On-site wireless communications improves hospital laboratory services

How quicker response improves service to ordering physicians, increases utilisation of investments in information systems and reduces risk.

ascom

Executive summary

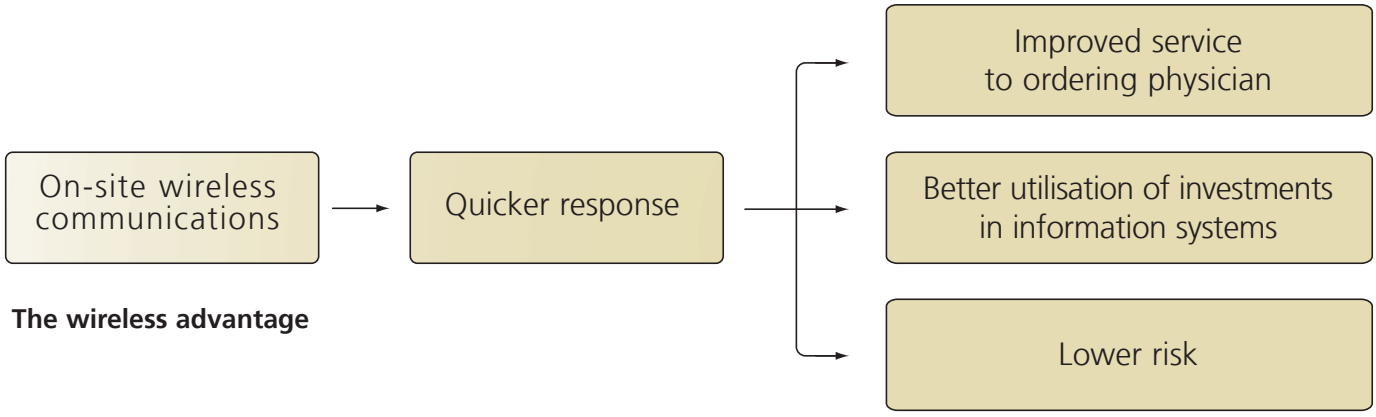
Why wireless?

Most laboratories invest in professional Laboratory Information Systems to improve efficiency. But higher efficiency in the laboratory does not always result in higher overall efficiency. To reap the full benefits of your investments, communications for quicker response is a necessity.

Quicker response is important enough for a smooth workflow within laboratories. But it is absolutely fundamental for a smooth workflow between laboratories and ordering physicians, and other laboratory services consumers.

On-site wireless communications speeds up response. Doctors and nurses get urgent test results right into their pocket. Laboratory staff and ordering physicians can communicate instantly, using voice or interactive messaging, while on the move.

It puts people from different departments in the same system. It does wonders for teamwork.



The wireless advantage

The benefits of quicker response

1. **Improved service to ordering physician:**
   - Quicker delivery of all test results
   - Urgent test results can seek out physician or nurse
   - Quicker quality assurance of point-of-care instruments and test results
   - Instant access to lab specialists and LIS

2. **Better utilisation of investments in information systems:**
   - Quicker collection of samples
   - Timely delivery of samples to the lab
   - Quicker response from ordering physician in reflex testing
   - Easier to get acknowledgement of receipt from physician
   - Better utilisation and uptime of laboratory instruments and LIS

3. **Lower risk:**
   - Support for quality assurance
   - Support for accreditation efforts

How the benefits arise

1. **Pre-analytical phase:** Demand from several sources simultaneously, complex logistics, labour-intensive. Ascom wireless solutions help speed up sample collection.

2. **Analytical phase:** High degree of automation, many different tests in the same production flow. Ascom wireless solutions speed up response from ordering physician for reflex testing. It also alerts lab staff when test values are out of range, or there is a need for instrument calibration.

3. **Post-analytical phase:** High demands on quality assurance and on timely delivery of the test results. Ascom wireless solutions make urgent results seek out physician or nurse automatically, reduce paging delays*, and enable ordering physician to retrieve results from the LIS while on the move.

Ascom on-site wireless solutions also make it easier to comply with accreditation requirements, such as those of the HIPAA.

* A study at a major teaching hospital showed that nurses in a typical hospital unit can lose almost 900 hours a year to paging delays. Physicians calling unit nurses typically lose 700 hours annually waiting on hold. Ward staff lose more than 500 hours a year answering calls for nurses and tracking them down. Units can reclaim 80% of time lost to paging delays and hold time with on-site wireless communications. Source: "The Impact of a Wireless Telecommunications System on Time Efficiency." The Journal of Nursing Administration. June 1995.

Making the most of the resources you already have

Healthcare today is gravitating more and more towards a business environment. Only the fittest providers in terms of efficiency and quality will survive in a highly competitive market. For the hospital laboratory, a number of challenges lie ahead:

- Cost containment
- Restructuring (core lab and satellite labs)
- Availability of personnel

Not to mention automation requirements, legal liability issues, point-of-care (POC) testing and what to do about reflex testing. Fewer staff and available instruments must process a myriad of samples, up to thousands each day, without compromising quality assurance or clinical information safety.

