TECH TRENDS

TECHNOLOGY NEWS
AND TRENDS
FROM PREVAS

NO. 2 2012

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In this issue of Tech Trends, we focus on traceability and control, issues which are becoming ever more important as global competition compels corporations to produce more from less in their existing facilities.

TRACEABILITY
Key to higher efficiency?

EDITORIAL

LUCKILY, there are many new technological possibilities. We see ever more integration between systems, not least between PLM systems and MES, as well as among maintenance systems and ERP, MES and automation.
The general information-technological development is a strong driver of progress, not least the advances in the communications area. Often, industrial IT system are implemented in global corporations and required to interoperate across entire world-wide groups. Here, today's Internet technologies are essential.
As new technologies emerge, they undergo a number of phases before they take off on the market. The journey starts with innovation and continues with growth and maturity.
The growth phase is often hampered by what I often call The Growth Barrier. In industrial IT, common barriers are lack of generally accepted standards and a general lack of awareness of the technology's potential. But we do inch closer to maturity every day and a number of factors suggest that many of these system classes that figure in industrial IT will grow strongly in the months and years ahead.
As of the beginning of the 1990s, a buzz concept has been Manufacturing Execution Systems (MES). Experience has shown that overarching control of manufacture by MES pays for itself in a surprisingly short period of time. It does so in the form of higher productivity, improved traceability, less rejects, smaller inventories and higher quality. Despite the economic potential of MES, the technology has been adopted by user only to a limited extent.
MES is the system class that interconnects Enterprise Resource Systems (ERP) with the PLC and SCADA level. To the extent that MES have been implemented, they have largely been custom-built for specific production facilities. Interestingly, a new standard, ISA95, has emerged, covering Manufacturing Operations Management, a concept that embraces MES. A number of other standards in related fields have also seen the light of day, or are near publication. All these developments create uniformity of approach and vocabulary to all who are involved in the development of systems at the MES level. Best practices are on their way to fruition.
To the extent that MES systems have been implemented, they have been custom-built for specific production facilities. But thanks to the new possibilities emerging, tomorrow's MES solutions will be based ever more on standardized platforms.✱

CHRISTER RAMEBÄCK

Senior Vice President
Industrisystem, Prevas AB

Center of Excellence in Traceability

Over many years, Prevas have been developing, delivering and supporting traceability systems nationally and internationally to world-leading companies. Traceability is one of the major keys to efficient and fault-free production.
To assist our customers we are now investing even more in this important field, e.g. by establishing an Expert Center for Traceability.
Read more at ***www.prevas.se/sparbarhet***

EFFICIENT FURNACE CONTROL

Outokumpu is a world-leading supplier of stainless steel. To make their production of such steel more robust and efficient, they are now upgrading their overarching control system for annealing furnaces with assistance from Prevas.
The making of steel products requires much energy. Materials are heated and cooled cyclically for it to get the desired properties. Efficient utilization of furnaces requires optimization of productivity, quality and energy consumption.

Expansion in Sweden

Prevas has opened offices in the Swedish towns of Jönköping and Karlskoga. These new offices will provide their respective regions with leading-edge competence in industrial IT and embedded systems. As of September 1, further offices were also opened in Finspång and Norrköping.

Innovation for Growth

With leading expertise in embedded systems and industrial IT, Prevas contributes by providing innovative solutions that create growth. Prevas is hired by customers wanting to develop smart products with IT contents and by customers wanting to streamline and automate their operations. The company has offices in Sweden, Denmark, Norway and India

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Arla Food

Prevas develops a new and modern control system for Arla Food. Final delivery is scheduled for December 2013 and the contract value is just over US $ 2 m.

