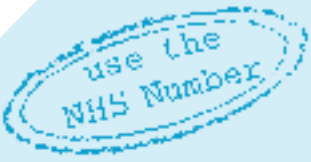
NHS England

SAFER HOSPITALS SAFER WARDS

Achieving an integrated digital care record

WORLD CLASS CUSTOMER SERVICE:
INFORMATION, TRANSPARENCY AND PARTICIPATION

RIGHT DATA,
RIGHT PLACE, RIGHT TIME



NHS NUMBER:
INTEGRATING CARE

COMMUNITY OF PRACTICE

High quality care for all, now and for future generations

THE NHS CONSTITUTION
the NHS belongs to us all

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Medical	Operations	**Patients and Information**
Nursing	Policy	Commissioning Development
Finance	Human Resources	

Publications Gateway Reference:	**00201**
Document Purpose	Guidance and launch of the Safer Hospitals, Safer Wards Technology Fund
Document Name	Safer Hospitals, Safer Wards: Achieving an Integrated Digital Care Record
Author	NHS England
Publication Date	01 July 2013
Target Audience	Foundation Trust CEs, Foundation Trust Board Chairs, NHS Trust CEs, NHS Trust Board Chairs, Medical Directors, Directors of Nursing, Directors of Finance, NHS England Regional Directors, NHS England Area Directors
Additional Circulation List	CCG Clinical Leaders, CCG Accountable Officers, CSU Managing Directors, Local Authority CEs, Directors of Adult SSs, Academic Health Science Networks
Description	This document sets out the benefits case for adopting safe digital record keeping as a precursor to achieving integrated digital care records across the health and care system. It provides further details and support for NHS Trusts, including Foundation Trusts, relating to their progress from paper to paper-light and ultimately paperless record keeping. It provides full details of the process for applications to the Safer Hospitals, Safer Wards Technology Fund.
Cross Reference	N/A
Superseded Docs (if applicable)	N/A
Action Required	Best Practice + Technology Fund 'Expressions of Interest'
Timing/Deadlines (if applicable)	**31 July 2013 for 'Expressions of Interest'**
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Documents Status
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Foreword

High quality care for all, now and for future generations

Safe, digital record keeping is the hallmark of a modern, sustainable and patient led health and care service. In order for the NHS to provide high quality and effective care for all, information must flow both within health organisations and across boundaries into social care, allowing vital data to follow patients through their care pathways. Patients and citizens must also be able to access and use this data – their data – whenever they wish.

NHS England is committed to Transparency – the safe sharing of data and information between clinicians and with patients – and Participation – supporting patients and the public to take more control of their health and care. Both depend on making the best use of digital technologies that have transformed so many other parts of our lives.

In primary care, digital records have now been implemented in the overwhelming majority of GP practices. However, NHS providers in hospitals and other settings are at different stages of digital maturity and many still have substantial work to do if they are to provide clinical staff with the systems they need to access immediate and comprehensive patient information.

Our vision is for a fully integrated digital patient record across all care settings by 2018 and that can only be realised when NHS providers are connected to the flow of information. This document sets out how we will work with our colleagues in secondary care to meet that challenge. It will only be achieved with the commitment and involvement of staff across all disciplines including clinical, management and finance – not just the IT community.

The key enabler will be the £260 million Safer Hospitals, Safer Wards Technology Fund announced by the Secretary of State for Health in May this year. NHS England will administer and deliver the Fund, which is open to NHS Trusts, including Foundation Trusts, ensuring that it facilitates the rapid progression to digital records.

Local NHS providers will be free to make investment decisions about the solutions which work best for their organisations as long as they meet national standards in vital areas such as data security and interoperability with other systems. The most important standard is that all providers adopt the NHS Number as primary identifier on all patient data. A key focus for the Technology Fund will be supporting providers to meet that standard; NHS England will be making it

a contractual requirement from April 2014. A second priority will be to make the digital transformation of health and care a focus for innovation and enterprise and a driver of economic growth, particularly among smaller businesses and third sector organisations.

Better use of digital technologies will transform clinical effectiveness and outcomes and reduce the administrative burden on frontline staff; it will enable the integration of care around the person who is being treated; it will empower people to do more for themselves – we are committed, for example, to giving every citizen access to their GP record online by 2015.

This is how we will deliver high quality care for all, now and for future generations.

Sir David Nicholson
Chief Executive

1. Key Messages

In this document NHS England reiterates the benefits case for adopting safe digital record keeping as a precursor to achieving integrated digital care records across the health and care system.

1. It confirms the expectation that local organisations and partnerships are best placed to make the key investment decisions that add capability in information technology and integrated digital care records in line with local context, operational and strategic imperatives.

2. It emphasises the criticality of having clinicians at the heart of the decision making and implementation process to drive forward introduction and use of integrated digital care records.

3. It recommends core architectural principles and information standards that should be universally adopted regardless of the alternative roadmaps different care communities follow to deliver integrated digital care records. First among these is the requirement that all providers use the NHS Number as primary identifier on all data to enable safe interoperability.

4. It outlines the procurement alternatives that exist to enable local economies to invest in appropriate capability and infrastructure at lowest cost, with greatest certainty at appropriate speed.

5. It highlights the critical role that information technology leadership and informatics expertise employed in the NHS will play if we are to invest wisely, scale effectively and sustainably.

6. It outlines our commitment to supporting local solutions within a framework of national standards and outcome oriented clinical capabilities. It reserves national procurement for those few circumstances when economies of scale or other specific rationale justify this approach.

7. It identifies the additional support and expertise that NHS England will make available to local communities as they move forward to implement integrated digital care records over the coming months and years.

8. It invites local communities to share insights, knowledge and experience with NHS England and each other as they move forward to implement integrated digital care records.

9. It introduces the concept of a clinical digital maturity index to help local economies benchmark their capability to deliver 'meaningful use' of integrated digital care records.

10. It describes in detail the process by which local NHS and Foundation Trusts can apply to the £260m Safer Hospitals, Safer Wards Technology Fund announced by the Secretary of State on 17 May 2013.

11. It confirms NHS England's commitment to make access to the technology market place easier for industry, especially small and medium enterprises, to maximise innovation and economic growth.

12. It communicates our ambition that patients be meaningfully engaged in the design and delivery of the technology that the NHS uses.

2. Introduction

2.1 Background

The value and importance to the NHS of investment in digital technology is widely recognised. It has the potential to improve the quality of care, whilst increasing patient safety and service efficiency, and it can enable everyone to have greater control over their health and wellbeing.

In May 2012, the strategy "*The Power of Information*" (Department of Health) set out a clear vision for the more effective use of information technology across the NHS. More recently, the report into the failings at Mid Staffordshire NHS Foundation Trust highlighted in its key recommendations the urgent need for the widespread use of digital systems to facilitate information sharing both between health professionals and with patients.

Francis Inquiry Report, recommendation 244: Common information practices, shared data and electronic records

There is a need for all to accept common information practices, and to feed performance information into shared databases for monitoring purposes. The following principles should be applied in considering the introduction of electronic patient information systems:

- Patients need to be granted user friendly, real time and retrospective access to read their records, and a facility to enter comments. They should be enabled to have a copy of records in a form useable by them, if they wish to have one. If possible, the summary care record should be made accessible in this way.
- Systems should be designed to include prompts and defaults where these will contribute to safe and effective care, and to accurate recording of information on first entry.
- Systems should include a facility to alert supervisors where actions which might be expected have not occurred, or where likely inaccuracies have been entered.
- Systems must be designed by healthcare professionals in partnership with patient groups to secure maximum professional and patient engagement in ensuring accuracy, utility and relevance, both to the needs of the individual patients and collective professional, managerial and regulatory requirements.

