

## Better Indoor Environment with Intelligent Windows

- Use automatic ventilation when the air quality is better outdoors than indoors. Such a function could be built today. Read more on page 6.

### Interactive Play

The concept of an interactive playground is now a reality. Kompan and Prevas have combined their many years of experience and knowledge of playing with computer technology.

Read more on page 4.

### Detective Work

Future-proofing and backwards compatibility were key words when ABB gave Prevas the task of developing a completely new communication module to be used in two generations of control systems for the process industry.

Read more on page 7.

### Lean Design

It's pays to be up to date in order to make the production process as efficient as possible. The goal is to shorten lead times and manufacture products quicker, with of a higher quality and better market adaptation, for a lower price.

Read more on page 8.

## He who Rushes Slowly Wins

I often ask our clients, "What is the most important factor to keep you at the forefront?" The answers I usually get are very similar. The managers of the development and product departments of Prevas' customers say, "the most important thing is being able to plan and develop with sufficient long-term insight and visions for the future, that enable us to stay one step ahead of our competitors."

So, how do you achieve that? It's about creating new products, new product prototypes, new technology, streamlining and paying all the necessary consideration to the environment. For this, you'll have to get it right from the very beginning.

This is what Lean Design is all about, something that we dedicated an entire article to in this edition (page 8). The aim is to manufacture products of the highest quality for the best price, with the shortest time to market. Rushing slowly may sound contradictory, but it is in this very initial process, that major results may be gained.

Here, all European regulations and directives are vital. In order for us not to run into problems later on, it is important that we stay on top of the new regulations from the very start. And Prevas does.

Predicting is difficult, particularly about the future, goes the old saying. But those of us who have been around, we all know for a fact that the recession won't last. This is why we should start preparing for the anticipated upward economic trend now. Increasing profitability through intelligent planning, and investments in productivity and quality enhancing solutions that are also environmentally sustainable, is something our clients need now more than ever.

### Spring games in an interactive playground

As the greenery slowly returns to the gardens, children and teenagers are rushing outdoors, at school as well as in their free time. Now there are new challenges to be had. After years of research and development, Prevas, in cooperation with playground manufacturer Kompan, has created an entirely new kind of interactive playground: ICON. The playground is similar to the Nintendo Wii, but the main difference is that at ICON locations, you are also getting fresh air and lots of exercise while competing against each other in teams.

ICON is the perfect example of how Prevas works with innovative solutions on a daily basis, in areas where technology has previously not been part of the concept, just like the intelligent windows you can also read about it in this edition. The fact is that we have developed more than 2,000 innovative solutions over the past few decades, solutions that help our clients to become successful within their various sectors.

Mats Lundberg, CEO Prevas AB



## Record Year for Prevas

In 2008, Prevas took another leap forward and had their best year so far, with positive growth in combination with a strong earnings trend. Financially, Prevas has significantly improved turnover, margins and cash flow. Operationally, the company has further strengthened its position as the Nordic market leader within embedded systems and industrial IT.

Find out more from Prevas' financial statement bulletin at [www.prevas.com/financial\\_reports](http://www.prevas.com/financial_reports).

## Successful Venture with Key Clients

Just over a year ago, Prevas invested in a consultancy operation targeted at larger companies in the Stockholm area, otherwise known as onsite projects. The aim of the operations was to be able to offer and strengthen the skills required to secure important contracts, mainly within telecoms and defence.

The onsite area has seen fantastic development. Above all, it is the combination of contracts, large-scale clients and unique leading edge competence that creates stability.

## Did you know...

...that these days, more and more communication and intelligence is being built into products. Embedded systems can now be found in consumer products as well as advanced medical technology products. Prevas has developed over 2,000 successful products that have contributed to a number of our customers becoming world leaders within their respective areas.

## Henrik Møller new CEO of Prevas A/S

Henrik Møller, Financial Controller for Prevas A/S, became the new CEO of Prevas A/S on 27th February. Henrik has 23 years of experience in the industry and has worked for companies like Arrow Danmark A/S as Financial Controller and, together with Technical Director, Rune Domsten, founded IO Technologies A/S, a leading technology company for client-adapted electronics and software. In 2007, it was acquired by Prevas, which continues to develop as one of Denmark's leading suppliers of embedded systems.

