

# TECH TRENDS

TECHNICAL NEWS AND TRENDS FROM PREVAS # 3 2008

## The intelligent fish hook - your second pair of eyes underwater

- The angler can get alert when there are fish in the water

Read more on page 6



### RTX Telecom is insourcing

Development-heavy companies are increasingly bringing cutting-edge competence back in-house, in order to boost agility. RTX Telecom is one of the latest to jump on the insourcing bandwagon by signing a contract with Prevas.

Read more on page 3

### Effective four-wheel drive

When you start your car and head off to work, you probably give little thought to how your car was made. But behind your pleasant, safe, functional drive, there was a long and complex production process.

Read more on page 4

### More effective testing

Any kind of product development requires a fast and effective testing process. Complexity and time-to-market are the two critical factors in this context. An increasing number of companies are relying on external partners for testing.

Read more on page 7

## It needs to be smart, quick, small – and attractive!

We all want to have more and more – and everything needs to go faster and faster. We notice this general trend in society throughout the entire Western World. But, it is particularly evident within certain industries, such as electronics development and industrial systems. Nowadays, communications and electronics are built into all types of products. And, IT support is an important competitive factor for industrial companies. For companies like Prevas, this not only places requirements on being able to deliver quickly and professionally. We also need to play a role in influencing the development of this trend where intelligence is built into everything. At present, not only are electronics expected in all products, along with smart IT support systems. But, in addition, both products and manufacturing are meant to be quicker and less expensive each year.

### Private consumers are also demanding customers

It is not just the business market that is demanding and wants more. Private consumers have also become more impatient and many firmly believe that anything is possible when it comes to IT and electronics. And, as we usually say, this is true. For this reason, we always make sure to keep the user and consumer in mind during our development work and consulting activities. For example, there is an increasing demand for the interfaces in everyday products to be compatible with different kinds of computer programs and mobile phones. For this reason, we are currently involved in the development of several popular kitchen appliances with control panels that are similar to those found on iPods.

### Technology that influences trends

Swedish industry is approaching maximum capacity. Therefore, it needs to continue investing in order to meet global demand in the future, as well as strengthen its own competitiveness. To a greater extent, machinery and equipment are becoming intelligent, and as such, an integral part of a coherent production system. Industrial firms connect with both suppliers and customers in order to achieve greater efficiency in the supply chain. This results in lower manufacturing costs and higher quality. Having a long-term, structured work methodology with continuous improvements in both productivity and quality is a must.

### Appearance is becoming more important

Within all types of industrial manufacturing, design is here to stay. The appearance of an item has taken on greater importance in conjunction with everything becoming much smaller and faster. It has become so important, that it is simply not enough for things to work as intended – they also need to look good. Such developments are simply fascinating and it is exciting to be a part of it all. This not only applies to the near future. It is also relevant should there be a downturn in the economy. At present, electronics are being included in conventional products in order to increase their competitiveness, which means that we still have a lot to do. It also means that our sector is not as vulnerable to economic slow-down, since, in order to survive, our customers must integrate electronics into their products.

Mats Lundberg, CEO Prevas AB

# TECH

trends

Technical trends, inspiration and news from Prevas AB

Prevas is an innovative IT company with a strong corporate culture that offers its customers solutions with a world-class competitive edge.

Prevas develops intelligence in products and industrial systems.

Prevas has offices in Västerås, Stockholm, Göteborg, Malmö, Linköping, Lund, Uppsala, Karlstad, Copenhagen, Århus, and Oslo.

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



## Prevas grows within embedded systems

From October 1, 2008, Emfila Software is incorporated in the Prevasgroup. The company has specialist competence within embedded systems. The acquisition strengthens and reinforces Prevas' leading position within embedded systems in the Nordic region.

## Prevas nominated for the Swedish Embedded Award

On 21 and 22 October, Embedded Conference Scandinavia (ECS) 2008 kicks off in Stockholm, the third-time host of one of the largest embedded technology conventions in the Nordic countries.

The conference will take place over two days and will include a show, a conference and a technology event, focusing sharply on Embedded Linux, MicroTCA and Computer-on-Modules. One of the highlights of the conference will be the selection of this year's top embedded solutions. Prizes will be awarded in three categories: Enterprise, Student and Micro/Nano. Prevas has been nominated in the Enterprise category for developing one of the largest supercomputers in the world, in conjunction with the Technical University of Denmark (DTU).

