

think:act STUDY

In-depth knowledge for decision makers

Automation – Time to find your true north

Global view on the automation industry



Dr. Martin Eisenhut

Dear Reader,

The automation industry finds itself at an important crossroads. The financial meltdown and resulting economic crisis battered many in the business. Those that survived still face tremendous challenges.

The aim of this study is to provide automation managers with practical guidelines and advice on how to best meet the challenges that lie ahead. Customer requirements are changing hard and fast, business is shifting to new geographic regions, and the way automation companies conduct their business is changing too.

To remain competitive, companies must look beyond incremental opportunities and closely examine systemic and structural changes that have much greater potential to improve competitiveness.

Based on our decades-long experience, extensive research and 120 interviews with manufacturers, customers and industry organizations from Europe, the United States, Japan and China, we've compiled a long list of strategic actions that can help automation companies establish a sustainable business model.

We believe companies in each business model – standard components, complex components, problem solvers and system suppliers – need to redirect their attention back to their core strengths. Only when companies know where their true north is, can they know how to proceed forward. It's this intimate knowledge that will enable them to select the best growth options for their business.

Seven strategic topics shape automation companies' competitive outlook today: positioning in emerging markets, product creation, global supply chain footprint, sales organization, service-up, pricing, and competitive cost position. Managers need to decide which of these key action items are relevant for their company and tackle the ones that are most urgent. This study presents managers with vital insights and hands-on guidance to accomplish this successfully.

Despite the hurdles, the prospects for automation companies look good. Across the world, customers are looking for innovative solutions that reduce costs and increase productivity. It's time to grab that growth.

A handwritten signature in white ink that reads "Martin Eisenhut". The signature is fluid and cursive, written on a dark blue background.

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1 FEW REVOLUTIONS IN THIS EVOLUTIONARY UNIVERSE

The automation industry rarely makes tangible products in the sense that cars, computers or cell phones are tangible, but companies would be hard-pressed to manufacture these goods without automation products and processes.

This behind-the-scenes industry is one of the biggest in the world, generating annual sales of EUR 290 billion in 2008. It provides almost all other industries with measurable productivity and safety boosts. The sector's 1.7 million employees work in more than 5,000 companies. Highly specialized small businesses account for a large share of the industry. Yet there are also a handful of big players whose product ranges run the gamut from HMI devices to sensors and software. These heavyweights have scale that can support worldwide distribution.

Automation is a fragmented business, with each product segment generating relatively small volume. Lumped together, however, these product segments can form sizeable businesses, as Honeywell, ABB, Siemens, Mitsubishi Electric and Emerson attest. These five largest players account for about a quarter of the market. Other big names in the industry include Schneider Electric, Parker Hannifin, Omron, Endres+Hauser, Bosch Rexroth, and Invensys.

Until the financial crisis hit, the sector was witnessing the strongest sustained growth in its history. Worldwide business expanded annually at around 9 percent during the period 2004 to 2007. While business continued to grow in 2008, the impact of the downturn on other industries soon caught up with automation too. Growth came to a sudden halt in 2009 and the ensuing slump has been massive. The market was down 18 percent in 2009 compared to 2008. Process automation companies were hit less severely than their plant automation counterparts.

SO WHAT'S HAPPENING NOW?

There's good news and bad. The recovery is already underway – at least for companies active in process automation. These companies tend to provide customer industries like oil and gas, power generation, chemicals and pharmaceuticals with products and solutions for instrumentation, automation and process optimi-

zation. The upturn, however, is going to be slow. It will be many years before automation companies see the levels of growth that they enjoyed in 2007 and 2008, if ever. Worldwide the industry can expect to grow only modestly, by 1.5 percent each year until 2015.

While the market for process automation will return to pre-crisis levels by 2012, we do not expect plant automation to rally until 2014. Plant automation companies create motors, generators, PLCs, and power electronics that provide power, motion and control for a wide range of automation applications.

The dire situation in the automotive and machinery industries – two of plant automation's biggest customers – hit the industry hard. In contrast, non-cyclical customer industries like pharmaceuticals and energy came out of the crisis relatively unscathed. This is why process automation is faring better than plant automation. Some uplift can also be expected as distributor and customer inventories rebuild and companies make overdue repairs and upgrades that were delayed in 2009. Power generation along with oil and gas will drive automation growth in the near future. Steel production is also bolstering the sector, particularly in Asia.

CHINA TO THE RESCUE

Emerging markets, especially the BRIC countries (Brazil, Russia, India, and China), will lead the recovery. Established markets like the United States, Germany and Japan have been stagnating in recent years, crawling along with low single-digit growth. Since these triad countries collapsed by 20 percent last year, there is little hope that they will return to their pre-downturn levels before 2015. Although their relative market share is shrinking, the strength of automation in triad countries remains undisputed.

China is surging ahead, with a robust 8 percent growth annually. There's nothing to indicate a slowdown and good signs that growth will expand even further. As one of the handful of economies still exhibiting strong growth, China has taken on even more strategic importance on the international stage, with implications for many companies worldwide.

CONSOLIDATION SLOWS

The recession certainly slowed down M&A activity in the automation sector in 2009. There was an M&A frenzy in 2006-2007, when transaction volumes reached EUR 20 billion per year, five times the volume achieved in the 2002-2004 period. The main acquisition targets were small to medium-sized manufacturers of high-end components. These mostly European companies were snatched up to fill specific gaps in industry or regional expertise. The volume may have decreased, but competitors continue to go after each other's installed base amid a rapidly aging base of automation systems that must be replaced. Over the next two to three years, M&A activity will remain subdued. There will be nothing hit-or-miss about these acquisitions. They will be planned and executed with the sole purpose of selectively closing technological knowledge gaps. This will remain the No. 1 reason for buying.

GERMANS HIT HARD

Germany's automation industry was hit particularly hard by the crisis owing to its strong focus on manufacturing customers. Automation volume fell 25 percent in 2009 from a record high of EUR 22.8 billion in 2008. Some segments fared worse than others, with vehicle construction automation plunging year-on-year by 40 percent and manufacturing by 26 percent.

The Asian titan has already replaced the United States as the world's biggest national automation market. It cushioned the automation sector from the worst impacts of the global downturn.

While China still specializes in making low-cost gadgets for export and products and processes for local market, its attention is shifting rapidly to higher-end applications and drive technology. Moreover, advanced mechanical engineering centers and R&D clusters are sprouting up throughout Asia, with many companies choosing China as their central development hub in the region.

China is automation's rising star, but its dazzle can easily blind companies to other high-growth nations. Neglecting growth opportunities in places like India, Brazil and Russia makes poor business sense.

GETTING BETTER AND BETTER ALL THE TIME

Although modern manufacturing wouldn't be possible without automation, this isn't a sector known for its noisy revolutions. Many of its products and solutions are groundbreaking, but its true strength lies in tinkering with existing technologies to make them even better.

Automation companies operate in a cycle of perpetual product improvement and evolution. Continuity is what drives this sector forward. Increasingly customers want innovative technology that is compatible with existing applications. That's good news for the automation industry. Its companies are adept at making things run smoothly, seamlessly, and – most importantly – reliably.

Despite the current challenges and obstacles up ahead, the automation sector's prospects look good. Some companies are using the end of the downturn as a time to shape up, preparing themselves to pull away from their competitors during the recovery. Companies are beginning to rethink the business models and approaches to which they adhered during the growth period. Many companies had to reconsider the way they do business simply to survive the downturn. For others, the crisis reminded them of the virtue of older business strategies that had long lost favor. Thanks to the crisis, the strategic importance of focusing on components or applications has again appeared on the radar.

MEASURING UP

Responding to the downturn, most automation companies have introduced a variety of standard cost-saving levers. They've pushed through reduced working hours and adjusted employee and tariff contracts, created shared services for finance, HR and IT, consolidated their business with small suppliers, optimized business and legal structures, divested non-strategic divisions and are managing their debts better. They've also introduced sales-up initiatives and tinkered with their pricing.

These austerity measures and reform programs are valuable. But they are not drastic enough. Bolder, more sweeping changes have to be made to ensure sustained business success. In the second section of this study, we show what action items are required to prepare companies for long-term survival in the automation sector. But before we do that, we'd like to share more of the insights that we garnered from our interviews. In the following chapters, we take a close look at the technological trends impacting the automation business today. We also examine what changing customer requirements really mean for companies, and also show how business models themselves are changing.

FIGURE 1

Global automation market 2007-2015 (EUR bn)

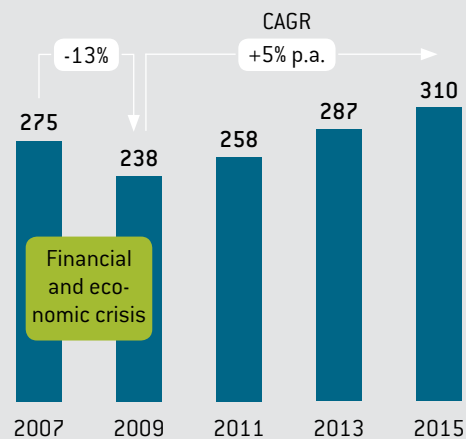
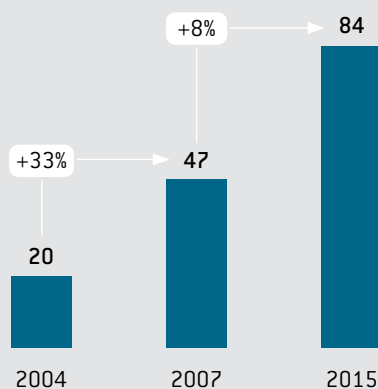
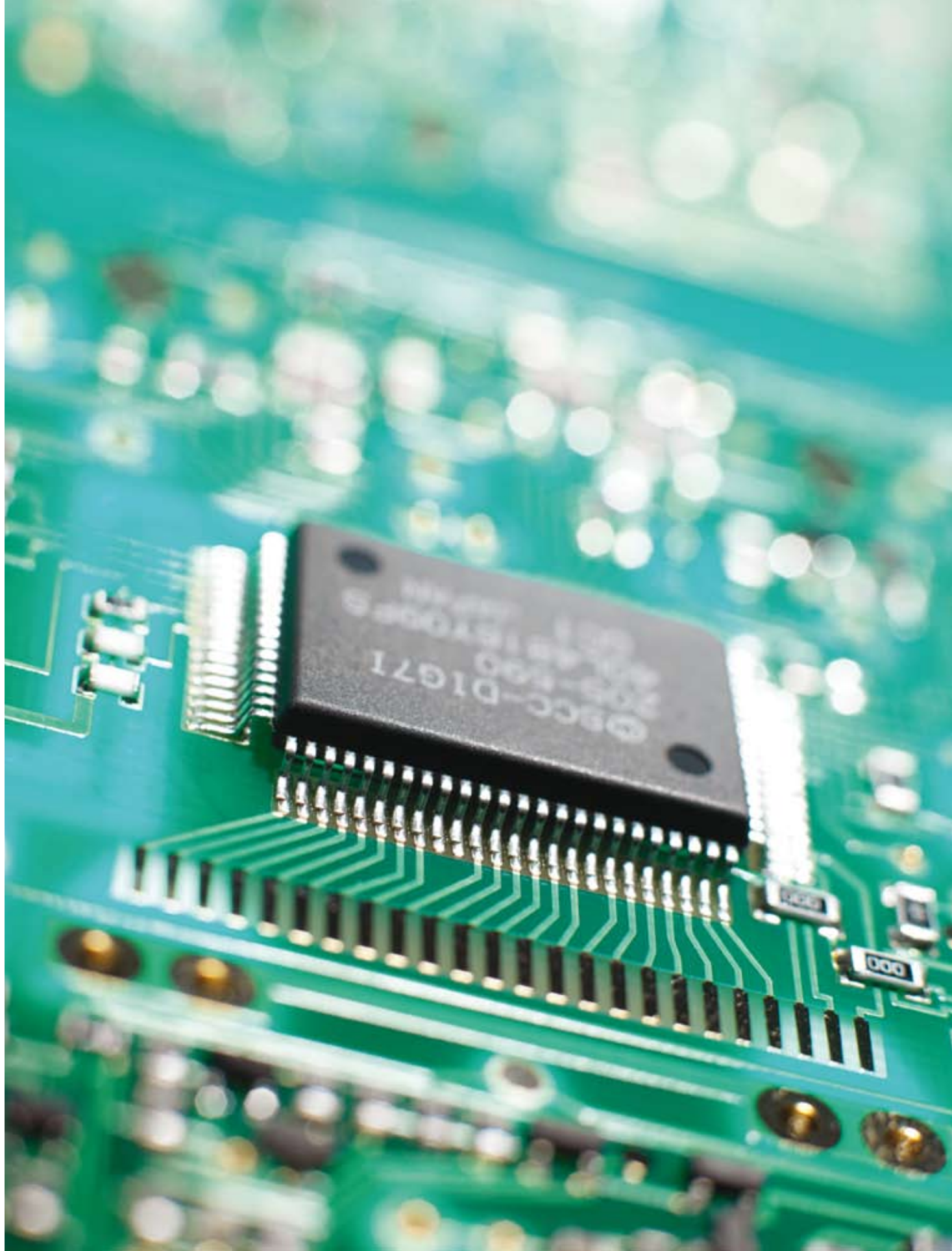


FIGURE 2

Growth in China (EUR bn, CAGR)





2 MINDS SET ON ENERGY EFFICIENCY, MACHINE SAFETY AND INFORMATION CONSISTENCY

Recognizing and seizing new areas for growth is a keystone for creating and maintaining a successful business. Fortunately for automation companies, business opportunities are plentiful at all levels of the automation pyramid: field level, control, operational and process, and company-wide.

