

# UNIVERSITY HOSPITAL GHENT SI

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Doctors and nursing staff at the University Hospital of Ghent have already installed wireless networks in eight wards throughout the hospital. As a result, patient records can be consulted wirelessly from any location within the respective hospital wards. The network therefore eliminates a lot of redundant tasks and saves precious time, while reducing the risk of human error.

**S**ome years ago, the question was raised at the University Hospital of Ghent (UZ Gent) how to reduce the number of needless hours spent updating patients' medical records. Observations made by a doctor or a nurse at a patient's bedside were first recorded on paper. Only later, after the patient rounds, was this information entered into the computer in the ward's central office. The number of kilometres travelled to record or consult information is barely imaginable.

The IT department of the University Hospital of Ghent felt this situation left a lot of room for improvement and began the installation of a wireless network, so doctors and nurses could access their medical records from any location on the ward. However, the implementation of the network was only the beginning of a project that would deliver far more improvements than could have been anticipated at its inception.

In order to provide the best possible patient care, UZ Gent was looking to use the most advanced and future-oriented infrastructure available, not only in the domain of medical equipment and techniques but also in the domain of IT infrastructure. Education, training and scientific research – equally important tasks of a university hospital – also form part of this project and need the support of the most modern IT applications.



# 3 CARDIOLOGICAL ALARM VIATION VIA WIRELESS NETWORK



**Patients will soon be able to access the internet from their beds, throughout the whole hospital.**

Wireless IP Phone 7920. Emergin software rapidly converts the data sent by the cardiograph into a code which can be read by the Cisco network. A second later, the message arrives at the user's device. The entire process proceeds considerably faster than the existing system, in which messages could take up to 15 to 20 seconds to arrive. As an additional feature, the nurse also simultaneously receives very useful information regarding the medical condition of the patient. An image of the electrocardiogram and information about the oxygen concentration and blood pressure also instantly appear on the screen. That way, the nurse can immediately monitor the patient's status.

"It is important that our University Hospital handles information and its accessibility in a way that takes future evolutions into account," says Bart Sijnave, head of the ICT department at UZ Gent. "Good patient care needs the support of innovative information and communications technology. The wireless applications we developed on the basis of our Cisco network, shows the way for many other hospitals, even those without a university background. It is also important that we evolve towards one, universal technology and away from all those different applications that have been in use over recent years."

Doctors and nursing staff already have access to a wireless Cisco network in eight of the hospital's various wards. As a result, they no longer have to walk backwards and forwards to the central desktop to make adjustments to their patients' medical records. Furthermore, the network completely satisfies the strict medical regulations with regard to redundancy and security.

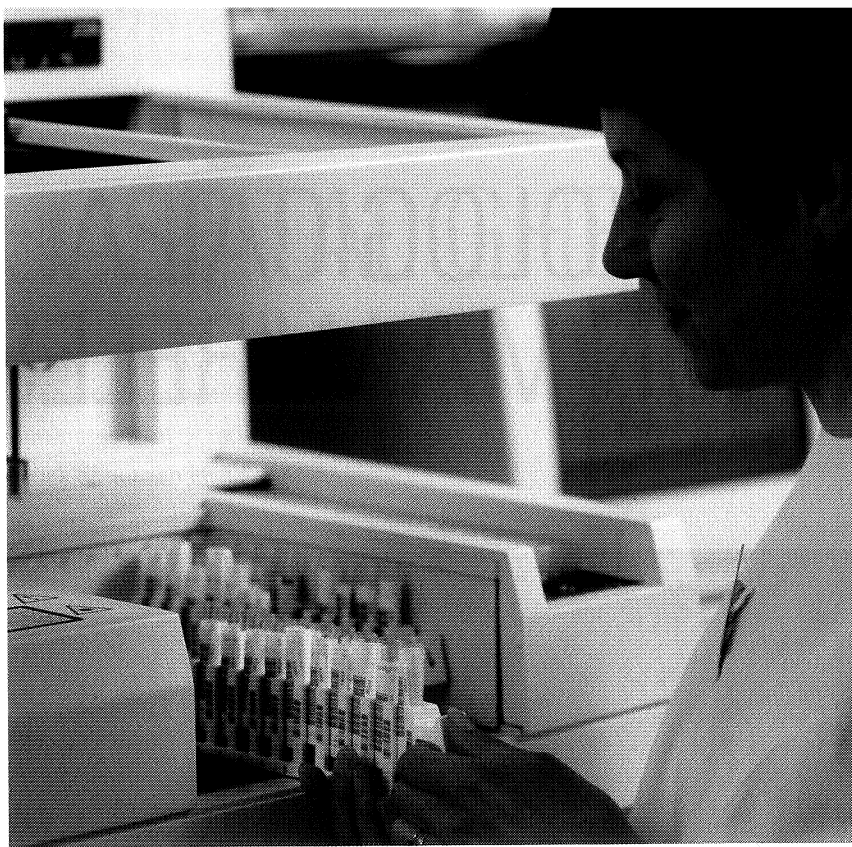
"People who work with our wireless system are incredibly enthusiastic," says Frits Dumortier, head of Infrastructure at UZ Gent's ICT Department. "In the meantime, the need has arisen here at the IT Department to get more out of the existing infrastructure. Together with Cisco, which supplied us with the wireless network and network integrator, Dimension Data, we went in search of other interesting wireless applications." As a result, patients now enjoy an improved level of service in terms of medical supervision, but also in terms of comfort. They will all, for example, soon be able to access the internet from their beds, throughout the whole hospital.