Subsequently, NHS England has set out a series of expectations it has for providers in the NHS to meet key digital standards – for example mandated use of the NHS Number as primary identifier from April 2014. In addition, the Informatics Services Commissioning Group (ISCG), which has system wide responsibilities for national technology services, has emphasised a vision of person centred health and care.

Compared to other sectors the NHS has been slow to adopt new developments in information technology. There is a critical need for the pace to quicken.

The creation and routine use of care records held in a safe, digital format enables timely, comprehensive and accurate communication between health and care professionals, patients and their carers. It is a critical component of a dynamic and innovative health and care system which strives to provide a safe, effective and positive patient experience. Chasing down misplaced notes or constantly repeating the same information wastes substantial administrative and clinical time and inconveniences patients.

High quality care is underpinned by access to high quality information. We must ensure that people are treated and cared for in a safe environment which protects them from avoidable harm. Lack of continuous records, incomplete information or indecipherable handwriting significantly increase the risk of error and potential tragedy. By effectively deploying safe, digital record keeping in a way that allows information to be shared across care settings, key information about the individual patient may be obtained from historic or current observations. This might include imaging, blood or pathology results or prescribing data. The knowledge base of clinicians can be enhanced through decision support aids which can highlight allergies, adverse reactions and contraindications, suggesting the optimal treatment regime based on the most current medical information.

Where the case for investment in digital systems has been made, there are countless tales of clinicians requesting laboratory, pharmacy or ordering systems without taking any account of cost, architectural fit or interoperability with other systems. Conversely, accounts persist of 'top down' decisions to implement joined up digital systems which are empty of data because the clinicians, who have not been engaged in the design process, continue to manage patient flow on a white board or flipchart.

2.2 An Integrated Digital Care Record: Our Vision

This arena is dominated by competing definitions and terms. In this document, we refer to the creation of an Integrated Digital Care Record (IDCR). Our intention is not to create yet another term for its own sake, but rather to communicate an ambition. We want local health and care services to use digital technology to ensure that vital patient related information and clinical decision and support tools can be viewed by an authorised user in a joined up manner in any single instance. We want information that is shared with or created by social care professionals to

be available in the same application to enable true integration of care to be delivered effectively. Going forward, patients will share that access to their personal information which will enable them, and those they trust, to enhance and enrich the record with their personal preferences and insights.

We want the digital systems which support this to perform to the highest possible standards and to sit behind a user interface which is intuitive and accessible in an increasing range of operational environments. The idea of 'bedside' and 'point of care' will expand beyond hospitals, homes, hospices, ambulances, nursing or residential facilities, to include mobile interaction at all points in between. As service and user needs change, we want digital systems to be adaptable at the lowest possible cost without compromising performance.

Everyone Counts – Supporting Patients

"To be a truly patient centred service we need to maximise the choice and control that we offer to people in the services they receive…….empowering patients and citizens to take control and make informed choices."

Putting Patients First: The NHS England Business Plan 2013/14-2015/16.

Preference sensitive care describes treatments for conditions where options exist; options involving significant trade offs among different possible outcomes. Some people will prefer to accept a small risk of death to improve their function; others won't. Decisions about these interventions, whether to have them or not and which ones to have, should reflect patients' personal values and preferences, and should be made only after patients have enough information to make an informed choice, in partnership with their physician.

People living with long term conditions, working in partnership with professionals in shared care models, should be enabled to enhance, enrich and extend their record with their preferences and insights.

So long as the standards in digital maturity differ, so will the quality of care received, meaning that certain patient demographics are, right now, receiving a poorer level of healthcare than others. While technology is not the only answer to addressing this, it is a significant enabler. Wherever a patient receives care, they should expect (and predict) that the quality of that care will meet the highest standards, supported by quality IT solutions.

Delivering the Vision – Clinically led Change

It is of critical importance that any digital solutions proposed for use by NHS hospitals are clinically led with comprehensive buy-in from everyone using them including doctors, nurses, allied health professionals and those working in laboratory, imaging or pharmacy roles. There are too many examples of systems being introduced that could provide real benefits to patients and clinicians that remain largely unused due to an absence of support among staff. Conversely, when clinicians have seen the real benefits of using new systems enabled by technology they are hugely resistant to their removal, questioning "how did we ever live without them?"

Clinical leadership and technical advances need to be in step – the one enabling the other. Maximising the benefits of adopting new technologies requires a critical examination of existing clinical workflows and culture, reviewing the quality of clinical care being provided to the patient and the extent to which current practices improve health outcomes.

We must be demanding of the technology we deploy – expecting it to perform optimally, reliably and intuitively. Achieving integrated digital care records brings with it the opportunity to develop new ways of working which drive us forward both culturally and in terms of operational efficiency.

3. The Path to Integrated Digital Care Records

3.1 Introducing the Clinical Digital Maturity Index

In a modern digital NHS, paper has a very limited role to play. However, driving up the digital maturity of the NHS will not happen overnight.

NHS organisations are clearly at different stages of digital maturity. There are numerous services such as Summary Care Record, Electronic Prescriptions Service, eReferrals and the Picture Archiving and Communications System (PACS) that are established and embedded in routine clinical practice. Some Trusts are at an advanced stage of integration and record sharing. In contrast others continue to have a significant dependency on paper records which is inefficient and potentially risky.

The recently announced Safer Hospitals, Safer Wards Technology Fund (described later in this document) aims to invigorate a journey through which the NHS will evolve to a position by 2018 where data can flow safely and securely between all points where treatment is delivered. The Technology Fund will enable organisations to extend their existing capabilities. For those starting from a low base, local ambitions may be geared towards securing basic capabilities. For others, high end functionality such as electronic prescribing will be well within reach.

Clinical digital maturity is a benchmark of the adoption of digital clinical technologies in hospitals, and of information sharing and standards use. NHS England is working to produce a comprehensive hospital Trust benchmarking service that will enable the NHS to better understand how its investments in technology, specifically in clinical information technologies, can be best used to deliver better patient outcomes, improved safety and deliver health services in a more efficient way. A variety of models currently exist that endeavour to describe the progressive steps organisations need to take to advance their clinical digital maturity. Whilst we are keen to ensure that international benchmarking continues to be possible in the future we are currently committed to producing a 'home grown' model developed in collaboration with NHS organisations. We believe that this will be more relevant given our legacy infrastructure, organisational landscape and capability.

This will allow individual organisations to explain the steps they need to take in their particular context with their particular assets, resources and business requirements to build towards a comprehensive integrated digital care record.

3.2 Defining the Levels of Maturity

Digital maturity is a multidimensional concept and the detail of the maturity index will be developed in consultation with the NHS in the coming months. We intend to publish a baseline document identifying the current stage of digital maturity of each NHS hospital and mental health provider before the end of this year.