ARLA FOOD´S i Prevas develops a new and modern control system for Arla Food. Final delivery is scheduled for December 2013 and the contract value is just over US$ 2 m. Arla Food's processing plant at Vimmerby, Sweden, was started up in the year 2005, today producing powdered milk from approx 350 000 tonnes of milk annually. The facility is expected to be expanded over the next few years and in preparation for that development, the company has decided to invest in new, modern and production-related IT systems.
– It is important to us to invest for the future, not least in Sweden, to make a difference and to be able to offer added value to customers, consumers, dairy farmers and staff. Prevas has both the competence and the experience in similar IT projects, says Jörn Skovlund at Arla. The project includes software, system migration, quality assurance, installation, commissioning, testing, training and support.
As supplier to Arla, Prevas ensures that, during the course of the project and over subsequent years, there will be locally resident expertise able to provide both support and services in order to maximize system uptime.
– We are very happy with the trust Arla Foods showing us. This type of project suits us, hand in glove. Our quality-assured work processes will ensure that as complex as the commissioning of Arla's new systems will be, it will still be executed smoothly and correctly during the brief and critical commissioning periods the company is able to offer us, says, Robert Majanen, Business Unit Manager at Prevas.✱

> "IT IS IMPORTANT TO US TO INVEST FOR THE FUTURE, NOT LEAST IN SWEDEN, TO MAKE A DIFFERENCE AND TO BE ABLE TO OFFER ADDED VALUE TO CUSTOMERS, CONSUMERS, DAIRY FARMERS AND STAFF. PREVAS HAS BOTH THE COMPETENCE AND THE EXPERIENCE IN SIMILAR IT PROJECTS. **Jörn Skovhauge, Arla**

PREVAS' NEW BUSINESS AREA

WE CHALLENGE CUSTOMERS WITH A NEW TYPE OF MANAGEMENT CONSULTING

General management consulting services have been available for years. Intelligent women and men have advised corporate management teams about how to communicate goals and get all staff members on board. This advice has usually been based on generally accepted models and concepts, which have been used by consulting firms for decades to develop and streamline business operations.

PER MELIN, who is a new Business Area Manager at Prevas, is starting an entirely new kind of management consulting operation. Says he:
I don't think customers want to buy general advice any longer. Processes are often, already, so fine-tuned that there is often not much left to get from them.
Rather, I think business managers want to be challenged, want innovators who are able to serve as vitamin shots into their business models. To be able to offer just that, we are creating an organization which shall be able to see cause-effect relationships that nobody else sees, staffed by people who are brave enough to question yesterday's truisms.
Another pillar in the foundation of our new Business Area is the commitment to become specialists in the management of specific industries. Most industries are undergoing changes at break-neck speed. Business models are shredded over night. Entire industries are radically transformed or made obsolete.
Acting as a managerial consultant under these circumstances requires deep business knowledge, as well as strategic and novel thinking, not merely old-hat advice that cements yesterday's solutions.
Prevas' Management Consulting supplements our existing offerings to our customers very well and paves the way to interesting synergies with our more established technological knowledge provision services.

Per Melin
BUSINESS AREA MANAGER
MANAGEMENT CONSULTING

Please contact Per Melin at *per.melin@prevas.se* **for more information.**

IT IS NO COINCIDENCE THAT THE MEDICINE-TECHNOLOGICAL INDUSTRY IS STRINGENTLY SUPERVISED. IN ORDER TO SELL MEDICINE-TECHNOLOGICAL EQUIPMENT, APPROVALS FROM GOVERNMENTAL AGENCIES IN THE TARGET COUNTRIES ARE REQUIRED.

