corporate culture.

Keynote speakers Professor Klaus Mainzer from TU Munich and computer scientist Dominik Bösl, Corporate Innovation Manager at KUKA AG, provided guests with valuable ideas on how to come to terms with current and future innovations in robotics.



THERE WILL BE A HUMAN-MACHINE SYMBIOSIS

Interview with Professor Klaus Mainzer, Technical University of Munich (TUM), Chair of Philosophy and Philosophy of Science

DIALOG: *According to a study conducted by MIT, employees are happier and more productive when they receive instructions from a robot boss. Could robots really have a management career in future?*

KM: Considering how moody and short-tempered some bosses can be you could be forgiven for thinking that robot CEOs are easier to handle, consistently friendly and rational in their decisions. However, rationality isn't everything – humans are and will always be social animals. Modern brain research and developmental psychology shows us that it is not until a certain stage of childhood that we develop the ability to put ourselves in the position of others in order not just to recognize the intentions and thoughts of our counterparts but also to sense their feelings and to behave accordingly. This projection and anticipation is termed the "theory of mind" and is the essential prerequisite for management activities.

We could speculate about whether to equip robots with a "theory of mind". But that would call for so much knowledge about our brains and cognition that we will not have for the foreseeable future. For this reason I prefer to place my trust in human judgment, which we can exercise and train through growing experience in order to achieve better results in management. There will therefore be a human-machine symbiosis in which we may also delegate cognitive tasks to autonomous systems but where humans should continue to hold the reins. High-frequency trading on the financial markets has already shown us what can happen when we delegate decision-making powers to algorithms.

DIALOG: *What robotics developments are realistic then, for example in the context of the Internet of Things (IoT)?*

KM: In addition to humanoid robotics there will also be infrastructure robotics that automate our working and living environments. People used to talk of "ubiquitous computing", meaning universally distributed computer functions in working and everyday surroundings instead of a concentration of these functions in a (super)computer. This development is continuing in a "ubiquitous robotics" of infrastructure. This is a huge market even for Kuka, which has traditionally concentrated on (stationary) industrial robots.

However, Industry 4.0 is not just about automated production. The areas of sales with its commercial level is being automated and linked to automated production, too. This will allow customer wishes to be input into the production process individually in "on-demand production". It will require cloud technology, a conspicuously large number of sensors, cameras and electric eyes and other control elements that big data generates. Infrastructure robotics is merging with the Internet of Things.

DIALOG: *Will this ubiquitous networking and exponential growth in computing capacity result in our creating a form of AI that exceeds our cognitive abilities at some stage in the future?*

Professor Klaus Mainzer, Chair of Philosophy and Philosophy of Science, TU Munich

KM: The fact that we cannot yet simulate the human brain in detail is not due to a lack of computing capacity but to our not knowing all the detailed workings of the brain. I'm certain that individual cognitive functions will be realized in technical terms and will exceed human capabilities. However, we must not forget that supercomputers require enormous amounts of power while our brains don't even need the energy of a light bulb. That type of efficiency instills respect for evolution. The idea that humans of the future are being designed on the drawing boards of technology corporations is naive. It didn't work that way in the past and won't work that way in the future. Innovations, customers and markets are full of surprises. And any intelligent businessperson should remember that.

CLASSICAL ENGINEERING MUST OPEN UP MORE

Industry 4.0 Award for Bosch Rexroth AG and BorgWarner Emissions

Experts from business and science joined in discussions under the motto of "Practice, Practice, Practice" at the "2nd Industry 4.0 Symposium" in Amberg on December 2-3, 2014. In the course of the event the trade journal PRODUKTION and ROI presented the "Industry 4.0 Award" to two particularly groundbreaking digitalization ideas from everyday business practice. A jury of experts had previously judged entries from a national competition in Germany. The jurors focused on production integration according to the criteria of level of innovation, cost efficiency, everyday practicability, customer benefit and degree of maturity.

