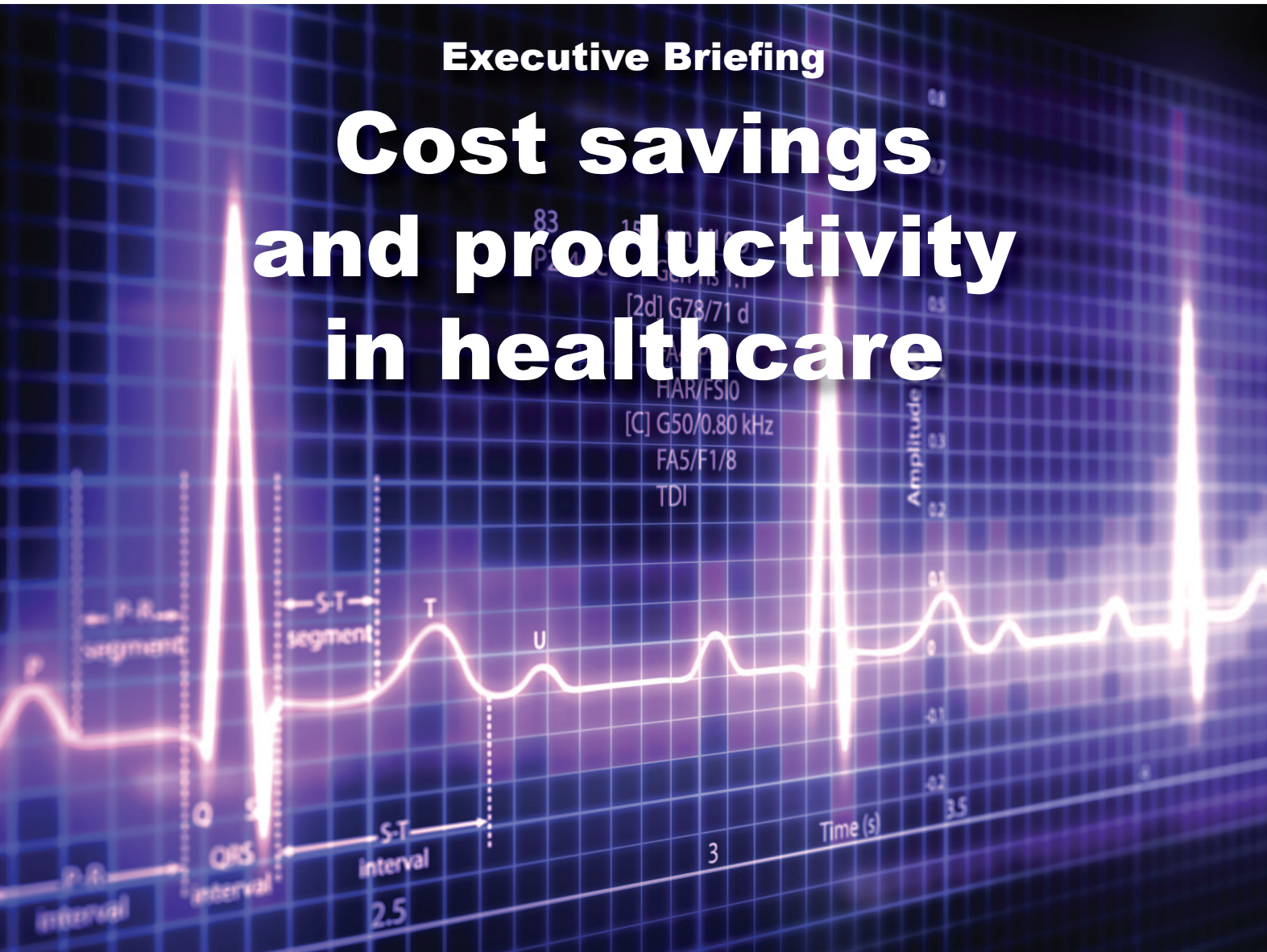# CIO
BUSINESS TECHNOLOGY LEADERSHIP

Executive Briefing

Cost savings and productivity in healthcare

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Unified communications helps cut costs without compromising standards

Healthcare CIOs must meet the demands of public-sector cost cutting while maintaining high standards of service. A unified communications system can help

Hospitals are always looking to save costs, and the current public spending cuts mean that financial restrictions will be tighter than ever before. For CIOs, the conflicting pressure to cut costs while maintaining a high standard of service to patients is particularly strong.

