



# Success

Public Sector IT Projects

# FOREWORD

This booklet celebrates IT in the public sector; an often overlooked area. The case studies are profiles of the winners, medallists and finalists in the BCS & Computing UK IT Industry Awards 2010 public sector category.

All too often media stories focus on high profile IT project failures, especially in the public sector. This hides the fact that there are many stories about fascinating successes to be told.

As BCS, The Chartered Institute for IT, we want to celebrate the excellence practised daily by IT professionals across the globe. Our aim is to ensure that IT is recognised as a respected profession and to raise public confidence in IT.

The examples shown here demonstrate the passion, commitment and professionalism of those working in government IT. This is their story. They tell us about the challenges they had to overcome and the lessons learnt. So please read on to discover the sheer scale and complexity of today's public sector IT programmes.

The full list of finalists and winners is available at:  
[www.bcs.org/awards](http://www.bcs.org/awards)

**Phillip Webb**

Chair of BCS Government Relations Group



# A RECORD WIN FOR E-HEALTH



St Helens and Knowsley Teaching Hospitals NHS Trust have moved from paper to electronic health records, enabling clinicians to have immediate access to patient case notes, resulting in improved care.

Hospital records departments are very busy places: storing and retrieving patients' health records, transferring them between departments and making sure they are available to help clinicians make decisions on patient treatment. Hospital storage facilities for paper records are vast and running them is expensive.

That is no longer the case for one trust. By moving to an electronic document management system (EDMS), St Helens and Knowsley Teaching Hospitals NHS Trust have improved quality of care by ensuring patients' records are available at the right clinic, at the right time, all the time. This has also saved money for the Trust through staffing, storage and efficiency improvements. It is the first NHS trust known to do so and this system has made the working lives of those who use it far better.

#### Patient benefits

There are many benefits for patients. Wherever a patient is attending the Trust for treatment, whether it is for outpatient clinics, via A&E or for an operation, their electronic records are easily accessible to the clinicians caring for them. For those patients whose case histories are held electronically, the system has the potential to reduce the number of patients who are admitted into hospital following their attendance at the A&E Department. As clinicians have immediate access to their notes, patients can be treated without the need to be admitted on to a hospital ward. It is also possible for several clinicians to view a patient's record at the same time, in different locations, using the new system. Health records related patient complaints have been virtually eradicated.

As outlined in the original business case,

the project will save the Trust £3.2 million over five years from an investment of £1.2 million.

The project was funded by the Trust itself, rather than by the National Programme for IT, as the Trust thought it was a worthy investment. The project took 22 months to roll out across 27 departments across the Trust during which time over 500 clinicians and over 130 medical secretaries were trained to use the system. Now all departments that require access to patient health records can access them electronically.

'The challenges of moving to electronic health records in the past were extreme operational pressure and the difficulties of managing the area,' explains Neil Darvill, Director of Informatics at the Trust. 'Any change management programme is difficult to implement, especially one as extensive as this. The logistics and the level of service



in the records department are hard to maintain. To put in a change management programme, the key process is to stop crisis management – where excessive amounts of time are spent finding files which are hard to locate – and to have much more of a production environment, steady and controlled.

'To succeed, it was crucial to identify stakeholders and get them involved at an early stage. Engaging with clinicians and convincing them of the value and benefits to patients was vital to the success of this project.'

### Going digital

In the initial stages of the project, a new department for digitisation of records was set up and ran alongside the old records department, with staff moving across as the paper records were removed. This helped to change the working culture of the records department and test the new system.

A scan-on-demand approach has been adopted for this project, which began by scanning health records for patients attending outpatient clinics. The next step was to scan health records for ward admissions, both elective and emergency, followed by records for A&E attendances. This means every patient coming into hospital is now seen by clinicians using the EDMS solution at the point of patient contact.

Kodak i660 and i780 scanners are used to digitise the paper files. Bar coding is used to indicate that a new patient file is being scanned or to scan into different chapters.

A bespoke portal for the system was created by C Cube Solutions to make the project clinically viable. It has a single, simple and safe point of access to view and access records so that the treating clinician can see the patient's medical history. Duplicated information and department-based libraries have been removed, with the system integrating with other IT solutions like the patient administration system.

The screen displays the list of patients with appointments, appointment times, patient demographics and the latest letter, and has a range of links (virtual chapters) into the EDMS so that a clinician can easily

navigate through a patient's medical history.