Automation companies are especially concentrating their efforts today on developing products, processes and solutions in three areas that promise strong growth:

- > Energy efficiency
- > Machine safety
- > Information consistency

Although these trends may take years to reach their fullest expression, companies that aren't paying attention to them now would be wise to start soon. In this section, we'll examine the trends and the growth opportunities they offer, explain why they have become so important for today's business world, and outline the challenges they pose for automation companies.

1. ENERGY EFFICIENCY

Demands for improved energy efficiency are spurring new application innovations in software products, intelligent control systems, as well as low-consumption components and services. Many customer industries, especially those in process industries, call greater energy efficiency their No. 1 business concern.

Energy costs, which have skyrocketed in recent years, are one good reason for wanting to improve energy efficiency. Electricity prices in Europe jumped by a staggering 37 percent between 2000 and 2007. Laws and regulations to ensure environmental targets are met have pushed up energy costs.

Moreover, the general public is more environmentally conscious than ever before, and solutions to improve energy efficiency reflect positively on corporate image and brand. Being green looks good.

Energy intensive industries like cement, chemicals, iron, and steel clearly have the greatest potential to lower their energy consumption. Since these industries often suffer from considerable usage fluctuations, improving output is a priority. Automation can help companies run their factories more productively with state-of-the-art control and automation systems as well as electrical equipment.

Automation companies can help customer industries use energy more efficiently by offering them an entire spectrum of products – ranging from energy-saving processes, components, and machines through to intelligent controls for plants and machinery – in power generation, power transmission and distribution, industry, and buildings.

Some of these innovations are quite simple: Tuning the output of pump motors more closely to demand using more sophisticated monitoring and controlling devices, for instance, can bring considerable savings for manufacturers. Automation companies can offer services, too.

There is a need for advisory services for introducing and running energy management systems, in process re-engineering, evaluating control systems, and providing inspections, training, and seminars. Customer industries also need help when buying energy and handling contract management.

COST IS A PITFALL, EXPERTISE TOO

Cost is the major hurdle stopping manufacturers from making gadgets and processes to increase energy efficiency. Automation measures might well bring tangible results, but there's little incentive for companies to offer these products. Customers simply refuse to bear the investment costs. When it comes to evolving technology like the smart grid, power generators balk at the massive investments required, especially since there is no guarantee of a return.

Another pressing challenge is the lack of experts with a technical background in energy. While there is a good base of automation experts, companies still find it hard to find energy experts and experts from related fields.

SMART GRIDS

Energy is a growth market, especially when networks start thinking about smart grid technology. A smart grid system allows for collaborative, two-way communication and electrical interaction between utilities and consumers. This process is called demand response. Utilities can selectively modify the amount of electricity they supply, and consumers can adjust their electricity use to take advantage of market price conditions. Demand response employs smart meters that provide real-time pricing to customers, which gives consumers the incentive to reduce electricity use during high-priced peak periods.

Smart grids mean that traditional automation and building automation start working more closely together. Smart grids also bring together established players like Siemens and ABB with new start-ups.

2. MACHINE SAFETY

Changes in machine safety regulations open up new markets for innovative technologies, especially software, and new application fields for existing technologies. This is particularly true for sensors. Even better, the legal framework is regularly updated to take into account technological advances. That means new or altered regulations will create additional growth impulses.

New application fields are opening up in machine controls and steering. Workers operating complex machines can be safe only if the controls they're using are reliable. At the field level, too, there is growth potential. Customers want newer drive technology and greater functional safety when it comes to bus systems. New applications for safety sensors are also opening up. There's a boom for supporting software to help engineers design safer products and processes. Automation companies can benefit from offering new advisory and service support relating to risk assessment as well as safety inspections and training.

European companies are pioneering the field. As machine safety takes on global significance, these companies will be in good stead, capable of selling their expertise to countries throughout the world. They will win the orders to help customers modernize their plants and machinery. Europe is setting the path with machinery regulations like Directive 2006/42/EG1 (introduced in 2009) and other safety standards. Countries in other regions are following suit.

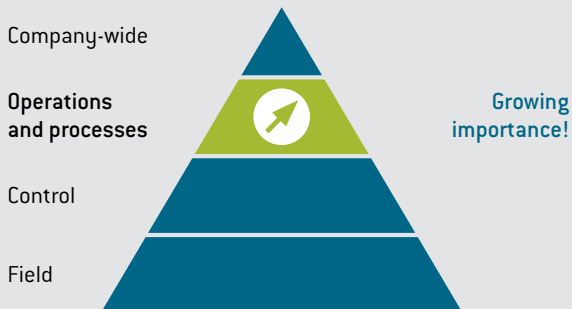
Process automation that uses computer technology and software engineering improves operational efficiency and makes operating conditions safer. Plant operators no longer have to physically monitor performance values and the quality of outputs to determine how to run the production equipment. As companies around the globe modernize plants and machinery, there's a huge backlog of demand for this sort of automation support. This is especially true for China, but is also relevant for companies operating in Eastern Europe, South America, and India.

TAKE THE LEAD NOW

European companies cannot afford to miss this opportunity. They need to quickly claim these markets and put their stamp on new application fields before others do. The first-mover advantage is decisive for reaping back the high development costs.

FIGURE 3

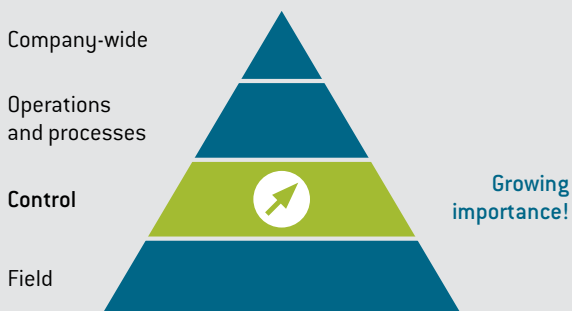
Technology trends at the organizational and process levels

**MAJOR TECHNOLOGY TRENDS**

- > Organizational/process levels being modernized slowly
- > MES providers must deliver industry-specific software packages
- > Growing demand especially for PLM software to shorten time to market and cut total manufacturing costs

FIGURE 4

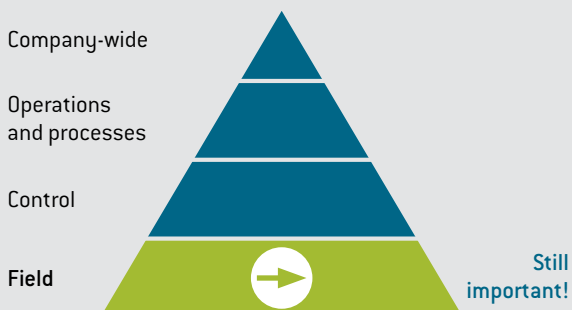
Technology trends at the control level

**MAJOR TECHNOLOGY TRENDS**

- > Centralization and decentralization trends will continue
- > Modern HMI will become increasingly important

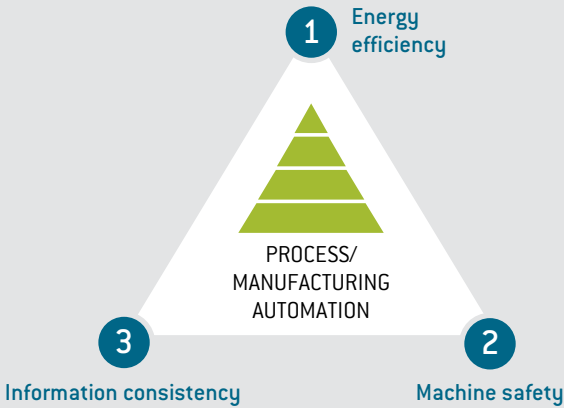
FIGURE 5

Technology trends at the field level

**MAJOR TECHNOLOGY TRENDS**

- > No revolutions expected in sensors and actuators – instead they will continue to be developed and fine-tuned
- > Decentralization drives the need for greater intelligence at the field level
- > Industrial Ethernet is only slowly gaining ground on professional bus systems
- > Wireless transmission will find acceptance

FIGURE 6
Technology trends



Companies would be wise to remember that the above-average growth resulting from the pent-up demand in developing countries exists only at the beginning. There's business to be had afterward with upgrades and alterations, but the real money can be made now.

Keeping the lid on development costs is the real challenge, especially as the legal framework in different regions demands specific product design flexibility. Modular solutions will be the answer to keeping product costs as low as possible

3. INFORMATION CONSISTENCY

Growing demand for information consistency provides new business opportunities for automation companies. Information consistency is the foundation for achieving all the optimization potential offered by the collation and analysis of operating data. It provides line operators with actionable data in real time, and managers with an overview of utilization and performance levels across multiple facilities. In short, it is the core organ facilitating the operability of many new automation solutions.

Customer industries recognize the importance of information consistency for their business. New application fields are opening up for automation companies to optimize information technology flows. Business opportunities exist in identifying inconsistencies and gaps in data, as well as in interface programming. At the field level, opportunities exist in bundling products.

When it comes to ensuring information consistency and fully tapping optimization potential, manufacturing execution systems (MES) are gaining in importance. Demand is rising in the product lifecycle management (PLM) software segment, largely because shortening the time to market is growing in importance. Reducing total cost in the manufacturing sector is another reason for the uptick in demand.

Growth exists in the sensors business too. However, data compilation in the manufacturing sector has yet to reach the level achieved in the processing industry.

Experts are not expecting any quantum leaps in the technological capabilities of sensors and controls. Instead, they expect to see improvements in the cost-performance ratio of products and for there to be a stronger focus on solutions.

ADAPT OR SPECIALIZE

Automation is becoming more and more software intensive. Companies need to take heed of this trend, which requires a migration away from a business model focused on products toward a software-centric one. Companies are offering all sorts of automation-related software, including advanced process control, simulation and optimization to third-party HMI, plant asset management, production management (MES), and ERP integration packages.

Automation companies must decide whether they want to develop software-intensive products and services themselves or partner with software makers. As software becomes more ubiquitous in automation products, manufacturers of software pose a threat to automation companies. They may well become rivals. Information consistency can be optimized only if data is accessible at all levels. Only then is the cost for these technologies justified. MES companies, for instance, face a dilemma. Developing software is expensive, but they cannot lower costs by creating standard solutions since each customer industry requires a unique and individual software package.