Fortunately, a number of technologies are now available that make it possible to do just that. One of the most attractive options is to adopt unified communications (UC) solutions, replacing old analogue systems with digital ones that combine voice and data, integrate mobile and landline devices, and enable CIOs to manage the whole communications infrastructure as a single entity.

Unified communications systems mean that staff can be contacted at any time, whatever the circumstances

UC can save hospitals substantial sums of money. The savings come in two forms: direct and indirect. Some of the direct savings arise out of the fact that internal calls are free of charge, cutting the substantial phone bills that most hospitals face. There can also be direct savings on mobile devices – some clinicians carry two or three mobile devices, such as a phone, a PDA and a pager. UC makes it possible to combine these devices into one, saving thousands of pounds on hardware costs.

Maintenance also becomes cheaper and simpler in a UC system. The CIO has only to manage a single server, rather than a complex infrastructure of different devices and software. It's also easy to scale up – if a hospital needs to add a few hundred users, then it is a matter of purchasing a different licence rather than installing a completely new system.

Indirect savings arise from improvements in efficiency and a reduction in wasted time. Currently, for example, much time is wasted trying to locate the right clinician – who may be anywhere in the hospital, as most clinicians spend a lot of time on the move. Having spent time unsuccessfully trying to contact a particular doctor, for example, a staff member might leave a voice-mail message for the doctor or send an email, or try a different doctor instead. To retrieve the messages, the doctor will usually have to find a computer or a landline phone.

When a UC system is in place, it becomes much easier to contact the right member of staff. The presence functionality will tell you whether the doctor is in a meeting or on her ward rounds or at lunch. If the doctor is available, she can be called on a single number, regardless of where she is, and that will go straight through either to her landline or her mobile.

The M155 smartphone (right) is connected to the wireless network and worn like a wristwatch

But if staff can carry a mobile device as part of the UC system, they can be reached regardless of where they are in the hospital. The M155 smartphone, which is connected to NEC's DECT wireless network, is worn like a wristwatch, allowing clinicians to make and receive calls while carrying out other tasks. The devices can be used to receive (and make) both voice calls and text-based messages, and messages can be

sent to groups as well as individuals. Messages arrive instantly, so important information can be received by the right person. This means less travelling around the hospital to locate the right individual, gaining the right information straight away every time and improving the speed at which procedures are completed. Nurses often have to spend time travelling between healthcare areas to receive further instructions. If nurses could be contacted at their location at any given time, jobs could be assigned to the person closest to the area concerned.

Similarly, most hospitals need to have duplicate sets of healthcare equipment so that staff can find the equipment when they need it. But if a member of staff can use their mobile device to contact staff in other wards, they would be able to locate any instrument when they need it, reducing the need for many extra sets of expensive healthcare equipment.

The MI55 devices have other advantages – they have touch buttons that can be used to raise an alarm and, because they are location-sensitive, the owner can be tracked immediately. This makes them particularly useful in settings where clinicians may be at risk of violence, such as a psychiatric hospital. Because a watch is incorporated, the MI55 can be used when taking blood pressure readings or recording a patient's pulse. The St Josef medical centre in Belgium has adopted the devices to use in tandem with the centre's existing DECT system from NEC, and has found them simple to install and to use.

"Getting them up and running was easy," says Greet Bielen of the centre's technical department.

"All we needed to do was input the phone numbers and assign groups – we could use the system straightaway. Pre-defined department-related text messages were also placed in the memory."

