TECH TRENDS

TECHNOLOGY NEWS
AND TRENDS
FROM PREVAS

#2 2013

technology

New Center of Excellence for Embedded Linux

Industrial open, long-life, operating systems. *Pg. 8.*

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OE-lite Linux

Reduces development and maintenance costs, says satisfied customers. *Pg. 7.*

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Win with Re-use

Early debugging can speed up development work. *Pg. 6.*

Smarter Electronic Systems

Maria Månsson from Prevas and chair of the Swedish Electronics Trade Organization offers her views on how to achieve sustainable development. Pg. 7.

Meet Karl-Gustav
Ramström
Prevas new CEO, pg. 3

FEEL SAFE AT HOME!

With a closed radio system, neighbors alert each other instantly when a burglary is about to take place. Read this success story on pgs. 4–5.

HOW TO IMPLEMENT GOOD IDEAS

EDITORIAL

AT PREVAS WE CONTINUOUSLY REFLECT OVER OUR SLOGAN ”Innovation for Growth”, asking ourselves which party is to innovate and grow, ourselves or our customers. And over where this innovation actually is taking place? As far as we know, there is no authority or institute that monitors or measures this. But I think we are on our way to getting an answer: innovation and growth happen when the customer and Prevas cooperate toward some worthwhile objective. This we get confirmed of over and over again as we interview customers, often as part of stories we publish in this magazine.

The process often starts very unassumingly with only a few lines on a piece of paper, but eventually develops into a product during a journey which often turns out to be longer than originally envisaged. That journey we constantly try to keep as short as possible by re-using know-how, both ours and our customer’s. In this issue, Kim Enevoldsen, owner of Næralarm, tells an interesting story about what easily happens when a non-technical person with a brilliant idea for a technical solution teams up with a development company like Prevas. Guided by a great vision, that idea was nursed all the way through production and marketing.

A benefit our customers often stress is the value of cooperating with a party who is able always to find the right person to solve a particular problem and knows which governmental regulations are applicable. A challenge of software development is all the bugs one hasn’t found yet. Consequently, if one is able to identify a previously developed solution which can be re-used in the next project the gains are usually considerable, in terms of reductions in cost, time and risk . The more unknown factors there are in a project, the greater the risk is that the initial time estimate will be shattered.

We call this endeavour of ours Re-use, meaning that we put much effort into identifying re-usable components for the next project. The process is about storing and describing previous solutions so that they become easily identifiable and retrievable. No customer should ever have to pay 100% for something we have solved to 50% previously. Our Mikkel Ingstrup writes about this on page 6

Customers come to Prevas due to the fact that we have experience, tried and tested platforms, test systems and operating systems to the extent necessary. We have been in business since 1985 and have by now taken part in the development of more than 5000 products, having given us an enormous knowledge bank. This bank is there for our customers to make use of and benefit from.

Finally, I would like also to promote Maria Månsson’s article on page 8 about the way the Machine-to-Machine field grows, as does society’s need for competence in the field of electronics throughout the entire value-adding chain from idea through research, development, and production to sales. To get an idea of Sweden’s progress in the field of electronics development, a look “under the hood” is necessary.

Hope you enjoy this issue of our mag!

JONAS MANN
Senior vice president
Product Development, Prevas AB

congatec chooses Prevas as technology partner in Scandinavia

A general trend in manufacturing is to reduce development costs, reach the market sooner, extend product lifetimes and reduce development risks. One way of reaching those goals is to use industrial computer modules and develop specific solutions to the needs customers have. The combination of congatec’s industry-leading computer modules and Prevas’ likewise leading solutions in embedded systems amounts to a strong offering to manufacturing industry.
- Prevas was established in 1985 to help customers create growth through technological innovations. Since then, Prevas has enjoyed stable growth as a result of continuous innovation. This strategy fits perfectly with congatec’s own plans. We look forward to cooperating with Prevas to offer our Nordic customers innovative modular solutions, says congatec’s marketing manager, Bernd Hacker.