'Patient consent to the digitisation of their record was not necessary because we have not changed the way we use the records or who can access them – they are still kept confidentially and are used at the point of care,' explains Darvill. 'This differs from GP records where the idea is that primary data becomes widely available via the NHS' IT backbone, the Spine. That data will be stored in a different place and a different system, whereas our system stays in the hospital.'

The EDMS runs on four clustered HP servers with all patient data (over 14TB) stored on two HP SANs, backed up to tape and optical disc to ensure robust disaster recovery.

The portal has also been developed in response to clinical feedback. This has included two page views, bookmarking, thumbnailing, clinic and ward views and hiding blank pages.

### What next?

The project does not end there. 'We're rolling out the system to GPs in early 2011 so that they can see a patient's entire record, rather than just the contents of a summary letter,' explains Darvill.

'We're also going to move to direct data entry, so that we can have full-blown health records. To date, clerical staff have been

scanning in doctors' notes after a patient's visit, but doctors will be able to enter information directly after this development – not just via keyboard but also using tablets and styluses. We will again roll this out first for outpatients.'

While Darvill continues enhancing the project, other trusts are considering emulating it. More than 30 other trusts have been in touch with Darvill to find out more. The EDMS supplier, C Cube Solutions, has also sold more of its systems into the NHS since.

The success of the project to date has made it the winner of a number of prestigious IT awards, including the public sector project category in the UK IT Industry Awards.

'We're delighted by winning these awards, as it means our ideas are corroborated by our peers in the IT industry. By entering we hoped to generate publicity, and that has worked as we've had more calls about the project since winning the awards,' says Darvill.

If all hospital trusts in England followed the example of St Helens and Knowsley Teaching Hospitals NHS Trust, the total savings per year for the NHS would be more than £200 million. Of course, that's simplifying the maths, but, given that care would also improve, online access to health records is clearly a winning move.

## THE TRUST'S KEY TO SUCCESSFUL ENGAGEMENT:

- executive and board level sponsorship;
- proper financial resourcing;
- consultation with doctors, consultants and all stakeholders to foster inclusion in the design and roll-out process;
- extensive effort on communication and support;
- a highly capable department and project managers to deliver it;
- creation of a case note structure and virtual chaptering for effective and efficient navigation.

# ON THE ROAD TO ONLINE FREE SCHOOL MEALS



The team automating the **free school meals process** is aiming to make the sort of difference to parents and carers that online forms have made to drivers applying for road tax.

In the past, when parents and carers applied for free school meals using paper forms, the process was slow, time-consuming and frustrating with some even giving up because of complexities. Part of the complication arose from parents and carers having to provide a paper-based proof of entitlement to the meals acquired from the Department for Work and Pensions, HM Revenue and Customs or the Home Office. Total processing time could take weeks.

A Connect Digitally Online Free School Meals project has changed the process, removed the complexities and transformed the service. Parents and

carers no longer need to provide paper proof as their entitlement can be checked on a new centralised system. The new process also allows parents and carers to apply online, reducing social stigma and simplifying the application process. The local authorities (LAs) can use the system to check entitlement for free school meals against central government data. This is set to reduce their annual administration costs by millions.

Automating the process, which has involved four government departments and 152 LAs in England, will eventually benefit the families of more than one million children who receive free school

meals. Online Free School Meals is delivered by the Connect Digitally programme. This programme is funded by the Department for Education and led by Hertfordshire County Council. It builds on the success of the Online School Admissions programme, where the team also worked with multiple LAs. Connect Digitally is cutting bureaucracy in LAs and schools through digital delivery of three frontline transactional services: school admissions; free school meals; and payments for school-related services.

'The free school meals service has sat in the "too difficult to solve" box because of the complex delivery chain for too long,'

says Amanda Derrick, Programme Director, Connect Digitally. 'The critical factor in making the change was to keep sight of the difference it would make when solved – i.e. parents, carers and children no longer being isolated or stigmatised. We had to stay focused. Data sharing and legal discussions, for example, were slow and challenging and we had to convince stakeholders that an online service was going to make a difference.

'The way we demonstrated this was to draw up parent journeys to show just how difficult the paper-based proof of benefit was compared to online application and eligibility checks.'

Although the programme's initial focus was on making improvements for families, it has also simplified the process for LAs and reduced the cost of the service for all stakeholders by massively reducing the time needed for administration.

The projected saving for LAs when the service is fully implemented is £18.5 million. Other government departments are expected to save £6.3 million and schools £1.2 million. Although the programme was initially funded to support LAs in England, its tools and products have also been transferred to Wales at no extra cost, and savings are also being made there as a result.