Key areas it will consider are:

- infrastructure
- current level of clinical digital capability
- current level of clinical digital usage
- current use of key information standards – including use of NHS Number as primary identifier
- level of interoperability within and external to an organisation
- business change capability
- leadership and buy-in – clinical and managerial

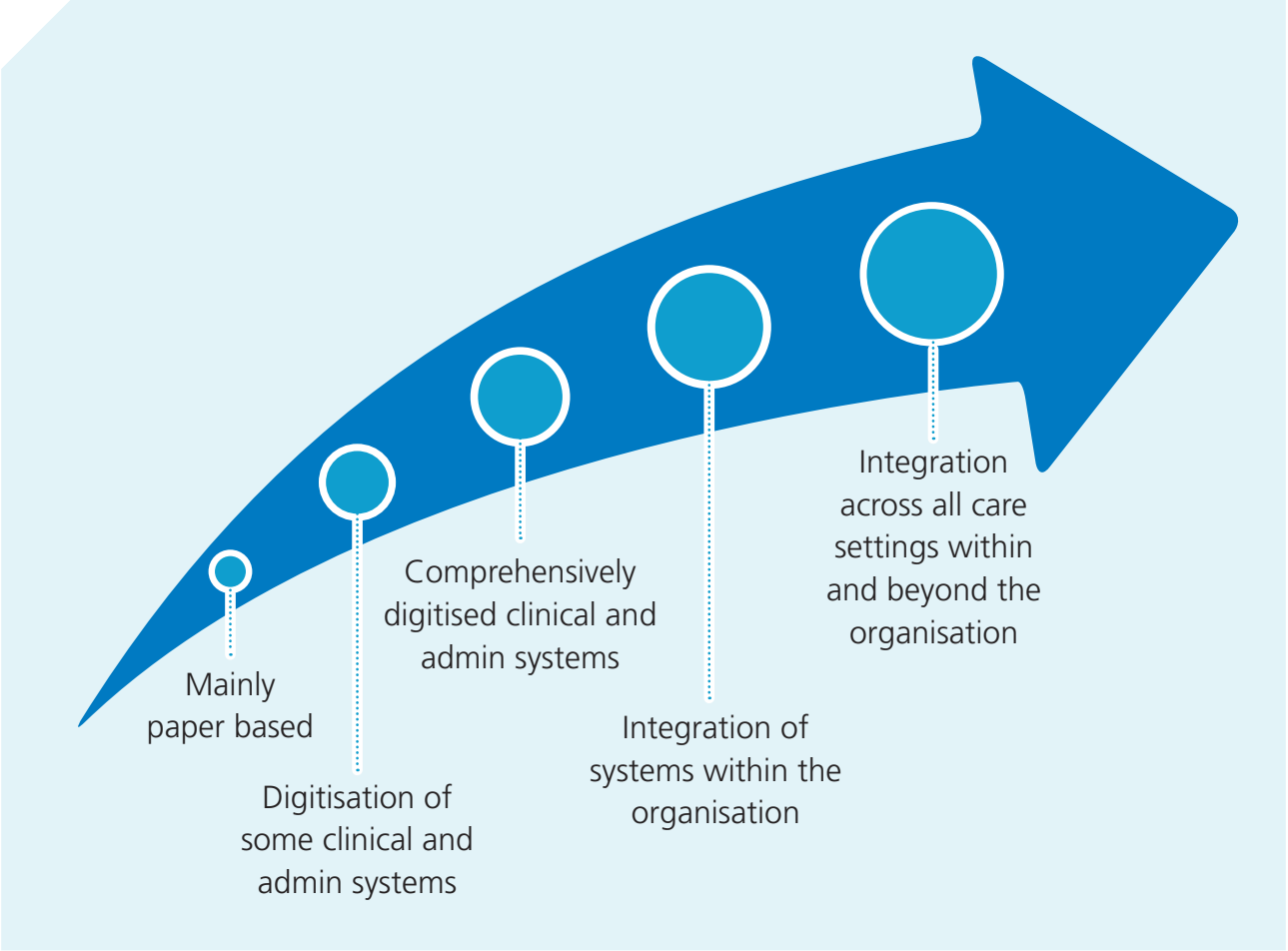
Going forward we expect to measure and monitor organisations and systems to ensure that they can demonstrate a progressively increasing level of 'meaningful use' of an IDCR and wider digital technologies in the delivery of care.

The example below gives a basic insight as to the journey being taken by organisations. It is worth noting that there will be times when records will be partially integrated across a care system before an organisation has completely digitised all its internal services.

The key aim is to support all organisations moving up the maturity levels no matter what their starting point.

We also recognise that the entire NHS can learn an enormous amount from the organisations that have already taken small or large steps on this journey, and part of our responsibility is to ensure that this knowledge is shared and leveraged.

3. The Path to Integrated Digital Care Records



4. Architecture and Standards

This section outlines the different approaches for developing the technology stack of an Integrated Digital Care Record (IDCR) and the underpinning principles, technical capabilities and key standards that local teams should consider when implementing safe digital care records. All of the information in this section will inform the criteria used to assess proposals to the Technology Fund but it has more general application and relevance to all NHS organisations seeking to add capability to deliver digital care records.

4.1 Technology Stack

The way the various technical layers of an IDCR have been developed and assembled will have an impact upon the ongoing running of the system in terms of cost and flexibility. The technology stack of a hospital IDCR system ranges from 'a fully functional, single, end-to-end, integrated system that covers every clinical function' to 'a patchwork quilt of individual, functionally rich modules, stitched together to allow data to transfer between systems' with lots of varying combinations in between. These can be referred to as 'single solution' and 'best of breed.'

There is no definitive right answer when deciding which architectural approach to take. A 'best of breed' architecture can provide more flexibility to implement digitisation gradually, piece by piece. Individual modules are chosen because they meet individual specialty needs. Replacing a module does not risk disrupting other clinical specialties. When purchasing new 'best of breed' systems, the flow of information in and out of the system will be enabled through Open Application Programming Interfaces (APIs). Specification of open APIs should form a part of the procurement criteria for Trusts purchasing digital systems both for core systems and for 'integration layers' such as portals/integration engines.

The 'best of breed' approach serves innovation and the small and medium enterprise (SME) sector well. However, maintaining a 'best of breed' approach requires a strong technically literate workforce and interfacing skills to ensure that data interoperability is achieved across the myriad of systems. Open standards and patients being identified by NHS Number as the primary identifier are important prerequisites to achieving IDCRs with a 'best of breed' technology stack.

Single solutions, as long as they support open standards for interoperability and are underpinned by the NHS Number as primary identifier, are often simpler to manage and administer from a technical perspective and provide interoperability as standard. There is often only one supplier relationship to manage, one contract to negotiate and

one user interface to get accustomed to. There is limited availability in the market for functionally rich single solutions and there have been a number of attempts to adapt systems built for the American health sector for use in the English NHS. The degree of successful take up of these solutions has varied. The key to success has been the degree to which the new clinical workflows encapsulated within the digital technology have been embraced wholeheartedly by the healthcare professionals impacted across all clinical specialties.

In conclusion, the primary driver for whatever approach is chosen to create the technology stack must be clinician ownership and buy-in. If the doctors and nurses won't use it then it doesn't matter what technical functionality and capability has been introduced.

Equally critical is the ability of the in-house information technology and informatics teams to provide ongoing support and maintenance of the system and its baseline ability to meet enterprise wide, commissioner and social care requirements for joined up, interoperable data.

4.2 Key Technical Considerations

Whilst the choice of system and order of progression should be locally driven, the following technical capabilities will be expected to underpin a local approach and form part of a local implementation of digital records and information sharing. Organisations should consider these as part of their application for funding. In addition, the underpinning infrastructure needs to be in place to enable the use of these capabilities.