Wireless technology applications hold great promise. Yet many of our interview partners believe that the saturation rate of wireless technology will remain only moderate in the near future. Industrial Ethernet and wireless communication are only slowly winning ground over professional business systems and will not push them out of the market any time soon. High costs and adjustment risks stunt their growth potential.



3 CHANGING CUSTOMER PREFERENCES AND DEMANDS

The global downturn has radically altered the competitive landscape of many markets. Companies are being forced to react in sudden, and often dramatic, ways. Since automation companies serve other companies, they're feeling the brunt of these changes in the shape of new customer preferences and demands. Some customers are trying to reposition themselves in the marketplace, planning to enter new regions to become more competitive. Others are focusing on the same geographical areas, but want to enter new market segments and are evaluating their supply chains to determine which suppliers can best support their growth plans.

Whatever the goal is, severe shifts in the needs, demands, and buying patterns of customer industries are forcing automation companies to navigate tricky new territory. Automation managers must develop a keen sense of how changes in customer priorities, needs, and service-level demands will affect their business.

In this section, we look at the different motivations for customer industries to adapt their value chain, and examine the ensuing shifts in customer relationships. We then examine three industries in depth, showing the market changes taking place in them and the impact they have on the automation industry in terms of new requirements and greater demands.

GEOGRAPHY CHANGES THE SUPPLY CHAIN

If you operate in the cement, paper, or mining industries, you're largely going to shape your value chain around the availability of raw materials and product economics. Since transporting raw materials – and semi-finished products for that matter too – is often not feasible financially and technically, you're also likely to nurture relationships with local customer industries. If those raw materials or local markets dry up, you'll move elsewhere and shift your value chain with you.

Some companies find it beneficial to manufacture products where they are developed. This trend toward bundling manufacturing and developing in the same location is gaining traction, especially in the machinery and mechanical engineering sector. Like many of its competitors, Caterpillar has increased its R&D activities in China, expanding and tailoring its product portfolio to satisfy the needs of local customers.

In late 2009, Caterpillar opened up its third R&D center in the Middle Kingdom. The center in Wuxi in the Jiangsu province of China will focus on engine and component product and process development, validation, and localization. "As Caterpillar continues to increase its manufacturing presence in China to support our growing Chinese customer base, it is strategically important to have world-class product development and validation facilities in the region," says Caterpillar Vice President and Chief Technology Officer Tana Utley. This strategy has been instrumental in the rapid growth of Caterpillar in China.

ABB is one example for a global leading automation company that finds "made in China" alone is not enough. It places increasing strategic importance and value on "designed in China." A pioneer in implementing this paradigm shift, it decided in 2005 to set up China research centers in Beijing and Shanghai. Its commitment to developing local talent for the Chinese market is recognized and rewarded: ABB has secured No. 1 positions in many segments of China's automation sector already.

Since labor costs are lower than in established markets, companies bundling R&D and manufacturing in China can also develop and produce gadgets and solutions more cheaply for export. As shown by the steady migration of manufacturing to countries with low labor costs, for many companies cost is motivation enough to make drastic changes to the value chain.

In addition to market growth potential, proximity to customers is another important reason for clients of the automation industry to modify their value chains. The automotive and energy sectors are good examples of this.

The promise of robust market growth in highly populated countries like China and India with a swelling middle class has other customer industries rushing to these areas of the globe. In addition to sourcing, customer industries might also set up offices in these countries, building up sales and service networks. Up close to their customers, these companies are often better prepared to anticipate and respond to changing customer requirements. A presence on the ground can work wonders when negotiating with local players and dealing with foreign legal systems.

NOT ALL GEOGRAPHY

The growing demand for technological breakthroughs, upgrades and improvements also spurs customer industries to make striking changes to their supply chain. The increased need in many industries for improved energy efficiency forces companies to rethink the way they operate, and make significant changes to their operations. They require solutions and products to reach these goals. Automation has an important role to play in providing key technologies in drives, motors, controls, instrumentation, and enterprise software.

The demands placed on automation companies differ from customer industry to customer industry. While demand for high-end and medium-end solutions is growing in the medical equipment industry, the automotive and machinery industries want more standardized products and solutions. The demand for modular and easily interchangeable building-block solutions is growing fast. But so, too, is demand for ever higher levels of customization. The key is to offer solutions at an economical price. Too strong a focus on customization can lead to prohibitive costs. Only if customization is scalable across several installations or customers can it be economically feasible.

Sometimes customer industries want both high-end and standardized products and solutions at the same time. The semiconductor sector is one such industry. Since customers take diverging paths, automation companies cannot pin their hopes on a single strategy for success. It's becoming increasingly important for automation companies to shape their own value chains to fit their different customer industries.

MIXED FORTUNES: A TALE OF THREE INDUSTRIES

Automation companies supply the automotive sector, the textiles industry, and the semiconductor business with solutions. The economic downturn has put in sharp relief the radically different fortunes experienced by these sectors. Each, however, is fighting to secure its place on the market. To remain competitive, they're pulling out all the stops. Automation companies have been forced to respond with new, even better solutions and products that directly meet the needs of each client.

AUTOMOTIVE SECTOR

Automation companies provide carmakers and tier one suppliers with a large range of products, solutions, and services as well as systems and modules for component assembly. Carmakers are making brutal adjustments to the automotive value chain, gutting and cutting wherever they can in order to keep afloat. They're pursuing a stringent cost management strategy that leaves no link in the value chain untouched, from manufacturing footprint through to the development of lean products. The automation sector feels the full brunt of these actions.

Automotive companies want large and complex automation solutions for their global operations as well as standard solutions for local suppliers. Automation companies are heeding that call. They're responding with products and processes that make manufacturing more flexible. To address ever shortening product life-cycles, they're offering more and more solutions and systems that can be retrofitted.

Automation companies are also tinkering with shared platform modules and processes to unlock hidden value. These sorts of standardized solutions are becoming popular – and necessary – because of increased vertical integration and the building up of global manufacturing networks. Automation companies are only too aware that solutions need to be compatible with processes already in place at existing plants.

The situation for carmakers is fraught. Automation companies cannot avoid being impacted by carmakers' misery. Over the period 2007-2015, automation in car manufacturing is expected to decrease on average by 0.6 percent annually. A sustainable recovery cannot be expected before 2011. All the same, automation companies are protecting their key customer relationships, developing tailored products and solutions to help them come through this major downturn.

TEXTILE SECTOR

For over two decades now, manufacturing capacity has shifted to countries with low labor costs. This is particularly true for the textile industry, which has in some parts of the value chain almost completely migrated to Asia. The result has been a dramatic sales collapse in Europe and skyrocketing growth in Asia, with a particular emphasis on China and India.

Today China is the largest supplier and exporter of textiles and apparel. When the Chinese government announced in 2005 its plans to strengthen the textile industry in its 11th Five Year Plan, the full regional shift of the sector to Asia was ensured. This spells good news for the automation industry: It is seen as key to achieving the ambitious goals.

Demand for high-end automation solutions has increased in China in past years, and there is no letup in sight. Low-end solutions are becoming less and less desirable; attention is shifting from quantity to quality.

SEMICONDUCTOR SECTOR

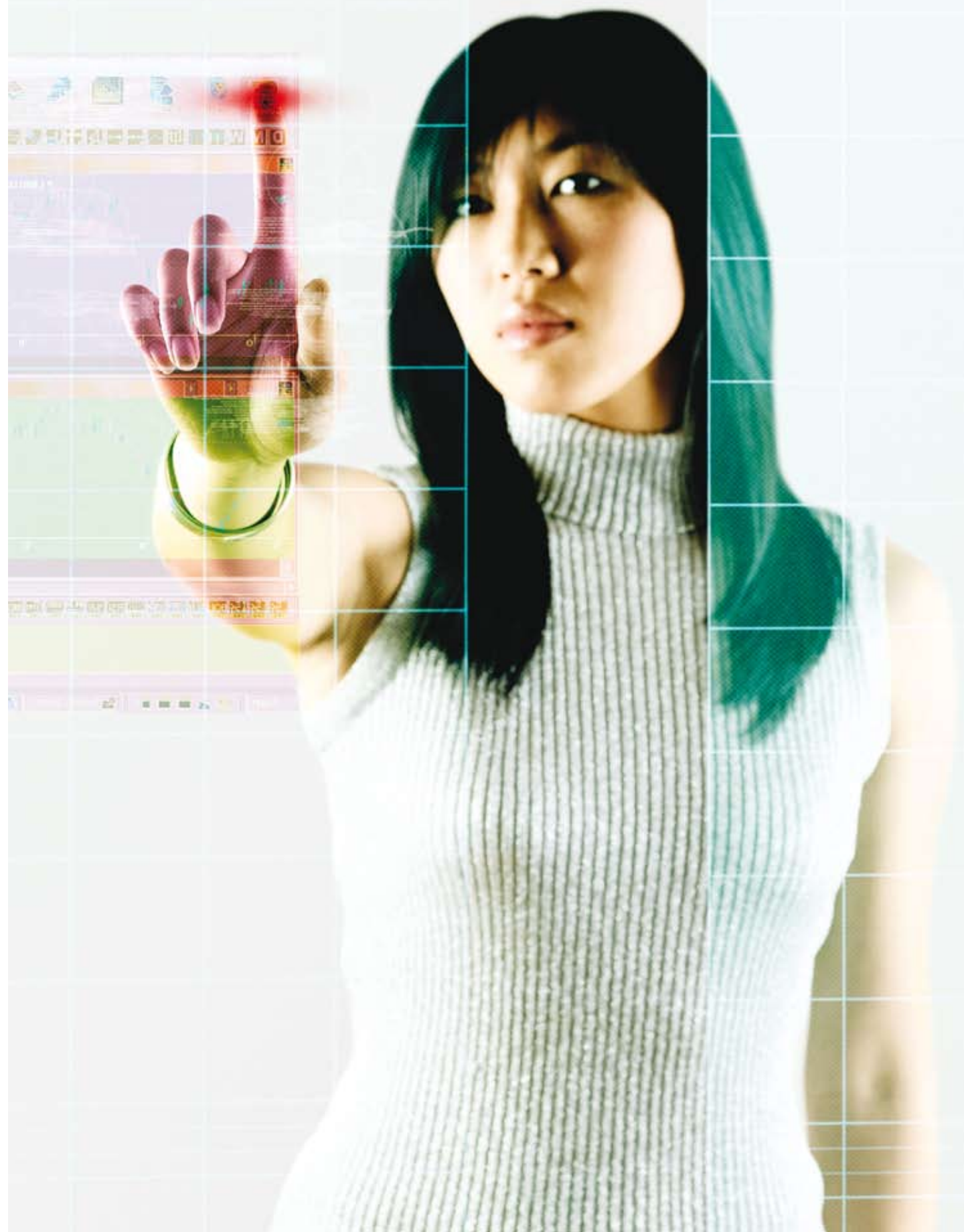
The semiconductor industry is highly cyclical and experiences unpredictable market fluctuations. This sector makes the chips that are used in computers, telecommunications equipment, automotive, consumer electronics, and wireless communications devices. The growing commoditization in semiconductor products translates into fierce competition. As price pressure intensifies, demand increases for products from countries with low labor costs. Actively developing lean products is of paramount importance. In terms of unit volume and device complexity, the sector's growth potential is strong. This growth is increasingly focused in Asia. At the end of 2007, a cyclical downturn kicked in that continued until the end of 2009. Demand started to pick up in 2010 and industry observers are already talking about a recovery.

The industry's cyclical nature means that demand for automation technology is volatile. The recent lull led to heightened use of medium- to low-end automation technology as companies tried frantically to reduce costs. A lot of business generated in these downturns, especially in saturated markets, is replacement business. Striving toward full automation is one of the main trends driving growth in this sector.

Companies are keen on finding ways to further reduce human error and wastage. This is one of the industry's paradoxes: Demand for low-end automation technology is increasing in the desire to cut costs, but high-end technologies are necessary in order to make microprocessors.

In the semiconductor sector, the batch size of discs has been getting smaller and smaller for many years now. Automation can help manufacturers achieve their goal of making smaller batches more cost effectively and with greater flexibility. Semiconductor customers also expect automation companies to meet and further develop mechanical and software technology standards.

