

Modular software delivers stress-free integration within and between departments

'Quality management system' delivering a patient orientated approach

An easy to use and fully integrated software solution is enabling departments in hospitals across Europe to enjoy outstanding benefits. They have real-time information on planning, workflow, and logistics, with full knowledge of each other's requirements, together with the latest materials availability, all linked to the patients' data.

Unlike other proprietary systems, that are largely standalone, the solution from healthcare software specialist Axis Medical has a fully integrated, open architecture module per department. The more modules a hospital uses the more efficient, cost, and time-saving the solution becomes, as further departments enjoy the advantages.

Able to be viewed and updated across all participating departments in real-time, this acclaimed system makes the daily routine, and even emergencies, as users say, "stress free".

With the widely-used Axis Medical system now available in the UK through agent BES Decon, *Hospital Matters* spoke to the team who created the 'multi- department' solution.

The person with the vision is Geert Ballyn, CSSD manager at AZ Delta, a private hospital, in Roeselare, Belgium. The provider is Axis Medical and its MLine (Medical Line portfolio) team, led by general manager Dries Vanbiervliet.

"We've now over 100 hospital reference sites across Belgium, Holland, France, Martinique and Guadeloupe," explains Dries Vanbiervliet. "The modules for the various departments are all linked on one platform, so no interfaces are required. Each department can see what's going on in other departments that use the system.

"The main areas we cover are operating theatres, CSSD, and endoscopy. We also have modules for A&E, workflow management, and digital medical archives."

Dries says: "SteriLine, the CSSD system has become so popular in Belgium that it's superseded other well-known brands. We find we're competing against other systems that do not usually work together, unlike ours.

"With our MLine portfolio we've focused on the whole organisation, which gives hospitals a better return on investment and vastly improved communication between departments. Basically we've sought to bring together the best platforms for each department, each discipline, that in real life belong together.

"The whole system is workflow, human and patient orientated. Users find that it takes out all the organisational stress.

"The planning module integrates fully with the hospital's information system. It links to all the patient information, electronic medical records, pharmacy and enterprise resource planning. So the whole flow of the patient is covered.

"Each phase of the sequence has its own time allocation, so at each stage the system will recalculate and adjust the programme's timing's if necessary - all in real-time. The various departments simply follow the information on the display screen. It makes everybody's life easier."

Dries adds: "The system is machine independent so we can interface with all types of equipment and are not limited to a specific brand - as many of our competitors are. The modules are all linked



Geert Ballyn, CSSD manager at AZ Delta, Roeselare-Menen, Belgium, and President of the Flemish Sterilization Club

on one platform, so no interfaces are required. The client decides the level of integration they wish to go to. And support is very close to the client."

The Vision

After working in theatres for 17 years "and being responsible for the cleaning and disinfection of instruments between operations," Geert Ballyn moved to set up the CSSD. He is also President of the Flemish Sterilization Club.

Geert explains: "After my time in operating theatres, I know how they work and how they schedule activity. Theatres were always asking us in the CSSD 'Where is my set?' They always want to have it immediately.

"I started looking for a software solution for our CSSD back in 2003. There were a lot of software packages for operating theatres and others for CSSDs, but they were standalone. There was nothing that communicated between the two - between operating theatres and the CSSD - with full integration, that I wanted. I was looking for a full quality management system, not just track and trace.

"As the hygienist. I wanted to know: which person, which set? I wanted full communication between the departments. A system that planned the activity, with open access for all. That was the vision I had when moving to the CSSD position.

"My idea was that the system would enable us to know in real-time what the operating theatres needed, and that the display would tell them where the sets they wanted were in the processing cycle," says Geert. "I needed to know: Do we in the CSSD have the sets as per their schedule? Will we be able to supply? We wanted to supply on a 'Just in Time' basis.

"The theatre team knew what I wanted to do, but the hospital's managers were not originally convinced. It took a lot of work and a lot of persuasion. When I started we had nothing. I had to make the managers believe. I had to prove that I knew what I was doing and that it was possible.

Now they believe."

Geert explains: "When I first spoke to Axis Medical in 2003, I told them we needed something for the CSSD: a quality assurance system so that we could guarantee a constant quality to our client - the operating theatres. I wanted theatres to be informed about the current status and location of the equipment, so they did not need to be constantly calling us on availability.