## TECH trends

Technology trends, inspiration and news from Prevas AB.

Prevas is an innovative IT company with a strong corporate culture that provides its customers with world class competitiveness. Prevas develops intelligence in products and industrial systems. Prevas operates in nine districts throughout Sweden: Gothenburg, Helsingborg, Karlstad, Linköping, Lund, Malmö, Stockholm, Uppsala and Västerås, as well as in two districts in Denmark: Copenhagen and Århus, and in one district in Norway: Oslo.

For more information about Prevas, please visit [www.prevas.com](http://www.prevas.com)



# Prevas Develops Information Management System



With the new system planned for launch in 2010, Prevas is developing tomorrow's information management system together with Forsmark. Prevas is a certified supplier to energy companies via Sellihca, a unique cooperation between the leading energy suppliers

in the Nordic countries. Participating organisations use the system to obtain information about, and select, approved suppliers when tendering for goods, services and contracts. For suppliers, Sellihca means the opportunity to qualify for supplying goods and services to a

number of Scandinavian energy suppliers in a simple and structured manner. Sellihca was developed in accordance with EU regulations with the so-called supply organisations.

## Important Order from ABB

Prevas has been contracted to implement CAN functionality (Controller Area Network) into the control electronics for ABB's product, the Torductor®-S.

Many of ABB's products contribute to an improved global environment, and Torductor®-S is no exception. The product is currently being used within Formula One to measure engine and gearbox torque in real time. By measuring this, you can fine-tune the engine settings, change gear more efficiently and measure gearbox wear. It also reduces harmful environmental impact and increases the lifecycle of the engine and gearbox.



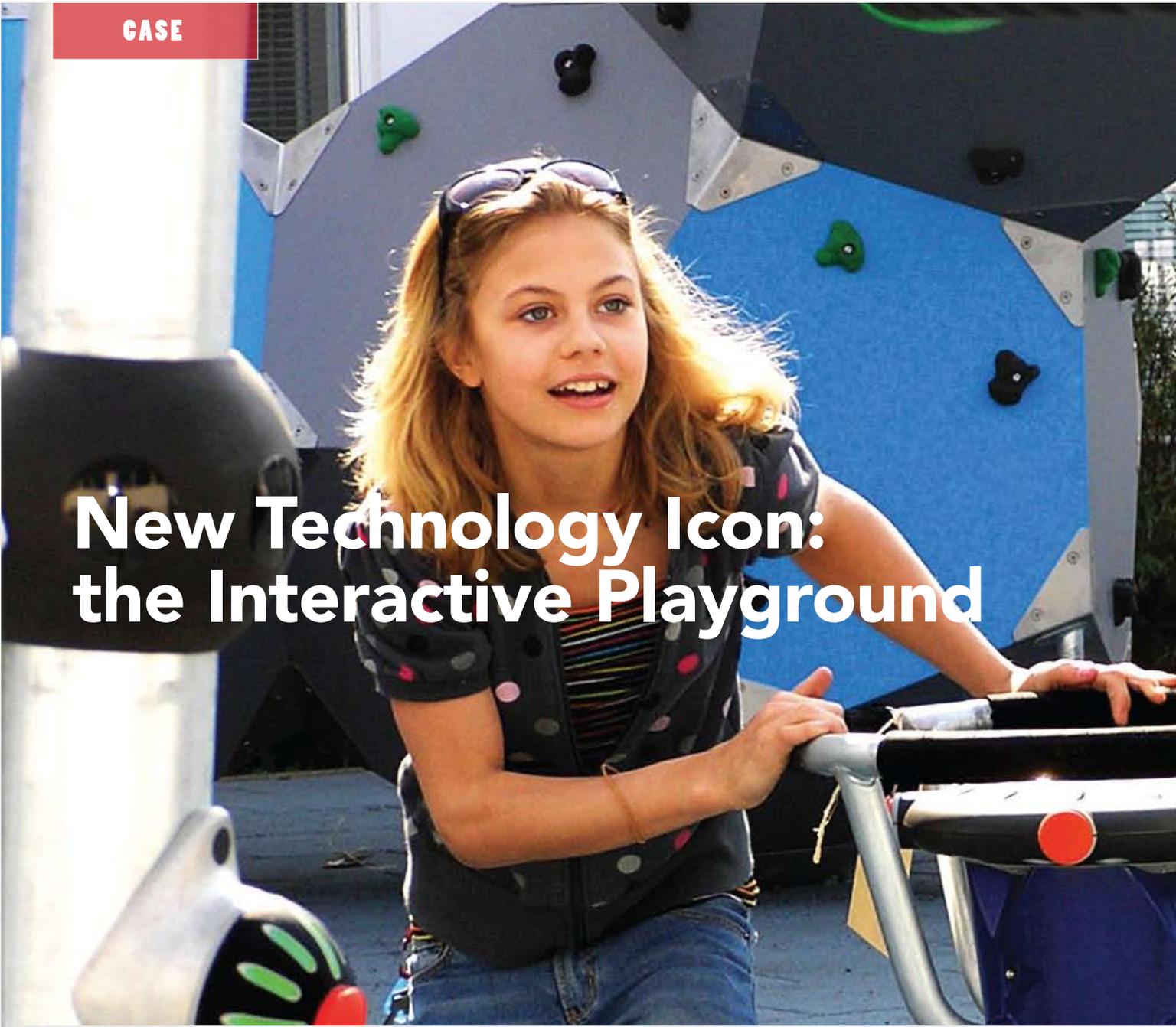
## Prevas' CAN Module Certified and Ready