Prevas teams up with Freescale

Prevas has been chosen as partner to Freescale in that company’s efforts to market its embedded systems based on the i.MX family of single– and multicore processor circuits in Scandinavia and the rest of Europe. The platform is optimized for multimedia, screen display and industrial applications and offers interactivity to a new range of products and to new, rapidly expanding markets, including the automotive, industrial and consumer sectors.

Innovation for Growth

Prevas employs 600 people, together serving as main supplier and development partner to leading companies in fields such as energy, automotive, defense, life science, telecom and engineering.

www.prevas.com

NEWS ITEM

PREVAS HAS GOT A NEW CEO
KARL-GUSTAV RAMSTRÖM

Where do you think Prevas' strength lies?
The people of Prevas with their deep knowledge and visionary solutions, combined with solid experience, tried and tested platforms. And Prevas' slogan: "Innovation for growth" means that we are more than an IT systems supplier. We are always striving to help our customers do better in their fields through our expertise and solutions. Our role is to contribute with competence, enabling our customers to take maximum advantage of all the new technologies available, regardless of the markets they operate on.

For a consulting company like Prevas, it is vital that we understand our customers' businesses and respond to their needs, hand in glove. I, like Prevas, has always worked in technology-intensive fields where the provision of value to the customer is the overarching goal.

However, historically, Prevas has not always excelled at telling the world about its impressive competence and that we are able to undertake quite big development projects, even operate as our customers' outsourced development departments. In addition, Prevas has, over the last few years, made a number of strategic acquisitions which nicely widens and strengthens our services offering.

Which weaknesses or development needs of Prevas do you see?
Engineers, of which there are quite a few at Prevas, are usually not the kind of people who are prone to bragging, but I think we have every reason to brag a bit more. It is important that we tell our customers what we know and are capable of so they can see the whole picture. I hope I will be able to contribute toward that.

> THE COMPETENCE IS THERE. NOW WE WILL DO BETTER AT TELLING CUSTOMERS HOW WE ARE ABLE TO PARTNER WITH THEM.

Our tradition is to talk to our customers' development, IT and technology people. Now we also want to talk to top management since the ultimate purpose of our technology-related solutions is to contribute to their business development.

EXPANSION IN SCANDINAVIA

Prevas has opened an office in Örebro, Sweden and expanded its operations in Jönköping, also to include embedded systems services.

– Prevas has a very good reputation among its customers and it is exciting to be part of expanding operations in Jönköping, say Joakim Bergs, office manager at Prevas.

Another expansive step has been taken: in Finland, in the form of a newly opened office in Helsingfors. The newly formed company will focus on offering Finnish industry production-related IT solutions.

Prevas launches new reference page

Over the years, we have managed to fill our reference catalog with lots of interesting and exciting projects. So now we have decided to make it both simpler and more fun for our readers to find out what we have achieved in cooperation with our customers. The reference list makes it easy to browse among our different projects and to get a better idea of what we can do.
You find the list here: www.prevas.com/references

I ONLY CONTRIBUTED WITH A GOOD IDEA

The Danish company Næralarm in Søborg has developed a smart alarm system that makes people safer in their homes. It is based on standard radio modules and the basic operation principle is that an alarm is distributed to the neighbors if/when a burglary is about to take place or some other emergency is developing. This is a good example of what easily happens when a layman with a good idea calls in a development team like Prevas.

One pitch-dark evening in 2009, feeling alone and unsafe, Kim Enevoldsen got a very good idea for a product that is now marketed by his company Næralarm ApS. After a time of development and testing, Kim's "inter-neighborly" alarm system is now available on the market and many families have already achieved higher security than previously. A product and an entrepreneurship was born in one fell swoop.

– At Christmas-time, four years ago, I was sitting in my country cottage with my then six-year-old daughter. It was pitch dark around us and at that time there were lots of writings in the media about domestic burglaries. So I started thinking about what I would need to feel safer in my home and to be able to protect my daughter.

I arrived at the conclusion that some kind of alarm system which somebody actually reacts to would make a huge difference. But like most of my rural neighbors, I neither had access to Internet nor to a wired telephone line. Consequently, I was forced to think along other lines and ended up at a closed radio system.