To meet these challenges, the laboratory is becoming increasingly automated and factory-like. Laboratory leaders have been moving from technology-based decision-making to process-oriented decision-making. Yet one thing is certain: the hospital laboratory will always play a vital role in the detection, diagnosis and treatment of disease. After all, the end product of the laboratory is not the testing itself – but information. Laboratories provide the critical basis for a range of time-sensitive services to consumers in virtually every clinical department.

The need for quicker response

For most hospitals, minimising length-of-stay (LOS) is a top priority. This can be a daunting task. Delays, bottlenecks and non-value-adding activities are everywhere. And they can usually be traced to breaks in the information flow between people, systems and departments. A quicker response and speedy turnaround of laboratory results, for example, can mean that the patient goes home today instead of tomorrow. This requires a seamless flow of information within and across departments.

An island of efficiency

To become more efficient, most hospital laboratories have turned to professional Laboratory Information Systems (LIS) rather than self-developed systems. Connectivity between the LIS and other Hospital Information Systems (HIS) has made a huge difference. Each system improves the efficiency of specific tasks and processes. Computerised barcoding technology helps speed up the sample analysis process, and reduce the risk of human error.

Many laboratories have gone even further by investing in integration with automation systems. Some very large, high-volume facilities handling thousands of samples each day have turned to Total Laboratory Automation (TLA). Most laboratories, however, are adopting a modular approach – investing in smaller, system-based work cells.

Despite all these dramatic improvements in productivity, bottlenecks remain. The problem is that the hospital laboratory operation itself is becoming an island of efficiency within the hospital enterprise.

True turnaround time

The laboratory is an integrated part of the clinical information flow and decision-making. Information slowdowns or breakdowns that occur anywhere in that flow can have a critical effect on patients' well-being. Not to mention laboratory accreditation issues and possible legal ramifications.

The ultimate goal is not to improve turnaround time within the laboratory. It is to assist the ordering physician so that he or she can come to the same, or a more accurate, diagnosis sooner, with less effort and without compromising confidentiality of patient information.

So, the true turnaround time starts with the decision to make a test, and ends only when the laboratory service's customer receives, and reads, the validated test result – whether inside or outside the hospital.

Breaks in the information flow

In laboratory services, information is more important than ever (particularly with the increased focus on POC testing). The challenge is how to ensure a seamless flow of information between departments, physicians, nurses and other laboratory services consumers. It is here that breaks in the flow of laboratory information occur. Samples wait to be picked up and delivered to the lab. Test requests for the samples have not arrived yet. Barcodes cannot be read. Physicians wait for laboratory results. And laboratory technicians often wait for physicians to respond to reflex testing requests (if not done automatically in the analyser). Information is held up somewhere or is simply lost.

Even when test results and patient information are distributed digitally, how can the physician know that the information has reached his or her PC? How can the physician acknowledge that he or she has seen the results? And what about an urgent reflex testing request? After all, the physician may not have immediate access to a computer – or the time to check every five minutes if results have arrived. Tracking down a physician who is on the move is time-consuming and often unsuccessful.

Integrating your healthcare enterprise

So the true benefits of these IT investments have not yet been fully realised. The current systems have not managed to eliminate the bottlenecks and communication breakdowns that occur outside the laboratory. When stress mounts and job satisfaction goes down, wireless communications can make all the difference.

This is especially true as hospitals move towards patient-centric healthcare – a holistic approach that is completely dependent on the seamless and timely flow of information. The Integrating the Healthcare Enterprise (IHE) initiative in the U.S., and similar efforts in other countries, are helping to speed up progress.

Wireless communications from Ascom helps to integrate the healthcare enterprise to improve the delivery efficiency and quality of laboratory services – while making best use of the resources you already have. Ascom does so by combining voice, messaging, alarms and data in one system. You choose the best mode of communication for the application or need in your workflow process.

Why wireless? Why now?

Wireless communications is a logical and economical next step. Not because it is the latest trend, but because it adds value – especially with interactive messaging. In a hospital, there is nothing more risky or unsettling than having to make assumptions. Sending a result or alert and having to guess whether or not it has reached the right people, and whether they have seen it – and acted on it – can keep you up at night. Wireless helps everyone make the right decision. Wireless keeps you in the know – so you do not have to guess.

Wireless helps ensure the integrity of clinical information, reduce patient risk and log events for added medical safety. Adding on-site wireless communications between departments, work processes, individual caregivers and administrators makes established applications and procedures far more productive. It enables you and your colleagues to get the most out of your resources.