To read more about ESC 2008, please visit  
[www.embeddedconference.se](http://www.embeddedconference.se)

## Robotcar at the DTU

A car, a camera and a credit card-sized piece of advanced electronics were the basic building blocks of a small international innovation developed by Prevas and a group of students at the DTU. By affixing a mini camera to an HM20 electronic module, the students have developed a prototype for a self-driving mini car, which uses images to manage and calculate optimum speeds on the go, in order to prevent any skidding. This development project showcases the possibilities of card-sized embedded electronics.

– Electronics are becoming increasingly smaller and ever more advanced, developing at a speed that has enabled us to develop practical robot-guided products today, which could be used, for example, in the hospital sector or in tracking equipment, says Rune Domsten, Chief Technology Officer at Prevas.

During the demonstration, the robot car drove along a piece of tape stuck to the floor. In principle, hospital beds could do the same if they were fitted with a camera and technology, because hospitals already use coloured strips on the floor as a guide for patients and visitors.



# RTX Telecom A/S and Prevas working together

Development-heavy companies are increasingly bringing cutting-edge competence back in-house, in order to boost agility. RTX Telecom is one of the latest to jump on the insourcing bandwagon by signing a contract with Prevas.

RTX Telecom wants to harness Prevas's cutting-edge competence in the fields of mobile technology and telecommunication, in order to create a dynamic development process. In doing so, RTX Telecom is contributing to a trend among development-heavy companies, which are increasingly boosting their operations with external cutting-edge competence, in order to be able to adapt more quickly to the challenges of a shifting market.

In RTX Telecoms' case, shifting peak periods, in particular, have triggered changes to development processes. The company has nearly 600 telecommunication products and can never be sure when a customer is going to sign on the dotted line. Once the customer does sign, however, complex products often have to be delivered within a tight deadline.

- Our market is shifting, which is a major challenge, both in terms of budgets and resources. Our partnership with Prevas actually initially came about because we lacked capacity. But insourcing their engineers has proved to have a number of advantages, says Niels Henrik Olesen, Head of Development at RTX Telecom A/S.

- Thanks to insourcing, we are creating an environment in which our employees' workload is reduced in peak activity periods, while at the same time ensuring that they feel secure in quieter periods, because we can simply adjust the amount of external resources we use. This has also had a positive impact on our budget, because we can only go ahead with a section of our development spending once we have made a corresponding amount of income, says Niels Henrik Olesen.

At Prevas, we are finding these ideas very thought-provoking. According to Michael Aoun, Managing Director, Prevas A/S, there is a steadily increasing demand for development competence, which reflects directly on the bottom line of the major development houses.

- We are riding the crest of the wave of all the recent media coverage of development-heavy companies. The demand for increasingly shorter development periods for new products means that development departments are having to weather troubled waters, with occasional unforeseeable calms, and that is a challenge, both in terms of resources and competence. That is why so many companies are turning to us. This year alone, we have seen 30% growth on last year and there are no signs of this trend reversing. Quite the reverse, says Michael Aoun.



# Effective production-system for SUVs

When you start your car and head off to work, you probably give little thought to how your car was made. But behind your pleasant, safe and functional drive, there was a long and complex production process.

The Swedish company Getrag All Wheel Drive AB made its name supplying four-wheel drive and wheel suspension systems to passenger car manufacturers, such as Ford, Volvo, Fiat and Land Rover. Getrag's competitive power is, above all, the result of a close partnership with Prevas over many years and mostly centres on effective production methods and intelligent storage. Working together, these two companies have developed the production and storage systems used by Getrag.

In recent years, global competition in the production industry has been as stiff as that in many other industries, placing constant demands on the quality of suppliers' products, as well as on their flexibility and productivity. Getrag uses Prevas's module-based LIPS (Logistics in Production) system, which manages

Getrag's entire material flow, from raw materials supply, via storage and installation, to packing. It brings effectiveness to all the storage processes and makes Getrag a very efficient, and thereby profitable, company.



**Competition is stiff and the production industry therefore demand efficient systems**





## Device as helps asthma-patients

The Swedish company Aerocrine, famous for developing devices for asthma patients, has set up a development department at Prevas. In collaboration with Prevas, Aerocrine has developed innovative methods for measuring airway inflammation and developing better mouthpiece solutions for asthma-inhalers. Aerocrine's development department at Prevas has been involved in the process every step of the way, using project management, software, electronics and mechanics.

