Digital technology essentials guide

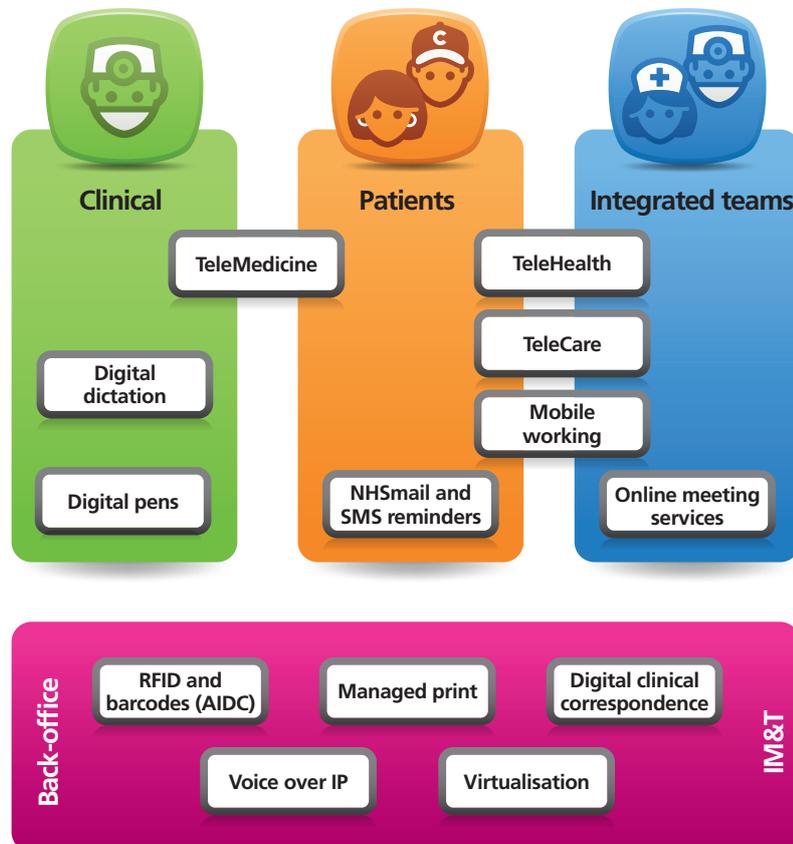## If your organisation is not using these digital technologies you could be spending more than you need

Key points

- There are a wide range of cross-cutting digital technologies that are available at increasingly competitive prices and with pay-as-you-go models rather than requiring up-front capital spend.

- This summary aims to highlight a number of these enabling digital technologies and provide sign-posts to where more information can be found.

- All NHS organisations should have a clear understanding of why they are not already exploiting these enablers and, if not, look at their plans for adoption.

This guide provides a brief summary of a wide range of enabling digital technologies most of which are quick wins and should be considered by all organisations.

The diagram below provides a view of the technologies categorised against the area where the technology is likely to make the biggest impact.

The target audience for each item will depend on the domain that it sits within, for example digital dictation or online meeting services should be read and considered by clinicians whereas items like managed print are targeted at IM&T and operations managers.

Clinical
- TeleMedicine
- Digital dictation
- Digital pens

Patients
- TeleHealth
- TeleCare
- Mobile working
- NHSmail and SMS reminders

Integrated teams
- Online meeting services

Back-office / **IM&T**
- RFID and barcodes (AIDC)
- Managed print
- Digital clinical correspondence
- Voice over IP
- Virtualisation

1. Digital dictation

What is it? Digital dictation is a method of recording and managing natural speech to enable easier handling of transcription into text either manually or using speech recognition software. It is typically used in the NHS for creating letters and reports but is also suitable for creating clinical notes.

What are the financial benefits? Benefits can be gained in a number of ways. In large acute organisations the ability to manage all recordings digitally and using electronic workflow can significantly improve turn-around times and reduce numbers of transcription staff.

Moving to speech recognition will additionally remove the need for transcription altogether.

In one specific study at University Hospitals of Morecambe Bay NHS Foundation Trust a team of 11 radiologists produced cash releasing savings of £69K per year and the return on investment was achieved within five months.

This technology has been deployed extensively at a number of large acute trusts include Salford Royal NHS Foundation Trust who are on track to deliver benefits of over £500k per year. The former North West strategic health authority (SHA) estimate savings of £7million to £18million per year are currently being achieved across the region.