One area in which the service is making significant savings is renewals. One LA reported the new system saved it £20,000 at each renewals period. The frequency of renewals periods varies from LA to LA and could be annually, twice a year, once a term or even sometimes twice a term. The new system, which uses an 'informed consent' model for renewals, can automatically check to establish ongoing eligibility. Through using the eligibility checking service LAs have been able to establish immediate confirmation of continuing eligibility for 90 – 95 per cent of free school meal recipients. The other 5 – 10 per cent are often found to be no longer in receipt of qualifying benefits and are therefore no longer eligible to receive free school meals.

'Another benefit for LAs is that they can also perform regular audits of their free school meals records using the batch eligibility checking process. This prevents parents and carers building up debts when their circumstances change,' says Derrick.

#### **A work in progress**

The Connect Digitally programme began in April 2009 with funding allocated to March 2011. To date, the team has set up the central processes and systems, which LAs can tap into for automated eligibility

### **THE SOLUTION INCLUDES:**

- central shared service checking eligibility in real time;
- robust, reliable, reusable infrastructure linking four central government departments and 174 LAs;
- high information security.

### **THE PROJECT DEVELOPED:**

- web services interface with LAs incorporating high levels of security;
- interface supporting single and batch eligibility checks;
- three-tier architecture, presentation layer, application layer and database layer;
- fourth layer, GSI interconnect providing connectivity to OGDs;
- encryption of web services XML;
- scalable architecture.

checks. It has also implemented an infrastructure linking the four central government departments and the local authorities and sorted out data sharing, legal issues and business processes.

For the LAs, the approach to moving to a fully automated system is phased and different LAs are currently at various stages of implementation. The target of the Connect Digitally programme is for 60 per cent of LAs to no longer require paper proof of entitlement to benefit by March 2011.

To date, 141 out of 152 LAs in England have used the eligibility checking service to check eligibility for free school meals online. This results in efficiency savings for the LA and means the application can be processed more quickly. When using the eligibility checking service, paper proof of eligibility is no longer required. In order to ensure parents and carers are aware of this, LAs need to update application forms and ensure information on websites is up-to-date. Currently 64 of the 152 LAs have done this.

The next stage in the implementation process is for parents and carers to be able to use an online form to apply. However, at this point, LAs still have to extract data from the online form and send it to the eligibility service. This means checking is not in real time and not seamless, but is still a huge step forward for data entry.

The icing on the cake is when the service is seamless and schools get an automated

return to an eligibility query. Seven LAs in England have reached this fourth stage. To do so, LAs need to be connected to web services, which is something new for most LAs. In Hertfordshire, for example, 100 per cent of applications are now made either online directly by a parent or carer or via an assisted digital channel over the telephone. The Hertfordshire model notifies both the school and the parent or carer of a child's eligibility for free school meals in real-time, thus enabling the provision of a free school meal by the next day.

'Web services connection needs investment in resources, time and understanding,' says Derrick. 'We've therefore set up a developer's toolkit and business case cost calculator. Different LAs have different numbers of free school meals and demographics.'

The final piece in the jigsaw – for all pupils to have a pre-paid card to pay for school dinners – is outside the scope of the current Connect Digitally programme. This cashless catering system is nevertheless being rolled out by various schools across the country independently of the programme. It means all pupils within a school present the same card at meal times, regardless if paid for by state or parents, reducing stigma still further.

The wheels are therefore in motion for the whole free school meal process to go online, a move that has won the Connect Digitally team a medal at the UK IT Industry Awards.

# A JOINT SUCCESS



**Care for haemophilia has become better, safer, cheaper and easier to monitor thanks to a new IT strategy that has integrated multiple systems.**

Haemophilia is a condition where a patient's blood does not clot correctly, which most commonly results in joint pain. Treatment to prevent bleeding, pain and joint damage is on a regular, preventative basis, using clotting factors.

Care for these patients has been made safer through the recent introduction of a national IT strategy that allows easy, nationwide comparison of treatments. The new systems have also made it possible for patients to enter their own treatment data and to have clotting factors delivered to their homes instead of having to collect them from hospital.

It's not just the patients who have benefitted, however. The strategy has helped people involved in the haemophilia service at various levels, for instance

making it much easier to conduct nationwide surveillance of particular health risks to haemophiliacs.

Furthermore, the strategy has made major savings, particularly thanks to the bulk purchase of clotting factors, which has saved £70 million from the annual cost of more than £170 million.