"To achieve this we built-in mandatory scanning events for each phase of the reprocessing cycle, so that at any given time we can see where the sets are at any stage. This also allows us to evaluate how long certain steps of the process take.

"The system is constantly evolving: we're adding tweaks all the time. I wanted a complete system, but one that is 'open' and allows us to add easily any new developments and improvements."

Geert says: "Theatres had also been looking for a solution for a few years and I knew that if we were able to integrate the two it would be the beginning of a very nice story.

"At the time our own CSSD solution, SteriLine, Axis Medical's CSSD workflow and traceability



system, was already up-and-running, so we were one step closer to my final goal.

"Axis was chosen to deliver its ORLine operating theatre solution. Then the ball really started rolling."

ORLine covers operating theatre planning, perioperative workflow and materials logistics. This includes central and decentral planning of operating theatres, including resource constraints checking, complete perioperative registration, full patient tracking, managing the supplies of theatre materials and nomenclature-compliant invoices.

Geert says: "We started with the planning for operating theatres - what they need, when they need it, the content of the sets, their availability, when they will be ready."

As a first step, in 2005 Geert began the ongoing process of barcoding the sets, moving on to instrument marking in 2010. Now 95% of the hospitals' instruments are barcoded and logged onto the Axis system. Webcams allow photos of sets to be added into the system at any time.

Geert explains: "Now I know where everything is - each instrument. I have a history of repairs and of loan gear. Through the system we have communication with the operating theatres."

Outlining the information that the system displays on the screens in the CSSD, Geert says: "In the system we've devised, the CSSD needs to know by 10am the day before what the operating theatres have scheduled for the next day. We've built that in. If there's a change they tell the theatre manager.

"So the system shows me the operating theatres' booking list the day before the activity. It shows me what kind of set types will be needed, and how many of each set type I need to supply for each day.

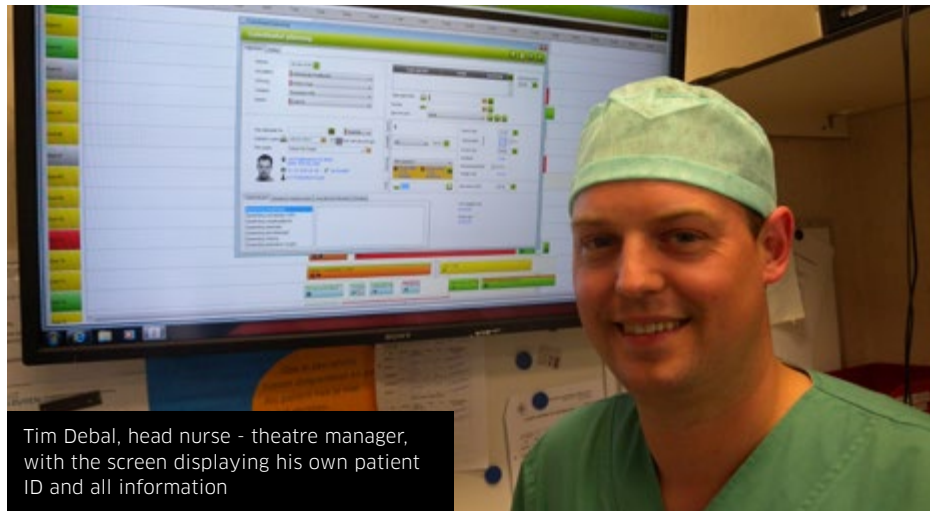


Real time activity across the hospital's 15 theatres

"In the planning overview screen, the CSSD sees the planned interventions of the day with a colour code. The colour code indicates whether all materials - not just the CSSD-derived materials - are available or not. The colour changes, from red to green and vice versa, in real time as the CSSD delivers material and as the operating theatres use the material. Based on this information, the CSSD can determine what we prioritise to make sure that no planned intervention stays red."

Geert says: "Reprocessing takes a standard five hours before an instrument goes back to theatre. That's the timescale I've allowed. The five hours starts from the first scan into the CSSD.

"After the intervention the screen shows the sets that have been released by the operating theatre and are now in transit to the CSSD. The system automatically calculates whether some of these sets need to be reprocessed immediately or if they will not be needed again today. This makes the



Tim Debal, head nurse - theatre manager, with the screen displaying his own patient ID and all information

organisation of our work much easier.

"If something is broken or, for example, if a pair of scissors needs to be sharpened, theatres can advise the CSSD through the system and we can advise them, vice versa. The message remains in the data as a record."