A PARADIGM SHIFT BEGINS IN THE HEAD

"With Industry 4.0 you have to let IT onto your factory shop floor – which is like a red rag to a bull for plant managers and manufacturers. Changing this and achieving a paradigm shift is a process that has to start in the head," says Eduard Altmann, Editor-in-Chief at trade journal PRODUKTION

THE WINNING PROJECT: "SMART AUTOMATION" AT BOSCH REXROTH AG

Winner of the "2014 Industry 4.0 Award" is Bosch Rexroth AG. With its "Smart Automation" project the company developed a new pilot assembly line for its Homburg plant, networking products, production equipment and employees with each other for example via RFID chip and Bluetooth. In the process, Bosch Rexroth not only created a versatile assembly line for the cost-efficient manufacture of hydraulic valves in lot sizes of 1 for six product families with over 200 variants, it also implemented a cloud solution for capturing and analyzing all data in real time.

STEP BY STEP TOWARDS INDUSTRY 4.0

"We generate ideas, put ideas into practice, measure the effects and take that as our new starting point," says Frank Hess, HoP2/PT, Bosch Rexroth AG in explanation of the approach used in the winning project. "Industry 4.0" requires the comprehensive exchange of data between machine manufacturers and corporate IT. Classical machine engineering must open up – it must drive open standards, thereby ensuring added value for the customer."

SIMPLE TOOLS FOR COMPLEX PROCESSES

"One thing quite clearly characterizes our 4.0 solution – that the user doesn't even see the complexity at the end of the Shift Doodle system," says Michael Berner, Production Director at BorgWarner Ludwigsburg GmbH. "This software is so self-explanatory that when it was launched there was no need to train generation Y for the app.

OUTLOOK: LOCATIONAL ADVANTAGE FOR GERMANY

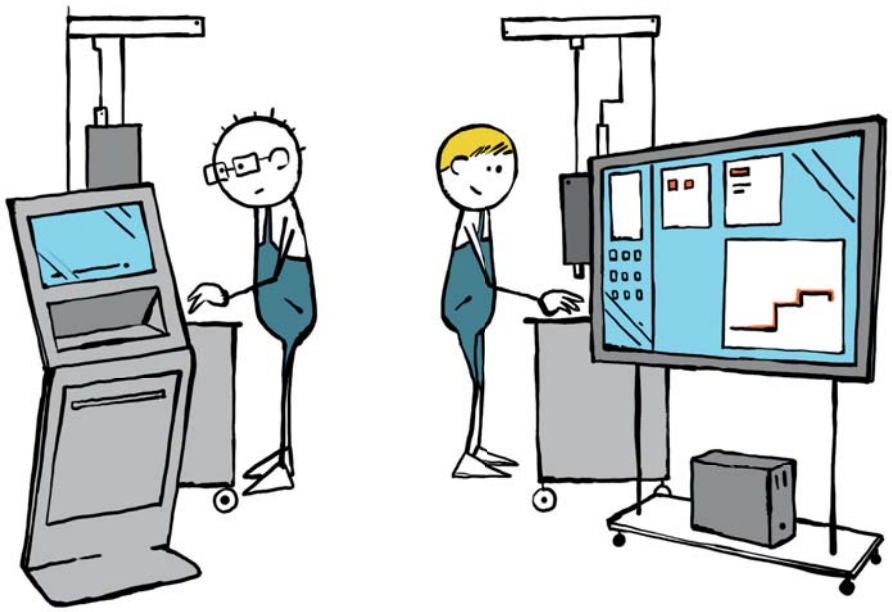
"For a start we have the 'Made in Germany' quality logo, we have the topic of Industry 4.0, which is supported by research institutes and the federal government, and we have data protection and security solutions – in total, a combination that cannot be easily copied by other nations," says Jan Bungert, Head of Platform Solutions Group Germany at SAP Deutschland SE & Co KG.