POC testing is a good example. Here, wireless communications is essential, since most hospitals do not equip each patient room with a computer terminal. Wireless communications also helps get the most out of an investment in barcoding technology. You can match the sample ID with the LIS and the patient's wristband using a wireless device. You can send the results of POC testing to other systems, such as the patient's electronic medical record, or to other departments and people.

Wireless communications increases flexibility at individual and departmental levels – helping you deliver better and expanded laboratory services to consumers anywhere in the hospital.

Supports all phases of laboratory testing

Ascom's technology supports the pre-analytical phase through more efficient collection of tubes. Physicians and nurses send a wireless message

to a group of porters as soon as a sample is ready for testing. The nearest available porter can then acknowledge that he or she will take on the request. This ensures faster delivery and turn-around time for test results. And it frees up nurses, who otherwise have to take samples to the laboratory themselves.

In the analytical phase, if reflex testing is not done automatically or the algorithm is not optimal, wireless communications can help. Laboratory personnel can notify the physician that preliminary results indicate a need for reflex testing. The physician can, in turn, immediately inform the laboratory whether or not to begin additional testing.

In the post-analytical phase, physicians can get wireless delivery of urgent test results anywhere in the hospital. He or she no longer has to chase results or patient information. The information finds the physician and other laboratory services consumers.

Everybody benefits

Ascom wireless communications is proven in hospital laboratories. No one else has even half as many wireless solutions in hospitals as Ascom does.

Ascom's solutions are based on experience and an understanding of specialised healthcare requirements. Wireless solutions can be tailored to the needs of your laboratory, producing tangible improvements with a small investment. You do not have to rip out old applications and communications systems. Ascom technology lets you build on existing infrastructure. It evolves with your processes.

Everyone benefits from wireless communications: laboratory staff, physicians, nurses and management. And patients who are looking forward to going home.

Benefits for lab management and staff

Automation is becoming increasingly important in today's hospital laboratory. Particularly in the pre-analytical phase. But automation is not the complete answer. It can improve the workflow, but may not improve the information flow. Laboratory systems, machines, conveyor belts and testing instruments do not know where and how the information helps a physician make the right choice. Ascom wireless communications does.

People will always be at the core of hospital laboratory services. And they have to be able to communicate with each other, as well as with the LIS. Mistakes, delays and misunderstandings are bound to happen between the pick up of samples and the physician checking the results. Often, it means picking up the phone. Is the person you need available? It is frustrating and time-consuming.

Patient information directly from the LIS

Systems such as the LIS are used primarily to view and store information – not to make it flow. Smart integration with Ascom wireless communications systems can make it flow. This makes it easy for authorised people to send and retrieve information. Only then can you take full advantage of the benefits of Information Communications Technology (ICT) investments.

Physicians, scientists and technicians can retrieve and send selected sample information or

complete results directly from the LIS without a PC. Information is exchanged in real time, preventing time delays and human error.

Faster, better service for the ordering physician

No one wants to wait for critical information when lives are at stake. With Ascom wireless communications, ordering physicians are automatically notified when selected results are ready – wherever they are.

They no longer have to pick up the phone or check the fax, email or hospital intranet. The information finds them. The LIS generates a message notifying the ordering physician that a patient's laboratory results are ready.

Wireless communications can also alert the person responsible for the diagnostic analyser and the LIS about errors that may cause downtime if not acted upon promptly. For instance, when a local hard disc is 80 per cent full, or if humidity is too high in the computer room, the system can notify the person responsible.

A more efficient reflex testing process

Cost pressures and patient considerations are forcing many hospitals and laboratories to make reflex testing more efficient. In reflex testing, the next test is determined by the results of the previous tests. The physician's knowledge is put in a software algorithm that controls the sequence of following tests depending on previous test results. An incorrect algorithm can mean unnecessary tests, which could result in legal and reimbursement discussions.

Reflex testing reduces the number of tests. But it requires quick decision-making by the ordering physician for the next set of tests if the patient's data is not clear. In this case, if the physician has ordered the following tests, all legal issues are resolved. A quicker response is crucial. Wireless communications not only improves the financial situation of the lab. It also the speeds up the diagnosis and helps to keep the lab out of legal discussions.

Smoother workflow

The laboratory consists of a continuum of processes and activities involving different people with different responsibilities. Ascom wireless communications automates key functions and supports the workflow.

The hospital laboratory can now more efficiently service requests from various departments, such as the operating theatre, intensive care, emergency or radiology. One example is when a department cannot begin a certain patient examination because crucial laboratory results are missing. Instead of having to use the phone, the physician or nurses can use wireless communications to notify the lab or retrieve the results directly from the LIS. This means quicker response time and faster throughput.

Benefits for the ordering physician or nurse

At any given moment, the ordering physician or nurse is on the move, trying to juggle many tasks, process paperwork and take care of several patients at the same time. They have little time to wait for lab results or patient information that might be critical for decision-making. It is needed right now, right here. Delay of information means starting a possibly incorrect or less effective treatment.