4.2.1 Patient Identity

Any information captured electronically will need to be linked to a specific patient. This requires that there be a consistent way of identifying a patient within systems and a way of identifying a patient when information is transferred/shared.

- At its simplest, local organisations often assign a patient identifier to patients within their patient administration system (e.g. a local hospital patient ID). However, this approach is inherently limited as sharing information requires a common identifier between parties and a shared mechanism for capturing and maintaining demographic information.
- The agreed national solution for this is to use the NHS Number and to maintain demographics in the national Personal Demographics Service (PDS). This provides the nationwide identity matching capability. National business processes have been established to ensure that demographics are kept up to date at all times and new NHS Numbers created only when absolutely necessary.

- NHS Number needs to be used as the primary identifier both within a Trust environment and when sending information across organisations. We are working with commissioners to build this requirement into provider contracts from 2014. Trusts should begin work to move away from local patient identifiers onto the NHS Number as soon as possible to ensure that all records for a patient within an organisation can be located using their NHS Number.

To find patients' NHS Numbers to map to local identifiers, local organisations can use national systems such as the Personal Demographics Service (PDS), and Demographic Batch Service or local implementations of the Interoperability Toolkit Spine Mini Services to trace the demographic information.

- *Key Standards: ISB NHS Number*
- *Key Systems: Personal Demographics Service, Demographics Batch Trace*
- *Interoperability Specifications: ITK Spine Mini Services.*

4.2.2 Digital Data Capture

Automated data capture technologies can be used to help clinicians enter information and can enable data to be structured and categorised accurately as it is captured. This reduces the risk that it will be "misfiled" and not be shared with others who may need it. It may also aid the transition from paper to digital records.

Mobile devices such as tablets and smartphones can allow clinicians to see and enter information while they are with the patient. This can happen wherever the patient is – even in their home. This reduces the risk of keying errors, and allows facts to be checked and corrected immediately with the patient.

Solutions such as scanning, digital pens and voice recognition can ease the transition from paper to digital. This is often a first step in bringing information together so that it can be accessed more easily.

4.2.3 Storage and Indexing

Once information is captured, it needs to be held electronically in a repository so that it can be accessed by those who need it. Information held electronically needs to be properly structured so that it can be categorised, indexed, linked and searched. This will allow clinicians to access the specific information they need to make decisions.

An 'Electronic Document Management' system can provide a shared repository for clinical documentation. It can be linked with scanning solutions to support moving away from paper records but can also hold electronically generated documents from the various systems in the organisation.

It is important to consider what historic information needs to be captured electronically. For example, very old, paper based historic records required solely for medico-legal purposes may be better stored on paper indefinitely. It is often cheaper than scanning, provided storage space is available. For files of ongoing patients, Trusts need to decide, with clinical input, the level of indexation required. Further details and examples of the decisions that can be taken with regard to storage and indexing of scanned records can be found at the link on the following page.

When paper records are scanned, consideration should be given to the use of Natural Language Processing and the Automatic SNOMED-Encoding of Free Text.

4.2.4 Open Application Programming Interfaces

When implementing IDCRs organisations must ensure that the systems built or bought provide Open Application Programming Interfaces (APIs). These should be both commercially and technically open i.e. APIs should be published and their usage not restricted subject to a reasonable assurance test having been satisfied. Open APIs allow modules and systems to integrate seamlessly with one another in a standard way. This provides more choice and flexibility in how a Trust deploys digital solutions as APIs allow information and functionality that is held deep within systems to be accessed. In addition, organisations should ensure that suppliers make available the relevant documentation accompanying their APIs to enable other suppliers to efficiently integrate modular elements of the IDCR.

This is important because often, at the time that new systems are procured and implemented, clinicians and managers may not know what all their requirements are. As NHS organisations make progress towards an IDCR they will need the flexibility to add and amend functionality. Open APIs facilitate this and prevent the need to 'rip systems out and start again'. Further details on what to specify for Open APIs can be found at the link below.

4.2.5 Patient Access to Records

The move to digital records also enables more effective sharing of information with patients directly as well as clinicians. However, when enabling patient access, the process used to register the patient should be robust and proportionate to the information that will be made available when the service is accessed. The following key activities are required:

- registration: the act of establishing the identity of a subject as a condition for obtaining a credential that can be subsequently used to reaffirm an identity
- service access: the process by which a registered user's entitlement to access a particular service is confirmed and authorisation is then granted to access the service
- authentication: proving who you are. The process by which the electronic identity of a user is validated using a credential issued following a successful registration
- across all these components is the need to maintain privacy i.e. the requirement for the responsible handing of personal and/or commercially sensitive information by a service.

The systems need to be capable of providing layered access (i.e. separation of access to the record from transactions) and the capacity to provide a parental/carer view to enable appointment booking and prescriptions requests without sight of other transactions.

More details relating to these technical capabilities can be found at:
http://www.technologystrategy.england.nhs.uk

In the medium term, the intention is to move from locally identified and authenticated patients to the use of common cross-governmental citizen identity mechanisms to enable patient access to records.

Until that ambition can be effectively planned and delivered, local organisations looking to implement patient access should continue to ensure, in addition to the above, that a coherent approach to online patient access is provided across their systems. This will avoid the creation of single point solutions.

Further guidance is available at:
http://systems.hscic.gov.uk/qipp/library/identityfs.pdf

4.2.6 Information Governance

The move to digital records makes it easier to share and enables organisations to have better controls and practices in place. This supports the principles of Caldicott 2 "Information to share or not to share", in terms of confidentiality and also the new Principle 7 (duty to share). Information Governance is a key consideration in this digital journey but importantly needs to be an enabler and not a barrier in supporting the move to digital records. It is not about putting up unnecessary restrictions but rather ensuring that the controls are in place at an organisational, system and user level to enable appropriate data sharing.

Key features of deployments that support effective Information Governance and in particular privacy of the subject include:

- role based access control functionality that supports differential staff access according to staff roles and organisational context – in particular where data are recorded by organisations operating within different legal frameworks e.g. health and social care
- the ability to share information between organisations or units, with recorded consent or other legal basis, and under this control present integrated views of the data
- access privileges that reflect legitimate relationships between health professionals and patients or service users
- the attribution of all system access and data authorship to individuals
- proactive access monitoring and audit trails.

Organisations should look to use existing standards and guidance in defining their Information Governance approach. These include:

- the IG Toolkit which is closely aligned to the Information Standards Board Information Governance Standards Framework
- the Information Commissioner's Data Sharing Code of Practice
- guidance on Privacy by Design and Privacy Impact Assessment
- the NHS Confidentiality Code of Practice.

Further details on Information Governance can be found at:
http://systems.hscic.gov.uk/infogov
http://www.technologystrategy.england.nhs.uk

4.2.7 Standards

When clinical information is recorded in electronic systems, it is important that it can be recorded consistently to facilitate, for example, eReferrals, electronic discharges and ePrescribing. This in turn improves the patient experience and minimises risk as well as making reporting less burdensome. When information is shared across systems it is also important that the meaning of each item can be established consistently both by users that may use the information to drive decision support or by automated workflows.

Semantic harmonisation is a journey. It will take time for organisations to achieve it. Organisations need to start the journey of digitisation without trying to achieve perfection before starting to share clinical data across specialties. So long as identity is established in a robust way, 'loosely tethered' data will inform clinical decision making much better than no information.