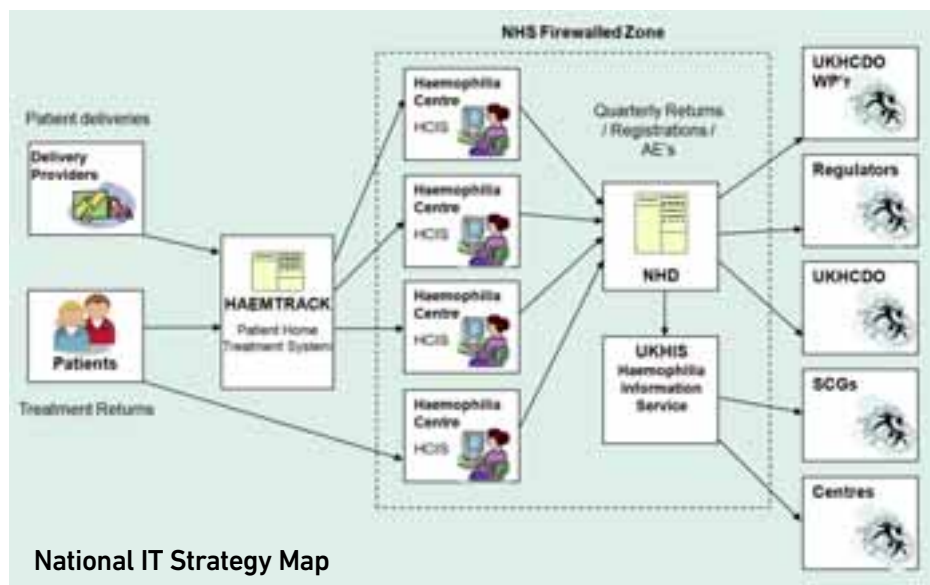
The above improvements have been made possible by the implementation of four new systems integrated via the latest web-based technologies, connected over the NHS internal network. The systems are: Haemtrack, a national patient home treatment record; Haemophilia Clinical Information System (HCIS), a Trust-based centre management system; National Haemophilia Database (NHD), a national registry; and The UK Haemophilia

Information System (UKHIS), a national reporting portal.

Patients use the web-based Haemtrack system to record their own treatment online. Haemophilia treatment centres can see patient information in real time, allowing speedy intervention where necessary, for example if patients are bleeding.

'Clinician access to this information is extremely important given that the vast majority of patients now treat themselves at home and have little contact with clinicians other than clinic reviews,' says Rob Hollingsworth, Head of Medical Data Solutions and Services (MDSAS), the small organisation (part of the NHS but financially independent) that developed the systems and associated strategy.

'Around 1,000 patients are now entering



completed on time by defining the requirements accurately at the outset. The group then had continuing input into the systems' development.

National user forums were established to ensure awareness of project initiatives before implementation and provide opportunity for feedback on any modifications required. These were complemented by a comprehensive training approach with centralised national and local training days.

To reduce delays in system development MDSAS used a prototyping method. This, together with short-term piloting of systems, gave users the chance to enhance and adapt the functionality well before go-live.

### Success

Involving stakeholders has paid dividends with lots of positive feedback from them. 'We're even getting feedback directly from patients that they like the system and you can't get much better than that,' says Hollingsworth.

The success of the new strategy is evident at many levels. Requirements have been met, savings have been made and it has been enthusiastically adopted. In the UK, 90 haemophilia centres have got involved along with all specialist commissioning groups and the Department of Health.

Furthermore, the project is being used as a model for other clinical services. An informatics strategy for the haemoglobinopathy service is being developed using the exact same methodology.

The haemophilia strategy has even been internationally recognised with the Novo Nordisk Haemophilia Foundation adopting it to implement in developing countries. Its aim is to use the strategy to help establish treatment care facilities and thus improve currently very poor life expectancy.

### What next?

That's not the end of the story for the haemophilia project in the UK, however. It is continually changing in response to changes in the delivery of care. With a move towards care being delivered through clinical networks, the team is looking at adapting the systems to enable hospital sites to work together, sharing resources to deliver a network-managed care service.

Another development is a move towards patients and clinicians being able to access the systems via mobile devices. MDSAS is expecting to shortly sign a contract to develop this service for iPhone and Windows Mobile7 operating systems. Once the contract is signed, development would then take 10 to 11 months to complete.

The strategy and systems are continuing to be refined, but their impact on the haemophilia service has already been far reaching, which earned the team a medallist position at the UK IT Industry Awards.

their own data. Those who suffered most severely were prioritised to be enrolled. Eventually we expect all 28,000 patients to be offered the chance to enrol, although we will focus first on the most severe, about 7,000 or so.'