The automation companies have responded to this call. Brooks Automation, a leading supplier of semiconductor tool and factory equipment, for instance, increasingly offers its customers software solutions to control the flow of resources through factories. Its factory automation software includes MES for managing the operations of an entire production process; logistics software for scheduling and coordinating workflow; and individual software packages designed to meet specific requirements like preventive maintenance systems for equipment.



4 WHICH BUSINESS ARE YOU IN?

Automation companies today are competing in a vastly altered global landscape. Business has become increasingly international in scope and rookie players are emerging in new regions of the planet and gaining dominance. Customer industries are expecting more from automation companies, upping their technological expectations and wanting more cost-efficient solutions in the form of greater modularization and standardization.

As customer industries modify their value chains to ensure their own competitiveness, they're subtly putting pressure on automation companies to alter their business models. For companies lacking clear strategic direction, this is a dangerous development.

In this section, we look at the five distinct business models that automation companies once fully adhered to, before explaining how and why they are changing. We don't believe this development is healthy. Companies expose themselves to unnecessary perils when they lose sight of their strategic business goals. We want to motivate automation companies to redirect their attention back to their core strengths.

WHEN THE GAME WAS SIMPLE

In recent years, automation companies have traditionally focused on one of five business models. They strove to establish themselves as a standard component manufacturer, a maker of complex components, a problem solver, a complete system supplier, or a system integrator. Each business model has its own set of distinguishing features, which we have outlined below.

Standard component manufacturers pursue a cost leadership strategy. By offering simple components with few differentiating features, they are able to achieve economies of scale. Supplier networks are firmly incorporated within these manufacturers' global value chains.

Complex component manufacturers follow a technological leadership strategy. By putting R&D at the heart of their business, they can offer top-notch components that are technologically superior to anything else offered in the market. They mostly do business in geographic regions where demand for high-end automation is strong.

Problem solvers sniff out emerging trends and find solutions for them fast. Their broad design and development scope means they can offer custom-fitted solutions that perfectly address individual clients' challenges. Problem solvers focus on a few customer industries, with some supplying only one customer industry.

Complete system suppliers pursue a strategy that involves being leaders both in cost and technology. They offer a broad portfolio of products, manufacture their own components, and frequently expand their product portfolio through acquisitions.

System integrators' key selling proposition is "all-round service and performance". Their focus is on integrating and optimizing solutions and products. Since developing and making their own components is not a key focus, they work closely with suppliers to ensure access to the products they need.

In bygone days, automation players stuck to one business model. System suppliers were sometimes the exception, doing business with components as well. But only here was there any overlap.

JACK OF ALL TRADES

Increasingly the lines are blurring between process, batch, and discrete automation. The massive push toward solutions and systems is fundamentally changing the contours of the automation landscape. More and more companies are pushing against the limits of any one business model.

There is a lot of activity going on. Complex component manufacturers are seeping into the problem solver business to such a degree that it's almost impossible to know where the two businesses diverge. Makers of complex components are even encroaching into business areas that were once the sole domain of complete system suppliers. The distinction between complete system suppliers and system integrators has almost completely vanished. During the growth period, almost all automation suppliers wanted to enter the solutions business. It was considered a magic bullet, guaranteeing business success.

FIGURE 7
Traditional automation business models

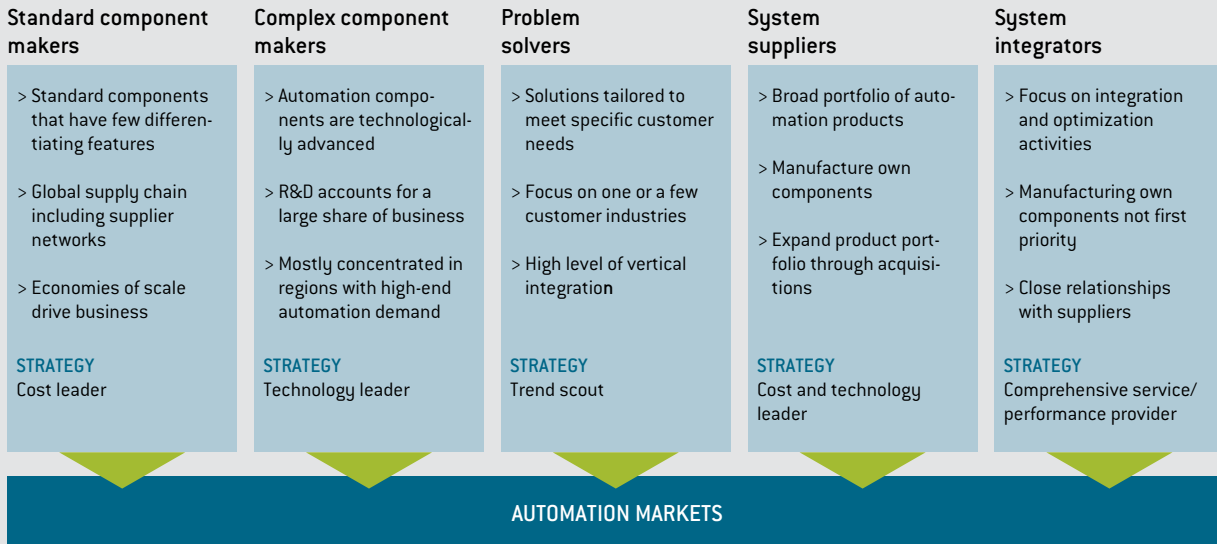
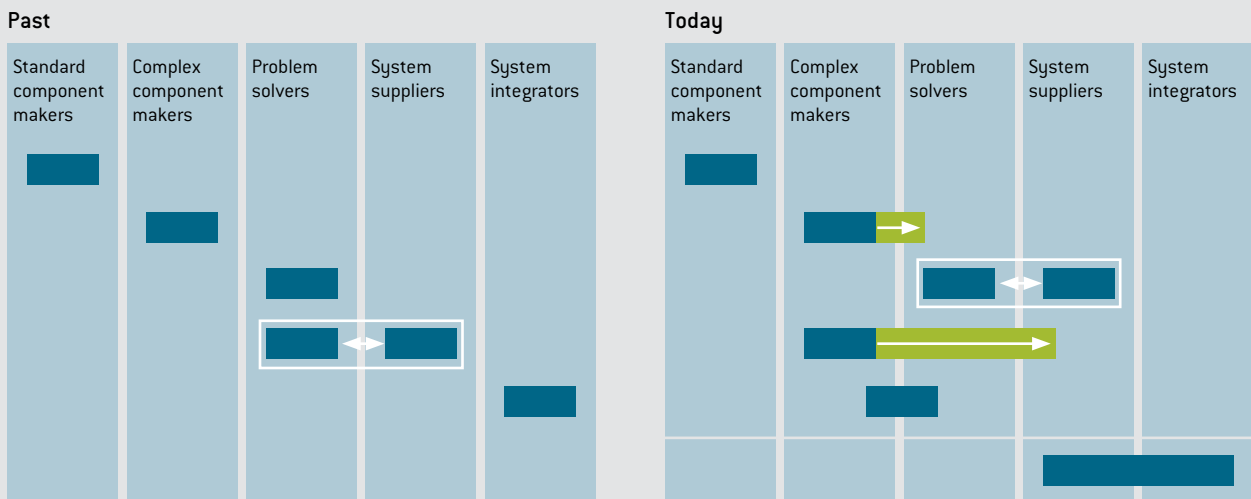


FIGURE 8
Changes in the business model



> Companies focused on one business model
> System suppliers often had a component business too

> More and more companies follow different business models simultaneously
> Boundaries between business models increasingly blurred

This development is two-pronged: It's occurring both at the industrial and product level. Automation companies are beginning to do business with new customer industries, turning their backs on the manufacturing versus process proposition that once restricted their business.

They're also offering their customer industries a broader portfolio of products. Key customers in particular are being lavished with new products and services.

While trying to capture all customer industries by offering as many products and services as possible might sound good in theory, it raises serious problems. The competitive standing of many companies is worsening. Not enough attention is being paid to nurturing and developing core competencies. As many automation companies may soon find out, gaining back lost business is a painful, costly, and lengthy task.

Half-hearted attempts to enter new business areas are never successful. While keen to win new customer industries and expand their product and service base, few companies have made the sort of changes to their organizational structure or processes necessary for this to work. Not enough companies, for instance, have reorganized their sales organization to meet the specific demands of the solutions business. Worse still, existing resources are being poorly managed.

WHICH WAY FORWARD?

It's understandable that companies want to grow their businesses. Yet an enduring competitive advantage in any market comes from a clear strategic direction and differentiated core capabilities. The automation sector is no exception. Management needs to turn its attention back to the basics.

In the following section, we encourage automation companies to look honestly at their current business activities and check whether they really line up with their long-term strategic goals.



5 SET YOUR OWN PATH TO SUCCESS

Today's harsh business climate provides automation companies with a much needed impetus to evaluate their activities and check whether these correspond with their long-term strategic goals.

Far too many companies have lost sight of those goals. Side-tracked by the boom years, they've haphazardly expanded their portfolios and capacities. When business started drying up in 2009, those very same companies had to adjust capacities downwards and drastically cut costs. The task for managers now is to establish a business model that is sustainable long term. The do-it-all mentality that arose during the boom years is not feasible – at least not for all players.

The need for change is acute. Distinct trends like changing customer requirements, shifts in regional demand, and an intensifying competitive landscape will come into even greater focus in the coming years. Companies need to honestly appraise their business operations now in order to fortify their differentiating capabilities and weed out any weaknesses.

FINDING YOUR TRUE NORTH

Considering the diversity of products and processes that automation companies create and the variety of customer industries that they serve, there is no single strategy for success. Indeed, the existence of a one-strategy-for-all would be odd. Different strategies can work effectively for different companies serving different customers.

We've identified a long list of strategic options to help companies become more viable, ranging from entering the Chinese market to launching lean products, optimizing their global production footprint, and getting global pricing right. Companies must weigh up the pros and cons of each and every option using certain guidelines to inform their decision. These guidelines include flexibility, complexity, and fixed costs.

Exactly which strategic growth path should be followed depends on the company's starting position. We believe companies in each business model – standard components, complex components,

problem solvers, complete system suppliers, and system integrators – should redirect their attention back to their core strengths. Only when companies know where their true north is, will they know how to proceed. It's this intimate knowledge that will enable them to select the best growth options for their business. For companies that develop and sell complex components, that might mean focusing on lean products or increasing the degree of vertical integration. For companies that want to continue producing and developing systems, it might mean optimizing vertical integration and better managing product lifecycles.

GROWTH OPTIONS FOR EVERYONE

We've identified successful growth options along three strategic dimensions: product level (degree of integration/system), customer level (by industry and application), and technology/price level.

To remain competitive, companies must look beyond incremental growth opportunities and closely examine systemic and structural changes that have much greater potential to improve competitiveness. They must think big.

COMPONENTS BUSINESS

Companies in the components business have six strategic growth options to choose from. High-end component makers have more strategic scope than their low-end peers. Companies that are active in the components business can:

- > Concentrate on the component business
- > Diversify into the process industry
- > Increase their activities in the systems business
- > Enter the hybrid industry through their systems portfolio
- > Make headway into medium-end automation
- > Provide components for new customer industries

FIGURE 9

Are you ready for change?