The key standards to which local organisations should start to adhere are:

Semantic

- SNOMED CT stands for the 'Systematized Nomenclature of Medicine Clinical Terms'. This is an internationally recognised standard that consists of comprehensive scientifically validated content including items such as presenting symptoms, procedures, diagnoses, medications and medical devices that are vital for electronic medical records. It enables consistent recording, retrieval, transmission and analysis of patient records across healthcare systems. Consistent use of SNOMED CT in patient records will provide a rich information base to support outcome analysis and improve patient safety by reducing the risk of differing interpretation of data. SNOMED CT is in use in many countries and has been adopted as the standard clinical terminology for the NHS in England: http://systems.hscic.gov.uk/data/uktc
- In the NHS, the national NHS Classifications Service is responsible for the development and/or maintenance and implementation of the clinical classifications and the associated standards in support of this objective:
  - » OPCS Classification of Interventions and Procedures OPCS4
  - » International Statistical Classification of Diseases and Related Health Problems ICD10

  http://systems.hscic.gov.uk/data/clinicalcoding/codingstandards/
- 'dm+d' is the dictionary of medicines and devices. It provides unique identifiers and associated textual descriptions for medicines and medical devices and is linked to SNOMED CT. It is used to support the national electronic prescriptions service: http://systems.hscic.gov.uk/data/uktc

- UCUM – Units of Measure. The Unified Code for Units of Measure is a code system intended to include all units of measures being contemporarily used in international science, engineering, and business: http://unitsofmeasure.org
- NHS Data Dictionary. The NHS Data Model and Dictionary provides a reference point for assured information standards to support healthcare activities within the NHS in England. It has been developed for everyone who is actively involved in the collection of data and the management of information in the NHS: http://www.datadictionary.nhs.uk/
- ODS – Organisational Data Service (formerly NACS) provides codes for organisations, sites and wards: http://systems.hscic.gov.uk/data/ods
- ISB is the Information Standards Board. It currently provides support, appraisal and approval services for the development of standards for the NHS and social care: http://www.isb.nhs.uk/
- Professional Records Standards Body (PRSB) – a new body recently set up to consider the development and use of record keeping standards: http://www.theprsb.org.uk/
- Academy of Medical Royal Colleges Record Keeping Standards and Core Data Model – a set of core information relating to clinical documentation: http://systems.hscic.gov.uk/clinrecords

Messaging

- CDA – Clinical Document Architecture. The CDA Release 2.0 provides an exchange model for clinical documents (such as discharge summaries and progress notes) and brings the healthcare industry closer to the realisation of an electronic medical record
- XML – eXtensible Mark up Language is a W3C standard specifying a syntactic format for conveying information
- MIM – Message Information Manual for specifications relating to national infrastructure components e.g. PDS, Choose & Book and Summary Care Record (SCR)
- DMS – Domain Message Specification is the replacement for the MIM. It contains information relating to specific areas
- HL7v2 – Traditional information exchange standards for use in the NHS, typically for admission, discharge and transfer of order communications
- HL7v3 – Typically used when accessing information from National infrastructure components e.g. PDS, Choose & Book and SCR. Specified in the MIM (see above)

Transport

- Transport Layer Security (TLS) – Approved Cryptographic Standard

User Interface
The Common User Interface toolkit (www.cui.nhs.uk) provides a set of standards and specifications governing presentation or graphical user interface components of electronic health record systems.

Automatic Identification and Data Capture
Automatic Identification and Data Capture (AIDC) is a term used to group the various technologies employed to automatically identify items, collect data about them and provide the ability to enter that data electronically into computer systems. GS1 standards govern the use of AIDC globally and across all industry sectors including healthcare. Where adopting solutions employing AIDC for asset tracking, stock control or patient identification, the GS1 standards should be followed.

Clinical Safety Standards
When implementing digital systems it is vital that local organisations take patient safety into account. Specifically the following standards need to be considered:

- ISB 0129 (previously DSCN 14/2009) aimed at manufacturers of health software www.isb.nhs.uk/documents/isb-0129/amd-39-2012/index_html
- ISB 0160 (previously DSCN 18/2009) aimed at healthcare organisations deploying and using health software www.isb.nhs.uk/documents/isb-0160/amd-38-2012/index_html

Information Sharing and Interoperability
IDCR projects which aim to enhance the electronic sharing of information between clinicians should look to use existing national interoperability specifications, where available, such as the Interoperability Toolkit (ITK).

Case studies describing successful implementations using the ITK for information sharing can be found at http://systems.hscic.gov.uk/interop/iscf2012/cases.

The ITK specifications are supported by a formal accreditation service which ensures product conformance allowing the NHS to benefit from consistency, repeatability and reduction in deployment timescales.

Further details of the information flows supported by the ITK, accredited systems, access to the specifications and a reference implementation is available at http://systems.hscic.gov.uk/interop

5. ePrescribing

ePrescribing is the utilisation of electronic systems to facilitate and enhance the communication of a prescription or medicine order, aiding the choice, administration and supply of a medicine through knowledge and decision support and providing a robust audit trail for the entire medicines use process.

5.1 Benefits of ePrescribing

At its simplest, ePrescribing improves the legibility and completeness of prescriptions and makes information about medicines available to the healthcare team at all times. The need to move paper prescriptions around an organisation is removed, patient safety issues associated with poor handwriting are addressed, the quality of care is improved as queries are reduced and efficiencies delivered as paper is no longer chased. Local formulary implementation is supported by reminders at the point of prescribing reducing the need to constantly update prescribers about local policy.

The use of decision support additionally supports prescribers. Guided prescribing can help to reduce inappropriate dosing, facilitate correct drug selection and reduce the incidence of incorrect selection when an allergy or contraindications are present. More advanced decision support can additionally provide information about monitoring and other warnings designed to reduce the risk of errors being made.

The improved clarity of communication and the use of scheduling to prompt and support the administration of medicines generate a number of benefits. Reductions in missed doses have been demonstrated and the additional use of barcodes to check medicine selection and dosing also has positive benefits.

Communication across the care continuum at the transitions of care, and access to information in a timely manner generate efficiency as well as safety benefits. Accurate and complete discharge summaries automatically created as part of the discharge process ensure that GPs are properly informed of medication changes and that patients get the correct medication in a timely manner.

Wider integration with the patient's record over time allows for more complex monitoring and support to be delivered, facilitating prescriber compliance and improving the quality of care.

5.2 Illustrating Increasing Maturity

There is no one route or sequence that should be followed for the adoption of systems to support prescribing, medicines administration and ultimately medicines optimisation. The range of medicines, specialties, prescription types and routes of communication that need to be met are wide ranging and unlikely to be met by any one solution.

Organisations will have differing priorities and existing systems that have to be taken into account when putting a local strategy together. The introduction of systems at the 'lower' end of the maturity matrix, which may not cover all medicine types or clinical specialties, may benefit sites taking their first steps.

Standalone, specialist or fully integrated systems will all deliver benefits if implemented effectively. Some or all of the building blocks may be implemented over time dependent on local need and system capability. The aim should be to move towards increasing system maturity. Strategies which include an extended implementation that gradually adopts/phases in functionality are also valid.