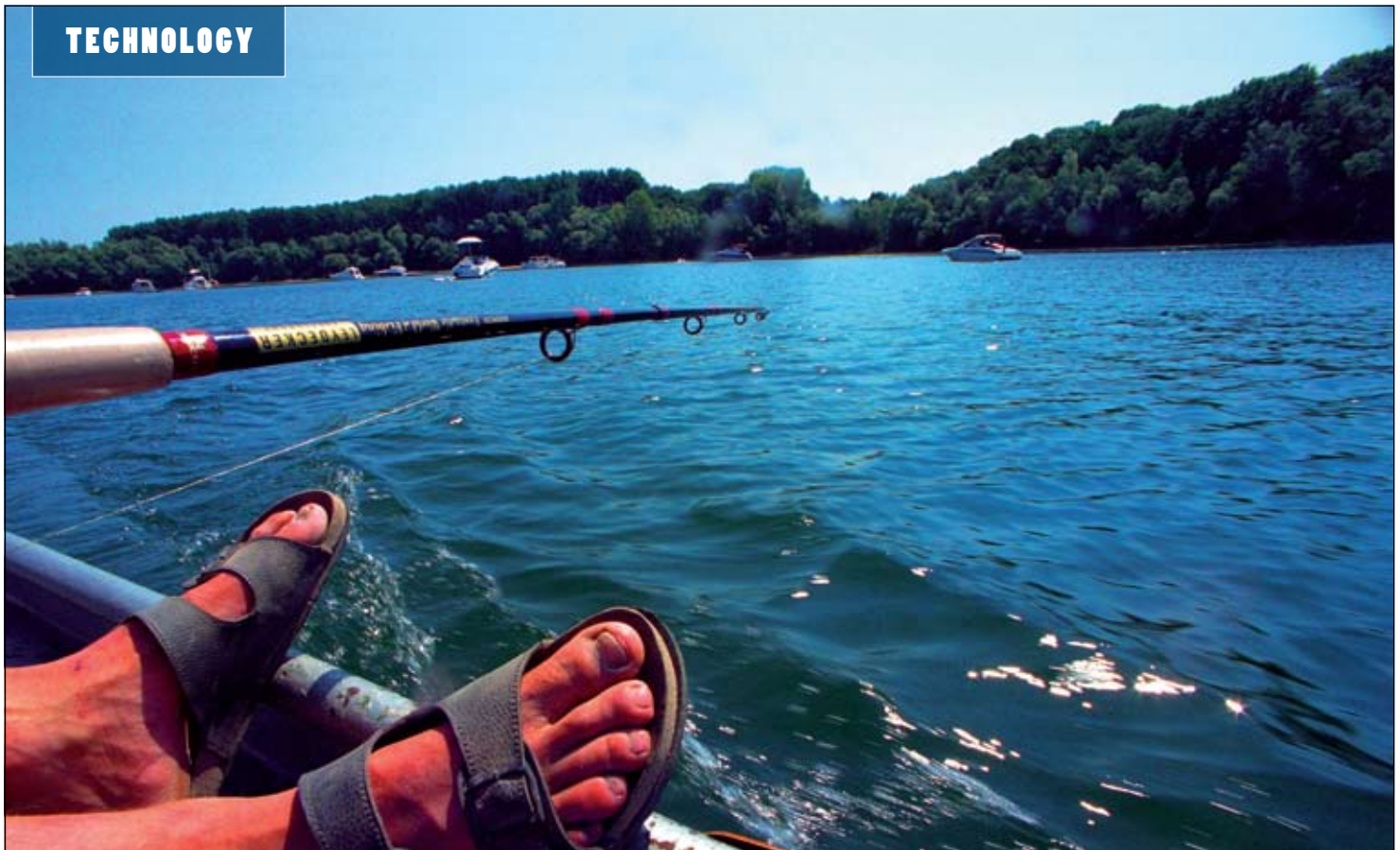
The fruit of these labours is NIOX® Flex, an instrument which measures the amount of nitrogen monoxide exhaled, which is an indicator of inflammation and which is routinely used in monitoring asthma patients.

## Less manual handling at Astra Tech

Prevas's product Snitcher Medical supports the entire labelling process, enabling design, version management, label print-out and traceability throughout the chain. It is a product for which there is particularly high demand in the medical industry.

The latest company to benefit from Snitcher Medical is Astra Tech, which develops, produces and markets dental implants and advanced hospital products for urology and surgery. It has optimized its labelling process (to the Good Manufacturing Practice standard) and the electronic signature and e-mail have reduced the amount of manual paper handling.