What benefits has the system delivered? "It's taken away all the stress," explains Geert. "You just need to look at the screen, to work with it. All the information you need is on the system. Everything runs smoothly.

"We do approximately 14,000 sets a month. It's all stress free. We serve two hospitals in Roeselare, which have a CSSD. The third one, 20km away in Menen, where there's no CSSD, is outsourced to us.

"When we make a transfer they scan it in to accept it. So on the system I know where all the sets are across the three sites."

In the receiving area, where used sets arrive from theatre and are scanned into the system, Geert explains: "Here we check the set content by number, by weight and by comparing the contents against a photo. If we find a lower weight than expected, we can look further into the detail by using the system.

"Before this, if instruments were missing it was a big problem. You had to speak to theatres to try to locate things. The stress took a lot of energy, all because things were not well organised. If they could not be located, missing instruments might need to be replaced - a costly process.

"First of all, we barcoded everything with a 2D datamatrix code, so we always know where things are. The system generates a production label that shows the set's key information. This means we can be sure that all the instruments are there when the sets leave us. That ended any discussion with theatres over missing instruments - it took away the stress.

"Now, when we check the sets in the clean area, the system generates a label that lists any missing instruments. This is fixed next to the production label in case we want to keep the incomplete sets in the system. Theatres decide whether they wish to take the set or not."

Geert says: "There are still instruments that 'disappear' every week. With the system we can prove they were there when they left the CSSD and the system helps us locate them.

"In the early years, we only did a count to be sure that every instrument was in the set. Sometimes that was not accurate enough, so after a few years we added the weighing solution.

"By weighing we can see immediately if there's a difference from what the set's weight should be. There might be several sets used in an operation

and the missing instrument might have been put in another set. If there's something missing, we can see in the history who was responsible for that operation."

Geert explains: "With so many instruments, it can be easy for items to go missing, or to be misplaced. So, we created a new position of materials manager in 2012. Using the system, the materials manager can find out where things are and locate 'lost' instruments.

"It's taken up with the theatre managers and staff, and helps avoid re-ordering. Her work has saved over 20,000 euros in 2014-15 alone."

Geert says: "The materials manager also knows when the operations will be and makes bookings with suppliers for loan sets and implants as required.

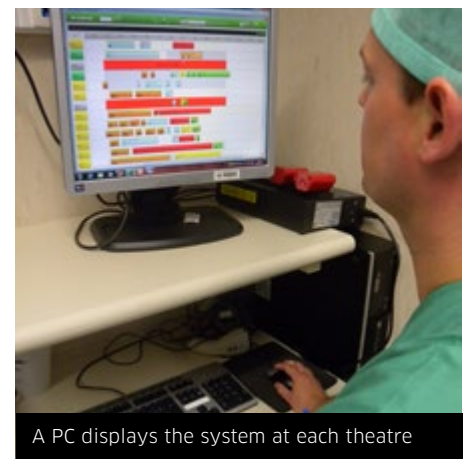
"With Axis, we're working on a new module for implants. With it we'll scan every implant, the specific number in pharmacy, and the article number in their software programme."

Operating theatres

In the operating theatres - where Axis Medical's ORLine is used - head nurse and theatre manager, Tim Debal says: "It's a 'living' system. We're fine tuning it every day. People come from all over to learn about the system, to see the progress we've made.

"For example, we recently had a visit from a university hospital where their operating theatres do not speak to with sterilization, but here it's normal. The collaboration between theatres and the CSSD is key. There's no separate system - as in many hospitals. It's a fusion of two systems - fully integrated.

"In the early days, my people had serious doubts that computers would help them in performing ▶



A PC displays the system at each theatre



Dries Vanbiervliet, general manager of healthcare software specialist Axis Medical, and Geert Ballyn, CSSD manager

their tasks. It's very important for the staff that you tell them the benefits to us in theatres, the benefits to the hospital, and to the patient. Now they all want to be involved and find it very easy."

Tim explains: "Initially we did a lot of work with Axis. We helped with the definition of the profiles that contain all the material types needed per intervention. Together with the surgeons we defined the set types in the profiles.

"When planning an intervention on the system, the surgeon needs to know the type of set he will want to use and makes reservations for the material contained in the linked profiles. The system keeps track of all that and evaluates the material needs per type in real time. There are compatible set types, so you have options to make up the resource for the intervention."