The features of HCIS include clinical management, stock control, contracting and operational functionality, which all aim to facilitate and enhance the running of haemophilia treatment centres. HCIS interfaces with the Haemtrack system to enable patients' home treatment data to be automatically transferred to the haemophilia treatment centres, eliminating duplication of data entry.

HCIS also connects to the NHD to automate a previously manual and time-consuming process to collate, validate and submit the data that is required nationally from all haemophilia treatment centres.

The NHD is the only source of national patient information in the UK and can help monitor long-term health risks to haemophiliacs, such as vCJD, HIV and Hepatitis C. It has also helped answer Parliamentary Questions.

The NHD provides the data directly to UKHIS, which offers a single point of access to online, real-time reporting for the haemophilia service. UKHIS allows stakeholders to carry out benchmarking at a local and national level for treatment and adverse event data. It can also be used to export data for local analysis. Service managers, for instance, can directly access information to benchmark national providers and to forecast service planning.

### The development phase

To develop the systems, MDSAS wrote its own applications using the latest MS-based web products, SQL Server with reporting services.

'This saved writing time and meant everyone was using the same application,' explains Hollingsworth. 'If we make one change to the software, we can see it instantly and we only have to update in one place to flow through to everyone. Similarly, a bug can be fixed in one place and applied across all systems.'

This approach helped keep costs down, which was necessary as funding was limited, according to Hollingsworth. It also made savings on licensing costs. Finances more generally were managed closely, which led to a very efficient infrastructure with close management of staff, IT and other associated resources. Haemtrack, for example, was developed and implemented for less than £0.1 million, replacing a system that cost over £10 million.

The foundations for Haemtrack and the strategy were first laid when Hollingsworth developed a haemophilia system for the Manchester Haemophilia Centre as part of his PhD in 1998. A few years later he started developing the national database and from about 2004-5 started working towards a national strategy. The main design and development of the strategy and the time to involve all the stakeholders (including specialist commissioning groups, hospitals, pharmaceutical companies, Department of Health, Health Protection Agency, Commercial Medicines Unit and patients) took three to four years.

Setting up the service was as much about stakeholder involvement as developing the systems. Hollingsworth stresses: 'The biggest factor contributing to the success was the contribution of all the stakeholders. It's not just about a system, but everyone supporting it.'

The key stakeholders were therefore all represented on a national advisory group. This helped ensure that the project was

# PREVENTION OFFERS CURE TO RAIL DELAYS



## Rail travellers should experience fewer delays in future as Network Rail implements an IT system that allows it to predict, and therefore prevent, failure of infrastructure in advance.

When points or signalling break down on the railway, trains are delayed while an engineer looks for the problem and fixes it. Such delays result in fines for Network Rail, which owns, maintains and operates Britain's rail infrastructure. The company is therefore as keen as its customers to reduce these sorts of delays.

One solution has been to implement a centralised IT system that can monitor infrastructure. The monitoring equipment is currently being installed for points and signalling power supply cable. Once data about these has been collected over time, engineers will be able to diagnose the cause of failures remotely and take out the correct tools and replacement parts to mend them first time. Better still, in certain cases the system will be able to predict when infrastructure is likely to fail and maintenance teams mend it before that happens.

The result of moving from a 'find and fix' approach to 'predict and prevent' will be fewer and shorter delays for passengers and freight. The potential time and cost savings were demonstrated in a pilot on the Edinburgh-Glasgow line using the central system and various assets, including points and signalling power supply cables.

'The pilot showed that points monitoring using the new system should reduce the number of minutes lost owing to failures by 30-40 per cent,' says Giles Tottem, Project Manager, Network Rail. 'The benefit gained from monitoring different assets will vary. In the future, for example, the programme could include heating of points, which would be more about reducing operational cost, rather than reducing delays.'

For the infrastructure where delays will be cut, Network Rail will also save money through a quicker, slicker operation and the avoidance of fines to operators. The projected saving, once the points and signalling power supply cabling have been rolled out nationwide (by March 2011), is £6.9 million per annum. That saving is just related to those first two pieces of infrastructure to be monitored, but others can be added to the central framework as the system is enhanced.

The central intelligent infrastructure system is based on a standard technology framework, including a standard platform and XML interface. Core components, such as an alarm management system (which notifies maintenance teams of potential failures by email or SMS) and trending functionality, are primarily off-the-shelf products rather than bespoke development and will be reused.

'In setting up the intelligent infrastructure system, the IT department's biggest challenge was integration. We had to work out how to integrate thousands of data loggers in the field, a national telephone network, remote connectivity and a central system.'



