

Introduction

Leeds City Council Social Services use of digital pen and paper (DP&P) is an excellent example of using new technology to help improve service delivery. The solution enables care workers to spend more time helping clients. It has also delivered substantial efficiency improvements and financial benefits to the council.

Problem

In the old paper based system, a form was used to record tasks and activities carried out in clients' homes, then posted or 'faxed' to the office for entry into the council's Social Care Record systems. A physical copy was retained by the client, for use by the NHS and other care agencies. This system created delays as well as transcription errors when entering data into the council's back office IT system. The data was used for client billing and staff salary calculations.

Solution

The digital pen and paper solution enables real - time data entry, while presenting itself to both staff and clients as a traditional pen and paper operation. Using this technology means that the information recorded on the paper in digital format can be instantly transmitted to back-office systems. The client still retains the much improved form.

The network independent solution works by entering information onto the form, using the digital pen. When the form is complete and a 'trigger' box is ticked, the pen communicates via the Bluetooth enabled mobile phone. The mobile phone sends the form data to the back office IT systems.

Implementation

A process of 'due diligence' was carried out to ensure the technology was stable and had proper market support. There was extensive consultation and briefing sessions. The form was carefully designed and tested. Communication at all stages proved vital, as was the training programme, to ensure that the form was understood and used correctly.

During the pilot the digital form used to capture information was revised, including incorporating changes as a result of improvements being made to the surrounding work process.

The project began in January 2005 with a 10-user pilot, the users completing a short training programme, before using the digital paper and pen. The number of users grew to 120. The solution is now being rolled out to over 1400 Home Care staff in all areas of the city.

Costs & Savings

Leeds City Council funded the project with the initial pilot costing £50,000. A typical cost for a 10 pen, Home Care, form based pilot, running for three months, is approximately £10,500. The full rollout costs will be £2.1 million, with anticipated savings over three years of £1.2million, a conservative estimate.

It is estimated that the direct cost benefits for grant recovery from the NHS will be £250,000 through improved reporting, and £100,000 per year through process improvements. Phone charges are reduced as staff now use mobile phones provided by the council. These corporate phones incur lower charges than staff's own mobile phones.

Technology

The solution makes use of digitally enabled paper forms, digital pens, mobile phones, wireless technology, integration software and back office systems for information recording, storing, analysis and reporting.

Devices

- **Digital pen** (Nokia): *Uses an inbuilt camera to record pen movements on paper, which is translated into an image and sent as an XML data stream.*
- **Digital paper** (Anoto): *Digitally enabled paper, with a dot pattern. It can be printed on virtually any paper.*
- **Mobile phone** (Nokia): *Bluetooth (wireless technology) enabled.*

Communications

When a 'trigger' box on the form is ticked, the digital pen communicates via the Bluetooth enabled phone. The pen is 'paired' with the mobile and once the form is complete uses Bluetooth to transmit the recorded data to the back office system, via GPRS (General Packet Radio Services) - an extension to the GSM mobile phone network.

Data processing

Data is processed by an Application Service Handler (ASH) server, which applies the recorded pen strokes to a 'map' of the form that is recreated electronically. The ASH also processes the data, and using an appropriate schema (developed as part of the project), can create an XML data stream for forwarding. The XML data is processed by LGOL-Net (Middleware) and stored in a database for reporting purposes. Data is encrypted at all stages of the transmission

Reporting

A solution was developed to enable managers to directly access real-time care data from any desktop PC.

Result

Using the digital pen and paper solution has:

- Helped enable effective NHS grant recovery through more accurate, up-to-date, accessible records.
- Freed up time to enable staff to spend more time with clients.
- Eliminated the need for paper documents to be returned to the office and physically stored, thus freeing up space.
- Improved management reporting by improved quality and accessibility of information.
- Encouraged improved service related communication, both voice and text, through the provision of a mobile phone, provided by the Council.
- Resulted in Home care managers being able to access real time care data from any desktop PC.

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To access the full case study:

Please visit - www.projectnomad.org.uk