> LIKE MOST OF MY NEIGHBORS, I NEITHER HAD INTERNET ACCESS, NOR A WIRED TELEPHONE LINE

– At first, I tested the idea on family and close friends who all endorsed it. I also checked immediately if anything like that already existed on the market but came up empty-handed. I also, at an early stage, presented the idea to a potential manufacturer who reacted positively. That made me realize that my idea for a product had great potential.

The next step was to find interested parties who believed sufficiently in the idea to contribute with capital. Personally, at that point I had no experience whatsoever of neither alarm systems nor entrepreneurship; I was only a man who had gotten a good idea.

The next step was to contact development people and I eventually chose Prevas. It was important to me at that time that my partner had a good grasp of how much development work would be required.

As early as in the fall of 2010, we had arrived at a working prototype. Compared with the final product, it was a primitive setup but perfectly adequate for testing three things we thought were important: basic system functionality, reach and user experience.

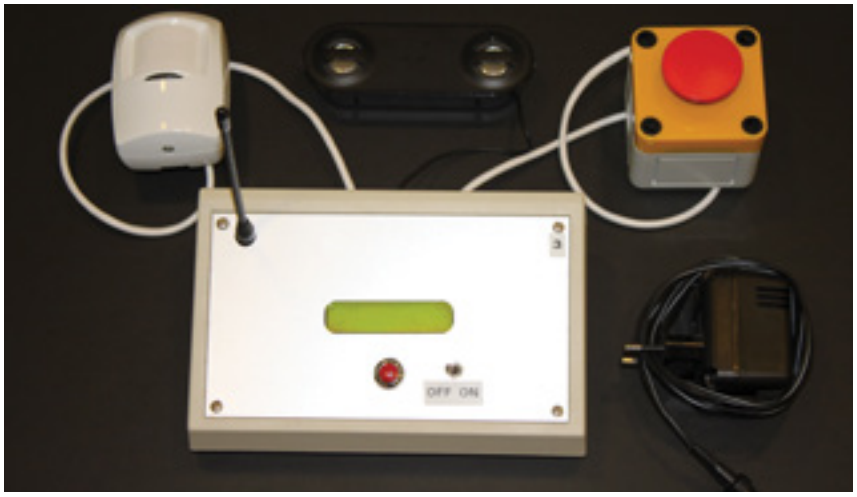
The first tests involved nine cottages in my neighborhood. From that effort we discovered that the range was approx. 450m, that the emergency button and the motion detectors worked as they should, that everybody were able to see from which cottage the alarm had emanated and that they all thought the system was easy to manage.

We realized the importance of the system not generating false alarms. Consequently, a high level of functional robustness was required. For example, the system is connected to the mains, but if that power were to fail, the system will continue to run on battery power for approximately 24 hours. Further, the system indicates both on its display and by SMS text messages if/when battery power is about to run out.

If an alarm were to be disabled during a break-in attempt, the other alarm units of the system would raise alarms in their turn due to the dying unit's failure to issue its requested "I am here" signal.

All of 2011 was spent on system development, an effort which ended with a full-scale system installation in a residential area at the beginning of 2012. A couple of months later, the number of participating household had doubled and currently even more people have joined in.

– My cooperation with Prevas worked like a charm. I am particularly grateful for the way they kept the pace up.



Demo system from 2010

This is a system which is installed in people's homes and the challenge with this kind of security alarm system is to uphold the highest reliability. So when trouble arose, Prevas' engineers always turned up at minimal notice, even during weekends and holidays.

Piloting an idea all the way to fruition, through testing, regulatory requirements and approvals is a complicated process, a process which was greatly facilitated by Prevas' wide range of competence in both hardware and software. They were always able to find just the right person for every issue, was it testing, regulatory requirements or manuals. All that was very useful.

– Most people care about others. Næralarm builds on this neighborliness. True, it is possible to include a security company in the circle of alarm receivers, but the basic function of my system is that the alarm will go off at the neighbors'. My system keeps neighbors interconnected 24 hours a day.