# The intelligent fish hook - your second pair of eyes under water

The angler of tomorrow will not only know what is going on above the water surface, but underwater, as well. By photographing its surroundings, this intelligent fish hook will let you know when there are fish in the water.

For some, angling is about peace and quiet and losing yourself in your own thoughts, rather than about how many fish you catch. For others, it is vital to fill the fish bucket on the very first throw. If you belong to the latter category, help is at hand. The intelligent fishing rod comes with a hook which has an embedded mini camera which photographs everything that is happening under the surface of the water. If your fishing trip seems dead in the water, without a fish in sight, your luck could change with the casting of a line.

## Alert when there are fish in the water

Light transmits the underwater images from the camera up through the line and, via Bluetooth, straight to the angler's mobile phone, so that he/she can follow what is going on on his/her screen. The camera can also be programmed to send

the angler a text message when fish are close to the hook.

- The intelligent fish hook is based on super-compact electronics and is an example of how familiar products can be given a new lease of life, adding functions that we never even dreamed of before, says Rune Domsten, Chief Technology Officer at Prevas.

## Camera chips at a bargain price

Over time, compact electronics have become so cheap that imagination is now the only limit to the integration of optics and intelligence. The price of compact cameras is falling every day, currently averaging between DKK 5 and 10. As prices keep falling, camera technology will find its way into more and more products.

- The possibilities are endless. An obvious product is the GPS vehicle tracker, which comes jam-packed with electronic devices. With an embedded camera, this electronic tracker quickly turns into a kind of "box" that takes images of the driver and the road, as well as recording the route taken, the speed and the acceleration. It's just what you need when you lend your car to your teenage son/daughter and want to know what they're up to, says Rune Domsten.

The intelligent fish hook is one of Prevas's products and is still in the design stage. The technology can be embedded into the fish hook, which can be developed and produced as soon as there is a demand for it.



# Entrust your testing to external partners, in order to make it more effective

Any kind of product development requires a fast and effective testing process. Complexity and time-to-market are the two critical factors in this context. An increasing number of companies are relying on external partners to create an environment for system and product testing. Prevas Test System Design is an example of a supplier which is a specialist in advanced testing solutions and simulation.

When Volvo has to update the software for the engines of the Swedish Gripen fighter, testing all the functions live is an expensive option, and one which is sometimes simply not practicable. For this reason, an extensive system test has to be carried out in a realistic environment where surroundings, in this case the jet engine, are simulated. One testing method which is gaining increasing currency is known as hardware-in-the-loop (HIL). Simulating the physical behaviour of engines, brakes, robots etc. allows advanced electronics to be tested effectively from the points of view of both economy and risk.

- Manual testing is undergoing a major decline, because products are constantly evolving in terms of complexity. This is why we are increasingly conducting tests in simulated computer environments, which require an extensive knowledge of programming. Only a very few companies have access to such competence in-house and so, increasingly, a number of development tasks are being placed in the hands of external specialist companies, says Hans Nyström from Prevas.

## Open standards mean greater flexibility

Prevas has more than 15 years of experience in developing testing environments for Volvo Buses, Volvo Trucks, Volvo Aero and Ericsson, among other companies. In addition to the HIL system, Prevas also develops many other types of systems such as, for example, functional, production and repair testing systems. Regardless of their particular functions, testing systems are, as far as is practicably possible, based on commercial standard products.

- Testing systems are developed in small volumes, so it simply doesn't pay to develop your own components. In the interests of economy and time, we, as far as possible, base all our testing systems on standard products and an open architecture, so that our customers can modify and expand the system as new upgrades come along. In cases where we identify a demand without finding a commercial solution, we develop a number of our own products, in order to be able to offer our clients complete solutions. Our systems are based on object-oriented architecture, which means that they easily absorb any future upgrades

in standards, functions or products, says Hans Nyström.