AN IMPORTANT AID to approval is certifications in quality, and the environment from international organizations. Keeping tabs on your development and manufacturing processes then becomes essential. Because when you do get your product approved in a country, you must subsequently be able to show that all the changes you make hence are implemented correctly, or else you will automatically loose your approval, the moment you improve your product.
An important component of any product is its markings. For this reason, an appropriate marking system, complying with the GxP rules governing the pharmaceutical and medical-equipment industries, is essential.
– Version handling and traceability, covering all changes at both label data and label layout levels are some of the advantages of Prevas' system Snitcher Medical, says Jonas Edlund, System Manager for Snitcher Medical at Nobel Biocare.
History of all labels, printed, by whom and when, is another essential function, as is support of review, approval and activation of label versions.
Nobel Biocare has bought a group-wide license from Snitcher Medical, covering Nobel Biocare's global production sites, its research and development location and its external suppliers. The server-based architecture of the system facilitates the groups' global label handling due to the fact that Nobel Biocare is able to design all labels centrally and then provide its internal production sites with the activated labels they need and control which labels external users should be able to print.
– External suppliers may be located in the USA or in Europe. The Internet is used for communications and all transactions are protected by VPN tunneling, says Edlund.
By virtue of the fact that the new system is integrated with Microsoft's Active Directory, the administration of users is facilitated. In addition, integration with Nobel Biocare's administrative system ensures safe orders-based labeling.
Variable batch data, e.g. Batch No. and Expiry date are added to the labels automatically.

Jonas Edlund
SYSTEM MANAGER
SNITCHER MEDICAL

Ulrika Magnusson
PRODUCT MANAGER
PREVAS KARLSTAD

Another advantage is that the new version of Snitcher Medical is able to manage 2D, DataMatrix barcodes. These may contain details of product type, country of origin, batch No., date of manufacture and use-before date.
– The DataMatrix codes offer many advantages when it comes to cramming a lot of information into a small area and using these in your labeling paves the way to satisfying future requirements for traceability, says Ulrika Magnusson at Prevas.
Edlund of Nobel Biocare agrees:
– Marking our products with DataMatrix' codes and complying with the GS1 standard are important services to our customers; it gives us an edge, he adds.
Edlund says that he is happy with Prevas as supplier:
– Prevas has been responsive to our requirements and we have cooperated fruitfully for quite a time, cooperation that has yielded both stability and quality. It is important to us that, when we do get our products approved, we maintain those approvals over time, despite the fact that we change the system continuously. Snitcher Medical helps us do just that.
– We are also pleased by having had the opportunity to work with Nobel Biocare. It has given us a lot of valuable feedback on how to make Snitcher Medical even better, says Ulrika Magnusson, Product Manager for Snitcher Medical in Karlstad where the system is being developed further.
The building in Karlskoga, Sweden, where Nobel Biocare resides was erected in the 1960s as a laundry establishment serving the Bofors group of companies. At that time, the various Nobel companies were largely synonymous with Karlskoga. Nobel Biocare has operated from this location since 1983, initially as part of the Bofors group and then under the name of NobelPharma. Its present name has been current since the second half of the 1990s.
– Despite the fact that only a few firms have been allowed to retain the name 'Nobel' as part of their names and despite the fact that they, these days, operate in quite different fields, most local residents still se us as part of the same old group of companies, says Edlund.

> **IT IS IMPORTANT TO US THAT, WHEN WE DO GET OUR PRODUCTS APPROVED, WE MAINTAIN THOSE APPROVALS OVER TIME, DESPITE THE FACT THAT WE CHANGE THE SYSTEM CONTINUOUSLY. SNITCHER MEDICAL HELPS US TO DO JUST THAT"/ JONAS EDLUND**

Edlund's pride in his company and its products shines through.
– If we are to live long we must have healthy teeth. Not being able to chew one's food devastates one's health. Our stomachs need to work and for this to happen, chewed food is required. If you start living on soups alone, your stomach will soon stop working, he says.
Nobel Biocare makes a wide range of titanium screws used to fix tooth implants into people's mouths.
– Even if a patient has been toothless for a long time and his jawbone has been softened, we have a screw that can go through the entire jawbone and the sinus, and be fixed into the oakbone above, says Edlund.
That screw is 52 mm long! If you are facing the prospect of getting a screw, half a decimeter long inserted into your head, it is important that the manufacturer is keeping tabs on his processes – very important! ✱

SINCE 1996, NORWAY'S BORREGAARD – THE WORLD'S MOST ADVANCED BIO-REFINERY – HAS, REAPED LOTS OF REWARDS FROM PREVAS' MIKON SYSTEM, PRIMARILY FOR REPORTING. THESE DAYS, THE SYSTEM IS ALSO USED FOR PROCESS CONTROL, FORMING A CENTRAL PART OF THE COMPANY'S NEW CONTROL ROOM.

