Croatian health ecology specialists and inspectors keep harmful microbes and chemicals at bay

Pardus and IBM solution enhances the monitoring of thousands of food items, materials and water

Smart is...

Determining the health profiles of drinking water, waste water, meat, vegetables and other products headed for Croatian and European markets and being able to go back immediately to fix problems.

By using eQMS: :LIMS from IBM Business Partner Pardus, incoming health samples from all kinds of situations are now analyzed and the data entered into electronic templates by Zavod technicians. This provides faster, more effective support by facilitating communication, providing traceability and instant auditability for timely and precise product recall in case of health emergencies. Zavod now can analyze up to 20 percent more samples than before, providing a typical Return on Investment (ROI) in approximately 36 months. Zavod health professionals can instantly identify samples, who brought them in, when were they analyzed, and, who handled each test. Trends are spotted and out-of-compliance data are flagged.

Varazdin County in north Croatia is one of the country's most populous and important counties with intense commercial and export activities focused on manufacture of milk and beverages, meat packing, clothing, textiles, and other products. Its county seat, Varazdin City, once the capital of all of Croatia, is a picturesque and bustling city with many cultural attractions and a population of more than 40,000.

Zavod za Javno Zdravstvo Varaždinske Županije, or Zavod, is the Institute of Public Health for the Varaždin County. Its official task is monitoring and evaluating many factors influencing the health of the population of Varaždin City and County. And that includes drinking, surface, ground and waste water, all kinds of food including meat and meat products, milk products, cereals, fruit, vegetables, as well as general merchandise samples.

"Until 2009, we had to carry out our mission with a slow and error prone paper-based system," said Irena Tomiek, Deputy Head of Health Ecology, Institute of Public Health for the Varaždin County. "We knew we had to change. The monitoring system had a great deal of inertia, it lacked transparency, we couldn't really trust the data and the system was very slow and hard to update."

To solve its problems in collecting, storing and processing health data, Zavod joined forces with IBM Business Partner Pardus d.o.o. to implement eQMS: :LIMS, a powerful laboratory information management system based on IBM WebSphere® Application Server Community Edition V2.1 and IBM Informix® V10 database software. The new solution can access analytical data in extensible markup language (XML), provide browser-based access and easily integrate with other IT systems.

All risks and threats are instantly made available

The new solution unifies data collected from food, water and general merchandise samples, and enables Zavod to enforce standard and legislative compliance, introduce process security, trace samples, promote enterprise wide collaboration and perform instant audits.

"All incoming sample data are aggregated into a centralized database that enables us to monitor trends and identify potential risks before

Business Benefits

- The database is secure and only can be accessed by a password-protected browser.
- The data is 100 percent traceable. Every technician has an ID, which also is keyed to specific data templates.
- Reliability and accuracy of data. Templates specify exactly what data can be entered. Exceeded concentrations trigger alarms.
- Speed of information transfer. The data goes immediately into a unified database, for storage, processing and report generation.
- Recognition of the analytical reports in the country and abroad. All data and reports are machine readable.
- Saving time and materials. Virtually all paper-based forms are avoided – eliminating errors and costly reentry of data.
- Increased productivity. In its first year of operation, Zavod technicians processed up to 20 percent more samples than before without any increase in staff.

incidents occur," says Tomiek. "And whenever a health parameter is out of acceptable range, a related authority is alerted. All risks and threats discovered by us are instantly made available to the public through the our web portal. We were never able to be this responsive with the old system."

eQMS: :LIMS relies on a workflow engine that automates overall analytical processes, from sample reception to finished analytical report or health certificate. The solution provides analytical procedures depending on sample type, purpose of analysis, owner, and other factors so it can be adapted to any new situation.

"Without the new system," said Tomiek, " there is no way that we could meet the new European Union (EU) Directive that requires all food sold and manufactured in the EU to be safe and fully traceable from 'farm to fork.' "Our county would have been shut out of that huge economic opportunity," she said.

WebSphere Application Server software provides eQMS: :LIMS with a reliable, service-oriented architecture (SOA) platform that will allow Zavod to flexibly integrate additional business processes on the same platform in the future. The Informix software provides fast and reliable storage for divergent sets of chemical, physical and biological data, enabling the institute to quickly and reliably retrieve data whenever needed.

Now, the institute can rapidly respond to public health threats as well as enable authorities to better understand the strength of their risk prevention policies. The solution also increases laboratory efficiency, productivity, throughput and lowers the cost of processing samples.