SPECIAL PRIZE: SHIFT DOODLE APP AT BORGWARNER EMISSIONS SYSTEMS

BorgWarner Emissions Systems was delighted at the special prize at the 2014 Industry 4.0 Awards for innovative work organization. The company has successfully introduced a Shift Doodle app at its Ludwigsburg plant, thanks to which the plant can adapt staff deployment to customer requirements, increasing flexibility and productivity. BorgWarner uses the app to actively involve its employees in planning staff deployment, which results in greater self-determination. Furthermore, the staff planning process can make a systematic selection of employees to be contacted based on inquiry lists and defined rules of priority.

INDUSTRY 4.0 MUST PROVIDE INTUITIVE SUPPORT

Discussion between Andreas Jenke and Hans-Georg Scheibe about the prerequisites for successful Industry 4.0 projects



DIALOG: *Mr. Jenke, congratulations on winning the Industry 4.0 Award. Your new pilot assembly line provides impressive results with regard to the efficiency and quality of production, flexibility in staff deployment and even ergonomic workplace design. What does a project like this need to be successful? What resistance and difficulties had to be overcome?*

AJ: Thank you for your words of congratulation. We are very proud of winning the Industry 4.0 Award.

Putting Industry 4.0 into practice results in a significantly more closely-knit network for the entire value chain in production but also to closer ties to engineering processes and after-sales service. We concentrated on operational procedures in the value chain of the product in the project.

Close interdisciplinary collaboration between manufacturing, job and production planning, materials logistics, factory IT and the plant manufacturer is required in order to realize such a project successfully. Profound knowledge of the processes in each of the relevant areas combined with new ideas from Industry 4.0 form the basis for creative, forward-looking project work.

The challenge consisted in ensuring this interdisciplinary collaboration in the project within the short duration of the project given that operations were running at full speed in parallel. In the course of the project it was important to identify feasible and at the same time innovative and pioneering topics and to also actually put them into practice.

DIALOG: *Mr. Scheibe, what do you think makes Bosch Rexroth's winning project so special?*

H-GS: I can only underline what Mr. Jenke just said. I'd like to pick out above all the holistic and ubiquitously networked approach integrating various aspects of Industry 4.0 and being based on a clear roadmap of the future. At the same time there was also a very high degree of digitalization and the systematic exploitation of possibilities that resulted from this – particularly in assembly, staff and production planning and in process and production control. The intelligent use of data generated in the overall system is also an important factor.

DIALOG: *Mr. Jenke, one central element of your Industry 4.0 implementation is the so-called ActiveCockpit. What role does it play in the overall solution?*
AJ: ActiveCockpit is the proof of how the implementation of Industry 4.0 principles can result in production information, which already exists in digitalized form, being made available to users in a concentrated and intuitive way. More importantly, ActiveCockpit creates the possibility of user interoperation and the openness that allows additional applications to be integrated into the communications for the shop floor. The benefits for the user are compelling: There is no complex, manual update process, which is necessary on current boards. Intuitive operation and presentation result in those responsible clearly understanding the information. The troubleshooting process is shortened thanks to the clear and rapid identification of results and definition of measures. This makes ActiveCockpit an important feature in the overall Industry 4.0 map.

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

H-GS: Another factor is also important. Dealing with Industry 4.0 is often economically motivated among SMEs. That's not wrong, but if there's no guiding vision, as there was at Bosch Rexroth for example, it will be very difficult to leverage all potential and to address the central fields of action – in networking the entire value chain, in utilizing the data produced and in generating forward-looking data analyses, and also in continuously adapting to changing job and training profiles. In other words, an understanding must first develop that Industry 4.0 is more than just another lever with which to cut costs and increase efficiency.