BORREGAARD CONTINUES TO DEVELOP ITS

MIKON 3.2 SYSTEM

TECHNOLOGY **LARS-JØRGEN THORESEN** har Thoresen has worked at Borregaard since 1989 as user and operator of the Mikon system Prevas installed in 1996. One of his first assignments at that time was to coordinate the company's efforts to integrate the new Mikon system with its existing SAP administrative system. Initially, the Mikon system was only used in the section of Borregaard that refines cellulose and there primarily for follow-up and tracing. Today, however, the system is used in ever more sections of Borregaard, even for process control due to the fact that advanced reporting has been added as a capability to the system. The reports are based on production data stored in a Production Information (PI) database where measured values are collected.
– Initially we developed the system primarily with in-house resources. We still do but also bring in Prevas for larger projects. It is a matter of capacity.
The Mikon process information system is flexible and we are happy with the support we get from Prevas, also when it comes to responsiveness to our requirements for new functions for operation and configuration. We see advantages in bringing in a local and nimble engineering firm such as Prevas as system supplier, says Thoresen, Systems and Interface Manager at Borregaard.
At installation time, the system was Unix-based but in 2005 it was transferred to the Windows environment. The system covers approximately 10,000 measurement points throughout the production process. Data from these points are put into a PI database, from which Mikon gathers data for its various reports. The system also gets input from manually conducted tests in laboratories. Shortly, the number of measurement points will reach 15,000.
Currently, the Mikon system is used to compile reports on production, water consumption, emissions and energy consumption to the authorities that have granted Borregaard concessions for certain amounts of emissions. The reports the Mikon system produces include e.g. running averages from the latest hours, days weeks, months and years.
When Borregaard built its new control room in 2010, Mikon became a central component of its control system. These days, Thoresen is manager of systems and interfaces and says that both the PI database and the Mikon system have been refined significantly since 1996 when they were installed. A conclusion now is that two separate products was not necessary.
With a view to the future, Borregaard is currently building models for the introduction of Mikon to a new plant section for the spray-drying of lignin. There is also a process for the standardization of processing of input data and the automation of production reports to the SAP system.
– Along the way, new requirements and new development projects always crop up, so our direction into the future depends significantly on the input we get from our operations people, says Thoresen.

Lars-Jørgen Thoresen
MANAGER
SYSTEMS AND INTERFACES, BORREGAARD

FACTS ABOUT: BORREGAARD

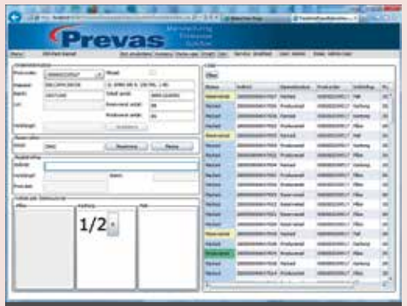
Borregaard is part of the Orkla Group and perhaps the world's most advanced bio-refinery, among other things making advanced and environmentally friendly bio-chemicals, bio-materials and bio-ethanol, capable of replacing oil-based products.

Mikon is a standard product which is wrapped around a specific application by configuration. Borregaard started using Mikon in 1996 and is currently running version 3.2. Prevas is now developing a "cloud" version for the benefit of users. The first edition of this version will be private, i.e. installable as a component of customers' Intranets. It is expected to be market-ready by the end of the year.

