

# Putting pen to data



To meet ever-increasing demands, while streamlining expenditure continuously, healthcare authorities look to technology as a way of delivering more for less and responding more quickly to changing circumstances.

However, there are capital and operational costs associated with introducing new technology, as well as the issues of effectiveness and usability. A recent study by industry analysts Quocirca called 'Light touch, firm impression', suggests that technology is often thrown at problems in the healthcare sector without full consideration being given to the underlying processes or the needs of clinicians and carers.

This is alarming given that healthcare is one of the top IT growth markets globally, set to expand by

**The threat of a pandemic puts pressure on an already stretched healthcare system that is expected to deal with everything that is thrown at it, says Petter Ericson, Chief Science Officer, Anoto AB.**

2.2 per cent to US\$88 billion this year, second only to utilities' IT spending according to recent research by Gartner.

### Don't discard paper

In an environment where paper is still the key medium for capturing information, digital pen and paper technology is winning over a growing number of healthcare trusts and local authorities in the UK and worldwide by putting usability and simplicity over IT wizardry.

Digital pen and paper (DP&P) automatically captures handwritten information in medical or care forms and digitises it, eliminating the need to type up notes electronically. The digital pen looks like a ballpoint pen. A tiny infrared camera at its tip

tracks its movements relative to a grey dot pattern printed on the form, recording and storing what is being written. Stored data is synchronised with back-end systems by docking the pen in a USB cradle or connecting via Bluetooth or a mobile phone.

While the Quocirca study shows that laptops, PDAs and smartphones have a high penetration in the healthcare sector, it also reveals that these devices can be tricky to write on single-handedly or while standing up, difficult to clean, easily damaged and prone to theft and loss. All of this hinders their effective use and drives costs upwards.

In contrast, a German pilot study by R Boldt and J Raasch from the University of Applied Sciences, Hamburg, in 2008 from comparing the usability of current electronic data capture (EDC) methods revealed DP&P to be significantly more user-friendly, quicker and more accurate compared with using a keyboard, tablet PC or PDA to capture data.

Evidence from the field also suggests that DP&P users require less training, can be up and running more quickly, and generally find the digital pens easy to use. In addition, DP&P systems have been shown to be more cost-effective compared with other mobile technologies.

### Speeding up emergency response

To benchmark preparedness for a flu pandemic, the Department of Public Health and Social Services for Solano County, California, organised a large-scale drill just before the annual flu season. Volunteer 'patients' used digital pens to fill in health surveys, making their data available instantly for triage. The survey data determined whether a patient could be vaccinated immediately or needed to be examined by a nurse first. Using DP&P, Solano County achieved the target vaccination rate of 350 patients per hour, as set by the US Center for Disease Control and Prevention.

The technology has since been rolled out to the county's emergency medical services. Traditionally, paramedics would fill in patient care forms in the ambulance and leave paper copies with the hospital and emergency services station. An administrator would then enter the data manually into the station's patient database. This caused significant delays in processing patient data and transcription errors led to data inaccuracies.

At first, tablet PCs had been considered, but digital pens were found to be a more cost-effective solution. The pens also enabled emergency services to meet its 95–100 per cent data accuracy target – no mean feat if you are dealing with more than 30,000

patients a year.

Paramedics fill in the forms as before, but now use a digital pen which they dock to download stored data once they are back at the station. In this way, the time from transporting a patient to uploading their data is reduced significantly.

carers would spend two hours doing paperwork. Taking laptops and printers on visits was ruled out due to staff security concerns and, more importantly, because service users – especially the elderly – often find computers off-putting.

The pens allow carers to interact with

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### Waiting lists and meeting targets

In a recent French study, DP&P technology helped shorten waiting lists for breast cancer screening. In France, women aged between 50 and 75 are offered breast screening every two years. Results have to be interpreted twice, once by the examining radiologist and again by a second expert. Traditionally, their handwritten notes had to be entered electronically by administrators.

After introducing DP&P to eliminate the lengthy, error-prone manual entry of data, the time required to analyse mammograms shrank from up to three hours to less than 30 minutes. Furthermore, less than 5 per cent of digital forms had to be checked, giving the DP&P system over 95 per cent data accuracy. No working routines had to be changed and the system has proved very robust.

clients one-to-one, without technology interfering: service users just see their carer completing a form with a pen. A copy of the completed, signed form can be left with the client while the encrypted data on the pen is downloaded via USB or a mobile phone.

### Secure websites

A secure website enables carers to access the form for validation later, at the office or from home. Integration with back-end systems ensures that once the form is uploaded to the council's database, the client's record is updated automatically.

The digital pen system has resulted in more efficient use of staff time, reduced costs and accelerated care provision, enabling Greenwich council to improve its performance ratings and overall image in the community.

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Screening centres using the pens were also able to meet government deadlines for delivering results to patients more easily, and they could move to the next stage of the national 'plan cancer' programme earlier than other screening centres. The only reported problem was that clinicians sometimes forgot to use the digital pens and used their own – highlighting the familiarity DP&P users' experience.

### Transforming social care records

Greenwich Council in London used DP&P to transform the way care workers capture data in the field and transfer it to the electronic social care records system.

In the past, for every one hour spent assessing a service user in the community,

When introducing technology to critical healthcare and social services, the first consideration should be the needs of the end users and the processes they work towards. Often a relatively simple solution such as DP&P can yield better results more quickly and at a lower cost than an all-singing, all-dancing solution that users find hard to get along with.

That said, whichever technology an NHS trust or county council opts for, it is critical to take a holistic approach: only when the front-end technology can be tightly integrated with records databases and other systems can it deliver the greatest benefits.

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