DIALOG: *What was the level of acceptance for the Industry 4.0 solution and the strategy behind it among employees?*
AJ: The Industry 4.0 solutions have generally been very positively welcomed among employees in the areas supporting production and among employees in production itself. We have also learned a lot in the course of the project. One significant insight is, for example, that all the participants should be involved in the development process of such a plant even earlier in the process

In my view, two things in particular are important for the high level of acceptance. First, the solutions must support employees in their increasingly complex activities in an intuitive way. Second, the awareness among employees that changing market demands can only be mastered using these solutions is crucial.

Andreas Jenke, Department Manager, Customer Projects Assembly Technology, Bosch Rexroth AG

DIALOG: *Mr. Jenke, after this important project, what does your Industry 4.0 roadmap look like for the coming years?*
AJ: Further projects have already been launched within the Bosch Group with the aim of implementing Industry 4.0 along the entire value chain. Realizing them will further increase the efficiency of the value creating areas.

As a vendor of industrial equipment, we are working at full steam to market products that are fit for the new demands of Industry 4.0. ActiveCockpit is one example of this. Furthermore, there are many more products from Bosch Rexroth.

We intend to actively shape this change process over the coming years, both from the user as well as from supplier perspective. We are well positioned in the Bosch Group to do this.

TRANSPARENCY AS THE BASIS FOR OPERATIONAL EXCELLENCE

Introduction of a holistic production system at ThyssenKrupp AG

Dr. Alexander Gulden,
Head of BA CT Technology,
Innovation & Sustainability,
ThyssenKrupp AG

ThyssenKrupp is improving the operational excellence and performance of its global production network with its project 'drive'. Together with management consultants ROI the global corporation is developing and rolling out the ThyssenKrupp production system. The aim is to achieve greater work safety, quality and productivity along the entire value chain of the production process.

In doing so, the group is having to overcome a number of challenges with regard to complexity. Around 29,000 people at 70 locations around the world are deployed in production of the 'Components Technology' business division alone. The portfolio of products is broad. In the automotive sector it ranges from assembled camshafts, cylinder head hood modules, crankshafts and steering and absorber systems to springs, stabilizer bars and the assembly of axle modules. In the industrial field, Components Technology supplies components for construction machinery, wind generators and numerous applications in general engineering. The business division's eight business units all hold leading market positions with their products. This must be continuously secured through the highest levels of quality and operational excellence in all value creation processes. The comprehensive portfolio of products does not make this task any easier as it results in a profusion of manufacturing processes. In addition, different production systems existed in parts of the individual business units as a result of the corporate structure that grew over time and expanded through acquisitions.

For this reason, the business division pursued the 'drive' project to develop the ThyssenKrupp Production System (TKPS), which forms the backbone of the company for operational excellence and performance. During the development of the production system particular importance was placed on taking into account the many constraints faced by individual plants. This was managed through two iteratively combined approaches – top down and bottom up.

"The production system is our navigator for continuous improvement and implementation of standards."

Efficient Processes for Greater Sustainability

The project's strategic framework was provided by the ThyssenKrupp mission statement and the guiding principles of the individual business units. Following a top-down approach, the project team used these to derive goals and operationalized requirements for the business divisions. Principles and methods of lean production were then assigned to these goals.

"We used this approach to create the basis for further customizing the production system from the bottom up with what we regarded as relevant content. The production system created in this way is our means of navigation in order to achieve operational excellence in all areas of our organization," says Dr. Alexander Gulden, Head of BA CT Technology, Innovation & Sustainability and director of the project at ThyssenKrupp AG.

Accordingly, a common understanding of an innovative and above all effective operational excellence system emerged in close cooperation between all eight business units. A project team consisting of TK employees and ROI consultants ensured that this aspiration was put into everyday practice. To this end, the

team developed 14 principles (cf. figure 1). They form the fundamental criteria of the production system.