EXPLOSIVES IN THE WRONG HANDS MAKE THE WORLD EVER MORE DANGEROUS. THE NEW EXPLOSIVES DIRECTIVE OF THE EU, WHOSE IMPLEMENTATION IN SWEDEN IS SUPERVISED BY THE SWEDISH CIVIL CONTINGENCIES AGENCY (MSB), ALONG WITH PREVAS' TRACEABILITY SOLUTIONS ARE IMPORTANT WAYS FORWARD.

ORICA MINING SERVICES USE PREVAS' TRACEABILITY SYSTEMS

DIFFERENT TYPES of explosives are used in terrorist attacks. Consequently, increasing safety in the handling of explosives is a prioritized issue in the European Union. It is essential that companies, making and handling explosives, have traceability systems covering such goods so that the whereabouts and the latest registered owner of them can be identified, at any time. A prerequisite for the maintenance of correct and full details of such goods, throughout the entire distribution chain, is that each item is equipped with a unique identity marking and that each link in the chain employs a system that is able to keep track of each such item. Such a system will facilitate the tracing of each such potentially dangerous item, from production to final use. Orica at Gyttorp, Sweden, makes and handles different types of explosives for civil use, including bulk explosives, igniters and different types of cassetted explosives. The buyers are primarily civil engineering firms, mining companies and assembly facilities throughout the world.



A screen image from the Prevas system used by Orica, Gyttorp, Sweden to trace explosives.

Mats Eurén is Prevas' liaison officer vis-à-vis Orica for its traceability system:

– Orica was very satisfied with our prestudy and chose to continue cooperating with us for implementation of a suitable system. On the basis of Prevas' MES system platform and in close cooperation with Orica, on the basis of our prestudy, we developed a system framework focusing on consistency in presentation and functionality. All for the purpose of simplifying the tasks of users and increasing flexibility.

Orica has managed to involve its staff during implementation very well. The process has been evaluated continually to ensure maximum acceptance from users and thereby maximum utility from the system in the years ahead.

The system will gradually be introduced throughout the factory. Currently, the system has been introduced to pilot lines in each production department with good results. The work now continues with the adaptation of the production equipment and the implementation of the system to parallel production lines. The goal is to have it all done by the end of the upcoming year-end, thereby getting a couple of months' grace before the new legislation takes effect.

Consequently, the system is largely finished, functionally speaking, and Orica is able to carry on, at its own pace, with redesigning machinery, training, documentation, etc.

Currently, the system, as installed at Orica, consists of everything from the marking of finished explosives cassettes (including igniters/fuses), cartons with 60 cassettes (semifinished) right up to entire pallets with 32 cartons.

The markings are based on a site code and a serial number. The Gyttorp factory has been allocated a site code from MSB, while the serial numbers are managed internally by Orica.

The product and the order information is obtained automatically from the company's administrative system.

When production is about to start the machine operators concerned call up the impending production order onto panel PC to get the appropriate product labels and to report back on actual production.

For each product, an appropriate label is printed, which the operator then confirms with a scanner. In this way the operator, implicitly, develops a packaging hierarchy (on the basis of the product description), keeping track of which instances end up in which bags, which bags end up in which cartons, etc.

When picking up an item from a carton, one immediately sees which other items there are in the same carton.

It is possible to follow the packaging hierarchy both upwards and downwards. The carton is then put onto a pallet and a pallet label is printed when the pallet is filled to its capacity.

When this label is affixed and verified, all relevant data about the pallet and its contents are reported to the ERP-system.

Later, another production department will be covered by the system, i.e. the one producing explosives in bulk. For that purpose, Prevas will develop an interface between the traceability system and the production equipment, consisting of conveyors and palletizing robots.

The Explosives Directive will go into force in April 2013 for producers and in 2015 for end users. The latter invocation will be effected by compelling distributors to keep tabs on their end customers. Each step of the distribution chain shall be identifiable.

We want to simplify things for all, primarily for small construction firms.

Mats Eurén, Prevas representative for the Orica project.