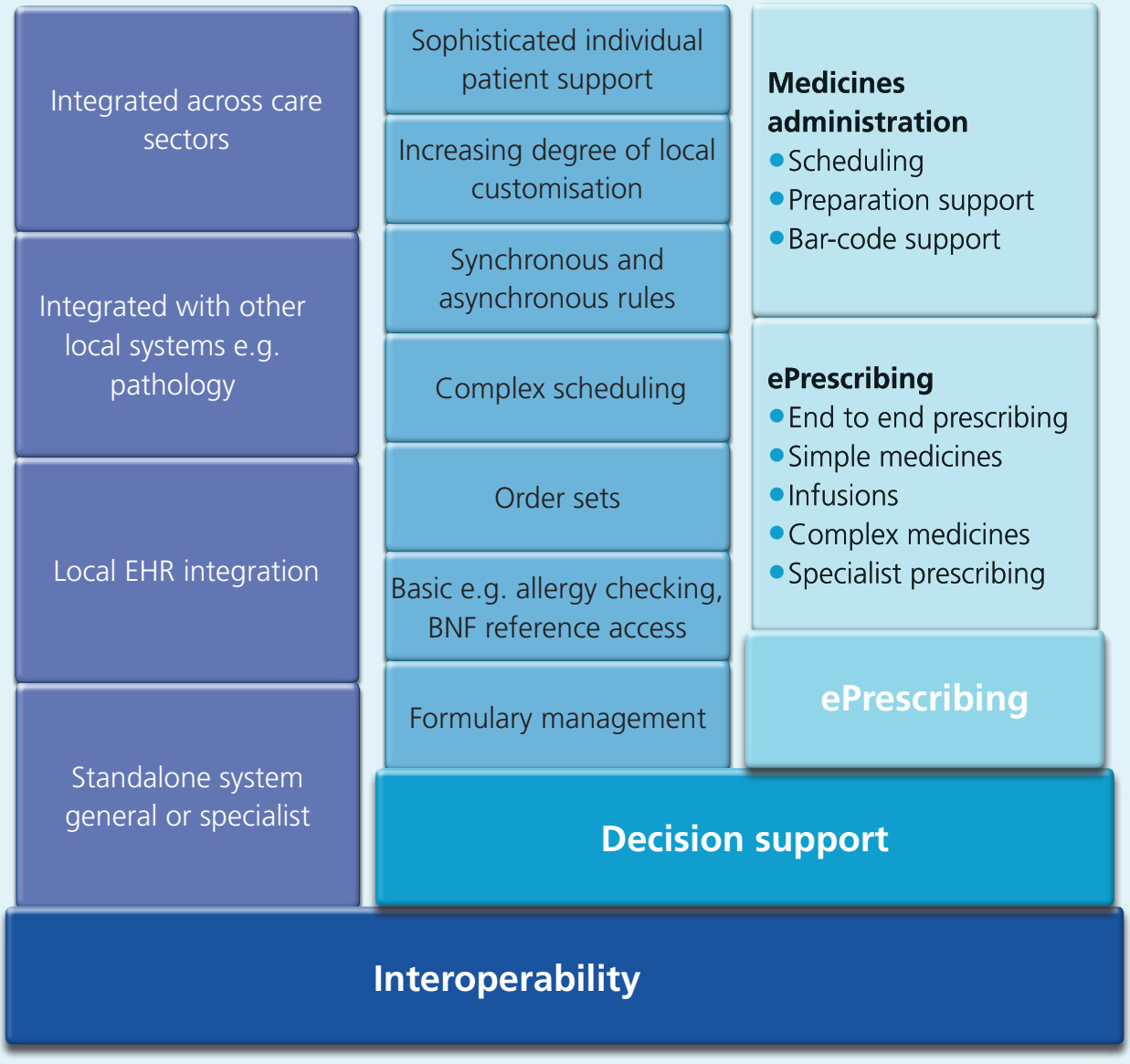
Domains				
Prescribing	**Medicines Management**	**Administration**	**Decision Support**	**Inter-operability**
Standalone system for one area or specialty	Formulary management	Scheduling of medicines for administration	Formulary support	Standalone system
Inpatient and discharge prescribing for the majority of patients	Checking and supply verification	Recording of medicines administration	Access to reference information	Access to pathology results
Prescribing for all medicine types	High risk medicines monitoring support	Support for medicines preparation	Basic – for example, allergy checking, drug interactions. (Identify which available)	Simple eDischarge summary information

Domains				
Prescribing	**Medicines Management**	**Administration**	**Decision Support**	**Inter-operability**
Specialist prescribing for complex areas e.g. paediatrics, chemotherapy, critical care	Documentation of ADR, clinical interventions, medication error reporting	Audit/reporting on omitted/ delayed doses	Order sets and order sentences Dose calculators	More complex eDischarge summary information indicating changes, enabling monitoring
Prescribing in all clinical areas	Medicines reconciliation	Complex scheduling	Support for guideline/policy compliance e.g. NICE, CQUIN	Integration with other systems e.g. pathology
Links to and integration of patient monitoring, infusion devices	Integration with inventory management systems	Automatic links to additional patient information e.g. pathology results within administration pathways	More complex decision support rules development (e.g. MLM modules) focusing on individual patient characteristics	Advanced reporting, feeds to national registries
	Integration with automated dispensing machines	Use of barcodes to support patient, medication and dose checks	Detailed patient level reporting	

This list is not exhaustive and should not be interpreted as rigidly sequential but there are foundation capabilities that must be in place before enhanced capabilities and therefore increased benefits, can be enjoyed.

The scope of ePrescribing has advanced over the years as technology and a more complex care delivery model has evolved. The key building blocks that can be put together incrementally over time are outlined below. NHS Trust Boards are reminded that the impetus for renewed focus on the benefits of ePrescribing is to improve quality of care, reduce opportunity for error and enable communication of essential information across systems. It is unlikely that short term financial gains will be made. Medium to long term improvements in service quality and patient safety will provide real improvements in efficiency.

ePrescribing components – High level



6. Direct support from NHS England

6.1 Open Source Solutions

To support the progression of organisations along the digital maturity levels described in this document, NHS England are aiming to develop a vibrant market of products and solutions that are available as national solutions or would be made available under Open Source licensing arrangements for local implementation. The intention is that by taking an Open Source approach the initial capital outlay associated with the licensing of Common Off The Shelf (COTS) products can be significantly reduced. In addition there is a potential benefit created by multiple NHS organisations collaborating to the ongoing development and improvement of these products.

Open Source is a term used to describe digital solutions whose underlying source code is made available free of charge to the wider world. There are no ongoing licence fees or royalties to be paid. However to take advantage of the flexibilities afforded by owning the software, software developers are required on an ongoing basis to refresh and update the product at regular intervals. They must also bear the costs associated with managing the change required to effectively adopt a new system operationally.

In the past few years a number of NHS organisations have embarked on development of their own Open Source software solutions and there is a small but growing cohort of clinicians who, spurred by the need to find digital solutions for their everyday clinical operational problems, are turning their hand to software engineering in collaboration with their informatics colleagues. Examples include 'OpenEyes', an Open Source IDCR (developed by Moorfields), an Open Source integration engine (developed by Kings College Hospital) and also an Open Source clinical portal (developed by Leeds Teaching Hospitals). Since clinician ownership is the primary driver for achieving digitisation of care records, involvement by clinicians in 'Code4Health' is to be encouraged.

The journey towards achieving the vision of a fully integrated digital record is one that will be specific to each individual local health community. Some areas have already taken steps towards this using the Summary Care Record as the basis of their collaborative activities.

NHS England will draw together details of available solutions and case studies that will aid organisations in assessing their options. In addition, and most importantly, NHS England will support the development of these products to ensure they are ready for market, that they have the necessary

support frameworks behind them, and that they have an appropriate roadmap for future development.