All too often, physicians and nurses have to use the phone to make requests or to get the results or additional patient information. A telephone is not always close by. Perhaps the other end is busy. Or the person they need to speak to is somewhere else. Maybe somebody else is trying to contact the physician about another emergency situation, but cannot get through because the physician is calling the laboratory.

No need to chase information

Results can be sent directly to the bedside patient terminal or the physician's own wireless device. This ensures quicker response times and enables the physician to start the treatment earlier than was previously possible. And this, in turn, means a shorter patient stay and higher patient satisfaction.

Wireless communications helps create and reinforce the "one hospital" feeling that occurs when everybody works together in a synchronised way.

For the ordering physician or nurse, it is not always easy to find time to check if results are ready. It is also easy to forget about them altogether. Chasing information is the last thing the physician should have to do.

Ascom wireless communications makes it possible to immediately notify the ordering physician when information is ready. Physicians no longer have to pick up the phone or check the fax, email or hospital intranet. The information will find the physician. He or she will know the moment information is available.

Get results while on the move, anywhere

A wireless lab-specific application, integrated with the LIS, can automatically send a wireless message notifying the physician that selected values indicate a possible need for additional tests. The physician can then send a quick reply to the lab technician or lab doctor and indicate that the result has been checked, and can then direct them on how to proceed.

More quality time with patients

The amount of time a physician has with each patient has a big impact on the quality of care and the level of job satisfaction. By ensuring a more active and responsive flow of information, wireless technology helps make the best use of time, so the physician has more time to care for patients. Or to improve procedures or keep up with medical advancements. In this way, Ascom wireless communications is helping to improve the very essence of quality care.

Benefits for hospital management

All hospitals must continuously strive to improve their competitiveness. A big part of this effort is identifying and removing non-value-adding activities. A highly efficient hospital usually does a better job of taking care of its patients. It is able to accomplish more with the resources it has.

Simply reducing costs by cutting staff, closing departments or removing procedures from the care offering is not the answer. Instead, it is about identifying and removing bottlenecks, inefficiencies, sources of human error and miscommunication. This also means making the right investments. They do not have to be big investments – just the right ones.

Increasingly, patients' needs shape these investments. Adopting patient-centric processes puts the patient in focus. Wireless communications supports this effort.

A better return on investment

Opening the hospital to the benefits of Ascom wireless communications is not a big investment. It builds on previous investments in automation and ICT, such as the HIS and the LIS. The hospital gets the most out of legacy systems and applications. And there is no need to worry about emerging technologies. Our wireless solutions are truly open – to the past, present and future. Giving the hospital the flexibility to grow, change and prosper. Wireless technology enables information to flow

instantaneously between systems, departments and people. Information arrives when, where and in the form that it is needed. This is how Ascom wireless communications supports the daily workflow.

Wireless communications promotes a smooth flow of clinical events helping to create rhythm, build momentum. It supports teamwork so everybody is more aware that they are working together, across departmental boundaries or areas of responsibility. And this makes each day more rewarding and satisfying. This is important to retain personnel.

Patients per doctor up, length of stay down

By dramatically reducing the time spent waiting for clinical results from the laboratory, physicians and nurses can spend more time taking care of patients. Or keep up with new developments in their profession. Treatments and procedures can begin and end sooner. This means improved quality, faster recuperation and a shorter hospital stay. And because the clinical workflow is more coordinated and more efficient, the cost of healthcare per patient is lower. And this, too, benefits the hospital, especially in the environment of DRGs (Disease Related Groups).

Controlling and securing patient information

At the core of Ascom wireless communications is a commitment to safeguarding patient integrity. There is no room for compromise. Wireless communications gives healthcare service providers greater control over critical results. The system keeps track of the results. It also gives the physician a quicker and easier way to acknowledge that he or she has received the results.

With wireless communications, an automatic "paper trail" helps ensure accountability and medical safety. It can also help identify bottlenecks and improve the workflow by logging events and enabling backtracking of activities.

Many hospitals are introducing barcoding to minimise the risk of error when matching the patient ID with the sample ID. Wireless devices can take the benefits of barcoding a big step further – opening up new possibilities such as wireless LIS connection to retrieve, access, send and control patient information.

The patient also benefits

We have all experienced it: waiting to see the doctor – or rather waiting for the doctor to see us. It is no fun, especially when you are not feeling well. And dangerous, if you are unsure of your ailment and precious treatment time is ticking away.

Nowadays, many patients are becoming increasingly involved in their healthcare. They are reading more about their illnesses and conditions, asking more questions about possible treatments. They know what is technologically possible. And they expect it. Today's patients are informed and empowered and they know how to make themselves heard.

Less waiting, less anxiety

Put yourself in the position of a patient. You have been rushed to a certain department only to wait: for samples to be taken, for the doctor to receive lab results and give you the news. You feel anxious. The feeling grows worse the longer you wait. When your doctor finally returns, you are loaded with questions. Why did the results take so long? Are they accurate? Are they really my results? When it is finally your turn, you may question the level of care and medical attention. You may wonder if mistakes are being made.