Just before the New Year, the Prevas IP module for the CAN bus technology was certified according to ISO 16845, and ready for use in our FPGAs and in finished products. It is an important step in our work to create a design kit with flexible modules, in addition to being an extra assurance factor for our clients, as the certification guarantees interoperability.

With flexible FPGA building blocks, development times are cut significantly while construction can be made more compact and resource-saving compared to using separate dedicated circuits.

### CAN in Brief

The "Controller Area Network" was originally developed for real-time communication between microprocessors in vehicles, which is still the most common area of use. The simplicity and well-extended functions for error correction make the technology suitable for use even in other tough environments and areas of application where demands for robustness are high. For example, take a look at the article about the intelligent playground in this edition of TechTrends. The various playground elements are linked via a CAN bus network.



# New Technology Icon: the Interactive Playground

After more than eight years of research and product development, the concept of interactive playgrounds is now a reality. Kompan and Prevas have combined their vast experience and their knowledge of games with computer technology. The result is called ICON.

The company, Kompan, has been developing and selling playgrounds throughout the world for 40 years. After several years of intense and innovative cooperation with Prevas, Kompan has now found the formula for the playground of the future. It has been named Icon.

“Our goal was to create a product that speaks to young people on their terms. The interactive dimension plays an enormous role. Just look at the growth of computer games, the social media and other digital ‘playrooms’ for children and teenagers. By using new technologies, the ambition has been to create a modern meeting place for young people to hang out, and somewhere they can de-

velop their physical activities as well as experience social interaction.” says Niels Julskjær, Head of Innovation at Kompan.

The idea behind the work on the high tech playground is the fact that the youth of today are generally too inactive, as well as the fact that their eating habits aren’t always great.

