

Internal IT Staff at a Serbian Children's Hospital Takes Innovative Approach to Outpatient Care

Executive Summary

CUSTOMER NAME

University Children's Hospital
Belgrade, Serbia

INDUSTRY

Healthcare

BUSINESS CHALLENGES

- Transform administrative processes and improve efficiency
- Improve standards of care without additional funding
- Use information technology to create a Connected Hospital and provide a template for other institutions

SOLUTIONS

- Centralized, online appointments-scheduling system and call center for outpatient clinics
- Java and Linux-based solutions on a high-performance Cisco converged, IP network running Cisco Unified Communications

BUSINESS RESULTS

- Reduced waiting times and improved staff productivity, leading to treatment of more patients and higher standards of care
- Statistics from the system help managers to maximize clinical resources
- Links to national health insurance funding system are the first of many planned developments to create a Connected Health community

Hospital outpatient clinics often suffer from overcrowding and long waiting periods. University Children's Hospital, Belgrade, is no different. To combat these issues and help put patients and staff at ease, the hospital is using an automated appointments scheduling system to transform its outpatient care. Today, waiting times are down, patient satisfaction levels are up, and staff morale and productivity are soaring. The hospital hopes to extend its successful approach to other institutions and the local community.

BUSINESS CHALLENGES

University Children's Hospital in Belgrade is the oldest and largest children's hospital in the Balkans. With 355 beds and 687 employees, the hospital covers all branches of pediatrics, pediatric surgery, and psychiatry. An important teaching hospital, it counts many leading physicians and internationally recognized experts among its staff.

The hospital entered the new millennium eager to establish an information system that would transform its operation and provide a template for other institutions in Serbia. In 2003, the donation of a high-performance, converged IP network by Cisco Systems® provided a platform on which to achieve this goal.

Two years after successfully developing an electronic patient records (EPR) system, the hospital still lacked a broader strategy for harnessing technology to bring about specific benefits such as cost savings, efficiency gains, and higher standards of care. During informal discussions and workshops with the Cisco® Internet Business Solutions Group (IBSG), the hospital staff



Prepared by Cisco Systems, Inc.
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explored the concept of a Connected Hospital. A Connected Hospital is one in which digital information is shared across the organization and between external stakeholders to achieve patient-centered and integrated delivery of care.

In applying this concept to change fundamental processes that encompassed back-office and clinical systems, they identified the scheduling of outpatient appointments as a “quick win” that would produce visible results fast.

The current systems were paper-based and fragmented, without any links between the clinics or the two main departments of pediatrics and surgery. Overbooking was a common problem, leading to crowded waiting rooms and a lack of confidence among parents that their children were receiving fair access to services. Many families traveled to the hospital to make initial appointments. When doctors requested examinations, such as X-rays, these exams would often be scheduled on different days. This caused greater cost and inconvenience to patients’ families and potentially affected the continuity of care by preventing doctors from receiving the information they needed in a timely manner.

A centralized, electronic appointment-scheduling application would help resolve these issues while reducing costs and allowing the hospital to prepare for upcoming changes in funding that would require automated administrative processes.

“SETTING UP A CORE TEAM HELPED US TO DEAL WITH THE CHALLENGES OF CHANGE-MANAGEMENT MORE EFFECTIVELY. AND CISCO’S GOVERNANCE METHODOLOGY GAVE US A FRAMEWORK THAT IMPROVED OUR PLANNING AND PROJECT MANAGEMENT AND ULTIMATELY GAVE US A BETTER RESULT, MORE QUICKLY.”

**Professor Ida Jovanovic, director of pediatrics
University Children’s Hospital**

SOLUTIONS

Before writing the appointment-scheduling software application, the hospital’s information technology team worked with IBSG to revise its outpatient appointment-scheduling system from the ground up to make sure that the new, automated workflow would be as effective as possible and would avoid the pitfalls of replicating an inefficient manual system online.

“We produced a flow chart of the process, which we could mirror in the application,” explains Igor Salom, IT consultant for University Children’s Hospital. “Cisco’s IBSG suggested we adopt new ways of thinking—such as looking at the scheduling procedure from the patients’ perspective—which made it much easier to write the software.”

The resulting application, written in Java for the Linux operating system, provides a single, computerized scheduling system for all outpatient clinics at the hospital. A new call center, running Cisco Unified Communications solutions, offers one telephone number that patients’ families can use to make or change appointments. The software automatically selects the next available date and time, and call center staff can transfer callers to a doctor if necessary. The majority of first appointments are now booked by telephone, instead of in-person, and staff can now schedule a series of examinations—in the most appropriate order—all on the same day.

Additional features are available to doctors and nurses in the outpatient clinics. At the end of each consultation, doctors are required to produce a printed report that is given to patients' parents. Templates in the scheduling application automate a large part of the report-generation process by populating several data elements such as name, address, and date of birth. Clinical staff also can insert the details of the patient's next appointment at the bottom of the report.

“ACCESS TO ACCURATE STATISTICS HAS ENABLED US TO MAKE A LOT OF CHANGES, SUCH AS MOVING DOCTORS FROM QUIETER CLINICS TO THOSE THAT ARE OVERCROWDED. WE'RE MAKING MUCH BETTER USE OF OUR RESOURCES AND TREATING MORE PATIENTS.”