Wireless communications eliminates much waiting and worrying – promoting the impression that this must be a leading-edge healthcare facility.

Faster recovery, shorter stay

Wireless communications streamlines the clinical workflow so that care providers have more time with patients.

The patient feels that the physician is more focused and relaxed. The physician has time to listen; and to learn how the patient really feels, instead of just checking test results and monitors and then hurrying to the next patient.

Less waiting and more time with healthcare providers raise patient satisfaction and speed recovery.

Competing for patients

With a rising demand for healthcare services and, in some countries, long waiting lists, the supply of patients does not seem to present a problem. At least not today.

But patients are becoming increasingly demanding and capable of well-informed choices. They are asking for more influence, better quality of treatment and higher level of service. These forces are moving healthcare towards market principles, away from traditional top-down bureaucracies. Individual patients will increasingly exercise their purchasing power to choose the service they prefer.

Smart integration

Most hospitals have invested huge sums in information technology. This often greatly improves the efficiency of their primary processes. But the benefits of the investments still cannot be used to the full. The problem is bottlenecks in information flows between departments.

Wireless communications for quicker response can remove the bottlenecks and enhance the return on the primary investments. And quicker response requires smart integration with the systems you already use.

Integration with existing systems is our true strength – acquired during fifty years of supplying integrated communications solutions to more than 20,000 hospital installations in Europe and the U.S.

Infrastructure, integration and wireless devices are the main components of our offering. The infrastructure we build is in line with the Integrating the Healthcare Enterprise initiative (IHE). Your Ascom solution integrates with clinical systems, such as HIS, LIS, PACS and RIS; with business and accounting systems; with building management and security systems; with telephone systems and local area networks; and with wireless and wired devices such as pagers (beepers), telephones, smart phones, PDAs, laptop and stationary computers.

Adding on-site wireless communications can make the systems you already have work much harder.

Forward and backward compatible

The wireless infrastructure we build is fully open to the future. You can upgrade and introduce new functions and systems without excessive costs. There will be no hard-to-penetrate boundaries between different generations of alarm, voice, messaging and data systems. We are still extending systems that we installed twenty years ago. We will be able to keep on extending them twenty years from now.

We can also help create a roadmap for the long-term (but inevitable) journey toward the all-digital, wireless hospital. It is important to remember that no single wireless technology or standard is the "best". Each standard is used for different purposes and in different scenarios. They are complementing, not competing technologies. The trend is towards a mixture of various technologies that interoperate to provide the required services.

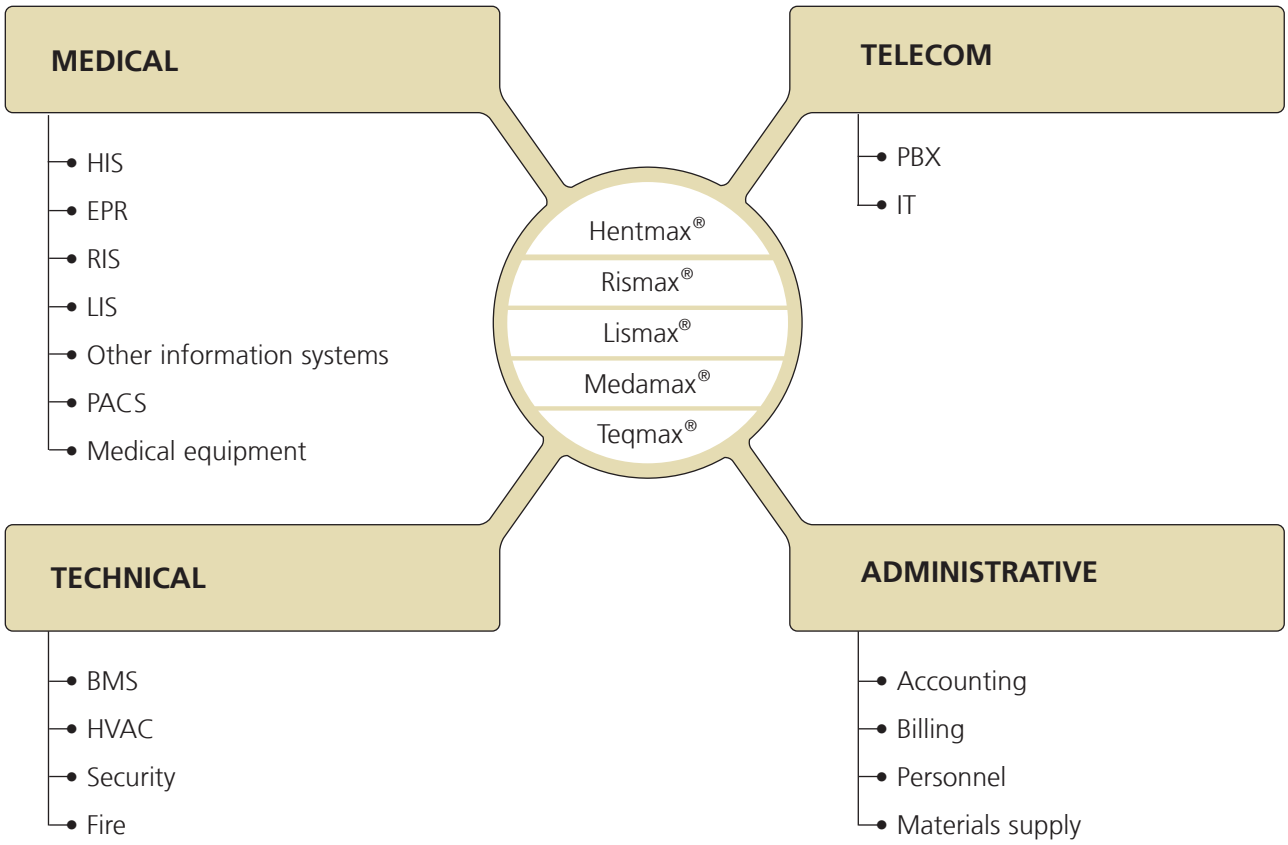
We are not married to any one technology as many other firms are. This allows us to select the most appropriate and cost-effective technology for each individual need. And to integrate the different technologies seamlessly.