Where can I find out more details? There are specific examples of trusts that are using this technology in the initiatives register on the QIPP Digital Technology (DT) NHS Networks site; see the links at the end of the guide or you can contact the team at qippdt@nhs.net.

The NHS Shared Business Services (SBS) have a framework in place for the supply of digital dictation, voice recognition and outsourced transcription with a range of suppliers. Trusts can save time and money by eliminating the need to conduct a lengthy procurement or mini-competition process by using this framework. Further details can be obtained from Damien Cador at NHS SBS via email: damien_cador@nhs.net or phone: 0161 212 3726.

2. Digital pens

What is it? A digital pen is an input device which captures the handwriting of a user and converts it into digital data, enabling the data to be stored and used more easily. The digital data can be interpreted by handwriting software (Optical Character Recognition) to provide a text rather than image based data.

What are the financial benefits? Evidence from maternity services in the Portsmouth area indicates a financial saving of up to £1,235 per pen per year is possible. There is also improved quality benefits associated with data being captured at the point of care. NHS Portsmouth estimate savings of £212K per annum.

Doncaster and Bassetlaw Hospitals NHS Foundation Trust collect patient feedback via surveys which are completed by the patient using digital pens. This is reducing the time spent inputting data to the feedback system, allowing patients to complete the surveys with minimal support from NHS staff and reducing the time taken to collate and act on patient feedback.

Where can I find out more details? For use of digital pens in maternity service a detailed document is available on the QIPP DT NHS Networks site[i].

3. Mobile working

What is it: Mobile working is the ability to work anywhere and at any time to access and update information from a supported mobile device. For health service staff critical activities can now be completed in real time, from accessing calendars to checking recent patient test results before visiting the patient, without needing to return to a desk.

The use of mobile technology is seen as a key enabler for improved quality and more efficient working practices. Significant challenges still exist in integrating mobile technology to existing applications and implementing easy to use solutions which achieve the desired results.

What are the financial benefits? NHS Calderdale showed efficiency improvements by implementing mobile working practices. The number of patient visits per day increased by 17%, 14.5% more time was spent actually talking with patients and non-elective admissions were reduced by more than 21%.

Where can I find out more details? The "National Mobile Health Worker Project: Progress Report" together with a wide range of other resources can be found on the NHS Connecting for Health website[ii].

4. Automatic identification and data capture (AIDC)

What is it? Automatic identification and data capture is the use of standards such as bar codes and Radio Frequency Identification (RFID) technology to increase patient safety in the NHS. It can be used for a number of purposes including: Tracking of Medical Records, Patient Identification, Pharmacy/Drug management, and tracking of sterile instruments or other assets.

What are the financial benefits? A study at Royal Bolton Hospital, Bolton Hospitals NHS Foundation Trust on the use of RFID to track medical records anticipates realisable benefits of: 80% reduction in time spent looking for misfiles, 92% reduction in time taken to locate a missing file; and 64% reduction in lost revenue as activity can be correctly coded for payment. This equates to around £300k per annum. For more details see the full case study[iii].

Feedback from organisations using bar coded patient wrist bands showed that they can greatly increase the positive identification of patients before, during and after care. They can also enable the cross referencing to treatment and direct access to patient records.

Where can I find out more details? There is more information on the AIDC section[iv] of NHS Connecting for Health website and a number of recent case studies are due to be published shortly.

5. Telecare

What is it? Telecare is the continuous, automatic and remote monitoring of real time emergencies and lifestyle changes over time in order to manage the risks associated with independent living. It is one of the services that can be used by integrated Health and Social Care teams to enable remote monitoring and support for vulnerable people.

What are the financial benefits? The benefits from Telecare are less about direct cash releasing savings and more societal and indirect such as reduced residential and nursing care by enabling recipients to remain at home longer, reduced hospital usage, and improved quality of life.

Where can I find out more details? More information can be found on the Department of Health website[v] and the telecare website[vi].

6. Telehealth

What is it? Telehealth uses equipment to monitor people's health in their own home. So for example equipment can be used to monitor vital signs such as blood pressure, blood oxygen levels or weight. These measures are then automatically transmitted to a clinician who can observe health status without the patient leaving home. The system and/or clinician monitor daily readings to look for trends that could indicate deterioration in condition. Readings that are out of the range expected are flagged to the clinician often using a traffic light system.

There are a range of solutions from simple SMS/text based services to high end solutions which require more complex technology in the home.