Hospitals have an increasing need to keep the running costs of IT infrastructure low, while providing a continuous, uninterrupted service to patients. The use of NEC's FT range of servers, which all support VMware Infrastructure 3, enables CIOs to introduce a virtualised environment. Server virtualisation, in which several virtual servers run on a single physical server, can slash running costs for a low initial investment.

A virtualised environment requires far fewer physical servers, dramatically reducing the electricity bill both for the servers and the cooling systems, cutting down the amount of physical space needed to store the servers and also reducing the related workload in maintaining the servers. Return on investment is rapid, and organisations implementing virtualisation have saved thousands of pounds a year.

In a virtualised environment, downtime of a single physical server can cause far more damage than in a non-virtualised environment, and historically many organisations have avoided using virtualisation for mission-critical applications. If an important application does run in a virtualised environment, it is essential that the servers used are highly reliable.

The St Jozef medical centre in Belgium adopted the M155 devices in tandem with NEC's existing DECT system (left)

This is where the FT servers come into their own: they provide exceptional levels of availability, which is crucial in a hospital environment. If a hardware component malfunctions, the faulty module is instantly isolated and the server continues operation on the other healthy module. The module can be repaired and replaced without interrupting processing.
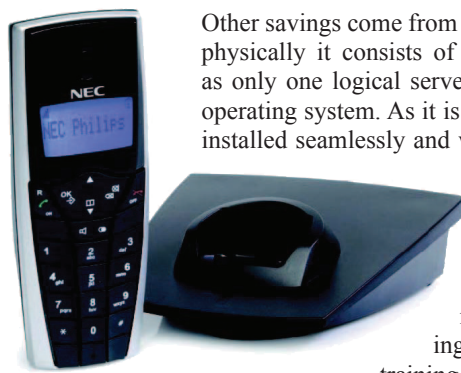
With ordinary servers, time is wasted and money lost in trying to fix server problems or restore lost transactions, but with just five minutes of downtime a year, FT servers are used to the maximum.

Other savings come from using an FT server. While physically it consists of two servers, it functions as only one logical server, requiring only a single operating system. As it is a single system, it can be installed seamlessly and without complex configuration and infrastructure. Maintenance is also straightforward; the FT server doesn't require any specific management skills, saving time and money on staff training. FT servers also provide CIOs with guaranteed peace of mind, as they offer total security with no loss of any transactions in the event of hardware failure.

Improving service to customers, making employees more productive and keeping costs low may seem like an impossible ideal, but, as NEC customers have found, technologies such as UC, virtualisation and fault tolerant servers make it an achievable one. By adopting such technologies, healthcare organisations can achieve a rapid return on investment, saving money on operational costs and responding more sensitively to the needs of patients. ●

NEC's Express 5800 fault-tolerant servers guarantee uninterrupted service

Instant availability can cure hospitals' productivity and efficiency woes

In healthcare settings, three-quarters of person-to-person calls go unanswered at the first attempt. Unified communications solutions can ease the pain

The pressures in a modern healthcare setting are intense. Better diagnostic tools have led to higher expectations, and patients believe they have the right not only to excellent treatment, but to care that is delivered with efficiency and courtesy.

Hospitals need IT systems that can support doctors, nurses and administrators to be more productive and to offer patients a better service. But hospitals can often be hampered by inefficiency, caused by difficulties in contacting mobile staff, for example, or poor use of computing resources.

Doctors typically walk six miles a day when they are on call, and nurses walk about two or three miles. Time spent walking, however, is time not spent delivering services to patients. Combine that with the fact that in healthcare settings, more than 75 per cent of party-to-party calls go unanswered at the first attempt, and you have a recipe for inefficiency and poor productivity. If doctors and nurses were easily accessible while on call, and callers could be sure of contacting the right clinician at the right time, then productivity would soar.

Unified communications (UC) solutions such as NEC's SV8100 UC for Business address this problem by bringing together all the methods of communication used in a hospital (such as voice, conferencing, email and instant messaging), so they can be managed as a single entity from a communications server. UC also has presence functionality, which tells you instantly if the person you want to contact is available. For CIOs, UC for Business makes it possible to manage all communications from a single server. The solution can be scaled up or down as necessary and can slash costs by integrating mobile communications with landlines.