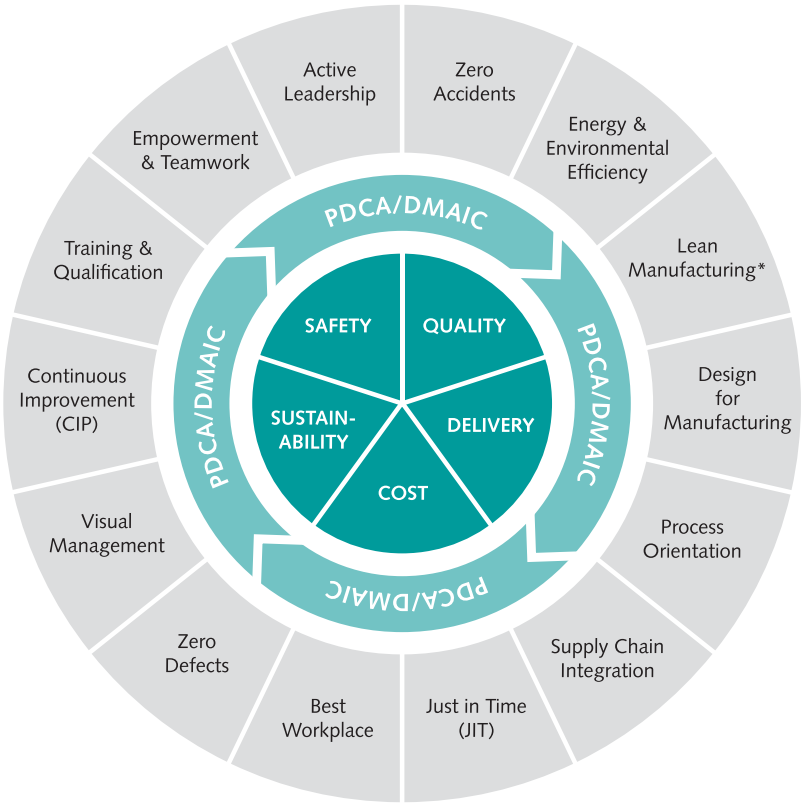
"Besides established principles like 'just-in-time' or 'zero defects' we included new principles like 'green responsibility' and 'supply chain integration'. The important thing for us about 'supply chain integration' is involving our suppliers more actively in our development and production processes. We want to use this to further reduce the lead time for our products and be able to produce more flexibly," says Alexander Gulden.

The 14 principles were subsequently fleshed in terms of content and given concrete target states such as the integration of a zero-defect culture. They define the future operational direction of the company. The involvement of the business units in this process not only allowed the use of business area-specific experience and the systematic transfer of knowledge across individual sectors, it also increased the acceptance of the new system among all participants. This was how a complete and ThyssenKrupp-specific production system developed.

Structured Introduction of Best Practices

The so-called OPX Maturity Scan was developed to ensure continuous improvement at individual plants and the structured exchange of expertise and best practices. This tool, based on the principles of the production system, is used to determine and assess the level of maturity of the production system. Using an appropriate system of KPIs, improvements can be measured qualitatively, allowing "operational performance" to be represented transparently.

The principles constitute the assessment categories and a total of 41 subitems with their target states represent the upper limits of assessment (level 5). The target states were broken down into the various states of expression (levels 0 – 4). This resulted in a uniform classification of performance. In addition, this allows improvement potential at the assessed plant to be gauged direct from the next level up. It also allows concrete measures to be derived from this. The best practice solutions are documented at each level 5 of a plant, serving the other plants as a template for implementation.



ThyssenKrupp Production System
*Design of plant and machinery concepts from lean perspectives

ThyssenKrupp AG

ThyssenKrupp AG is Germany's largest steel and technology group. In the 2013/2014 financial year the group generated sales of around € 41 billion with around 160,000 employees in almost 80 countries. ThyssenKrupp has more than 850 direct and indirect subsidiaries and shareholdings around the world. Internationally, it has 2,500 production facilities, offices and service centers, two thirds of which outside of Germany.
www.thyssenkrupp.com

Productivity Increases thanks to Annual Assessment

In future, the assessment of the individual plants will be performed once a year as part of the operational excellence initiative. It will create corporate-wide transparency of performance in accordance with uniform standards. This will allow consistent operational and strategic target planning at plant and company level. The inter-plant exchange of knowledge and resources will also be greatly simplified. The interaction of the production system with the tool used to assess the level of maturity will allow productivity to be increased efficiently and continuously over the entire production landscape of the Components Technology business division.