Step by step

Ascom's offerings to hospitals comprise five concepts:

- Hentmax® (basic communications platform)
- Lismax® (laboratory process support)
- Rismax® (radiology process support)
- Medamax® (medical alarm integration)
- Teqmax® (technical alarm integration).

Technical integration with existing systems



Smart integration makes your existing systems work harder. We integrate seamlessly with existing systems, such as EPR, HIS, LIS, PACS and RIS, etc. And with existing IT infrastructures, LAN, PBX, etc. Plus accounting systems, building management systems and security systems.

Lismax®

Quicker response to requests for laboratory tests

Lismax is on-site wireless communications designed to support laboratory testing processes within the hospital enterprise. Typical users are laboratory personnel, ordering physicians, nurses and porters.

Lismax integrates with the LIS and HIS to speed up communications between laboratories (such as clinical chemistry, endocrinology, haematology, immunology and microbiology) and ordering physicians and nurses as well as within laboratory departments. Clinicians can be automatically notified when results are ready. Quicker response and speedy turn-around of laboratory results can mean, for example, that the patient can go home today instead of tomorrow.

The pre-analytical phase is supported with more efficient collection of test tubes. A wireless message can go automatically to porters as soon as a sample is ready to go to the laboratory.

Ordering physicians can be notified instantly wherever they are if additional information is required during the reflex process – while the sample is still on the analyser, so that there is no need for a new draw.

A Lismax solution can include infrastructure, software, wireless devices and integration with the existing LIS/HIS/analysers and telephone switchboard, etc. A complete solution comprises installation, commissioning, training of users, maintenance and service.

Examples of functionalities:

- Retrieve and send information directly from the LIS
- Test results go directly into clinician's wireless device
- Support for point-of-care testing through wireless LIS access
- Support for monitoring of all quality assurance activities
- Automatic ordering of sample collection
- Talk with colleagues – one-on-one or conference calls
- Receive and send text messages
- Automatic logging of events
- Support for fixed asset tracking and management
- Seamless integration with the LIS and with other Ascom solutions

Mr. João Carlos Ferreira,
Managing Director, Eritel Telecomunicações Ltda, Ascom's Brazilian partner:
"We are proud of this solution. In spite of its technical complexity, it is user-friendly and works flawlessly. It has helped the laboratory to upgrade its services to other hospital departments."

The Latin American hospital described in the text has invested in a Lismax concept from Ascom.

Quicker lab samples collection

The Clinical Pathology Department of a 500-bed Latin American hospital had problems with the collection of samples to be tested. When samples were ready for pick-up, nurses had to call the lab over the internal telephone system. Missed calls and delays in samples collection slowed down the processing and often made the ordering physicians wait an unduly long time to begin treatment.

The hospital had previously installed an Ascom wireless paging system. This formed the basis for a new solution to speed up samples collection. Now, when a nurse wants to order pick-up, all she has to do is press a single button on the nearest telephone.

This instantly sends an alphanumeric message to the porter responsible for that particular area, stating where to go to get the samples. The porter accepts the task just by dialling his or her identity number. If there is no answer within a predetermined time, the task is automatically transferred to another porter. If there is still no answer, the supervisor of porters receives an audible alarm and an error message on the PC.

In addition, the system generates statistics of samples collection and displays them graphically, for example, total number of pick-ups in a certain period, average time from notification to pick-up, number of calls per hour, number of cancelled pick-ups. The speed and efficiency of samples collection and the turnaround times for lab results have improved markedly.