Experience so far indicates that the first neighbors react within seconds. After a couple of minutes 8-9 neighbors out of a group of 17 households have rushed out to see what's afoot. That spells increased security.

After having obtained an official approval, the system has been updated with GSM functionality so now it can also issue alarms to cellphones. Since the product is EU-approved, it can be adapted and exported to other European markets. After the success in Denmark, Næralarm is ready for cooperation with interested marketing parties in the other Scandinavian countries.

So far, all the people, having installed Næralarm remain loyal customers of my company.

For more information, please contact:
Henrik Möller, phone + 45 29499202
email: henrik.moller@prevas.dk
or visit: www.næralarm.dk

How NærAlarm works:
Up to 20 households are locally interconnected through units communicating by radio. When an alarm is raised – be it an assault or a burglary – all participants are able to see it immediately on their units.
The display shows, name, address, phone number and reason (assault or burglary) of the affected household. An audible alarm is also raised.
In connection with installation, all participants are instructed what to do if/when an alarm is activated (e.g. to inspect the affected home and to phone the police).

Specifications:
Reach: approx. 450 m between homes
All boxes operate as range extenders, from one box to the next.
Battery back-up time: ca. 24h.

If a unit is rendered inoperable for any reason, the other units will raise a an audible alarm and indicate which unit is out of order.
In addition to the above-mentioned primary alarms, five SMS messages will also be issued in case of emergency.

REUSE OF SOLUTIONS SAVES MONEY AND TIME

Reusing computer designs, software as well as tried and tested technology is the way to go for industry. Already debugged solutions make for faster progress than the reinventing-the-wheel approach.

The biggest problem with software is all the bugs one hasn't found yet. They have a tendency to show up gradually, while users get ever more irritated when discovering that systems do not quite work as they should.

If one is able to write code so flexibel that it is possible to reuse it in later projects, one can take advantage of previous debugging efforts and save time, and money - and raise quality - while putting the customer's money to better use.

In the following, we are talking to the manager for Prevas' Re-use project, Mikkel Ingstrup:

– Of course, Re-use is about saving money. Cost is always a major issue. If one is able to re-use something already developed and skip that step in a subsequent project, the gain is rather immediate, but eliminating risk is just as important.

The more uncertainties there are in a project the greater the risk of time overdraft. To be able to say "we have prior experience of this or that" is a great sales argument.

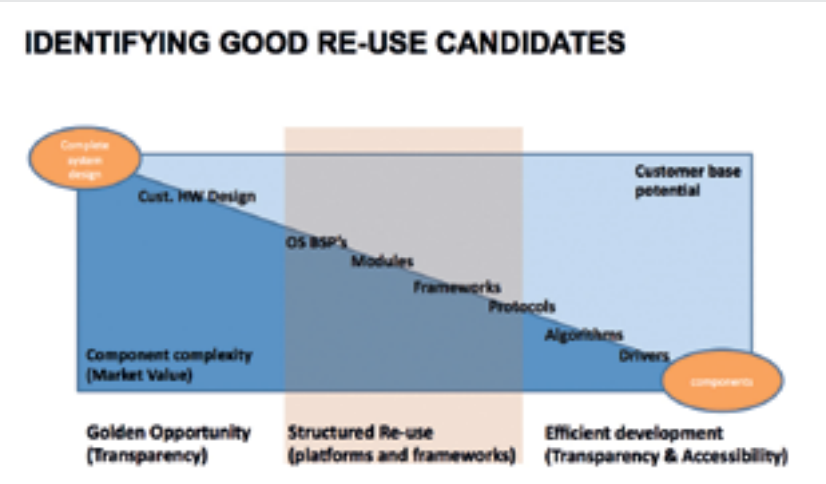
The Re-use process is about cataloging everything we have already done. Nobody should have to start from scratch on a problem we have already solved to 50%.

Prevas has some twenty offices and if we are able to share existing solutions among us, the savings potential is enormous.

Since I started with this 1½ years ago, I have investigated what is reusable and which solutions are most interesting to share among our offices.