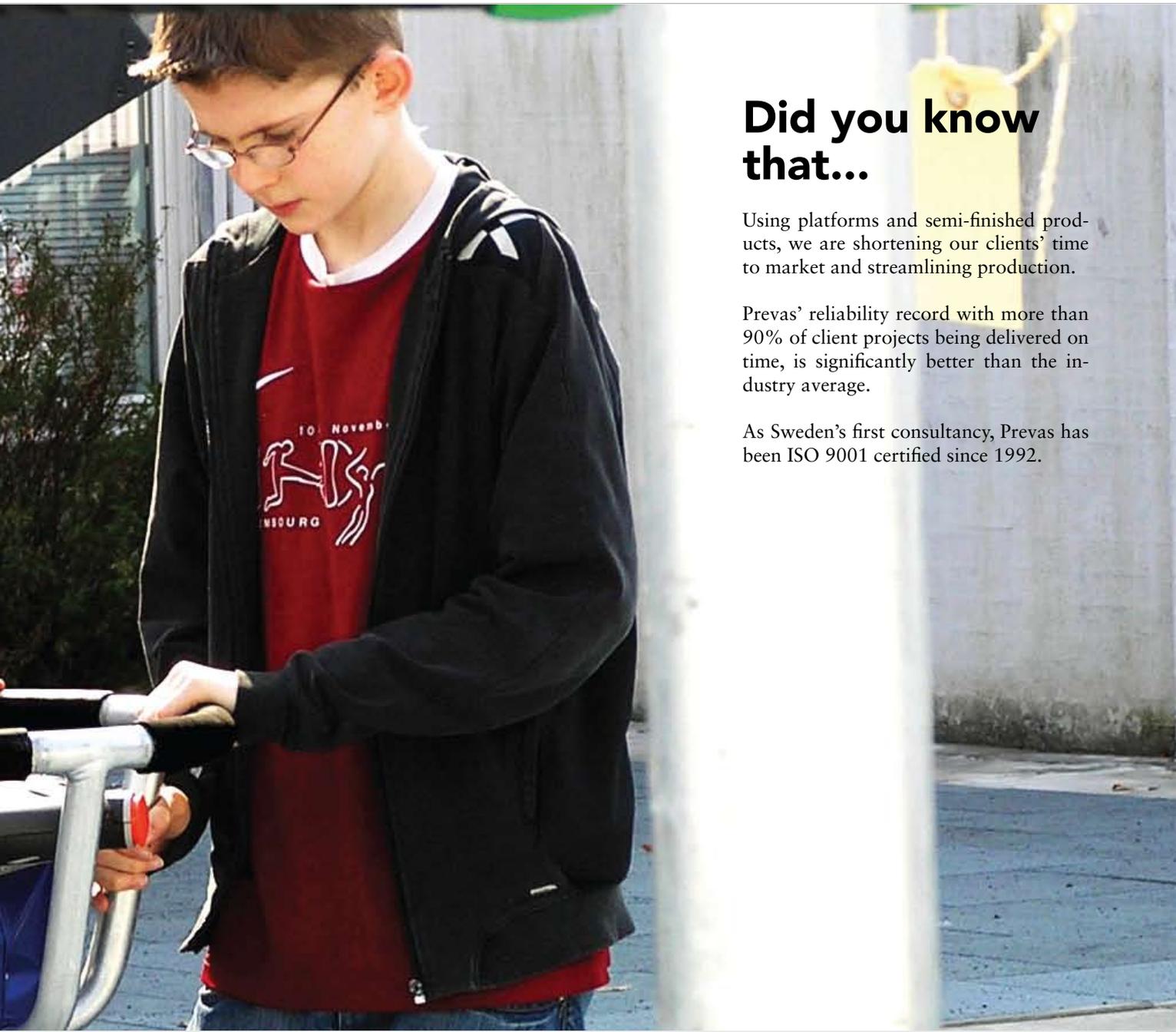
## Technology can be built into most things

Prevas is the Nordic market leader in embedded systems in Scandinavia. Every day, more than 500 software, electronics and mechanical engineers are working to create new innovative solutions for vari-

ous products. The playground is a clear example of the fact that elements of everyday have become high tech for a lot of people.

Mats Lundberg, CEO at Prevas, says that the new playgrounds are great examples of the obvious tendency to have technology built into most things.

“We work on a daily basis with entirely new areas, where technology has never been a part of the concept before. It could be anything from a fork that measures calories, to this – an intelligent playground,” says Mats Lundberg. The interactive playground is similar to the Nintendo Wii, where the screen has been replaced by a playground. The chil-



## Did you know that...

Using platforms and semi-finished products, we are shortening our clients' time to market and streamlining production.

Prevas' reliability record with more than 90% of client projects being delivered on time, is significantly better than the industry average.

As Sweden's first consultancy, Prevas has been ISO 9001 certified since 1992.

dren chase a sound or a colour, competing against each other, competing against the product. The challenge is based on time, strategy and performance, while at the same time improving motor ability and dexterity.

### Integration with mobile phones and the Internet

The playground's technology platform has been prepared for integration with both mobile phones and the Internet. The technology platform was developed in cooperation with several companies, including Prevas, who have provided their know-how, advice and the concrete implementation of the electronics in the new products.

"The new interactive meeting places are good examples of how an innovative cooperation where there is room for open communication, is the preferred working method when it comes to

developing new products," says Mats Lundberg and continues, "The main challenge was to develop solutions that weren't too complex and that you didn't need an engineering degree to control. Plus the fact, of course, it was extremely important to take into consideration weather, wind and sunlight, as Prevas' embedded technology in this case would be used outdoors."