We aim to develop this list over time and welcome feedback on the list as well as contributions of new ideas that can enhance this offer.

6.2 NHS VistA

Recognising the challenges and costs involved in the digitisation of care records, NHS England has looked at the potential of the Open Source market to deliver NHS Open Source IDCR components. It is clear there are a number of success stories already in existence within the NHS and elsewhere, and we have looked to identify how they may meet the challenges faced by many organisations.

One of the significant products we have investigated is VistA and for reasons described in more detail below we are looking to adopt some of the ethos behind its creation and potentially part, or all, of the technical product, in combination with others to generate 'NHS VistA'. 'NHS VistA' as a concept will focus on bringing together the 'best of breed' capability of Open Source solutions and will be driven by NHS organisations with the support of NHS England and others.

The US Veterans Health Administration 'VistA' system was created in the 1980s by clinicians and software engineers from the ground up. It has become renowned across the world as the first truly integrated, clinically owned system. It has been in operation long enough to be able to demonstrate real clinical outcome benefits.

Latterly, the Veterans Health Administration has recognised the potential benefits to themselves and others of developing a global community of users to develop VistA. VistA has now been configured for use and adoption in Germany, Finland, Mexico, Jordan, India and Brazil. NHS England can leverage the learning from these implementations and has secured access to the expert resources that have led some of those implementations across the world.

NHS England has visited the Veterans Health Administration to undertake deeper analysis of the product and the capability for it to be used within the NHS. We are now undertaking an initial assessment of product capability and the necessary customisation that would be required to make it fit for use as part of NHS VistA.

The benefits of this work will then be available to all organisations subsequently looking to implement NHS VistA in future years, and continued support for the core product will be available to ensure ongoing innovation and development.

Expressions of interest to be involved in the initial pilot or ongoing development and implementation of NHS VistA can be made as part of the application process for the Technology Fund.

We will continue to look closely at additional, credible Open Source solutions that can deliver benefits to NHS organisations, clinicians and patients.

6.3 The Future of the Summary Care Record

The Summary Care Record (SCR) is derived directly from GP systems and includes a 'core' set of required clinical data, namely allergies, medications and adverse reactions. We have commissioned the Health and Social Care Information Centre (HSCIC) to add immunisations, significant past problems and procedures, end of life care information and other patient preferences to the SCR.

The increased level of standardised information within the SCR significantly enhances its value to secondary care clinicians. Over half the population of England has an SCR and the especially low implementation costs make it a simple and straightforward solution for integrating primary care data into secondary care. It is underpinned by the national Personal Demographics Service (PDS) and the NHS Number to ensure patient identification is as quick and as accurate as possible.

The SCR is being used by clinicians in out of hours settings, emergency departments, health and justice settings and hospital pharmacies. The process of viewing the record is simple and the SCR is available in a range of systems including a nationally available web application, the Summary Care Record Application (SCRa), and as an integrated 'module' within existing systems including The Phoenix Partnership's SystmOne, Advanced Health and Care's Adastra and Ascribe's Symphony.

The list of integrated solutions able to access the SCR is expected to grow and to include mobile device platforms. Similarly, work is underway to explore the introduction of an SCR 'spine mini service' which allows integration of the SCR into local, bespoke systems and portals.

In the future, we may not need to centrally provide an SCR because everything is being transferred seamlessly between primary and secondary care settings. Until that time, which is currently some way off, the SCR will provide NHS Trusts with a key building block towards an IDCR and we strongly recommend its uptake and adoption.

7. Support for Sourcing from the Marketplace

NHS England intends to set a new standard for partnership with industry and the third sector by improving access to the technology marketplace. We want to encourage innovation and engagement especially through small and medium enterprises as part of the NHS contribution to the wider economic growth and entrepreneurship agenda. Academic Health Science Networks (AHSNs) will be key partners in delivering this ambition. We will develop online resources that enable entrepreneurs to advertise their capabilities and NHS providers their needs as the basis for sustainable partnerships.

Procurement Toolkit

Working collaboratively with Trusts, NHS England will look to develop a Procurement Toolkit to enable effective decision making for sourcing activities. We are committed to identifying procurement needs and supporting Trusts to help shape the design and development of assessment tools to directly inform procurement and delivery plans.

How it will work

The toolkit will ensure the right questions are asked at the critical junctures in the procurement lifecycle and that key risks are identified and managed. The process will adopt best practice and innovation to support effective delivery. The tools will be designed to assist at key points in the process. These could include:

- **understanding your requirements and preparing for a procurement:** considering business models, looking at all the options for how the arrangement between customer and supplier might work (organisationally, financially, in relation to risk management etc.). In practical terms this might involve guidance and assessment tools that help to establish when and how best to engage the supplier market, how to test its appetite, feasibility, capability, maturity and potential costs. Considering how your requirements might be usefully split or bundled together to achieve better value for money and how this might affect the project e.g. a single, end-to-end, integrated system will require different internal management to that of a combination of multiple 'best of breed' solutions.

- **determining your procurement strategy, governance, plans and resources:** once requirements are well defined then decisions will need to be made about procurement procedures, delivery routes and contracting vehicles. There are a number of policy and best

practice tools in existence that the toolkit will aim to consolidate for ease of reference. This will include **LEAN Standard Operating Procedures (SOPs)**, a set of mandated central government sourcing principles, developed to strip out bureaucracy, eliminate wasteful practices and speed up the procurement process. Government procurers are now encouraged to make greater use of the Open Procedure under the Public Sector Procurement Directive and existing frameworks. The toolkit will help determine which procedures or frameworks might be more applicable for different categories of spend. In addition to this, central government's Information Communication Technology Strategy will be examined and guidance offered to help buyers consider best value and so on.

Procurement artefacts will need to be produced at this stage and the toolkit could offer example documents to support the various routes of delivery and contracting considerations to ensure Trusts adopt the right partnering construct to manage their suppliers.

Governance will be key to successful delivery. Guidance could focus on what assurances, processes, systems and decision making bodies need to be established at which points in the process. In addition to this the appropriate use of expert commercial and procurement support at key stages in procurement design and delivery will be critical. The toolkit could offer a view on the skills and experience needed to support this process.

- **delivering procurement and commercial management:** NHS England will work with Trusts to develop a procurement readiness assessment to help assess whether a competition or call-off can commence. This will serve as a timely checklist or gate to ascertain overall readiness. A contract management template could be developed to ensure that Trusts understand what resources and processes they need to put in place to manage the entire procurement lifecycle.

NHS England will organise a series of procurement workshops that aim to examine and establish the overall content for the toolkit and support guidance and advice. We are eager to consult to understand what Trusts require to deliver successful outcomes.

8. Leadership, Change Management and Technology Skills

8.1 Specialist Informatics Capacity and Capability

To ensure that the introduction of digital record keeping systems and ePrescribing systems are reflected in the day to day workings of a secondary care organisation requires leadership and change management as well as technical implementation skills.

Organisations will want to be assured that they have access to the knowledge and skills necessary at strategic, tactical and operational levels.

Leadership of the informatics function should be undertaken at an appropriate level and the function represented at Board level if not by an informatics strategist then by an Executive supported by an appropriately experienced professional, such as a Chief Information Officer (CIO).

The appointment of Chief Clinical Information Officers (CCIOs) has been encouraged for some time, and they will act as the crucial bridge between the clinical and managerial communities as they play the key role of ensuring that technologies that are purchased are both fit for use and deployed by their colleagues.