Prevas competence range is very wide. The different offices are not at all involved in the same things. Some work on test systems, others on Linux, audio, medical technology, defence, green technology, machine-to-machine communications, etc.

The adjacent figure shows a way of systematizing the different kinds of existing solutions we are dealing with. At left we have solutions representing major development efforts, therefore high values, but a small customer base, at right we have more limited efforts, e.g. drivers and algorithms, which represent less value but are more widely applicable. In the middle there is a lot of highly structured stuff, having a high potential for reuse.



To make reuse as transparent as possible, Prevas has developed its own project environment system for the purpose of systematizing all development and making all results available to all offices. Since everything we develop becomes property of our customers, all such reuse is contingent on the original customers' approvals. Prevas' project environment system is a tool for configuration handling, featuring confidentiality and version handling, as well as a components database for hardware development. Only putting a new processor into our design tools may take a couple of days and it would be wasteful to do so more than once. Another advantage is if this processor has come to be used in more than one project and then taken out of production. We would then know in which projects it has been used and then be able to contact all those customers and offer them upgrades. The system also features a search engine, enabling searching for key words in documents and in source code.

The tool can also be used to implement our ISO-certified project models so that all our offices would end up solving their tasks in the same ways. This enables us to deliver the entire project history, with all changes, customer requirements, source code files and binaries to the customer. This ability has proved to be of great value e.g. in medical technology projects where traceability is highly important.

We also want to modularize the hardware we have developed without going as far as turning it all into modules. For this purpose we developed the ESIP system (Electronic Subsystems Intellectual Property) to achieve the same short development times we have for system modules (SoM). The aim is to be able to take a module, consisting of a ready-made core, consisting of a processor and

often desired in large volume products. For this purpose we developed the ESIP concept (Electronic Subsystems Intellectual Property) to approach the attractive time-to-market potential we see in designs with system modules (SoM). For board development the concept is to choose an existing core ESIP, consisting of a processor, power management etc. , with the required software parameters and combine it with customer-specific peripherals such as Ethernet and USB ports, analog inputs, drivers, stepping motors, etc. In this way it becomes possible to shift the development burden from reinvention to reintegration.

We are currently involved in two customer projects using the same core ESIP.

one is a high end sound system and the other a control system for a food processing application. While the two applications are very different, they integrate the same core but different peripherals.

The future suggest further development of the ESIP project, for instance the ongoing introduction of the i.MX6 processor architecture from Freescale. This architecture is very flexible.

For more on this subject, please contact:
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Mikkel Ingstrup
MANAGER FOR THE RE-USE PROGRAMME PREVAS

OE-LITE LINUX

REDUCES DEVELOPMENT AND MAINTENANCE COSTS

For embedded industrial use, there is a constant demand for stability and reproducibility in software development. In order to provide this for embedded Linux based products, Prevas is one of the main contributors and sponsors of the OE-lite Linux community project.

OE-lite Linux is an integration tool for industrial-grade Linux Board Support Packages (BSPs), born from a demand for stability and long-term maintenance of customized Linux. Since the early start back in 2008/2009, OE-lite Linux has been used for Linux BSP integration and maintenance in many different solutions, from train information systems to medical devices, and they have provided high value to many customers.

The main idea is to keep a stable customized Linux for 10+ years for customer-specific hardware (HW), even if that HW changes over the product's lifetime (e.g. different HW versions or CPUs). With OE-lite Linux, Prevas' customers keep the same Linux API, kernel version etc. in a given customized Linux, even when running on different types of HW. This solution efficiently reduces the application development and maintenance costs, making the customized Linux API the actual platform for application development, not the raw HW. This enables application developers to focus on value adding application features instead of low level HW support.

OE-lite Linux BSPs have been made by Prevas from small uCLinux MMU-less CPUs up to multi-core x86- or ARM-based boards with little or much memory and with or without display and touch screen.

Visit www. prevas.se/referensprojekt to read more about how Hounö uses Linux to control tomorrow's furnaces from a cellphone application.

