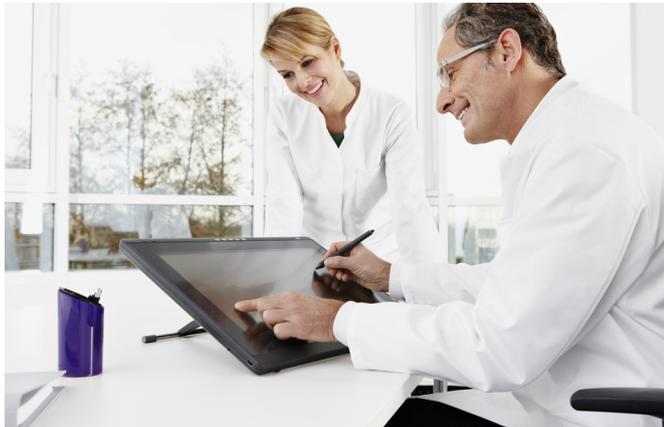# Medical White Paper

Wacom interactive pen displays in Electronic Health Records

BUSINESS SOLUTIONS

Introduction

The use of electronic health and patient records has been widely discussed in Europe. Some countries like the UK have started trials to test practicability and acceptance. The advantages of recording patient information digitally are obvious: faster and more efficient treatments, better overview about the general health history of a patient and, last but not least, cost saving aspects. Those advantages are counter-balanced by a range of various concerns: data protection; up-front investment and human-machine interaction. The challenge for all those involved in the issue will be to find a way to introduce electronic health records which provide maximum flexibility, respect data protection and confidentiality, and help work more efficiently, thus saving time and money. Hardware and software need to be integrated to support this goal. Wacom pen tablets and interactive pen displays are the ideal interface and are likely to be well-received by both patients and doctors as a flexible, easy-to-handle and cost-effective solution.

Data security and protection

Electronic health and patient records will only be widely accepted if the users are confident that their data are safe. There are two critical factors: first, all data collected has to be stored securely so that misuse can be excluded. Secondly, there is the question of capturing handwritten signatures of patients and doctors alike. Both have to be sure that the level of protection in capturing their signature is as high as possible. Wacom tablets fulfil all requirements in this area. Wacom's patented technology works with a high resolution and accuracy. In addition to the xy position of the pen, Wacom pen tablets record the pressure during the writing process. This set of information (xy position and pressure) can be used to create a unique biometric profile of one's signature, which can be used for verification and authentication purposes. Thus, fraud is nearly impossible and the signature is legally binding.

Application areas

Although electronic health records will most probably play a major role in all medical areas in the future, the main focus today is on hospitals. This is mainly due to the substantial investment necessary to set up such a system, which is likely to be too big for a single doctor or a small medical institution. Therefore, the focus will be on hospital applications.

There are five major application areas where electronic health and patient records are used:

- Administration
- Surgery
- Mobile use (e.g. in a ward or for home visits)
- Prescription of drugs
- Post-operative area

Administration

Administrative processes run through all activities in a hospital. They are time consuming and costly. At the very first encounter with the hospital, a patient's data are recorded, and patients and healthcare staff have to sign documents to agree to data handling, to treatment or to validate a statement. This amounts to a large number of different forms that are stored in the hospital physically. Integrating all these documents as digitised documents in an electronic system saves time and allows quick access to all information. Consequently, rather than signing a patient's files on paper, signing the digital

document directly, for instance via an interactive pen display or a dedicated signature tablet, can help streamline the documentation process significantly. For the duration of the treatment, forms may have to be signed by the patient, e.g. the consent on the pre-operative instructions form. Wacom products fulfil all requirements for secure handwritten signature verification, in conjunction with respective software partners. The acceptance with both patients and staff is high, as the feeling of signing digitally in such a way is very much like signing on a normal sheet of paper. For doctors and other medical personnel, it is important that such files can be effortlessly archived and easily retrieved, thus allowing quick access to all data available.

Surgery

Normally, it is sufficient for pre-treatment instructions to use a standard form which may require some text input and ticking boxes. For more complex operations, the surgeon often resorts to sketching respective body parts and measures. By implementing a fully digitised process with an interactive pen display as the input interface, creating such records can be alleviated substantially. Either a dedicated free space on the form will be used for the drawing; alternatively the digital form can be part of a file comprising access to different media such as images or other documents. The surgeon or specialist is not limited to the space of a paper form, but can add several drawings if required, e.g. to show different perspectives or to elaborate on a detail. Pictures taken after the operation needed for documentation can easily be affiliated to the case.

Mobile use

While visiting their patients, either in the hospital or out-bound, doctors usually have to rely on very little written data. Notes taken down during the visit are, afterwards, normally entered into forms which – again – have to be stored physically or, if they are to be integrated into a digital system, have to be scanned before archiving them. These processes are time-consuming and cause additional costs. If a doctor uses a digital pen to enter data directly into the system while seeing the patient, this information is stored directly within the patient's record, with the optional access to information already stored in the system.

Prescription

Entering prescriptions into the computer and printing them at the reception desk of a surgery is a common procedure. Patient and health data are stored in an integrated electronic health record; it can be used more intelligently. For instance, looking at a patient's prescription history spanning across different medical areas can be very helpful in order to establish a successful and efficient treatment plan. Thus, the more information is available for the doctor, the better his position to help the patient and to minimise the risk of adverse consequences or contradictions.

Post-operative area

Even more important than at the time of pre-treatment instructions may be the postoperative communication where the patient is trained extensively to convalesce from the consequences of the operation. If a patient needs to change his lifestyle after an operation or if he or she needs to undergo a rehabilitation programme or physiotherapy, a lot of different aspects and medical disciplines are touched. If all documents are stored electronically, the treatment progress can be monitored much more effectively and the different parts of post-operative care can be structured easily. Using an interactive pen display as their interface, doctors and physiotherapists can easily create digitalised drawings to explain details of the treatment to their patients and store them at a click of a button, without the detour to the scanner. They can also quickly highlight parts of the body that need special attention and exchange their knowledge in a flexible way. Important documents which the patient should take home can also be marked and enhanced by sketches and notes. Treatment thus becomes much more individual and effective, while saving costs at the same time.