What are the financial benefits? A number of NHS organisations have reported financial savings using Telehealth. The Kent Telehealth pilot which ran from 2005 to 2007 reported cash savings of, on average, £1,878 per patient or annual savings that could be £7.56 million across the region. Simple telehealth has shown reductions in clinical time, and improved medications compliance for diabetes patients. The Department of Health Whole System Demonstrator programme headline results show significant reductions in emergency admissions (20%) and mortality rates (45%). Visit the DH website[vii] for the full results.

Where can I find out more details? More information can be found on the DH website[viii] or by contacting the QIPP Long Term Conditions work stream[ix].

Further details on Simple Telehealth which is led by NHS Stoke-on-Trent are available online[x].

7. Telemedicine

What is it? Telemedicine is used to provide interactive healthcare, usually with modern technology and telecommunications, allowing patients or other clinicians to consult with physicians live over video for immediate care or capture video/still images and patient data are stored and sent to physicians for diagnosis and follow-up treatment at a later time. Basic forms of telemedicine can be achieved using the technology detailed in the online meeting services section, but more advanced services will require specialist or dedicated equipment.

What are the financial benefits? Telemedicine is widely used in the English prison service[xi] to provide care to prisoners. Costs of £2,500 per consultation are avoided by not physically transferring patients to hospital for consultations with clinicians.

Telemedicine is also used to provide out of hours stroke care in many regions. For example six acute trusts and seven PCTs across Lancashire and Cumbria expect savings of £1.8 million annually. Read the case study[xii].

Where can I find out more details? More information can be found on the Department of Health web site and by searching the web using terms such as "telemedicine and NHS"

8. NHSmail including SMS

What is it? NHSmail is the secure email and directory service available to all NHS staff. It provides a range of services including email, calendar and text (SMS) messaging. NHSmail has been accredited for the transfer of patient identifiable data such as referrals and discharge summaries. It is a highly resilient service available 24x7x365 and is free to use for NHS organisations. NHSmail also provides functionality which can send appointment reminders via text message. This has been shown to reduce did not attends (DNAs).

What are the financial benefits? NHSmail enables NHS organisations to realise the following types of benefit:

- Reduced DNAs through Automated SMS patient appointment reminders: typically a 50% reduction in DNAs at a saving of £31 per appointment.

- Reduced cost of processing discharge summaries or other clinical correspondence including reduced cost of printing and postage.

- Savings through decommissioning of local email services: benefits include reduced licensing and support costs, help desk costs, and local IT staff costs.

- Improved patient experience: improves the efficiency of geographically dispersed teams by replacing workflows traditionally based on phone and the postal service.

Where can I find out more details? More information regarding NHSmail can be found on the NHS Connecting for Health website[xiii] along with detailed case studies highlighting benefits across the NHS.

9. Digital clinical correspondence

What is it? The use of digital communication to enable the transfer of clinical correspondence between typical health and social care settings including: primary care; acute care; community care and social care. This typically provides workflow support and tools to enable system integration for senders and receivers. These services also normally include tagging of key information (meta data) about the correspondence such as NHS Number to enable automated workflow on receipt.

What are the financial benefits? Stockport NHS Foundation Trust developed a solution called DDS which is used to exchange information with most of the GP practices and is saving over £100,000 per year in reduced consumables (printing, paper, ink, envelopes and handling time) alone. The other advantages include time saved in not having to scan documents and fewer errors occurring because patient notes are not mixed up.

Where can I find out more details? Visit the Stockport NHS Foundation Trust website[xiv.]

10. Voice over IP (e.g. N3)

What is it? Voice over IP (VOIP) typically uses an existing computer network to transmit voice calls rather than having a separate network. This is different from a traditional telephone system where the calls are routed over a dedicated network. In VOIP the audio is broken down and encoded into IP packets so that it can be treated just like normal computer data traffic and transmitted over a computer network. The advantage being that you only need to have a single data network which can handle Voice as well as data. The NHS N3 service provide VOIP services as do a number of other commercial services like Skype, CISCO WebEx and Microsoft Lync.

What are the financial benefits? Estimated savings of £100k per annum for a medium sized trust have been reported by the West Midlands.

Where can I find out more details? Contact the N3 team[xv] for an NHS approved offering.

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11. Online meeting services

What is it? Online meeting services use technology to enable meetings and consultations to happen without the need for people to be physically in the same location. It includes the use of audio, web and video conferencing.