## WIRELESS HEART MONITORING

Several wireless applications are currently already in use. The most impressive is perhaps the wireless alarm system at the nursing unit of the cardiology ward. In the event of an alarm, the ambulatory electrocardiograph sends a wireless message to the nurse's Cisco

"In a medically critical environment such as the electrocardiography ward, every second can be crucial," says Erik Billiet, head of the Biomedical Technical Department, which monitors more than 12,000 of the hospital's medical devices. "Patient safety is of course a primary concern of ours. That is why we need a reliable monitoring system that allows us to react quickly. Thanks to our new wireless alarm system, nursing staff are able to evaluate the patient's condition much more efficiently and thus take the necessary action immediately, even before they reach the patient. This gives our patients enormous peace of mind. They know they are under constant supervision and that they will receive immediate assistance if and when required. Our nurses also enjoy a greater amount of freedom of movement, without compromising the needs of their patients."

If a nurse does not react to an alarm within a few seconds, it is transferred to another device



**Bart Sijnave: "It is important that our University Hospital handles information and its accessibility in a way that takes future evolutions into account. Good patient care needs the support of innovative information and communications technology."**

and/or repeated. The system has also been installed so that several alarm levels can be set according to various algorithms. It is obvious that a temporary technical malfunction requires less urgent intervention than a patient with a heart problem."

Early 2007, the University Hospital of Ghent will also install the same wireless monitoring system for the stroke unit and the epilepsy department. Bart Sijnave: "The coming two or three years will see the addition of yet more services where patients require urgent medical supervision. To allow this wireless alarm system to work seamlessly, we will need more than twice the current number of aerials to be able to consult the medical records wirelessly." It is already clear that the wireless alarm systems are an excellent tool for improving patient care.

### **LOCATING PEOPLE AND DEVICES**

A system will also be put into place at UZ Gent in early 2007 to assist in pinpointing the location of people and devices using the reliable wireless Cisco network. Certain patients who are allowed to move about the ward but still require medical supervision are given a wireless device with a specific code. "This device sends regular signals to the Cisco aerials, so

that in the event of a medical alarm, the patient can be located immediately," explain Erik Billiet.

The possible applications in a hospital for such a locating system are enormous. For example, the locating system can be employed to monitor incoming and outgoing movement at the psychiatric or geriatric wards. Nurses can also use the application as an urgent paging system: with a touch of a button they can request assistance. The system therefore works in both directions.

"After all, what works for people can also work for devices," says Dirk Ketels, team leader at Networks & Telecom at UZ Gent. "That way, we'll be able to trace a device when it is urgently needed."

### **MANY MORE FUTURE POSSIBILITIES**

The University Hospital of Ghent's IT Department expects that the applications of the wireless Cisco network will increase exponentially in coming years. That will not only benefit patients and the quality of care they receive; the administration at the hospital can also expect significant improvements in years to come. ■

## **ABOUT UZ GENT**

The University Hospital of Ghent is one of the largest healthcare centres in Flanders with almost 5,000 employees and more than 1,100 beds. UZ Gent conducts on average 365,000 consultations, 300,000 days of hospitalisation, 33,000 overnight admissions and 24,000 day admissions every year. In 21 operating theatres, around 26,000 operations are conducted annually.