### Roll-outs

To implement the intelligent infrastructure system and run the trial on the Edinburgh-Glasgow line took two years. Roll-out for the equipment to monitor points and signalling power supply cable followed and is now over two-thirds of the way through.

When finished, around 5,000 points are to have data loggers installed out of a total of 18,000 in Great Britain. The business case used to decide which points to monitor was based on which ones will reduce delays by most minutes and which are most critical for the network (for example points just outside Waterloo station).

'The signalling power supply cabling is slightly different to the points because there are already some devices out in the field, so it's partly about getting the information from local sites into the central system,' says Tottem. 'Readings taken from the cabling vary depending on the temperature and whether it's raining, so the previous method of taking one reading once a month did not give the full picture. The new system allows continuous monitoring of the cabling and for data to be accessed in real time and remotely.'

Once these roll-outs are complete, other assets are earmarked to follow. The main items that received investment approval in early 2011 were track circuits (signalling systems that show if trains are on a certain stretch of track) and points heating (to stop them freezing).

### The wider picture

The IT implementation is part of a wider business programme at Network Rail. The programme includes creating asset data standards for use by track side data logger suppliers; setting up new business processes for remote condition monitoring; and the procurement and installation of compatible data loggers and monitoring equipment.

'The pilot has shown that a standard process makes a big contribution – previously monitoring was patchy and diverse using many different suppliers' system,' says Tottem. 'There is now a structured and consistent way of managing work, a process implemented at the organisation level.'

As it was part of the wider programme, the IT project involved many stakeholders with differing requirements for the system.

'Good collaboration between different parts of Network Rail was essential for the programme's success,' says Tottem. 'The programme crossed lots of departments: maintenance, operations, engineering and IT, so a significant amount of stakeholder management was needed.'

Regular meetings were therefore held between the information management project team and members of the other internal functions, system suppliers and the data logger manufacturers to build an integrated, cross-disciplinary team.

Convincing people on the ground of the benefits of getting involved was not difficult as the pilot clearly demonstrated the programme's benefits, according to Tottem. Network Rail is also running a comprehensive training programme, including a team of four engineers travelling round the country for a year, making sure the equipment goes into operation.

With this phase of implementation due to be completed in March 2011, train delays should soon be reduced thanks to the use of an intelligent system.

### NETWORK RAIL MAINTAINS:

- 40,000 tunnels, bridges and viaducts
- 20,000 miles of track and infrastructure
- 18,000 points

# NETWORK UPGRADE SLASHES MILLIONS

A technology upgrade to the NHS core network, N3, has reduced costs by more than 25 per cent, saving millions of pounds while improving services.



Photo: Len Chard

Some of the main leaders from the N3 team for the various phases of the technology migration project (from l-r)

**Simon Shipman**, Implementation Team Leader, whose team was responsible for much of the customer engagement; **Iain McConachie**, N3 Project Manager, who is the PM for National NGE Phase; **Judith Nash**, Deployment Planning Manager; **Steve Humphries**, the team leader for the technical assurance team who work with the supplier on technology assessment and migration planning; and **Lee Ramsbottom**, who looks after most of the communications tools (websites, portals etc) that were used through the project.

GP practices and hospital trusts rely daily on N3, the NHS's secure virtual private network. This IT backbone makes it possible to run services such as the Choose & Book System used in GP surgeries and imaging services in hospitals.

A recent upgrade programme to N3 has increased broadband capacity by four times in GP surgeries, moved the service to next-generation ethernet (NGE) and in the process reduced actual bills by more than 25 per cent. Throughout the migration to the new technologies, the N3 team made sure that there was no disruption to the critical day-to-day IT needed by the NHS.

'Four elements were chosen for this programme, because they were high cost with scope to make large savings, and there were new technologies available for deployment in these areas. Also, implementing IPstream for the GP surgeries met their requirement for greater bandwidth,' says Len Chard, N3 Programme Head, Connecting for Health.

The four stages were to migrate GP surgeries to IPstream technology; London's live ethernet connections to NGE; the N3 core network to NGE; all NHS England's live connection to NGE.

The migrations have made new services available to users, including managed voice (which will save the N3 voice services £6m over the next three years), IP-based applications such as auto attendant and video conferencing.

The upgrade programme began in July 2008 and is due to finish in March 2011. Although this upgrade programme was stand-alone, N3 (which was initially rolled out between 2004 and 2007) is in fact being continuously reviewed and upgraded, a condition mandated in the contract.