GREAT FUN LEARNING

ROI's Blended Learning Approach

All theory is gray – this is the principle behind ROI's approach to training. We make challenges in development and production tangible in our learning factories in Cologne and Prague – and acquiring knowledge about seven complex topics such as lean principles, PEP and quality management becomes a shared, interactive experience. Here the focus is on practical relevance and how to cope with concrete, company-specific issues. The use of haptic simulation and game-based elements make abstract leaning content tangible while trainers with didactic and practical experience provide a context of concrete tasks for seminar participants. This ensures that learning results are highly effective and can be easily transposed to everyday working life.

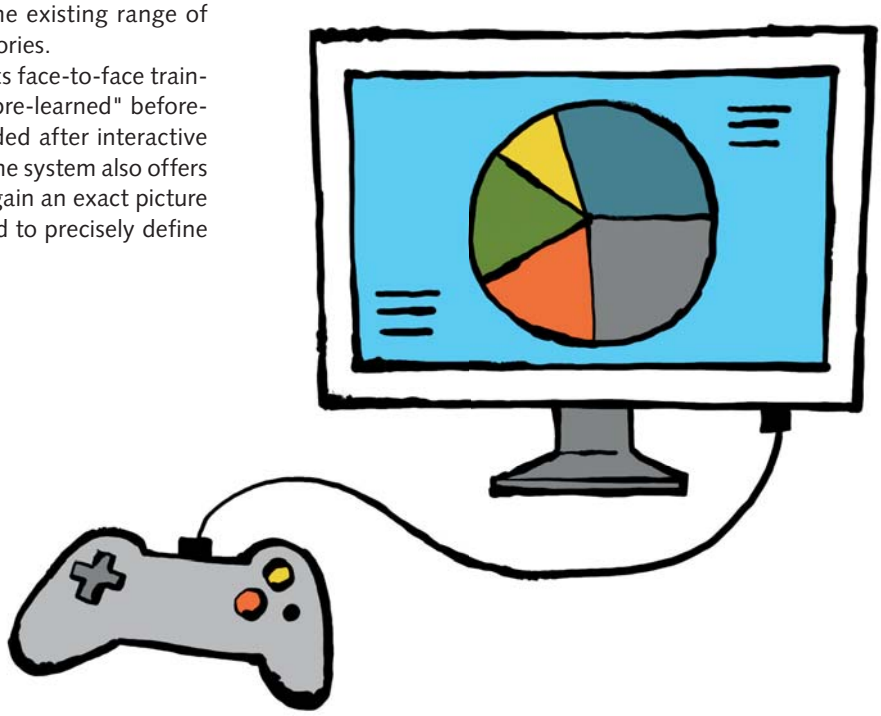
Experience, efficiency and the sustainability of training results – these principles formed the foundations for the development of ROI's new Learning Management System. The platform, which has been available since the beginning of 2015, adds e-learning modules to the existing range of training courses at the two learning factories.

Firstly, the platform supplements face-to-face training by allowing learning content to be "pre-learned" before- and systematically repeated and extended after interactive events. Secondly, with its focused tests the system also offers the possibility to rapidly and efficiently gain an exact picture of employees' current qualifications and to precisely define specific training requirements.

The e-learning environment can be accessed from anywhere, while a differentiated authentication system allows employees to integrate phases of learning in their working lives in an optimum manner, which reduces the opportunity costs of training to a minimum.

The structure of the new Learning Management System and the content, which is so far available in German, English and Czech, were optimized in close cooperation with test users and designed from a didactic perspective as well as with regard to technical performance and usability. The "game-based learning" approaches play an important role and transpose the playful approach of the face-to-face training seminars to the digital platform.