In highly mobile settings such as a hospital, this kind of functionality provided by UC is invaluable. Take a situation where a colleague needs to contact a doctor urgently. The presence function would immediately show whether the doctor was available, or in a meeting, or with a patient. If the doctor is available, the staff member doesn't need to try different numbers – one number would reach him regardless of whether he was at a landline phone or on the move and using a mobile phone. If the presence functionality shows that the doctor isn't available now, the colleague could contact another doctor with the relevant expertise if the matter was urgent, or leave an email or voice mail message for the first doctor. The advantage of UC is that all messages can be retrieved from whichever device the user is using at the time, so the doctor won't need to find a landline phone or a computer to access messages.

Mouscron Hospital in Belgium has used UC as a way of improving efficiency and customer satisfaction. When it expanded by adding a new building, the hospital's existing telephone system could not accommodate additional extensions. So it decided to install a new NEC iS3000 communications server in the new building, which provided an opportunity to upgrade its alarm systems.

Systems like NEC's SV8100 UC for Business bring together voice, email, conferencing and instant messaging for a true unified communications solution

Like most hospitals, Mouscron has various alarm systems, including nursing and medical alerts, fire and smoke alarms and alarms for technical equipment. These alarm signals were sent to beepers, and all were managed separately – an inefficient and time-consuming process. But the NEC Messenger server has enabled the hospital to manage the alarms as one entity: the server now receives all the signals, recognises them and sends them to the correct person, and with the correctly allocated priority. The server also sends a new alarm when the first one is unresolved within a predefined time. Alarm messages arrive on employees' existing DECT phones – employees no longer need to carry beepers as well as phones. Staff can now send alarm messages to each other, and they are able to send and receive more detailed text messages than with the old beepers.

The hospital also wanted a more efficient and customer-friendly call accounting and invoicing method for patient phone calls. In the past, when a patient was admitted to the hospital, the reception desk had to create a personal "fee ticket" and the patient received the phone number for the room. At the end of the month, the receptionist had to gather all the call costs recorded in the telephony system per phone number and re-enter them in the accounting system for billing to each patient. There was no integration and the manual task took up to five hours every week. When the patient was moved to another room, relatives and friends would often use the old phone number and fail to reach the patient.

To improve the patient phone service, the new communication server was linked to the hospital's accounting software, making it easy to keep track of patients' phone calls. When a patient is discharged, the telephone invoice is printed off with just the press of a button. The new system immediately freed up several hours per week on the reception desk – time that the receptionists now spend on other tasks. Patients also benefit from the new system, says Paul Ardenois, technical manager at the hospital. "When a patient changes rooms, we don't have to assign a different phone number. The patient simply logs in to the new room's phone via a pin code – the phone number is effectively assigned to the patient not to a room," he explains.

Hospitals and other healthcare settings face not only the problem of improving efficiency and service, but of responding promptly to emergencies. In a business, server downtime can result in loss of business transactions and a reduction in the quality of customer service and a loss of money. In a healthcare setting, the loss of a server at a critical time can mean the difference between life and death.

This is why many hospitals have decided to install fault tolerant servers, such as NEC's Express5800. The Express5800 has 99.999 per cent reliability,

UC solutions can ensure more person-to-person calls get answered on hospital wards

which equates to fewer than five minutes downtime a year. The server can carry on running while maintenance is being carried out, so that even if a component fails, there is no loss of data or of service.

It is not surprising then that, in Liguria, Italy, public safety operations centres, responsible for co-ordinating the emergency services response, use the Express5800 as the platform for their emergency management system, known as EMMA. The server's exceptionally high reliability means that the response centres can remain operational at all times, without interruption of service caused by server failure. Because the server is monitored remotely, alert reports are generated if there is any sign of a problem. Compared with a more traditional clustering solution, the fault tolerant server is highly cost-efficient, requiring only one application licence.