'In 2003, the N3 contract moved away from the usual fixed network that looks good when implemented, but is out-of-date five years later,' says Chard. 'It's an unusual contract because it's for a network integrator, rather than a network. Various telecommunications companies are responsible for different circuits, with the network integrator, BT, overseeing it all. It is under contract to continually review the marketplace. It's obliged to implement changes and look for newer, faster and lower cost technology.'

'The migration programme has shown that this sort of contract works. The savings made are actual reductions in bills. It's to BT's credit that it manages the contract with such enthusiasm, given that the changes often reduce the amount of revenue it receives.'

#### Ensuring savings

Savings have been made at every stage of the upgrade programme. In stage one, all

12,000 live NHS England datastream connections (10,500 of these are GP surgeries) were migrated from existing broadband technology to new IPstream technology. The latter is very cost-effective and will save £31.04m over three years compared to previous costs, while quadrupling the bandwidth available. This has improved speed and productivity, which is particularly useful as the health system moves to a GP-led model. Savings from rental ceases amounted to an additional £4.89m per annum.

In the second stage, all 115 live NHS London ethernet connections were upgraded to new NGE services. Its major benefits are flexibility, efficiency and increased local traffic performance and it will save £4.2m over three years.

Thirdly, the N3 core network in England was migrated from multi-protocol label switching (MPLS) to ethernet technology. This will double the available network core bandwidth – to 10Gbps – to support the National Programme for IT initiatives and IT services with no increase in costs. In fact, NGE access charges are some 40 per cent lower compared to conventional technology. The flexibility of 21C ethernet enables the reconfiguration of the network within hours rather than months and at a much lower cost.

Stage four is still ongoing and is to migrate all 301 live NHS England ethernet connections from existing technology to new NGE services, which will save more than £18m over three years.

#### Programme success

As well as saving costs, the programme has increased customer satisfaction. The principal contractual measurement metric of 'overall customer dissatisfaction' has dropped during the migration period to 11 per cent (February 2010) from 19 per cent (June 2007).

'What was key to the success? 'It's the planning that is crucial,' says Chard. 'The requirements may have changed, but having a good plan to start with made it possible to adapt. The NHS is a very quick-moving, fluid organisation – for instance the number of GP sites changes daily – so we had to be flexible.'

The way to achieve flexibility was to put a lot of effort into the communication strategy, according to Chard. The team ran regular roadshows and an active website and worked very hard at communicating the plan to the NHS and telling them what was in it for them – other than creating their more work.

For Chard and team the work doesn't stop there. As upgrades to N3 are continuous, the team is already looking at the next changes needed. These will be

## TIMELINE

### Stage 1

July 2008 – July 2009:

12,000 links to all GPs throughout England were upgraded with no unscheduled outages or lost GP consultation time. At its peak the programme was migrating more than 1,000 sites a month.

### Stage 2

February – November 2009:

115 NHS London sites were migrated to new ethernet services. These users now have increased resilience through the use of copper and fibre connectivity for most 10Mbps services and better internet and local traffic performance for most customers.

### Stage 3

July 2009 – March 2010:

The entire N3 core network was changed completely without one minute's downtime.

### Stage 4

July 2010 – March 2011:

Planning completed for 301 sites. First sites delivered and all ethernet connections due to be migrated by March.

new services for internet access and integration with other public services. All the while, the team will be running N3 for business as usual, so that IT can assist the NHS in providing the best possible care.

# BROADBAND NETWORK LINKS WELSH SERVICES



## A public sector broadband service is being rolled out in Wales, enabling secure IT collaboration between public bodies at lower cost.

In preparing for a possible swine flu epidemic in 2009, health and local authorities in Wales looked at how they could work together in a franchised way, presenting a united front to the public. They opted to use the Welsh public sector broadband service, which provided them with a secure mechanism to access distributed databases in the health service from local authority sites, allowing them to share data and offer a single contact point for the public.

This is the sort of collaboration that the Welsh Government Assembly was hoping to encourage when it embarked on a

project to provide a service that would aid collaboration, while also offering public bodies a more effective and efficient way of procuring broadband.

The service is called the public sector broadband aggregation (PSBA) and is midway its seven-year roll-out. By the end of 2010, more than 50 organisations with a total of over 2,200 sites have been connected.

'The greatest impact to date of the project is getting multiple public sector organisations to work on a common national ICT activity,' says Michael Eaton, Director of the PSBA Network. 'We've had

genuinely good outcomes and proven that you can do collaborative working.' [See examples in box.]