Solutions for rugged hospital environments

Ascom provides you with on-site wireless communications solutions in which every component has been developed for demanding hospital environments. Each solution meets the most stringent formal and practical requirements.

Formal requirements

The formal demands placed on equipment to be used in hospitals vary from country to country. Our solutions meet the requirements laid down by most national and regional authorities. Ascom on-site wireless solutions also make it easier to comply with accreditation requirements for protecting the privacy of patient information, such as those of the HIPAA and equivalents in other countries.

Ascom on-site wireless solutions use low-power, unlicensed radio technology, with little risk of interference with sensitive medical equipment and are field-proven to be safe for use in patient care areas.

You can get robust hand-held units, dust- and water-resistant according to IP64 and shock-resistant according to IEC 68-2-32. Units can be disinfected. You can get a solution that meets the most rigorous safety requirements, such as the German GS standard (Geprüfte Sicherheit – Tested safety).

Practical requirements

Practical requirements vary from hospital to hospital and from one clinic or ward to the next. A common stipulation is secure and complete coverage of specified areas. Another is that people can speak to each other in noisy conditions.

We can design your solution to deliver guaranteed coverage of every nook and cranny of a defined area. It will provide outstanding voice quality throughout your facility with no clicks, fading or dead spots – even in underground passages.

You get telephones that suppress ambient noise. Users can hear – and make themselves heard – even when equipment whirs, beepers beep and people talk loudly all around. Hands-free devices are also available. Should a phone malfunction, simply transfer the SIM card to another device. All personal information, alarms and functions move with the card into the new phone.

Ascom wireless telephones integrate seamlessly with the hospital's existing fixed-line telephone system, regardless of make as well as with any nurse-call system. Seamless call handoff and automatic roaming ensure total reliability as users move around the hospital. Lower power levels than in other wireless communication technologies, such as ordinary mobile phones, eliminate interference with sensitive medical equipment.

A solution for every requirement

Healthcare professionals can use varying types of devices, or information appliances, to access wireless services – voice-centric, data-centric and hybrid devices. Typical devices include phones, personal digital assistants (PDAs), tablet PCs, laptops, wired computers and workstations, or any combination of these that suits the individual worker.

Whatever the demands posed by your environment, we can devise a wireless solution that satisfies the toughest formal and practical requirements. Challenge us with a demanding application. We look forward to showing you what we are capable of.

Primary system functions

User interface for pocket devices:

- Role/responsibility-specific function push-buttons
- Menu structures adapted to specific user requirements
- Text and graphs
- Sound and/or vibrating signals

Medical alarm:

- Alarm to personnel or central systems
- Preference for prioritised alarm
- Alarm receipt notification

Personal alarm:

- Automatic alarm (man down, no movement)
- Manual alarm (push-button, pull cord)

Interactive messaging:

- Traditional paging with message receipt function
- Send or receive text messages
- Request status (vital signs)
- Send control signals (start/stop, open/close)

Voice:

- Person-to-person calls
- Conference calls
- Hands-free
- Loudspeaker

Positioning:

- Precise locating (x-, y- and z-axes)
- Movement, wandering control
- Tracking of people and equipment

Logging:

- Alarm (what, where, when, who)
- Action (who did what)
- Task confirmation (care, procedure performed)

System security:

- Logging of system alarms
- Escalation of important messages and alarms
- ATEX certification

System monitoring:

- Monitor the wireless system
- Monitor to ensure handsets work correctly
- Monitor modules and interface

Total customisation

Some suppliers of wireless communications offer standardised systems that are intended to satisfy all needs. But no two hospitals function the same way, are organised along the same lines, or have identical infrastructures. In addition, people have different values, preferences and priorities. They simply do not work the same way.

At Ascom, we take these differences into consideration. You get a solution made to measure with smart and often unique functions. Commissioning, training, maintenance and service are part of our offering. We go to great lengths to adapt to your specific needs.

Identify and prioritise

Where in the hospital could better communications improve patient satisfaction and boost productivity? Usually, there are several areas in which quicker response and time saving can be achieved quickly and with a limited investment.

Together with key people from your organisation, we identify the most promising areas of improvement and quantify their benefits. What to change? What to change to? How to cause the change? This results in a list of projects, prioritised by their benefit to hospital operations.

Mapping the processes

We map the workflow in each of the prioritised areas. We involve members of the workforce to make them understand what is going on and take advantage of their experience.

Most workflows involve several departments or specialties. But hospitals are often structured, measured and managed in parts rather than as a whole. Making these parts work together as an integrated system is a main objective. To do so, it is necessary to consider the needs of the entire hospital.

The process mapping results in a general view of the organisation, its processes and information flows. It also reveals who needs what information and when – who is getting the right information in a timely manner and who is not.