Smarter Health Knowledge: Gathering information for intelligent analysis

Instrumented	All data are entered into the system from secure laptops, desktops, Personal Digital Assistants (PDAs) – and directly from lab instruments – increasing accuracy and productivity.
Interconnected	Biological, chemical and physical data are pulled together from many laboratories into a central database for storage, processing, alerts and reports. Any password-protected Web-browser can access the data.
Intelligent	Instantly identifies samples for health professionals: who brought them in, when they were analyzed, what the results were and who handled each test. Trends are spotted and out-of-compliance data are flagged.

Solution Components

IBM Software

- IBM WebSphere Application Server Community Edition
- IBM Informix Community Edition V2.1V10

IBM Business Partner Software

- eQMS: :LIMS information management system from Pardus d.o.o.

"We have a major responsibility to safeguard the health of Croatian citizens. This solution helps us meet that challenge more productively and more accurately. It also flags concerns and helps us to identify emerging trends."

Irena Tomiek,
Deputy Head of Health Ecology,
Zavod

In 2010, the first year Zavod began using eQMS::LIMS, the productivity of its staff in handling and analyzing samples increased by up to 20 percent. "Without adding any technicians," Tomiek said, "now we can examine about 2,000 samples of water, 1,500 samples of food and 1,500 microbiological samples per year. Based on this experience, Zavod should be able to achieve Return on Investment (ROI) in 24 to 36 months."

"We have a major responsibility to safeguard the health of Croatian citizens," said Tomiek. "This solution helps us meet that challenge more productively and more accurately. It provides traceability and instant auditability for timely and precise product recall in case of health emergencies. It also flags concerns and helps us to identify emerging trends."

The Inside Story: Getting There

Zavod had been struggling with tracking thousands of health samples for many years using a slow, error prone paper-based system. All chemical and microbiological data were recorded manually on paper spreadsheets. That required constant checking, and naturally, with manual input, mistakes were made. But according to Tomiek, "the biggest drawback of the paper-based system was its lack of swift and accurate traceability in cases where a microbiological outbreak had been discovered."

But, then, in 2009, Irena Tomiek and colleagues attended a conference in Varaždin where she heard Damir Kropf, co-founder and CEO of Pardus, present a paper on the success of the eQMS: :LIMS application that the firm developed for the Croatian National Institute of Public Health in Zagreb. Here was a solution that was almost a perfect fit. The National Institute of Public Health was measuring essentially the same variables, dealing with the same issues and challenges and using a set of templates written in the Croatian language. Irena was impressed.

She learned that Pardus was formed in 2001 in the city of Zagreb, the capital of Croatia. Soon after, it began to develop its flagship product, eQMS: :LIMS to streamline processes and data flows for analytical, research and quality assurance laboratories. The system had to be a major step forward in laboratory automation. But it also needed to incorporate best practices in the way data were recorded, checked, and importantly, how measurements could be traced back to every technician who had a hand in entering data. That would give any laboratory, such as Zavod, using eQMS: :LIMS a double advantage. It would make a laboratory more productive, and it also would enable it to produce a more accurate analysis that could be traced back and referred to days, weeks or years later. This is just what Tomiek wanted to hear.

The idea of best of breed practices is a discipline that is sought after by many, but only rarely can it be extended to such an extreme. Although not used in this case, this is what IBM's Industry Frameworks is all about – collecting best of breed examples and applications on an industry-by-industry basis, which makes it easier, faster and more economical for a customer to solve application challenges.

"We are pleased with the results that Zavod has obtained because our solutions are designed from the ground up – to meet the specific needs of our clients. And using IBM middleware means that the underlying infrastructure is rock solid. We never have to worry about it."

Damir Kropf,
CEO,
Pardus

Solutions are designed from the ground up

Tomiek also was glad to hear Kropf say, "Using IBM middleware means that the underlying infrastructure is rock solid. We never have to worry about it." That was important to Zavod since they were transitioning from a purely paper based system and did not have experience with an in-house electronic system.

Zavod signed the contract in the fall of 2009 for Pardus to go forward and install the system. Because it is a cloud computing application, there were no hardware issues to deal with. In three months, Zavod was up and running with all 16 of its technicians trained with 200 specific templates they use for entering data for all of its situations. And Tomiek's emphasis on traceability paid off. After a year of experience of using eQMS: :LIMS, Tomiek said, "traceability is the most important benefit of the solution. If there is ever a question about a concentration sample, we can immediately go back and identify just when it was made, who made it, and the value of all associated parameters."

For more information

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For more information about ISV resources from IBM PartnerWorld, visit: **ibm.com**/partnerworld/industry networks

For more information about Zavod, or Institute of Public Health for the Varaždin County, visit: www.zzjzzv.hr/

For more information about Pardus d. o. o., visit: www.pardus.hr

For more information about eQMS: :LIMS, visit: www.lims.pardus.hr

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Produced in the United States of America
February 2011

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IVC03002USEN-01