When combined with the face-to-face training seminars in the learning factories, the new platform thus creates the conditions for developing and efficiently implementing company-specific training programs and ensures their long-term success.



INDUSTRY 4.0 REPLACES BUSINESS MODELS, NOT HUMANS

Interview with Torsten Rehder, Director Knowledge TrendONE GmbH

Torsten Rehder,
Director Knowledge,
TrendONE GmbH

DIALOG: *Mr. Rehder, TrendOne observes how innovations and trends develop around the world. Where will the action be with regard to the Internet of Things (IoT) in the coming years and where do you see Europe in this competition?*
TR: Europe slept through the first wave of digitalization: Almost all major Internet companies are located in the USA. But ICT is only one of the competences required for success in Industry 4.0. What will be crucial is the ability to apply this competence in the industrial field. If traditional production technology, where Europe still has a lead, can be networked intelligently with the new IT, Europe will be in a good position and will be able to become the innovation leader in Industry 4.0. Over the long term, this will allow us to bring production back to Europe and to offer for example automated job production in "speed factories" at mass-production prices.

> "The Internet of Things is not a new feature but rather a new layer that overlays all the functions of a company."

DIALOG: *The IoT is become a business reality – has it really got the potential for disruption?*
TR: I think that it depends on the industry as to whether the potential is perceived as disruptive for companies. The arrival of digitalization is no longer considered to be revolutionary in the FMCG or automotive industries. It is important to understand that the IoT is not a new channel or new feature but rather a new layer that overlays all the functions of a company.

In my view what is disruptive is, first, that the IoT will allow new business models based on data to arise and, second, will offer the possibility to produce job lots of 1 at mass-production prices. Industry 4.0 replaces business models, not humans.

DIALOG: *How can companies recognize whether a consumer-oriented innovation like Google Glass can also generate added value in industry?*
TR: Through trial and error – and a big shot of the agile start-up mentality that experiments with technologies, quickly builds various prototypes which it constantly adapts, improves and uncompromisingly discards. There's no point in first setting up and calculating a complete global business case. It is more promising to set up manageable trials, give them qualitative targets and constantly monitor the targets. This works best in large companies through an autonomous spin-off venture.

DIALOG: *Is the IoT accelerating the breakup of boundaries between B2C and B2B industries?*
TR: That can be assumed. One significant change brought about by digitalization and datafication is that companies – generally IT companies – can enter new industries without having to understand their essence. Their core competence consists in designing digital products and services. For Industry 4.0, data are the mission-critical raw materials. Players who already have experience in setting up data-based business models, even in the B2C field, are inevitably driving the convergence of different industries. What do you think will happen when in future Google not only coordinates information via its NEST thermostats but also power?

www.roi-international.com

About ROI

With over 1,000 successful projects, ROI Management Consulting AG is one of the leading consulting companies for global footprint design, development and production. ROI helps industrial companies to optimize products, processes, technologies and global production networks in accordance with lean management and operational excellence principles and to adapt to changing market, customer and technology demands. As initiator and co-organiser of the Industry 4.0 Award, which was first presented in 2013, ROI actively promotes the development of technological innovation in Germany.

ROI has won several prestigious prizes and awards for its highly implementation-oriented projects. The company has about 100 employees at its locations in Munich, Beijing, Prague, Vienna and Zurich and is represented by partner offices in Italy, France, United Kingdom, Thailand, India and the USA.

Subscribe now to ROI DIALOG

Use this QR code to access the order form direct.
Or simply click on ROI DIALOG in the navigation bar at www.roi-international.com

Legal notice:
Person responsible for content under German press law:
Hans-Georg Scheibe

ROI Management Consulting AG
Nymphenburger Strasse 86, D-80636 Munich
Phone: +49 (0) 89 12 15 90 0, E-mail: dialog@roi.de

Management Board: Michael Jung, Hans-Georg Scheibe