### Hollywood actors also want to play

Through their 'Make It Right' foundation, American actors Brad Pitt and Angelina Jolie have bought an Icon playground which has been set up in New Orleans, in one of the residential areas that were destroyed by Hurricane Katrina in 2005.

Take a tour of the playground by clicking on <http://icon.kompan.com>.

### Facts

Icon is an interactive playground based on Prevas' HM 20 process module. Read more about the HM20 at: [www.prevas.com/module\\_hm20](http://www.prevas.com/module_hm20).

Target group: 10-15 year olds.

The playgrounds can be found at the following locations:

Sweden	Stockholm, Nydalsparken, Tensta allé 17.
Denmark	Copenhagen, Hellerupvej 22-26, Hellerup. Odense M, Rosengårdskolen, Stæremose gårdsvej 51.
Norway	Stavanger - Brattlandsgate 31, EIGANES.



# Better Indoor Environment with Intelligent Windows

At Prevas, we are constantly working with new product concepts, in addition to the usual client projects. This could mean the application of brand-new technologies, or creative combinations of existing ones, retaining and sharpening our competence at the forefront of engineering science. One of the sketches on the drawing board at the moment is the intelligent window.

If you live in the city, you have probably at some point opened a window only to discover that the air outside is of a poorer quality than the air you wanted to let out.

With intelligent windows of the future, you can use automatic ventilation when the air quality is better outdoors than it is indoors. Such a function could be a realised today, by combining one or more sensors for critical air quality parameters, such as CO<sub>2</sub>, particles and humidity, with a suitably programmed control processor and mechanics for the actual opening.

## Active noise reduction

"Yeah, right," I hear you say. "That's not going to be as much fun when the rising CO<sub>2</sub> levels from the exhaled air in the boardroom cause the windows to fly open and all the noise from the street drowns out every attempt to go over next year's budget."

Naturally, intelligent windows are smarter than that! You see they also have a system for active noise reduction. Thanks to advanced signal processors, either programmed in an FPGA or the more traditional DSPs, strategically placed microphones and speakers will analyse incoming noise, and emit reverse phase sound waves through the speakers

to reduce noise via destructive interference. The result is that it remains quiet indoors during ventilation despite the traffic outside.

This is also existing technology being used already, for example in advanced headsets for noisy environments. The challenge with the window application would primarily be in the advanced acoustic calculations that would control the speakers' behaviour in relation to their surroundings. As a last resort, if the noise levels get too loud for the system, the mechanics will close the window. With sensitive microphones and the right programming, an approaching lorry for example could be detected in time for the window to close in a quiet and soft manner so as to disturb as little as possible.

## More or less light

One of a window's most important jobs is to let in daylight, but sometimes you can have too much of a good thing. Therefore, on warm and sunny days, you can limit light and heat admission thanks to electro-chromic glass that darkens when you add an electrical current between the window frames. The system can also be used to reduce the loss of valuable heat at night.

Reversed, the window can also produce its own light when there is too little

natural ditto. With 50-odd RGB LED's in the window frame, a detailed simulation of, for example, a sunrise can be produced at any suitable time of day, to increase residents' well-being during the darker months of the year.

## Communication

In order to get even more out of the functions described above, the window must be in direct contact with the outside world. The best way is via a standard IP-protocol, and/or ZigBee or Z-Wave, both of which have been specifically designed for energy-saving wireless communication between property systems. Such communication provides opportunities to operate or configure functions remotely, interact with other property systems, and enable the window to raise an alarm in case of malfunction, send statistics or obtain information from external sources. One example of the latter is the window obtaining current pollen levels and perhaps even wind conditions from a website, so that it doesn't ventilate on the days that would cause problems for allergy sufferers in the building.

As yet, we have not been assigned the task of designing the window described above, but we are ready to get going as soon as the project lands on our desk.

# Prevas and ABB Works with Cutting Edge of Technology



Future-proofing and backwards compatibility were key words when ABB gave Prevas the task of developing a completely new communication module to be used in two generations of control systems for the process industry. Some 8,200 man hours later, the product is now in operation with the first client.