### Value for money

The other incentive to sign up is that using the PSBA as a broadband supplier is saving organisations around 20 per cent on like-for-like services. This is largely due to the service being provided by a network integrator. The supplier, Logicalis, has created a highly advanced, national broadband IP network by purchasing circuits from wholesalers such as BT, Virgin Media and Cable & Wireless.

'In terms of getting value for the public sector, having a systems integrator means they can work the marketplace for us,' explains Eaton. 'I think a national carrier would have no incentive to place competitive pressure on its own value chain – the systems integrator works on a different financial principle and also introduces competition into the market.'

Being able to offer a good value broadband service was vital to getting the project off the ground, but some other factors were equally important.

'Ministerial sponsorship was crucial to the project's success, including an acknowledgement from the minister that it carried a risk – if not enough sites had signed up, it would not have made sense,' says Eaton. 'It also helped that we had genuine support from senior professionals in the NHS in Wales, higher education and all 22 local authorities. During the initial two years of development about ten different public sector organisations signed up to the service. This core body helped with their time and expertise – without these teams of people we would not have been able to do it.'

Securing sponsors to champion the project and architecting a qualified proposition was the first step in a three-year development phase beginning in 2004 after the concept was conceived by the Welsh Assembly Government. This early planning phase had to overcome numerous obstacles: how to manage and encourage change and develop a procurement process that works; how to mediate collaboration and ensure the stakeholders' objectives were met without unduly impacting the collective direction; and how to instil the trust and security required of a shared network.

The biggest of those challenges was security. The PSBA had to achieve information assurance and trust between

various public sector bodies with different security levels. As a next-generation network, Logicalis is able to separate traffic and assign policies to encrypt specific information. However, as a community network, there is also a strong emphasis on human trust and collective will.

#### Implementation

After the development phase, a contract with Logicalis was signed in August 2007. During the first 18 months of that contract, it created the network and connected 1,000 sites. By the end of 2010 more than 2,200 sites were connected, with another 800 signed up to join.

'The process of connecting new organisations is influenced by dates when current service contracts expire or it becomes worthwhile to pay a penalty,' explains Eaton. 'Another convenient time to move service is when people and buildings are re-located.'

The NHS in Wales, for example, is using the PSBA, but individual units are connecting as their broadband contracts expire. All GP practices in Wales have already moved over and all hospitals are connected to the network. However, as many hospitals cover a large area with some peripheral buildings, some parts are being gradually added as contracts come up for renewal.

'If lots of public organisations in one geographical patch move over at once we can get best value for money,' says Eaton. 'Connecting multiple sites in one design is most cost-effective, but coordinating the group is harder to manage and can end up as a three to six month mini-project.'

#### Future

The next three and a half years of the project will be about signing up more organisations and continuing to update the broad offering. If all Welsh public sector

bodies decided to use the network (which is their choice), there would be up to 10,000 sites including home workers (about 3,000). The numbers are always slightly in flux.

'When we started out, the emphasis was mainly on the speed of high-speed broadband for data transfer – but there is of course also voice services and video,' says Eaton.

'Now we're also adding voice over IP, IP telephony and presence and instant messaging, so that we offer the same services as any large network. Some small organisations will be moving to fully hosted IP telephony, while larger ones may just adopt services such as VoIP transport from the portfolio. Next month we'll start to focus on enhancing our video collaboration capabilities.'

In about two years' time, procurement will start for the next broadband service period, but it will be different from the current contract as it will be to replace an existing national network rather than creating a new one. Also, by then in the UK, the Public Sector Network architecture will be built and Wales will be fully involved with it.

'Initially we will connect to the government conveyance network (GCN) – when traffic leaves our network, it will travel over this UK national transit network,' says Eaton. 'We will be the direct network service provider (DNSP) for Wales, responsible for all security and governance boundaries between us. In the UK it will be a federated model with mini-“PSBAs” in various regions.'

In Wales, the last three years have proved that such a model can work. The initial risk that not enough organisations would connect has been overcome. Collaboration is flourishing and the network is offering better value than comparable services.

## INNOVATIVE AND EFFICIENT USES OF PSBA

- In south-east Wales, a partnership service between Cardiff Council and South Wales Police is piloting the 101 non-emergency number.
- Local authorities are running disaster recovery services across the network.
- The system supports the use of telemedicine.
- Rather than 22 separate links (for each of the 22 unitary authorities in Wales) connecting to the UK-wide Government Connect Secure Extranet (GCSx), a pair of resilient links are running across the PSBA.
- It connects to existing public sector networks including JANET and N3.

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