The NEC Express5800 is particularly useful in a hospital setting. It supports NEC's SAN-compatible disk array devices, which means that it is ideal for any environment that requires a large volume, high availability and high-speed response, such as an electronic patient records system.

Customers who have adopted NEC IT platforms and UC solutions have been able to improve productivity and respond more effectively to patients. Hospitals can now feel confident that they are using their resources in the most efficient way possible while providing patients with the high quality service they expect. ●

Mouscron Hospital in Belgium used a communications refresh to upgrade its alarm systems

NEC solutions leave hospital operations in a healthy state

Time is a vital commodity in healthcare. Two hospitals in France and the Netherlands used fault-tolerant servers and unified communications to streamline their services

For doctors and patients at Briey Hospital in France, the internal laboratory provides an essential service, analysing blood and tissue samples, and it often has to respond quickly to urgent requests. The laboratory needs to be able to process results without interruption for emergencies and other hospital services (such as radiology and surgery) 24 hours a day, seven days a week, 365 days a year. It cannot afford to lose precious time simply because the server is down or being maintained.

To guarantee a completely uninterrupted service, the hospital has installed one of NEC's fault tolerant servers, the Express5800. Because it is equipped with fully redundant components, and has exchangeable hot swap hard disks, the server can carry on running even while maintenance is being carried out. Even in the case of component failure, there is no interruption to the service or loss of data. The introduction of the Express5800 has also improved productivity: the combination of the fault tolerant server with an automatic analysis system has reduced the delay in obtaining analysis results from 20 minutes to five minutes, so the laboratory can now process more than 200 patient files a day.

The system has the capacity to isolate the faulty component while it is still operational, so maintenance of the server is much simpler too – a maintenance agent who previously spent 60 per cent of his time maintaining the server now only spends five per cent of his time doing so. "The server runs on its own and requires very little intervention", says Bernard Jeanjean, the hospital's IT director. "Since the server has been running, we have not had any failure here at the laboratory."

St Jansdal Hospital in Harderwijk in the Netherlands had a different problem. It needed to improve internal efficiency and customer service. The hospital receives 10,000 calls a month from people requesting appointments – most calls reach the employees on their direct lines, and the rest come via the operator. St Jansdal wanted to make sure that it was able to respond to callers quickly and put them through to the right person.

The old switchboard had automatic call distribution (ACD), but limited functionality, particularly when it came to providing management information, so the hospital decided to opt for a voice over IP (VoIP) solution that would provide greater flexibility.

Ton Luigjes, manager of the hospital's multimedia department, explains: "Some time ago we acquired an outpatient clinic in Dronten about 25km away. The doctors who work in both locations wanted to be reachable with the same phone number irrespective of the location."

Another important reason for using VoIP was that it provided the ability to work more flexibly, says Luigies: "The capacity of Harderwijk's appointment desk could be increased by involving Dronten at busy periods. To prevent capacity problems, we sought a combination of VoIP and an application that offered good management information."

The hospital decided to install Business ConneCT, NEC's combined Unified Communications (UC) and call centre solution, which provided for 18 call centre workstations, full management reporting and interactive voice response (IVR). Operators answering the phones now have information that helps them serve the customers more quickly. Agents see how many callers are on hold, how many agents are logged in and what the average response time is. More agents can be deployed as necessary.

"If it's very busy or if there is a technical malfunction, customers can be informed how long their expected waiting time is via a recorded message. Establishing clarity ensures that customers remain satisfied with the service that they expect from our hospital," says Luigies.