As one of the world's leading suppliers of systems for efficient and secure automation, control, and surveillance of industrial and process plants, product range continuity is of the utmost importance to ABB. Across the world, a large number of industries are entirely dependent upon a well-functioning operation, even when parts of the control system need to be upgraded.

ABB faced one such challenge, to modernise and keep existing and future users in mind, towards the end of 2006, when they decided to produce an entirely new version of a so-called real time accelerator (RTA). The unit acts as protocol translator between the software on the operator's work station and the Masterbus 300 based control network connected to the target systems.

## History and future

Previous generations have been manufactured as expansion cards for assembly in Unix or Windows-based work stations. In order to increase flexibility and future compatibility for a long lifecycle, ABB decided that the next generation's communication module would be a free-standing unit based on the Ethernet and TCP/IP standard protocols. Central to this solution was a long lifecycle, and such an implementation that the interface in the products that will use the module would not need modification in any way at existing client locations. This required state-of-the-art technology software for the computer.

After the decision to produce a new module was taken, ABB requested quotes from a number of consultant firms. They chose Prevas, thanks to a combination of sound analysis and understanding of the task, good merits from previous projects, and an attractive pricing for the entire project.

## Joint detective work

Shortly after the project began in September 2007, it was clear that we were in for some unique challenges. The task meant Prevas had to produce completely reworked hardware architecture based upon new components.

With the hardware completed, the next task was that of porting existing functions onto the new platform. It was crucial that the new unit should function in the same way as previous generations, to ensure the necessary backward compatibility with existing installations.

Copying the contents of the old control system entailed some detective work, but through cooperation with ABB's staff, the platform could be programmed to cope with both the old and new functions.

## A satisfied customer

The client feels it is important to point out that the key to a successful project is not just high technical competence alone, even if this obviously was an important piece of the puzzle.

Katarina Wiklund, Project Manager at ABB, explains, "A lot of skills, not just

purely technical ones, are required to get a project this complex to work. Prevas have shown that they can cope with all the elements, and have kept the whole thing together and delivered on time."

Despite this, the project naturally involved a great deal of advanced technology and problem solving. Katarina Wiklund continues, "It was a challenge to work at the very leading edge of technology because we wanted to ensure future compatibility for the product, far beyond today's operating systems. At the same time, through the smooth cooperation between Prevas' team and our own staff, we managed to retain the existing functions from older generation RTA's intact. This was absolutely necessary, as the product will be used in environments with extreme demands upon operational reliability, such as nuclear power plants."

## Current situation and our future

Now, in April 2009, advance series samples of the PU410 (which is the ABB article name), are in operation in a client's production environment, a client with whom ABB has close cooperation. Serial production of the entirely new RTA unit will subsequently continue for many years to come.