What are the financial benefits? The former North East SHA report cash-releasing savings of £1,785 made by switching one regular face to face meeting to a web based online meeting. This will lead to annual savings of over £21,000 for that meeting alone. A case study of audio conferencing at NHS Derbyshire primary care trust showed cash-releasing savings of over £92 per person for each meeting. This equates to an annualised saving of £115,000 at current usage levels. The acceptance and success of online meetings mean these are expected to increase.

Where can I find out more details? There are a number of guidance documents which include case study references available from the QIPP DT NHS Network site[xvi].

12. Virtualisation

What is it? Virtualisation is the creation of a virtual instance of an IT resource rather than having to have a physical instance. This can include servers, operating systems, desktops, or software applications. The benefits typically include greater utilisation of the underlying physical resources, easier scalability, and reduced support and maintenance costs.

1. Server Virtualisation: Virtual servers are created which can then be used to run specific software applications. Multiple virtual servers can be run on each underlying physical computer. It is easy to start up new virtual machines if for example extra capacity is required or to move virtual machines if the physical server fails.

2. Application Virtualisation: This is where individual applications are setup to run in their own dedicated virtual environment within a single operating system. This enables multiple applications to run on the same physical machine even where there are co-existence issues with the applications. For example when needing to run two versions of Internet Explorer.

3. Presentation Virtualisation or Terminal Services/Remote Desktop Services. This is where the desktop software runs on a centralised server rather than on the end user's device. The user's device is purely used for input and display with all processing done on the server. This reduces the hardware specification for the end user devices, and reduces the support and administration costs of the desktop estate. Examples include solutions from Citrix, Microsoft and others.

What are the financial benefits? Savings can be made in a number of areas, reducing the number of physical servers in a data centre can deliver savings in space, electricity, and reduced disaster recovery times. Northampton General Hospital report savings of over £435,000 in this area and Moorfields Eye Hospital reported £10,000 per annum savings on power usage alone. Desktop virtualization can extend the life of desktop machines, enable users to bring their own devices or support development environments without increasing physical device count. Application virtualisation delivers savings in management time and enabling applications that normally could not co-exist to be run on the same device, potentially reducing physical device count.

Where can I find out more details? More details on virtualization solutions can be found on vendors sites, for example Microsoft[xvii] and VMWare[xviii]. In addition the NHS Technology Office[xix] has a number of resources including the NHS Desktop Strategy and NIMM Assessments.

13. Managed print services

What is it? Managed print services is the unified delivery and management of printers, scanners and copiers for an organisation. Managed print offerings range from standard support and maintenance to fully out sourced device supply including management and maintenance. Solutions also range from taking on the current fleet of devices to a total redesign of hardcopy provision and access. The main aim is to reduce the total cost of ownership of printing, but there are other advantages including an improved end user experience with standard devices being used across the organization and reduced wastage and convenience with pull printing where a user can pull and print their documents on any device.

What are the financial benefits? Benefits depend on the level of management and outsourcing chosen. However savings of up to 30% off the cost of printing are not uncommon for an organisation that is seeking to take control of an organically evolved printing service. The trade body Intellect quote savings up to £200 per user per annum by implementing a managed print solution. Details from one Foundation Trust in the North West who implemented MPS in late 2011 indicate that they are realising savings from the reduced cost of the physical printers including the cartridges, reduced volume of paper being consumed and lower power usage by the devices. Their figures indicate a return on investment after just 3 months and current savings running at over £50K per month.

Where can I find out more details? There is an existing Pan Government framework agreement for the supply of managed print services available from the Cabinet Office. This provides details of anticipated benefits and supplier details for each of the four lots. More details are at http://gps.cabinetoffice.gov.uk/contracts/rm1599

References

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iii http://www.connectingforhealth.nhs.uk/systemsandservices/aidc/benefits/royal-bolton-hospital

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vi http://www.telecare.org.uk/standards/telecare-code-of-practice

vii http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_131689.pdf

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xii http://www.multisense.co.uk/markets/healthcare-2/stroke-services/telemedicine-telestroke-a-good-practice-case-study

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xiv http://www.stockport.nhs.uk/DDS/default.aspx

xv http://www.n3.nhs.uk/ProductsandServices/N3Applications/VoiceServices

xvi http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/Factsheet-20for-20Online-20Meeting-20Services-1.pdf/view

xvii http://www.vmware.com/virtualization

xviii http://www.vmware.com/virtualization

xix www.pspg.nhs.uk

To find out more visit www.connectingforhealth.nhs.uk/qipp
or email qippdt@nhs.net

You can also find us by searching for 'QIPP Digital Technology' on NHS Networks and LinkedIn.