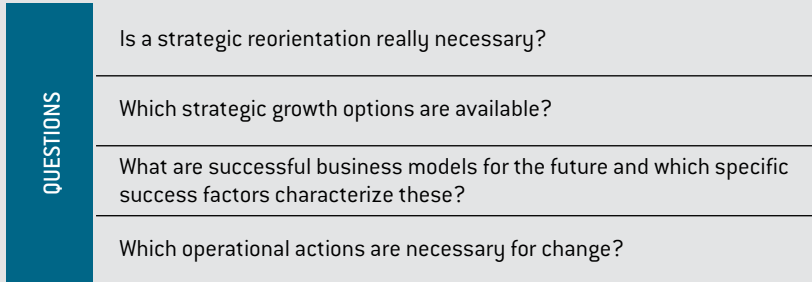
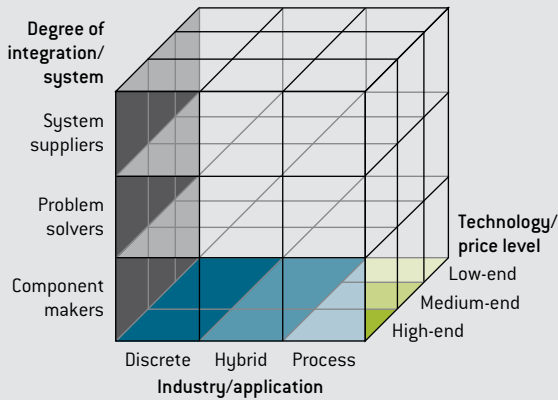


FIGURE 10

Strategic growth options – Three dimensions

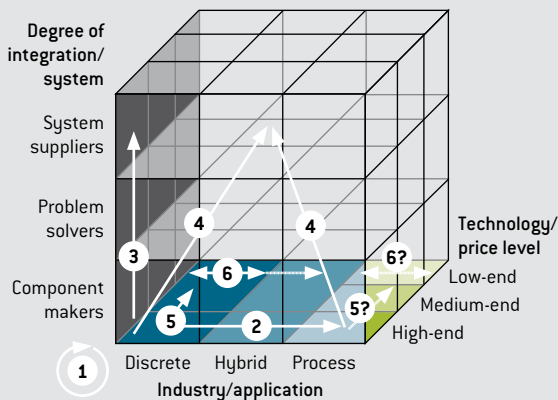


EXPLANATION

- > Basic strategic dimensions
 - Product level: Degree of integration/system
 - Industry level: Industry/application
 - Technology/price level
- > Identifying success models for
 - Component makers
 - Problem solvers
 - System suppliers

FIGURE 11

Six strategic growth options for components – High-end companies have more options



OPTIONS

- 1 Concentrate on the component business
- 2 Diversify into the process industry
- 3 Increase activities in the systems business
- 4 Enter hybrid industry through systems portfolio
- 5 Make headway into medium-end automation
- 6 Provide components for new customer industries

STANDARD COMPONENTS

Companies operating in the standard component business have few opportunities to differentiate their products from rival products. Standard components have become increasingly commoditized in recent years, resulting in competition driven almost exclusively by price. Price and competitive pressure are fierce. The emergence of new local competitors in countries like China is posing a real threat. Not only does China push up price pressure even further, it may also squeeze some established players out of the market. Rising demand for greater compatibility means companies have even less scope to differentiate their products.

As availability requirements increase, development costs for improving quality rise too. Global deliverability poses a challenge as well. To retain their customers, companies must be able to deliver their entire portfolio of products worldwide.

Standard component makers can secure success by achieving scale effects, differentiating their products through operational availability, optimizing their global production footprint, and pushing through global price differentiation strategies. Individual strategies exist for each of the four business areas: positioning, product strategy, supply chain, and distribution/sales.

Makers of standard components can position themselves as cost leaders, offering a complete portfolio of products for each product segment. They can also position themselves through their broad global reach and by optimizing customers' follow-up costs. By enabling companies to differentiate themselves from pure low-cost vendors, this strategy promises higher margins. Standard component makers should stay clear of services.

When developing a product strategy, standard component makers should think as broadly as possible. It makes no sense to focus on certain customer industries. Instead they should offer the same products to as many customer industries as possible. Ideally, the customer industries will be similar to avoid product modification: a high degree of standardization is necessary to realize manufacturing scale effects. Makers of standard components should only use design-to-cost and platform concepts. They should go on the offensive and offer product bundles. This will help win new customers and retain established ones.

To achieve manufacturing scale effects, the share of standard components made in-house needs to be high. Occasionally, it might make sense for standard component makers to outsource the production of non-core competence components. This would be a wise strategy to ensure that companies can offer their customers a complete product range. It is essential that standard component companies optimize their manufacturing footprint. A good rule of thumb is that if it's not global, it's not sufficiently optimized. Setting up manufacturing plants in emerging countries is the key to gaining cost advantages, especially with local customers. To optimize sourcing costs, companies need a dedicated global purchasing department.

Successful companies in the standard component business need a global sales network, with offices in the most important markets. Although their products might be standard, their prices shouldn't be. A global pricing strategy is a key factor for success: companies must charge different prices in different markets. Some well-respected companies might find it beneficial to use their brand to stand out from low-cost vendors.

COMPLEX COMPONENTS

Knowing how to respond properly to the shift from high-end to medium-end solutions is the biggest challenge facing makers of complex components. Customers want products that are easier to use, maintain and replace. How manufacturers respond to this development will be decisive for their survival. At the same time, customers also want individualized solutions that are compatible with their changing processes.

Customers are narrowing their supplier base, preferring to deal with only a handful of suppliers who can cover all their sourcing requirements, irrespective of location. They want global deliverability. Complex component manufacturers are increasingly being asked to develop solutions that reduce internal engineering outlays.

Manufacturers of complex components can achieve success by capturing leading positions and setting new technological trends. Only those with a pioneering spirit will survive. Below we look at the individual strategies manufacturers of complex components have at their disposal in terms of positioning, product strategy, supply chain, and distribution/sales.

If you are a manufacturer of complex components, you must position yourself as an innovation leader. There is no other option. You have to make your products stand apart from those of your competitors through fantastic performance and original specifications. At the same time, it's critical that you find ways to differentiate yourself from standard component manufacturers too. Offering innovative, specialized component solutions with high quality and additional services is the way to accomplish this.

In terms of product strategy, you must decide what the right balance of solutions and components is for your business. The mix will be individual, based on your core competencies. For some, the right strategy will be to focus purely on components. For others, developing products for a few niche markets with low competition will be the answer.

Another strategy for success – especially for giants in the field – might be to develop blanket capabilities when it comes to applications. To enter the medium-end component segment, you will actively need to develop lean products. Here, care must be taken. Complex component manufacturers must ensure that they create these products with specific customers firmly in mind.

When it comes to the supply chain, a high level of vertical integration is paramount for quality reasons and to ensure that solutions are optimal. Safeguarding core competencies is another good reason for putting all activities under one governance structure. To defend your innovation leader position, it might be necessary to cooperate with niche players to develop certain technologies.

The distribution reach must be global. A strong sales presence in core markets is vital. To identify specific customer requirements at a local and global level, it also might be critical to develop market research centers with a strong customer focus.

PROBLEM SOLVERS

The desire for less complexity and greater compatibility almost rings the death knell for problem solvers. Their ability to differentiate themselves from every other automation company virtually vanishes when solutions become standardized.

More and more customers want solutions, processes, and products that are easier to use and operate, and which are simple to maintain. Making matters worse, the fluctuations in demand from a few major customer industries are becoming less and less predictable.

Problem solvers have two main growth options at their disposal: they can enter the systems business or they can offer their solutions to more customer industries. Here, too, individual strategies exist for each business area: positioning, product strategy, supply chain, and distribution/sales.

If you position yourself on the market as a problem solver, you must provide a comprehensive range of solutions that exactly meet the needs of your customers. As a technological trailblazer, you must provide high-quality products and innovative solutions based on cutting-edge knowledge. You also need to ensure that your after-sales services are integrated, easy to use, and add real value. This is how you'll stand out from the crowd.

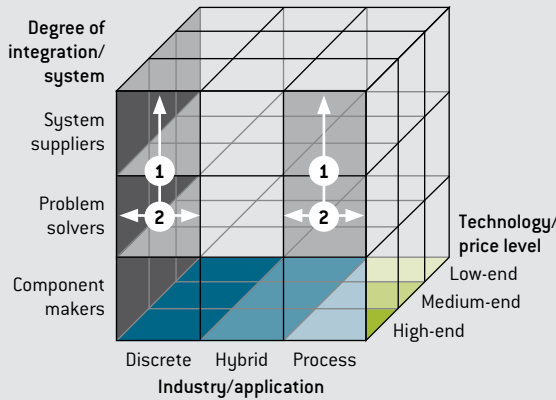
When it comes to product strategy, you are well advised to focus on a few customer industries. Given the degree of specialization required to support different clients, it's not possible to serve each and every customer industry.

Your key selling proposition will be actively developing customized products. As well as providing customers with the best solutions and products, you must also excel at after-sales services. Having comprehensive applications competence is crucial.

While providing specialized solutions, you'll have to introduce a high level of modularization or other building block systems. Closely integrating suppliers into the product development process is also necessary when optimizing the supply chain.

Because problem solvers specialize in providing unique solutions for selected customers, it is essential that they build up a strong presence in all locations and markets relevant for their clients.

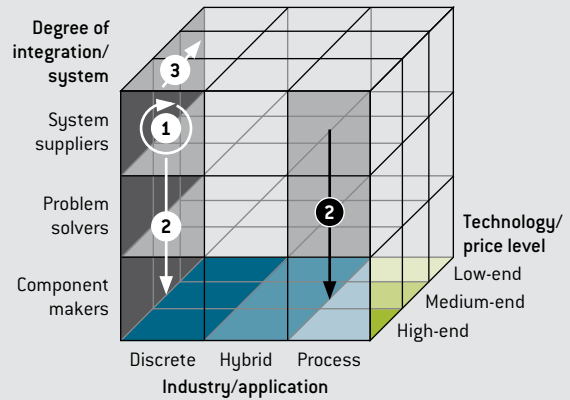
FIGURE 12
Increasing standardization is the main growth option for problem solvers



OPTIONS

- 1 Enter systems business
- 2 Offer solutions to more customer industries

FIGURE 13
Three promising growth options for system suppliers



OPTIONS

- 1 Expand the installed base
- 2 Pioneer new markets
- 3 Encroach upon the medium-end automation business

FIGURE 14
Strategies for business segments

	COMPETITIVE POSITIONING					PRODUCTS					SUPPLY CHAIN				SALES						
	Cost leader	Innovation leader	Solutions specialist	Competitive provider	Process integration/optimization specialist	Broad customer industry base	Broad product portfolio	Comprehensive service portfolio	Use applications/solutions competence	Use design-to-cost	Modularization/standardization	Focus on lean products	High level of vertical integration	High degree of manufacturing integration	Integration competences	Globally optimized manufact. footprint	Global scope	Developed network/service presence	Local specifications competences	Strong brands	Global pricing
Standard components	●					●	●			●	●	●		●		●	●			●	●
Complex components		●						●	●				●	●	●			●	●		
Problem solvers			●				●	●	●				●		●			●	●		
System suppliers				●	●			●	●	●	●				●	●	●	●			●

● Success factors

SYSTEMS BUSINESS

Companies operating in the systems business face two diverging trends that have the potential to seriously disrupt their viability: the increased use of medium-end automation, and the rise of software in automation solutions. In addition, component companies are fast encroaching on the domain once dominated by systems business operators. This development goes hand in glove with increased demand for less complex automation solutions. Customers no longer want to pay for high-end solutions that are over-engineered. They expect flexible solutions that are compatible with existing processes, partly to simplify maintenance and service requirements. The increasing share of software in automation systems is making this trend toward simplified products and solutions all the more challenging. In general, the more software involved, the greater the complexity.

Systems operators can achieve success if they downsize systems, which they can only do by actively developing lean products. Optimizing the supply chain and establishing after-sales services with a global reach will help companies surge ahead.

Let's look at the strategies on offer for systems operators in terms of positioning, product strategy, supply chain, and distribution/sales.