Finding the bottlenecks

Many bottlenecks occur in services, such as laboratory, radiology, pathology and physiotherapy, which must cope with demand from several sources simultaneously. But most bottlenecks result from inadequate means for communication between people.

Lack of data is not the problem. The problem is a proliferation of different hardware, software and networks that makes it difficult to access data as information. It takes too long to find out whether the relevant information is available. And if it is, it takes too long to access it.

Removing them

Wherever decision-making and processes need to be accelerated, we can define wireless functions that remove bottlenecks. Since processes frequently span departments, this usually involves removing informational barriers between departments.

You lay down the requirements – in terms of, for example, functions, safety, security. We transform your requirements into a solution with infrastructure, software and communications devices. We integrate with your existing systems, such as EPR, HIS, LIS, PACS and RIS, etc. And with existing IT infrastructures, LAN, PBX, etc. Plus accounting systems, security and building management systems.

A complete solution

You get a robust system with high functionality and security. You can count on a complete solution, including installation, commissioning, training, maintenance and service.

During installation and commissioning, we train the system managers and users. System managers get effective tools for discovering, identifying and solving problems. During the system's entire service life, we offer training for users to ensure usability and maximise the business benefits for you.

Starting with your needs and requirements, we design customer-specific services for preventive maintenance and remedial service.

You can get maintenance contracts based on preventive maintenance that ensures the availability of the system. You can get service contracts with guaranteed service response times, or phone support from our local organisation. And at a fixed price so that you have complete control over all costs.

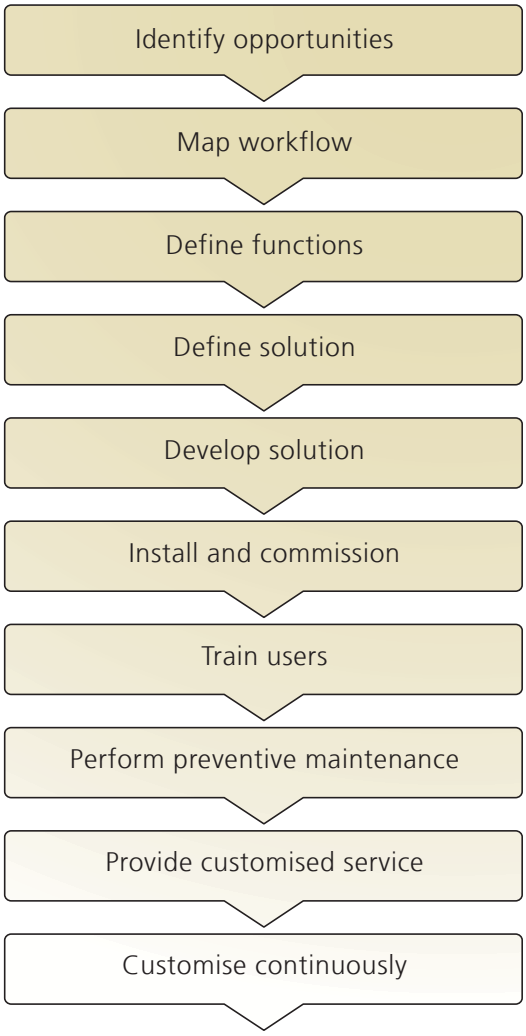
Continuous customisation

Your demands will change over time as you develop your processes. That is why we offer not only a solution made to measure for today's needs. We offer a future-proof solution. We can continuously enhance it to meet your organisation's changing requirements. We transfer expertise to your organisation, so you can develop your own applications.

Most of our systems are in use for ten years or more, and we have more than 20,000 healthcare systems in operation. That has given us solid experience of continuous customisation.

A growing number of hospitals are using on-site wireless communications for quicker response. No other supplier can match Ascom's experience in this area.

Ten steps to quicker response and improved productivity



Wrapping it all up

Greater patient satisfaction. More effective use of time. Lower risk. These are the benefits you get if your organisation can respond quicker to the need for critical information.

On-site wireless communications speeds up response. Doctors, nurses, administrators and other personnel receive time-critical information right into their pocket – as speech, data, text or alarms – and in an interactive form. The right person gets the right information, at the right time, in the right way.

Ascom wireless communications integrates with clinical systems, such as HIS, LIS, PACS and RIS; with business and accounting systems; with building management and security systems; with telephone systems and local area networks; and with wireless and wired devices such as pagers, telephones, smart phones, PDAs, laptops and stationary computers.

Integration with existing systems is our true strength – acquired during fifty years of supplying integrated communications to more than 20,000 hospital installations in Europe and the U.S.

Where can wireless communications and quicker response benefit your operation? Contact us for a feasibility study. We'll quickly find services that pay back in less than a year.

Ascom
Wireless Solutions
P.O. Box 8783 SE-402 76 GÖTEBORG
T +46 31 55 93 00 F +46 31 55 20 31
www.ascom.com/ws

ascom