For more information on what OE-lite Linux can do for you, please contact Søren W. Mathiasen
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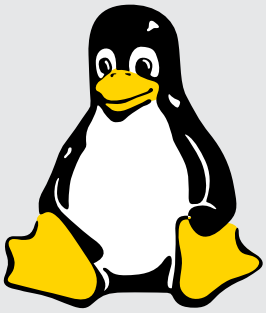
Søren W Mathiasen
PREVAS A/S
VICE PRESIDENT
SALES & MARKETING

CENTER OF EXCELLENCE (COE)
EMBEDDED LINUX

Industrial Longevity Open-source Operating Systems



TECHNOLOGY

Prevas has the largest independent team for embedded Linux in Scandinavia for design, development, customization and long-term maintenance of industrial-grade embedded Linux Board Support Packages (BSPs), including varieties of Linux such as Android and uClinux. These services are provided by a core team within our Embedded Linux CoE together with a number of Linux experts spread over the entire Prevas.

Prevas' services in embedded Linux cover all aspects of professional BSP work.

Prevas ensures that all development is executed efficiently and with professional long-term maintenance as a quality target. Starting with the early specification and technical decisions needed to achieve a high quality BSP. Continuing with Quick Start BSPs for fast tracking of early hands-on testing and evaluation, including education seminars for in-house development.

Development ends with delivery of a fully customized embedded Linux (pure Linux, Android or uClinux) BSP, including an application software development kit, customized kernel, a bootloader, rootfs and deployment integration.
After delivery, Prevas continues to take responsibility for the delivered BSP.
Prevas has developed a long-term maintenance program for industrial-grade BSPs, ensuring continuous upgrades and enhancements of the BSP, which sustains the value of the BSP.
When the customer product approaches its end of life, Prevas can help in the efforts to reuse the BSP work in new software platforms for future products - even after 15-20 years of usage.

For more information on this subject - or on what Prevas can do for you, please contact: Søren W. Mathiasen
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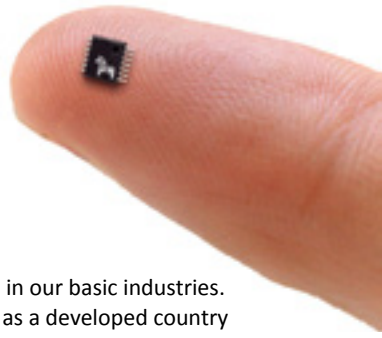
Smarter Electronic Systems for Sweden



The development of electronics and embedded intelligence in products is truly impressive. Better, cheaper and faster – at a breathtaking pace. The success of products these days depends largely on the functionality and capabilities of the electronics and software which are hidden under "the hood". And the makers of these products are getting ever more dependent on ever more intelligent systems for automation, efficiency improvements and traceability. Efficiant production and design for manufacturing are also important for the competitiveness of the product.

Electronics has an important role to play to achieve sustainable development of this globe of ours by solving many of the challenges facing humanity, by providing smart systems to save energy and utilize renewable sources of energy. However, electronics also consumes electricity, giving rise to the need to develop more energy-efficient hardware to meet the communication explosion we can see coming. The need for communication not only between people but also between gadgets (Internet of Things) appears almost limitless.

"Smarter Electronic Systems for Sweden" is the name of the research and innovation program established by a wide range of interested parties to make electronics a strategic field of innovation for Swedish industry. So far, we have examined the state of the industry in terms of health and prosperity, and identified weaknesses and promising new areas to enter into.

For Sweden, with its many successful 'flagships' in fields such as automation, telecom, automotive, life science, home appliances and IT, more use of smarter embedded electronics promises to become an important competitive edge. Right now we see the need of embedded systems, sensor networks and conectivity increasing also in our basic industries. Sweden's success as a developed country in the years ahead will largely depend on how we reach and maintain high competence in the electronics field throughout the entire value-adding chain, from idea through research, development and production, to market availability.

For more information on electronics development or what Prevas can do for you, please contact Maria Månsson
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BUSINESS UNIT MANAGER OF PREVAS & CHAIR PERSON OF THE INDUSTRY ORGANIZATION SWEDISH ELECTRONICS