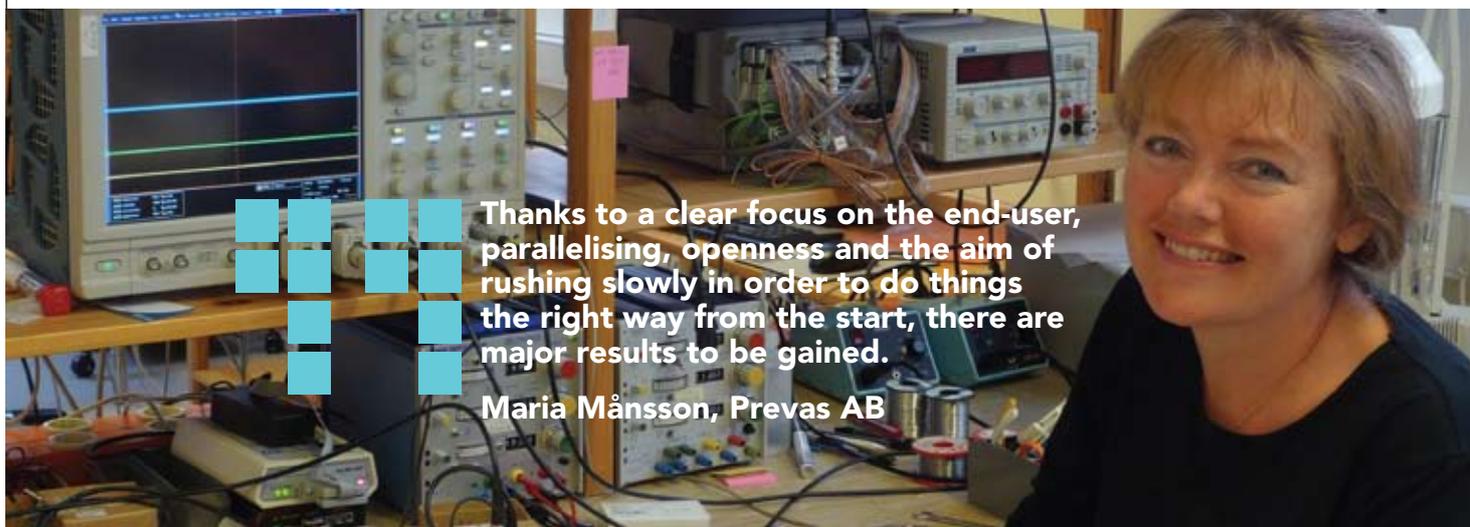
### Facts

Prevas' key skills in the project: Electronics design, FPGA programming, Porting between platforms, UMDf drivers, Project control, TCP/IP

## LEAN THEME

# Think Twice about Regulations

There is a lot going on with the directives and regulations that govern product manufacturing. It pays to be up to date, to keep the product development process as efficient as possible.



Thanks to a clear focus on the end-user, parallelising, openness and the aim of rushing slowly in order to do things the right way from the start, there are major results to be gained.

Maria Månsson, Prevas AB

Now that lean production has become established in Nordic industry, there is also a growing interest in applying the principles as early as the development process, in other words, lean design. The goal is to shorten lead times and more quickly manufacture products of a higher quality and better market adaptation at a lower price, by applying a way of thinking that has its roots in the Japanese car industry. Thanks to a clear focus on the end-user, parallelising, openness and the aim of rushing slowly in order to do things the right way from the start, there are major results to be gained.

## Lean and the regulations

An important part of the practical lean design puzzle is keeping on top of the regulations that govern your future product from day one, and knowing how to comply with these regulations in the best manner, so that they are included from the start. For example, advice from Prevas' EMC experts and measurements performed in our pre-compliance lab significantly reduce certification costs. Having to reverse at a late stage in the development process generates higher costs, delays time-to-market and can, in the worst case scenario, jeopardise the entire project.

There has been an increase in the number of regulations recently and several "old" directives are being reworked.

The environmental aspects, with an emphasis on climate impact and chemicals are the reasons for several of the new decrees. A few examples are the Ecodesign EUP Directive and REACH, as well as RoHS and WEEE which are now being put forward for revision.

## Revising RoHS and WEEE

RoHS (Restriction of Hazardous Substances) aims to limit the use of a number of harmful substances in electrical and electronic products. It applies to mercury, cadmium, lead, hexavalent chrome and certain (brominated) flame-retardants.

One problem, however, has been the fact that the original RoHS version, which came into effect in July 2006, was weakly formulated and lacked important definitions in order for it to be implemented consistently throughout the EU area. The result has generated major interpretation differences and a lot of headaches for manufacturers. This is partly the reason why a completely new, revised version of the directive has been drawn up and is being reviewed by the member countries.

## The proposal contains several new aspects:

- More product categories have been included and they have been more carefully defined. For example, medical technical equipment, and sur-

veillance and operating instruments will no be longer exempt.

- Further substances could become prohibited. Five new substances are listed in a separate annex. The methodology for REACH should be used for the introduction of new substances.
- The directive will be better harmonised and coordinated with other regulations through the New Legislative Framework.

Another related directive that covers the majority of electronic equipment and regulates how and what amounts are to be recycled, is WEEE (Waste Electrical and Electronic Equipment). This is also currently being revised.

## Prevas guides you

Maria Månsson, regulatory expert at Prevas, is carefully following development of the changes that affect the regulatory requirements in product manufacturing. Creating a review of how a product could be affected by the regulatory changes could be wise. Prevas is there for its customers, helping them find their way among the complicated regulations, whether it's an isolated issue that takes just a few hours, or a turn-key project.

For more information about Lean Design, please contact Maria Månsson at Prevas, [maria.mansson@prevas.se](mailto:maria.mansson@prevas.se).