**Professor Ida Jovanovic, director of pediatrics
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Cisco IBSG provided the methodology that allowed the hospital to manage the project effectively. This approach to IT governance covered activities such as setting objectives, defining the scope of the project, and measuring its success—activities that sharpened the focus of the project and made it easier to monitor the outcomes.

Motivation and training were also important elements, not to mention high priorities from the start, particularly as some staff members were resistant to the idea of changing a mainstream process. To convince them otherwise, IBSG recommended that the hospital create a core team of approximately 12 managers and clinicians who would be responsible for evangelizing the new scheduling system within their departments and for driving the project through to a satisfactory conclusion.

“Setting up a core team helped us to deal with the challenges of change-management more effectively,” says Professor Ida Jovanovic, director of pediatrics, University Children's Hospital. “And Cisco's governance methodology gave us a framework that improved our planning and project management and ultimately gave us a better result, more quickly.”

The call center and outpatients appointment scheduling application, integrated with the existing EPR system, went live in April 2006 after just three months of development and testing.

BUSINESS RESULTS

The benefits of the new system are numerous and were clear even before hard data was available. For starters, the waiting time between a patient's referral and first appointment has been reduced.

The improved efficiency of the new scheduling system has given parents more confidence that their children will be seen at an agreed time, resulting in less overcrowding in the hospital's waiting rooms and corridors and enhancing satisfaction levels among parents who often travel to the hospital at some added cost and inconvenience, following referrals by their own pediatricians or smaller hospitals.

Staff productivity has also soared. Two nurses in the call center now handle 80 percent of all outpatient appointments made by telephone, whereas, previously, many families made appointments in-person or called the individual clinics directly. The nursing staff at the hospital's

outpatient clinics has been reduced by 30 percent, as many nurses have been reallocated to other areas of the hospital while some nurses have retired. The reduced burden of administrative work means that the remaining nurses are able to spend more time working with doctors on clinical matters.

Doctors win too, as they spend less time producing reports, which they used to write by hand, and the end result is better quality. The fact that all the information is available in the scheduling system database, and is easy to find and use, leads to fewer mistakes and higher standards of care.

Another major advantage of the new system is that it automatically collects data on a daily basis. As a result, hospital managers can now see at a glance how many patients attend each clinic, the average length of a consultation, and the average waiting time that occurs at each clinic. The staff has been quick to act upon this valuable management information, according to Professor Jovanovic.

“I have been at this hospital for 25 years and even I was surprised by the information we get from the appointments system,” explains Professor Jovanovic. “Access to accurate statistics has enabled us to make a lot of changes, such as moving doctors from quieter clinics to those that are overcrowded. We’re making much better use of our resources and treating more patients.”

In spite of initial resistance from some employees, the appointment-scheduling system has demonstrated the value of process-automation when combined with the appropriate training, governance, and technology platform. The project has raised morale and has inspired all hospital staff to work together to improve standards and patient care.

NEXT STEPS

Still in its infancy, the appointment-scheduling system is already undergoing improvements. The system is currently being extended to cover inpatient clinics, and eventually patients will be able to make outpatient appointments over the Internet, by e-mail, through text messages, and by telephone. Long-term plans to create a fully Connected Hospital include an e-learning system for staff and medical students, and wireless access to information systems throughout the hospital.

This autumn, the hospital will introduce an invoicing module. The module, which will be linked to the hospital’s accounting system, will automatically generate a report on the cost of each treatment or consultation. This reporting capability will be vital going forward—in the future, hospitals will be funded according to the services they deliver due to forthcoming changes to the national health insurance system in 2007.

The addition of diagnosis codes (based on the *International Classification of Diseases, Tenth Revision*) into the report templates used by doctors is also in development and, once introduced throughout the hospital, will eliminate any discrepancies caused by different coding systems or languages within patient records.

University Children’s Hospital is also working toward a broader vision in which it will form part of an extended connected health community. By creating a local network with links to all primary and secondary care providers in its area, for example, the hospital will facilitate applications such as telemedicine—online consultations—which will reduce the number of unnecessary referrals while improving levels of care within the community.

Ultimately, the hospital hopes that its systems and methodology will be even more widely adopted. “We have done a lot of the groundwork in our fairly complex environment, so it will be much easier for other, less complex institutions to take this approach and adapt it for their own needs,” says Professor Jovanovic. “The use of open, standards-based technology and freeware will further help to reduce costs and complexity, with the aim of raising healthcare standards consistently throughout the country.”

Professor Jovanovic and the University Children’s Hospital, Belgrade, may get their wish: the Ministry of Health of the Republic of Serbia is considering implementing the appointments-scheduling system in hospitals throughout Serbia.

MORE INFORMATION

The Cisco Internet Business Solutions Group (IBSG), the global strategic consulting arm of Cisco Systems, helps Global 500 companies and public organizations transform the way they do business—first designing innovative business processes and then by integrating advanced technologies into visionary roadmaps that improve customer experience and revenue growth.

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