– We want to simplify things for all, primarily for small construction firms. Many of them use explosives e.g. during the construction of roads and buildings. In the upcoming fall, we intend to provide a 'cloud' service in the form of a cell-phone app, enabling contractors to report how much explosives they have consumed, when, etc. This date will then be safe-kept in a database at Prevas, concludes Eurén.

FOOTNOTE 1

The MSBFS 2010:3 decree mirrors the EU Directive 2008/43/EG. The purpose is that all explosives for civil use must be traceable from manufacture/importation to deployment, at any time and at any point in the distribution chain. Source: Swedish Rock-blasting Contractors' Association (http://www.bef.nu/in-english.aspx)

WWW

http://www.prevas.com/press_releases_20111205.html

http://www.oricaminingservices.com/se/sv

ULRIKA MAGNUSSON FROM PREVAS' KARLSTAD OFFICE IS OUR COMPANY'S LATEST SPECIALIST APPOINTMENT. **THE PROMOTION IS IN RECOGNITION OF MAGNUSSON'S KNOWLEDGE IN THE VALIDATION OF COMPUTER SYSTEMS IN** GXP-REGULATED INDUSTRIES.

KNOWLEDGE AND PASSION

SPECIALIST

THIS WRITING is about companies making products which are either pharmaceuticals, medical devices or active substance for pharmaceuticals. These industries are subjected to legislation and decrees which are often referred to as Good Practice Legislation. The most well known is perhaps Good Manufacturing Practice (GMP).

Every market has its own set of rules. The American one is governed by the Federal Drugs Administration (FDA) and the European Union (EU) has a corresponding set of regulations.

Validation is the process of reaching a position of proof that one's computer system is appropriate and safe for its intended use and that it satisfies the relevant regulatory requirements put on it. To a large extent, it is also a matter of retaining the approved status during the entire life-time of the system.

Usually, a model is used in which the requirements, functions and design of the system are specified and then verified by appropriate checks.

At all times, it is up to the system user to ensure validation but Prevas, as system supplier to these industries, gets involved in these validation processes.

Ulrika Magnusson, who, by education, is a systems analyst, has more than ten years of experience in managing projects involving validation of IT systems used in the pharmaceutical and medical industries. She knows much about the demands placed on them for traceability, safety, documentation and quality.

– Our customer are subjected to stiff scrutiny by authorities and if shortcomings are found, the company gets a warning or, at worst, is barred from selling its product. When working on validation issues it is important to help our customers decide on the appropriate level of work, i.a. on the basis of risk analyses. It is also important that we, as a system supplier, shape our documentation so it can easily be used in the validation process.

Validation does not imply a fixed framework, which often lures customers to overdo the work they put into convincing the authorities of the appropriateness of their system, often detracting from more important quality-assuring activities. Consequently, it is important to validate efficiently in terms of both cost and quality.

Latter days' 'agile' system development methods, in which requirements and functions are not specified from the start but gradually, also pose new challenges to validation.

For the sake of proof of validity, the traditional 'V' model is used but it has to be invoked many times during the course of a project and on suitable sections of its functionality and then with different test methods, says Magnusson.

Magnusson's expertise in validation is in perfect harmony with Prevas' guiding tenet: "Innovation for Growth".

– Thanks to our knowledge in validation, our customers save money and get better systems. My assignment is to keep abreast of the regulatory developments in the field and help my company and its customers spend our time on the tasks that really improve quality and robustness, not merely produce reams of documentation. I feel confident that this specialization of mine can contribute to more efficiency and higher prosperity among Prevas' customers, concludes Magnusson.*

NEW CAREER PATH

A while ago, Prevas opened the door to an alternative career path. That of Technological Specialist. Being appointed such a specialist implies that the person involved possesses leading-edge competence in a field which is important to Prevas and that (s)he undertakes to keep abreast of developments in that field and to promote awareness thereof and positive development therein throughout our company.