Almost all the 10,000 calls are now responded to within 25 seconds; staff from different locations can help with busy telephone reception periods; and each doctor is reachable via one number over several locations. All this has resulted in greater increased operational efficiency. "The organisation has better insight into telephone traffic patterns, enabling us to predict peaks usage times that require additional staff members," says Luigjes. ●

St Jansdal Hospital in the Netherlands uses NEC technology to respond to 10,000 phone calls a month

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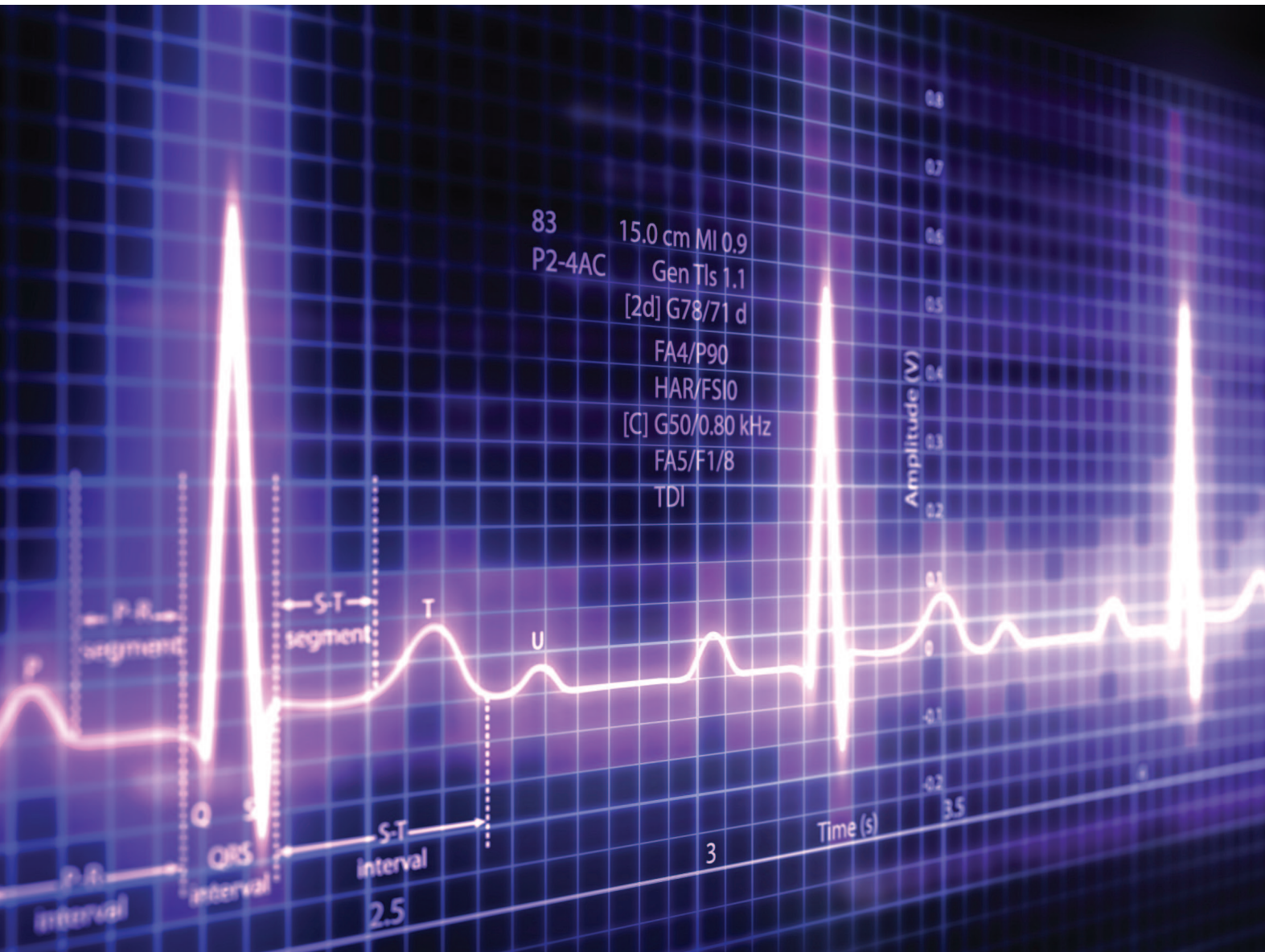
Lesley Saville
Executive Director
AEG Europe

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Amplitude (V)

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