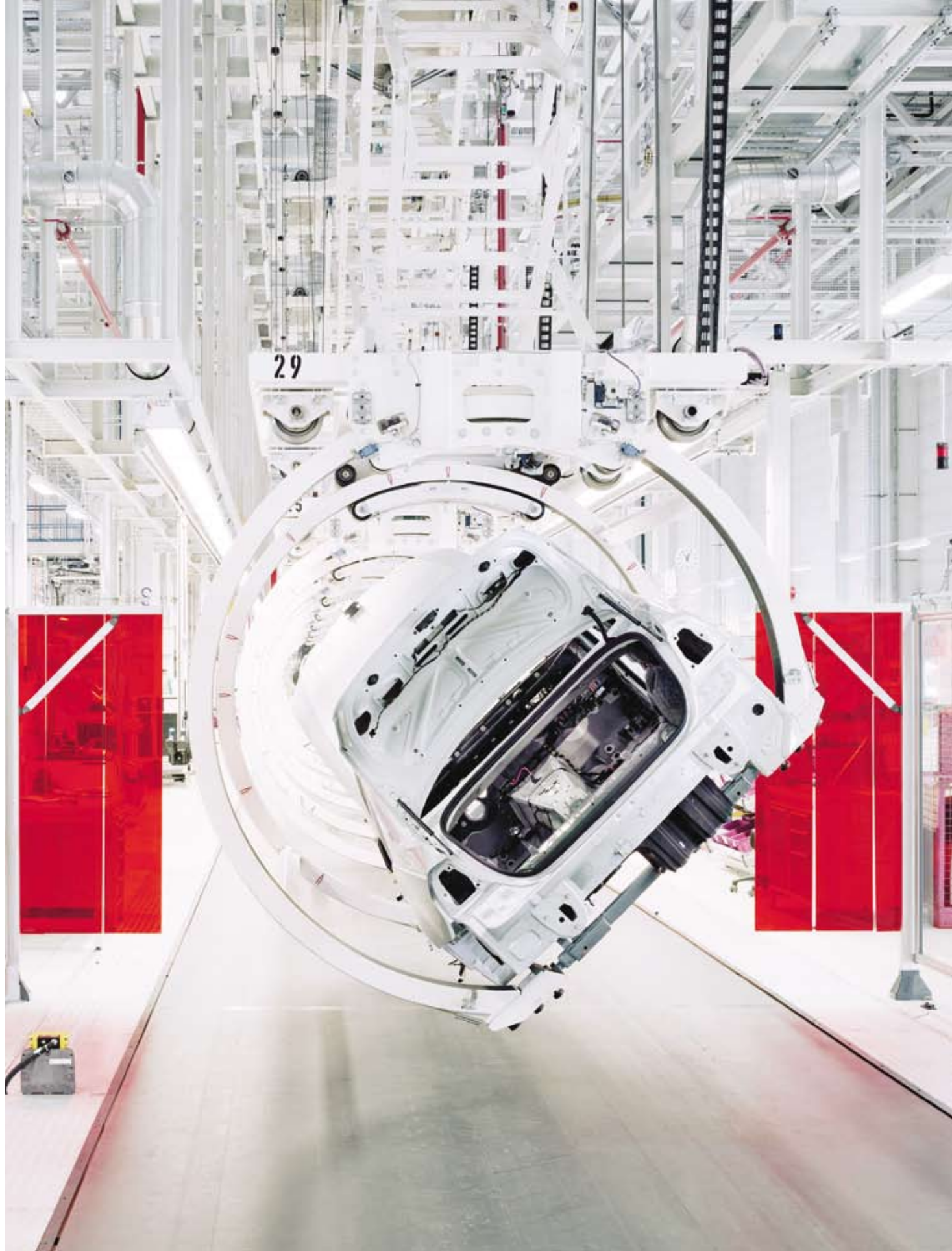
To carve out a spot in the systems business, you have to clearly position yourself as a systems provider or integrator, or both. To push back component companies that are striving to offer more specialized services, you must focus more sharply on specific customer industries. You must quickly decide whether you want to outsource software development or expand your own capabilities. Whatever path you choose, you must ensure that R&D and the sales function adopt a more software-centric business model.

To address the growing demand for medium-end automation, you should consider system downsizing. You need to actively develop lean products and systems and start designing-to-cost, especially to meet the growing interest in modularization and standardization. Actively managing the product lifecycle and providing a complete range of after-sales services is a must.

Making bold changes to the supply chain can help some systems companies achieve long-term success. Companies should think about vertically integrating their business more completely, especially with respect to R&D activities. Taking steps to manage the entire supply chain more effectively can bring costs down.

There is much room for improvement here, from improving integration competencies to prevent interface problems, and managing suppliers better to realize economies of scope, through to globally optimizing the manufacturing footprint.

Systems companies would also benefit from improving their sales presence and introducing a global after-sales service network, allowing them to implement the product lifecycle management system.



6 ACTION ITEMS FOR YOUR AGENDA

Several opportunities exist for automation companies. But the way forward presents vexing challenges. We believe there are seven pressing topics that are decisive for shaping automation companies' competitive outlook. Managers need to decide which of the key action items are relevant for their company and tackle the ones that are most urgent.

There is no one-and-only blueprint for success. Companies will weigh each of the action items differently, based largely on their business model and current strengths and weaknesses in critical areas. How well a company has weathered the recent downturn will feed into the decision too. While the answers will vary from company to company, one thing is unequivocal: this is not the time to be making incremental alterations. It's time for bold actions that will require an all-hands-on-deck mentality.

The seven pressing topics determining automation success are:

1. Positioning in emerging markets
2. Product creation
3. Global supply chain footprint
4. Sales organization
5. Service-up
6. Pricing
7. Competitive cost position

1. POSITIONING IN EMERGING MARKETS

Far too many automation companies have taken a potluck approach to their business activities in emerging markets. They've underestimated the importance of carving out a solid position for themselves. Making up lost ground is going to be tough on two fronts. Not only do they have to compete with the established automation pioneers that saw the vast bounty in developing nations early on, they also have to wrestle with local players who enjoy considerable competitive advantages.

THROW OUT THE RULEBOOK

As the pioneers learned the hard way, success in emerging markets is rarely achieved by following the old rules of business. Companies won't succeed if they offer the same products to all customers and rely on the same business model.

Products must be modified for local buyers. This is necessary both to satisfy customer requirements and to keep cost structures competitive.

While medium-level automation might not be all that attractive in domestic markets, it is the fastest growing segment in emerging countries. By addressing the need for medium-level automation, automation companies gain an additional business opportunity.

They would be wise to make their mark sooner rather than later. Local players today are mainly active in the medium-end to low-end automation business. But as markets and customers mature, local companies tend to enter medium-end to high-end segments. There's no reason why this shouldn't happen in the automation sector too.

THREE TIMES LUCKY

Companies can choose from among three approaches when trying to position themselves in emerging markets. They can exclusively focus on high-end segments, wait until markets and customer priorities mature before deciding on how to move, or actively address low-end to medium-end market segments. While the rewards can be bountiful, making headway into emerging countries also can be a perilous adventure. Each approach has drawbacks and risks.

Companies that focus on high-end premium segments with higher profit margins must be capable of offering superior technological products and know-how. Only by continuously making technological innovations will they be able to protect their position and IP. They'll gain only moderate returns for their efforts, however. Companies that take this approach run the danger of bypassing certain customer groups and might not be able to tap newly emerging business segments.

Other companies might want to wait until the dust settles before taking any major action. These companies are content simply to defend their existing position in emerging markets until markets and customer priorities mature. They'll offer standard products until customers demand something else. Time is the shortcoming of this tactic: Any benefits that arise will do so only in the long term. There is also the danger that companies lose customer segments and business to competitors who were quicker off the mark.

SMART SIEMENS

Siemens, known around the planet for its high-end, top-of-the-class products, knew early on that its traditional approach to developing products wouldn't work in emerging markets. It follows a SMART philosophy when making products for these countries – and this is true for all three of its divisions: energy, medical, and industry. SMART stands for simple, maintenance-friendly, affordable, reliable and robust, and timely to market. Other companies should think about embracing this attitude to building products. It gave its product developers an unequivocal mandate: make robust products that can work in tough environments, are of high quality and meet global standards, and that can be easily repaired and used by low-skilled operators. Since these products do not have fancy additional features, local consumers can afford them. Designed to cope with humidity, dust, and voltage fluctuations, they can also be sold to rural customers.

Siemens' emerging markets strategy was clearly defined. Its three goals were to:

- > Achieve top positions in these regions by developing, producing and selling goods locally
- > Increase market share in entry-level segments globally by fully exploiting global market opportunities with a range of dedicated products
- > Increase local value added in emerging markets by reducing costs for the complete portfolio

It has been successful on all accounts. Siemens is China's entry-level market leader for long rolling in energy automation. Not only has it exported engineering know-how to Asia and the Middle East, it's also set up a global training center for its customers. In addition, it's the clear market leader in China's circuit breaker and substation segment. More than 90 percent of its circuit breakers and 80 percent of its hybrid gas-insulated substations are made locally. In India, too, it has been a trailblazer. Siemens is the leading player for x-ray products for rural healthcare in India. It has a fully localized value chain, and exports to 36 countries. Siemens' strategic focus on high-end products hasn't changed: it's firmly attached to building the most advanced products and technologies in the world. But its SMART low-end portfolio of products gives it the opportunity to generate additional business.

Actively addressing mid-market segments is the third approach available to companies. Automation companies that choose this option need to remember to modify their products – and how they make them – for local conditions. To triumph in these regions, they also need to find a smart entry strategy. Snapping up local players might be the best way for many companies. This bold approach is risky. Value leakage is a concern – think here of IP, staff attrition, and other similar issues. Companies might also find it hard to win the internal buy-in necessary to implement this strategy.

2. PRODUCT CREATION

The compass points automation companies need to bear in mind when creating goods are product platforms, standardization, design-to-cost, and lean products. Paradoxical as it might sound, these cardinal points may also show companies how to navigate the increased demands for customized products. Each automation company must decide on the correct trade-off between delivering made-to-order solutions and products and achieving scale effects through modular-based manufacturing.

Companies are increasingly using modular approaches to reduce cost, shorten lead time and gain flexibility. Here's an example of how creating products using so-called building blocks helped one automation company gain a competitive advantage. By modularizing 90 percent of its manufacturing machinery, a leading manufacturing company was able to reduce its costs by 22 percent. Lead time fell from 13 to 8 weeks.

The trick is figuring out how to sell products made in a modular fashion without customers feeling as if they're getting standardized products. Product customization can take place either based on a common platform with additional options or based on combining and mixing-and-matching modules to achieve different product characteristics. Finding ways to optimize product attributes to create differentiated products that deliver customer value without hurting the bottom line is an agenda issue that many automation companies should highlight.

FIGURE 15

Strategic agenda

1	Emerging market positioning	<ul style="list-style-type: none"> > Define key segments and understand customer priorities > Align business model to meet new demands
2	Product creation	<ul style="list-style-type: none"> > Agree on product platforms and standardization > Offer design-to-cost and lean products
3	Global supply chain footprint	<ul style="list-style-type: none"> > Align international footprint to meet market and productivity demands > Use the downturn as an opportunity to realign
4	Sales organization	<ul style="list-style-type: none"> > Move away from a regional/product-oriented sales structure to a more solution/industry-focused approach
5	Service-up	<ul style="list-style-type: none"> > Define service portfolio and organization
6	Pricing	<ul style="list-style-type: none"> > Develop an international and value-oriented approach, leveraging breadth of products and service portfolio
7	Competitive cost position	<ul style="list-style-type: none"> > Ensure competitive cost structures to enter growth markets and retain profitability

FIGURE 16

Three positioning strategies

	1 Focus on high-end segments only	2 Wait until markets & customer priorities mature	3 Actively address mid-market segments
Approach	<ul style="list-style-type: none"> > Specialize on high-end segment > Offer superior technology and know-how > Protect own position and IP through continuous innovation 	<ul style="list-style-type: none"> > Defend current position in emerging markets > Address customer needs until these mature and advance > Act as an enabler for these new customer groups 	<ul style="list-style-type: none"> > Actively address new market segments with targeted products and approach > Modify how you create and make products > Assess market entry options via buying local players
Drawbacks/risks	<ul style="list-style-type: none"> > Moderate additional growth potential > May lose contact/control of new growing segments (customers, competitors) 	<ul style="list-style-type: none"> > Benefits only materialize in the long term > May lose contact/control of new growing segments (customers, competitors) 	<ul style="list-style-type: none"> > Difficult to implement internally > Risk of value leakage (IP, staff attrition, etc.)