## Flexible development

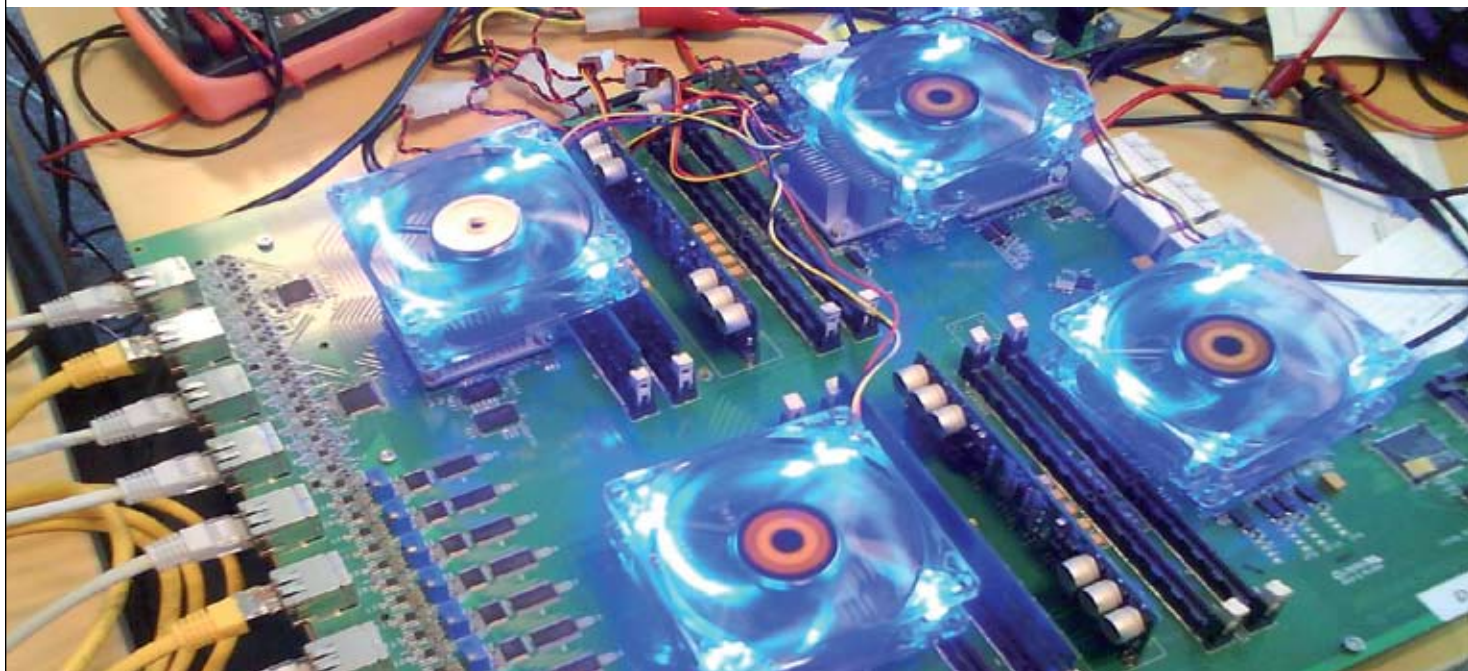
The model whereby testing systems are developed with standard components and a secure system architecture also means that it is possible to build product testing environments at an early stage of development. This is also necessary for incremental development, which is advocated in many development methods, such as Agil and RUP. The development process is evaluated and revised on a continuing basis, which means that the building blocks of a project can be changed mid-project. It is particularly important that the testing environment is flexible.

- Development processes are becoming more and more dynamic, which makes keeping up to date with testing solutions a real challenge. The combination of flexibility and effectiveness requirements in the testing phase and the increasing complexity of products means that testing causes companies to overstretch. This is why many of them choose to involve an external specialist, says Hans Nyström.



# A super-computer to beat them all ...

There's been a lot in the media about it.  
The experts have commented on it.  
Other nations are eyeing it up



We are talking about probably the largest and fastest real-time computer in the world, whose function is to ensure that blood clots and other cardiac problems can be diagnosed non-invasively. A computer for the most demanding image-management tasks, which provides a 3D view of the whole heart and blood flow in all the blood vessels. This super-computer is the fourth-generation research scanner and is based on more than 15 years of experience in designing completely innovative signal treatment and computer systems.

The supercomputer achieves its extreme calculation powers and degree of detail by using the latest technologies. It consists of 640 PowerPCs, stored in 320 FPGAs, which function simultaneously as CO-Parallel processors with a total RAM capacity of 1Tbyte (1000 Gbytes).

## The future is gathering pace

The supercomputer is module-based and may be used for a number of other demanding tasks, such as for radar systems, advanced vision and image recognition and encryption and decoding tasks. Prevas specializes in development projects based on FPGAs, and, given the crazy pace of development at Prevas, we are looking forward to a future involving many FPGA projects. We are planning to pave the way for yet another super project, as early as the next edition of Tech Trends.

The supercomputer has been developed in conjunction with the Center for Fast Ultrasound (CFU), headed by Professor Jørgen Arndt Jensen.

## Excellence in technology

- Your partner for intelligence in products and industrial system.