Tim explains: "The surgeons and their secretaries plan their session times. As coordinators, the other head nurse and I plan the activity across the hospital's 15 theatres. We manage the activity between 7.30am and 6pm. The system gives us an overview and the control.

"In the theatre we scan in what we have used, otherwise it means the set is available for another operation.

"In verbal communication, there's always a large risk - something might be misunderstood or forgotten. Everything we do is on the system, as is everything we need and when we need it by. We can also see that the sets will be ready when they're needed.

"The screen shows you where all supplies, materials, and instruments and sets are, and if they're available. The contents' barcode is scanned in at every step, so everything is traceable at all times."

Demonstrating by moving the cursor onto an instrument in a photo of a set due to be used in theatre, Tim says: "For example, this instrument has been used in an operation 585 times. While the set itself has been used 1,900 times. We can also see the patients it was used on and by which surgeon."

Typical of the detail the system carries and enables, once the patient's ID is scanned-in, the screen will display an outline figure of a person showing the location of any implants and allows operations to be logged.

Having had an operation at the hospital himself, Tim demonstrated by inputting his own ID how all the information on the patient, all the history and the type of resources they require is readily available.

"The patient's ID is scanned in the ward, so we know they are here for the procedure and we scan

the patient's wrist band again in theatre," explains Tim.

"We can view the information on theatre patients who may need to go into ICU. Several profiles are automatically defined with a post ICU stay and, if not, the surgeon/secretary can still indicate during planning that this should happen. It ensures that an ICU bed is released ready for the patient. The screen displays the telephone number of the nurse responsible. The display also tells ICU when they can expect to receive the patient, as they have a real-time view on the situation in theatre and can see which patient will be coming to ICU.

"As the ward also has a real-time display of the intervention, staff are able to give the patient's family information on progress."

Tim adds: "There's another hospital, 20kms away, in Menen. Through the system we monitor what they do too. We can monitor that the surgeon is there and other information, such as the sets being available."

Outlining the system's benefits for theatres, Tim says: "It gives a good view of the total plan of all theatres for the whole day in real-time. Every step is traceable.

"It gives you a quick overview of what's happening in each of the hospital's theatres. A red square 'pings' for an urgent case, so it allows you to react quickly to emergencies.

"Everything now goes very smoothly, as it's well organised. All we need to know is on the screen, and you can communicate with everyone through the system. If there's a problem you can go back and see which sets, which surgeon, and which nurses are involved."

Summarising, Tim adds: "The Axis system contributes to increased patient safety. It includes the WHO Safe Surgery check list. If you don't fill in the form you have to say why.

"The patient, recovery, and allowance for the cleaning of the theatre are all programmed into the system and allocated automatically.

"Thanks to the system we've already achieved several hundred thousand euros of savings in theatres alone. We also know the real cost of every intervention we do."

Endoscopy

The hospital's use of Axis software was expanded with the addition of the EndoLine endoscopy reprocessing module, as Geert explains: "I'm also responsible for reprocessing the endoscopes, so we needed to be able to work with endoscopy in the same way as with theatres - to know what they need and when they need it."

Endoscopy unit manager Sebastiaan Kindt says: "Traceability is really important. All the departments are linked into each other. Even when they come in from pathology, all the information is there.

"The Axis system gives us the whole story about the patient. It covers the doctor, the nurse, the devices. It's not just equipment or machine based, like other systems. This is the only one we could find which was also patient-orientated.

"Axis can communicate with other systems too. The system was specifically developed as an open system, easy to interface. It gives you a larger picture than other systems offer. The planning is very good. It communicates with the day care unit too."

Sebastiaan adds: "I'm responsible for the endoscopy at all three AZ Delta hospitals in the area. And I have all the information here. We know all the patients and the procedures being undertaken at any time. The system will tell you if all the scopes are available for the day.

"Thanks to the system it all goes very smoothly."

In summary

Geert adds: "Axis have delivered my vision. It takes the 'heat' out of the system. It's now widely used, but not everyone works with the system like we do here. The more you do with the system, the more you know and the less surprises there are. We don't have surprises anymore."

The whole investment, over the years, was done as part of the hospital's strategy around increasing the quality of the patient journey and security.

For further information, call BES Decon on 01179 666 761, e-mail info@besdecon.net or visit besdecon.net



Sebastiaan Kindt, endoscopy manager