HOW IT CAN BE DONE: LENZE'S L-FORCE

Lenze, a German drive and technology specialist, introduced modular platforms into its plants to ensure that it could create customized products at the lowest possible cost. This strategy helps prevent costs spiraling upwards – an all too common occurrence when companies individualize goods. Its customers can choose from one of three different platform solutions, which Lenze calls optimizing, rightsizing, and solutionizing.

Developing these capabilities was time intensive. It took Lenze almost a decade to move from being a company that offered customers a complete product platform for broad applications to being a solution provider. Lenze faced a number of internal challenges before getting its most advanced modular solution up and running. Considerable investment was required to create an application-oriented sales force with the necessary engineering competence, and to bring the sales force up to speed on all the products' technical specifications. Now, however, it's eked out a position for itself as a value-adding partner, capable of developing application-specific know-how for customers.

OVER-ENGINEERED AND UNDER-USED

Automation companies pride themselves on their ability to create and deliver made-to-measure solutions for their customers. But our study uncovered a worrying trend: customers don't actually use most product features. According to our research, 30 percent of European manufacturers use less than 70 percent of a machine's features. There's clearly a big gap between product designers' understanding of customer needs and what they actually want. If Western customers aren't using their machine's specially-designed features, it's unlikely that cost-conscious customers in developing nations will use them either.

This should act as a sharp reminder to companies of the necessity of close cooperation between R&D, sales, and marketing teams. We believe that cross-functional teams help prevent products and solutions being over-engineered. They're also influential in fostering greater acceptance of modularization and standardized platforms.

3. GLOBAL SUPPLY CHAIN FOOTPRINT

The current downturn offers companies a golden opportunity to realign their global manufacturing footprint so they can meet current market and productivity needs better, and to position themselves well for the future. The supply network needs to be realigned to address shifts that will become more salient in coming years, while balancing cost, service, risk, and sustainability.

Areas of potential change include shifts in channel strategies between direct sales force models and indirect channels, shifts in required lead times for key customer segments, shifts in product makeup, and shifts in volume growth in geographic markets. All of these can have significant implications for the optimal design and form of supply chains.

A PARADIGM SHIFT

Let's take a closer look at how shifts in volume growth in geographic markets force companies to radically rethink their global supply chain footprint. In the past, automation companies' Asia footprint was largely confined to factories that manufactured simple products for Western consumers cheaply.

That's no longer appropriate. Today a quarter of automation sales are generated in Asia's emerging markets, and local markets are being served as well. As the importance of developing nations in Asia grows, automation companies are shifting more and more of their supply chain footprint to the East.

The paradigm shift from "made in China" to "designed in China" is gaining traction, especially among automation titans. In 2008, ABB's R&D headcount in low-cost countries (LCC) was as high as 56 percent. In that same year, almost half of all Schneider Electric's sourcing was done in LCCs (48 percent) and 41 percent of its employees found work there. Emerson's payroll in LCCs is even larger, with 53 percent of its employees working in these countries in 2008.

Asia is a prime example of how shifts in volume growth in geographic areas force firms to modify their supply chain footprint. Yet automation companies should be wary not to lose sight of other growth areas. Opportunities abound closer to home too. Automation companies in the United States might want to give Brazil and other South American countries a second look. European companies might find that growth potential in Eastern European countries hasn't fully been unlocked.

FIGURE 17

Global footprint – Asian markets growing in importance
 (Percentage of sales in Asian markets)

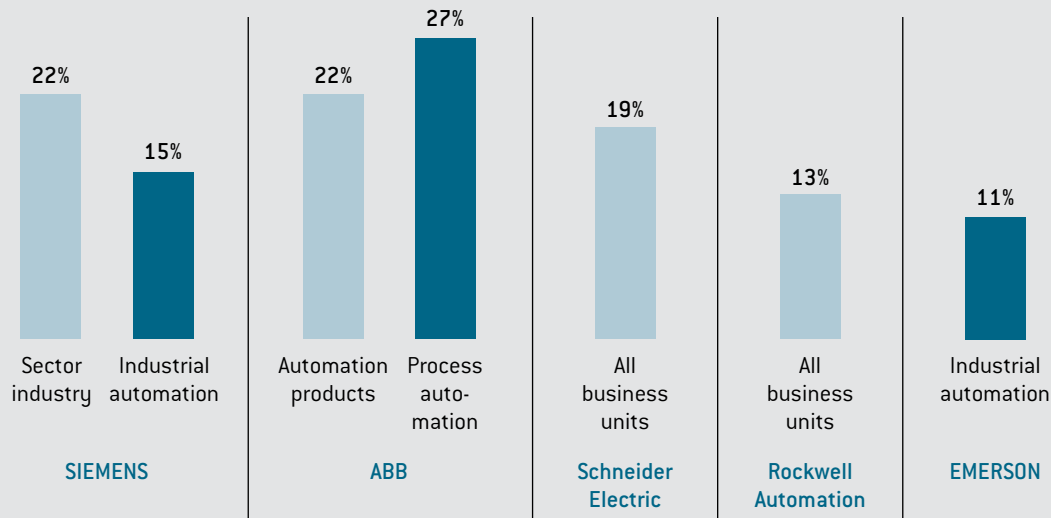
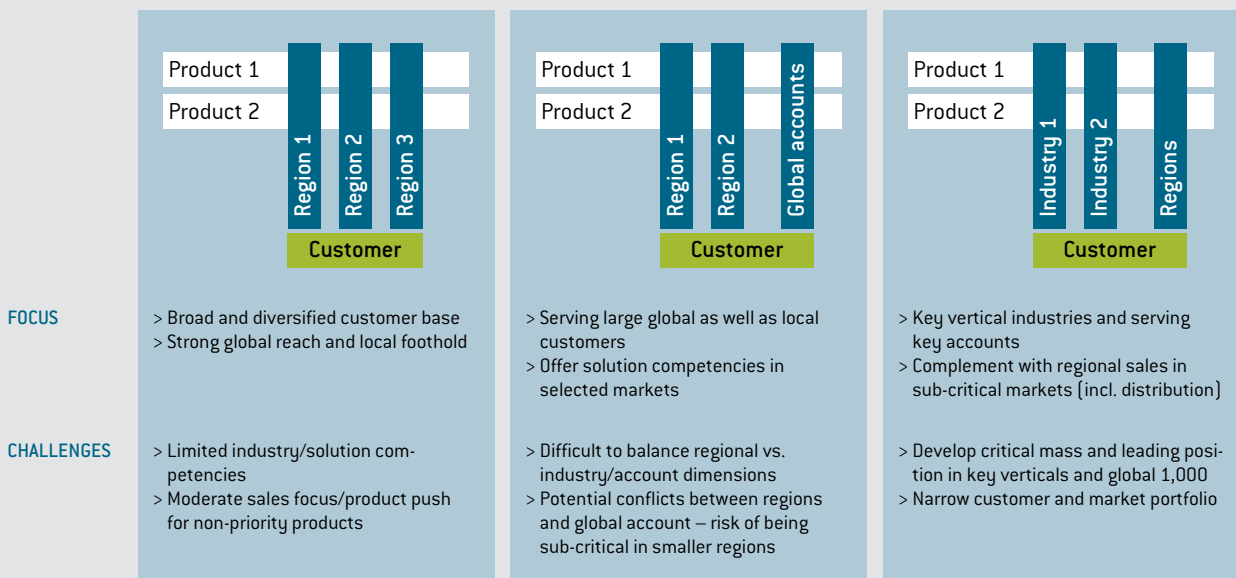


FIGURE 18

Sales organization options



4. SALES ORGANIZATION

Companies in industries that have only limited direct access to their end customers need to be especially creative when finding ways to improve their sales organizations. Automation falls into this camp. The lack of contact between automation companies and their end customers means that critical information gets filtered out by “middlemen” firms and changing requirements cannot be addressed adequately. It’s almost impossible to anticipate your customers’ future needs – and create solutions to meet these – if you can’t talk with them one-on-one.

There’s no reason why automation companies should short-change themselves out of business opportunities like this. There are three broad areas where change can be made to facilitate better customer relationships. First, companies need to optimize several sales dimensions like regional context/customization, customer foothold, product positioning, solution/industry focus, and serving international accounts with a global portfolio. Second, they need to align their organizational and governance structures to meet clearly defined priorities. Third, they must transform the sales structure and introduce sales processes and reporting, incentive and monitoring schemes, and internal and external communication while keeping the lid on costs. It makes little sense to make these improvements if costs balloon out of control.

A number of factors compel automation companies to reorganize their sales organization from top to bottom. The increasing internationalization of the automation industry means that companies can no longer afford to rely solely on business from regional customers. It has also resulted in a proliferation of large, global accounts. These can only be managed by companies with a globally savvy sales division. Companies also have to tinker with their sales organization to ensure that they are meeting customers’ demand for more solutions and industry-specific products. A company is better able to sidestep price competition when it has products with differentiation features in its portfolio, and good sales organizations know how to maximize that.

UNIQUE CHALLENGES

The challenges automation companies face when trying to improve their sales organization largely depend on the type of customers they serve. Companies that have a broad and diversified customer base need to have a sales organization which measures up to their strong global reach and a secure foothold in local markets to be successful.

Companies that serve both global and local customers with solutions need to make sure that they have a clearly demarcated sales organization. This is necessary to ensure that regional and industrial accounts are paid equal attention. These companies need to take special care not to become sub-critical in smaller regions.

Companies that specialize in providing products and solutions for key vertical industries and enjoy key accounts can often complement these activities with regional sales in sub-critical markets. But it’s a difficult position to reach. Achieving leading positions in vertical industries and with key global accounts is an ambitious goal for even the most talented sales organization.

Based on our experience, truly standout companies willingly accept the need for bold changes in their sales organization. ABB, for instance, after accepting that the structure of its sales organization had become obsolete, completely reorganized in 2009 to create a dynamic, forward-looking organization. ABB’s new structure makes it easier for the company to focus more clearly on customer segments and channels, create targets for its service strategy, and gain transparency in its sales and go-to-market approach.

5. SERVICE-UP

The complexity of systems and solutions today creates staggering demand for post-sale support. While many automation companies pride themselves on their high-quality products and innovative solutions, few truly excel at after-sales service. Only a handful can boast of having a top-notch after-sales service team. There is huge potential for improvement here.

Companies that think improving after-sales service is optional should think again. After-sales services can form a lucrative additional business segment that buttresses a company's core business. While orders for products are very cyclical in some segments of the automation industry, after-sales service business is relatively stable. By offering such services, companies can ensure and stabilize economic growth, even in sluggish times.

By creating easy-to-use after-sales services that add real value, companies can set themselves apart from competitors. Since long-term customer relationships are difficult to imitate or replace, companies that have nurtured them have created for themselves a sustainable competitive advantage. Systems companies in particular could benefit from introducing a global after-sales service network to implement the product lifecycle management system, and by generally improving their sales and after-sales presence.

ONE STEP AT A TIME

Companies have a number of options available for expanding their after-sales service portfolio. Whether companies choose to offer a dedicated team of technicians and engineers for their most attractive customers, ensure parts are available around-the-clock in all pockets of the globe, or provide consulting services, there's plenty of potential to improve their standing with customers.

But providing after-sales services for all customers in all regions is no easy task. Medium-sized automation companies find it especially hard to offer this sort of comprehensive service. Working with service partners in some countries will be the only solution for many companies. Yet this strategy has risks. If the service provider's quality is lacking, this can reflect negatively on the automation manufacturer. In addition to reputation damage, automation companies also lose direct access to their customers when teaming up with service providers.

Identifying areas of improvement is the first step to creating a top-notch after-sales service. Companies that are serious about lifting their game will ask their customers for honest feedback about their after-sales service experience. They should also ask customers what they would like to see improved. Companies might well be surprised by the answers. In a second step, automation companies should internally assess the improvement measures that will make the biggest difference – both for their customers and for their own bottom line. To ensure that implemented measures result in performance improvements, it is critical that companies introduce performance metrics and rigorously monitor them.

6. PRICING

Few automation companies devote sufficient attention to pricing. Before the global economic crisis, this short shrift was business madness: these days it's tantamount to business suicide. Automation companies need to start pursuing pricing with the aggression they've tackled cost reduction over the past decade. The primary drivers of pricing – consumers' willingness to spend, competitors' pricing, and company economics – need direct attention.

In many respects, automation companies have it good. Since they have a broad portfolio of products and services, there's much scope to differentiate on price. Better still, different verticals offer additional opportunities to develop a targeted pricing strategy. Additional pricing opportunities exist in addressing customer economics (value pricing for machine up-time for instance) and through selling solutions and bundles. Software is proving to be a strong product differentiator.

THE PRICE IS RIGHT – OR IS IT?

A company's pricing process must be analyzed thoroughly and broken down all the way to the end customer. The traditional focus on pricing and pricing variation whittles the field down to the cost of goods sold and profit premium. Yet these don't give companies enough scope to adjust prices. When companies add value-added services, discounts, and bonuses to the cost of goods sold and profit premium, they are in a much better position to differentiate their products through price. This is especially true when competing with local rivals offering similar products.

LOCAL WILLINGNESS TO PAY

Exploiting different customers' willingness to pay for the same product is a key to profitability. To succeed, you need to know your customers. Let's say an established technical trailblazing company uses Germany – its domestic market – as the base-line for setting product prices. The selling price is competitive and aligns closely with customers' actual willingness to pay.

Customers in the United States will probably be willing to pay more for the same product because they equate German goods with quality. The German company can mark up its products there.

In China, the situation is reversed. Although German companies can probably charge higher prices than other competitors (thanks to their reputation for making quality goods), Chinese customers' willingness to pay is below the actual production cost and the target price. To be successful here, the German company would have to modify its product in order to price in line with local buyers.

By introducing minor variations and limiting the impact on the cost of goods sold, companies can differentiate their products. They can do this with software-based features, minor specifications, and documentation and/or user interface changes. Companies can also modify products to add value to local end consumers. Local customers in low-cost countries won't be willing to pay as much for the same product as other customer groups. Companies must adapt their prices to sales channels and sales contacts. When it comes to non-product differentiation, companies have an array of features that they can use to adapt their prices, like payment conditions, lead times, and minimum order quantities.

Customers have little difficulty comparing the price of individual products, but once companies start bundling products with value added and offering mixed product and services packages, it's harder to do the math. Companies can pre-assemble single products or offer combined products and services for dedicated customers. A bundled package might include productivity analyses, user training, process optimization, and application engineering.

Clever pricing strategies help companies grab market share from competitors. But all too often price variation is neglected because local operations have too little say about pricing strategy, and too little authority. To get pricing right, you need to have the right instruments in place and the right command structure. Pricing needs to fit perfectly with customer preferences and spending constraints.

7. COMPETITIVE COST POSITION

Developing a competitive cost structure – particularly with respect to the supply chain – is critical to entering growth markets and retaining profitability once there. To benefit from the rise in stature of emerging markets, automation companies need to get the basics right. That means defining key business segments, understanding customer needs and priorities in order to make products customers want, and aligning the business model to ensure they meet local customers' goals profitably. Creating the right products or modifying existing ones doesn't guarantee success; companies must also develop a competitive cost structure.

To achieve this, companies need to assess their competitive cost situation and analyze their product design and performance. Given the global nature of the automation business, companies need to benchmark their cost structure not only against local competitors, but also against rivals in other parts of the world.

Some players might need to optimize their manufacturing strategy or network, others their channel and product strategy, and others again their research and design departments. To eliminate competitive cost gaps with leading competitors, some companies might have to develop an entirely new operations strategy, including sourcing, manufacturing, and distribution.

Of the seven action items detailed in this chapter, ensuring a competitive cost position is the one which is probably most relevant for most automation players in these days. Getting this right is absolutely essential for survival and sustainable growth.

THINK:ACT CONCLUSION – CALL TO ACTION

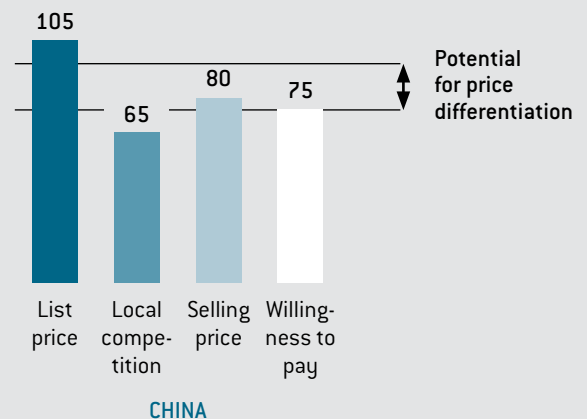
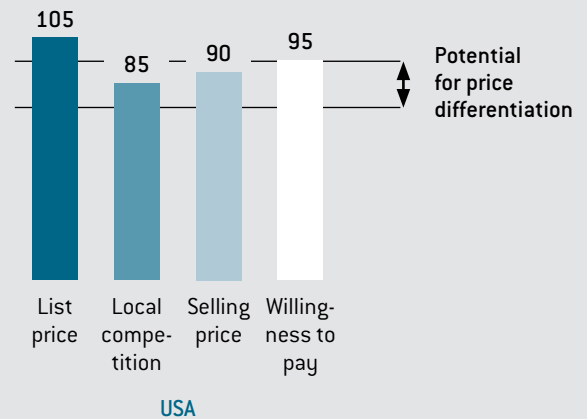
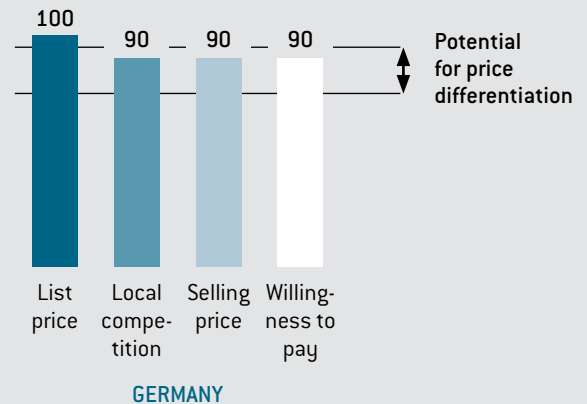
Virtually all automation companies need to formulate and execute strategic responses to survive today's grueling business environment. Many companies reacted to the financial crisis by pushing through short-term actions that captured immediate savings.

These measures are laudable. But bolder action is needed. Automation companies must ensure that their business activities correspond perfectly with their long-term strategic goals. It's time for companies to redirect their attention to their core strengths, to what they do best. Different companies need to sharpen different aspects of their value chain. Whether in product portfolio, sourcing, manufacturing footprint, R&D, sales or service, companies need to identify and capture available growth opportunities. No matter what action is taken, managing costs at every turn is essential in order to establish a sustainable business model.

We hope this study shows automation companies how they can leverage the opportunities arising from geographic, technological and customer shifts to catapult themselves to a new level of performance.

FIGURE 19

Profit potential of price differentiation





7 STUDY METHODOLOGY

During the course of 2009, we conducted a global study to investigate the status of the automation sector. We asked industry experts how the sector will develop until 2015, with the aim of unearthing the factors that will drive or impede a recovery.

We conducted 120 in-depth management interviews. Some 55 interviews were conducted with automation manufacturers that follow different business models and approaches (components manufacturers, system providers, and problem solvers). A further 25 interviews were held with experts from the automation sector as well as from customer industries. In addition, 40 focus interviews were held with customers from the process and manufacturing industries. Interview topics included strategic positioning, defining product portfolio strategy, customizing products and service levels, approach to defining the right level of value creation, aligning operations, go-to-market setup, and organization.

The interviews were complemented by extensive desk research. Our insights draw on study data and information pertaining both to the automation industry and to customer industries. We researched companies in the United States, Europe and Asia, with sales ranging from EUR 0.5 to more than 30 billion.

We examined the market size and growth forecasts of automation companies by industry and region, competitor structure, and structural changes like the emergence of new providers and acquisitions. We also studied the different development levels in automation technology, looking at current trends and the outlook to 2020. We examined value shifts in automation architecture with the aim of highlighting both declining areas and business segments with growth potential. We also carefully studied changes in customer priorities, demand volumes, and timing.

By synthesizing the interview findings, the many years of experience garnered by Roland Berger's automation experts, and survey and interview data, we could identify factors that lead to higher growth and profitability.

FIGURE 20

The study covered the entire automation pyramid

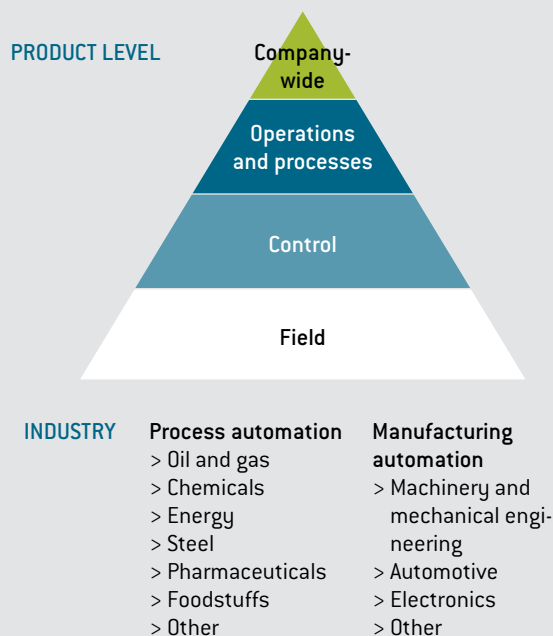


FIGURE 21

Automation products and services

Controls/drives	Networks	Sensors/actuators	Services
> Machine controls	> Junctions & connectors	> Sensors	> Replacement parts
> Motion controls	> Bus systems	> Actuators	> Repairs
> SPS	> Ethernet		> Upgrades
> HMI	> Wireless networks		> Maintenance
> Drives			> Leasing/financing
> MES			> Technical support
> Scada			> Other services

ROLAND BERGER STRATEGY CONSULTANTS WORLDWIDE

Roland Berger Strategy Consultants, founded in 1967, is one of the world's leading strategy consultancies. With 36 offices in 25 countries, we have successful operations in all major international markets. In 2008, we generated more than EUR 670 million in revenues with approximately 2,100 employees. Roland Berger Strategy Consultants advises major international industry and service companies as well as public institutions. Our services cover all issues of strategic management – from strategy alignment and new business models, processes and organizational structures, to technology strategies.

Roland Berger is an independent partnership owned by about 180 Partners. Its global Competence Centers specialize in specific industries or functional issues. We handpick interdisciplinary teams from these Competence Centers to devise tailor-made solutions. At Roland Berger, we develop customized, creative strategies together with our clients. Providing support in the implementation phase is particularly important to us, because that's how we create real value for our clients. Our approach is based on the entrepreneurial character and individuality of our consultants – "It's character that creates impact."

All employees at Roland Berger Strategy Consultants are committed to our three core values: entrepreneurship, partnership, and excellence.

- > Entrepreneurship – We are a network of entrepreneurs who provide pragmatic and practical solutions
- > Partnership – We build trust-based relationships in our company and with our clients, and we are committed to constructive teamwork
- > Excellence – We achieve excellent results and develop global best practices for measurable and sustainable success

ROLAND BERGER AND ITS AUTOMATION SPECIALISTS

Roland Berger's automation team has a long history of helping companies build competitive advantage through in-depth industry know-how – of both automation companies and their customers. The automation team supports clients in reviewing their strategic positioning, developing product portfolio strategies, conducting business model transformation projects, realigning and increasing R&D efficiency, and designing sales and service networks. It also prepares and implements acquisitions and mergers in the automation market. The team helps create partnerships that increase the sort of know-how that facilitates the creation of new automation solutions. It designs growth strategies in defined industries and markets and assists clients in achieving a strong customer or industry focus. Roland Berger's automation team also works for relevant customer industries.

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