All clinical professions need to be engaged with the programme and mechanisms for multiprofessional collaboration established. Named clinical professionals should be identified in leadership roles for informatics at several levels within organisations, particularly where departments are operating as quasi-autonomous business units. Healthcare professionals should also operate at all levels within projects. An increasing number of clinicians are familiar with mobile technologies and paperless working. Their potential to champion digitally enabled change should be harnessed at every opportunity.

Many organisations will buy in generic IT technical ('back office') capacity from a local or commercial support service provider rather than employing staff directly and this flexible approach is also likely to prove cost effective here.

In addition to IT technical roles (including increased help desk capacity) there will be a need to source expertise in:

- system specification, procurement and contract and supplier management
- change management (including programme and project management) but also system, process and behaviour change expertise
- training and development
- communications.

There are key differences between the capabilities and skills required to undertake core technical tasks (network and server implementations/support and user device support) and those required to effectively harness the power of digital technology in clinical care such as process reengineering, ergonomics, user device selection and risk assessment. A balance of complementary skills is required in totality.

Suppliers are likely to provide elements of change management and training support but these should be based on agreed local/national standards of performance and quality and managed as an integral element of the programme.

Learning from the experiences of others who have undertaken major procurements and implementations will provide guidance about the number and nature of IT staff needed for success. Membership of the Health Informatics Services Benchmarking Club may complement local professional networks and partnerships and provide up to date information and contacts to help in this regard. See www.hibc.nhs.uk for information and contact details.

The national Health Informatics Career Framework (https://www.hicf.org.uk) provides a wide range of informatics role descriptions, job descriptions and team design and planning tools to help in assessing the range of skills needed and in identifying gaps in existing team skills.

Whether employed in-house or contracted in, employers will want to assure themselves that staff are of the highest quality, fit to practise and up to date. Registration and/or accreditation by a recognised professional body (such as UKCHIP or BCS) is one way individuals can demonstrate adherence to nationally agreed standards of practise. Organisations are encouraged to use this as an indicator of quality in their employees and contractors.

8.2 Getting Buy-in to the Changes

When a change programme fails, the root cause can often be traced back to a failure to adequately address issues associated with managing the change from a people perspective. Whilst the benefits of investing in IDCRs and ePrescribing are becoming well documented, there may still be passive or even active resistance to change.

Securing engagement for the required new ways of working from system users, including patients and carers, will require investment. Users need to know why the changes are required and how they will improve services and impact on their day to day work. They will also need to understand how those changes will improve safety, effectiveness and outcomes for patients. This will be a key role for the CCIO, CIO (or equivalent), Chief Executive Officer and other board members. Their input will have greatest impact and relevance when they work with local champions who can share case studies as they emerge and translate and contextualise evidence of benefits for peers and colleagues. They are also ideally placed to anticipate and mitigate risks and challenges associated with the programme. Managing go-live

dates effectively is a critical test of the cross-organisational support for the introduction of an IDCR. Enabling key clinical staff to deliver direct implementation support at this point in the project lifecycle is vital.

Organisations will want to consider investing in process change and change management expertise if this is not already available in-house. Making sure that project board members are aware of and trained appropriately in their designated roles is key. In addition all change management activity needs to be complemented with the adoption of an appropriate programme/ project management methodology. Research has demonstrated that systematic commitment to any model of continuous improvement in combination with rigorous but proportionate project management can deliver successful change management.

Implementation projects should be designed so that clinical users of new IDCR systems can see the benefits for patient care and their working practices as soon as possible. This can be profiled in project planning by delivering short term (maximum six months) modular components with associated step improvements. Supporting reflective practice and encouraging peer review is key to driving up adoption of an IDCR by clinicians and realising the benefits. When deployments stutter or falter, root cause analysis is a very useful tool to identify how to achieve progress and renew support.

8.3 Building and Developing End User Skills and Expertise

Most organisations will have their own computer based training facilities or access to the same; and have established programmes of IT skills training tapping into existing national resources as required. The NHS IT Skills Pathway offers free at the point of access training in essential IT skills (the 'Elite' programme) to provide foundation level training in the use of a PC including email and web browsing. It also offers, on the same basis, access to Office application training from beginner to advanced user. Organisations may wish to explore how these training tools can fit into their local training strategy to underpin system specific training likely to be provided by suppliers.
See www.itskills.nhs.uk.

Ensuring the quality and timeliness of supplier led training will be a local responsibility as will compliance with local and national standards. Guidance on standards can be found at: http://systems.hscic.gov.uk/icd/informspec/etd/standards/index_html.

Training managers will want to ensure the availability of ongoing training and resources and plan for refresher and new starter training on an ongoing basis. There will be a marked spike in training needs post go-live that should be anticipated, with training in situ for clinicians at this point hugely beneficial. The opportunity to interact with a 'demo' system ahead of go-live can

assist in managing apprehension as well as familiarising clinicians with day to day usage of the new capability.

Resourcing plans will need to include reference to the capacity and capability required to support business as usual and ongoing development of systems and processes, as well as the monitoring and measurement of benefits anticipated in the local business case. A strategy will need to be in place to assess and ensure the right composition of the skills and capability required to support business as usual and ongoing development and maintenance.

8.4 User Participation in Designing and Delivering Success

In addition to securing clinical leadership, to deliver the key benefits of information technology, quality, transparency and participation NHS organisations need to involve patients, and as appropriate carers, in the design and testing of information technologies and informatics in systematic and meaningful ways. This helps ensure that applications are customized to meet their needs. User-centered design (UCD) is an approach that involves end users throughout the development process from concept to delivery. This ensures functionality and usability, thereby increasing the likelihood that the intended health outcomes are secured.

9. The Safer Hospitals, Safer Wards Technology Fund

9.1 Programme Overview and Eligibility

Introduction

The Safer Hospitals, Safer Wards Technology Fund was announced by the Secretary of State on 17 May 2013. Applications from eligible organisations are invited to the capital Fund.

The capital Fund is a catalyst to assist NHS organisations to move from paper-based to paper-light and effectively paperless, integrated digital care records (IDCRs). It also supports those organisations that seek to achieve demonstrable improvements in efficiency, quality and safety by introducing ePrescribing within acute settings and community settings, linked for optimal benefit to an IDCR.

It is recognised that all NHS organisations are at different stages with regard to having the underlying technical capability in place to maximise the benefits available from digital care records. We also recognise that NHS organisations are at different stages of clinical digital maturity in terms of the use their clinical workforce make of the capabilities within their systems to meaningfully improve the quality, safety and efficiency of care provided to patients. The Fund invites applications from eligible organisations irrespective of their current level of clinical digital maturity or technical capability.

This section describes the types of projects which are eligible for funding and the application process.

Available Capital Funding

The Fund makes available £260m of Public Dividend Capital (PDC) for NHS Trusts to spend on eligible projects. A total of £90m is available in FY2013/14 and £170m in FY2014/15. This central capital funding must be spent before the end of March 2015.

There is no maximum amount per application available to an organisation or project. However, applicants must fund match (revenue or capital) any award received as part of this scheme. Organisations must be able to cover any NHS capital charges, depreciation and the consequential revenue or capital run-on costs arising from the initial capital award. An organisation may submit multiple applications to the Fund, each of which will require a separate Expression of Interest and will undergo a review as detailed in Section 9.5 of this document.

At the end of the programme, a Trust should be able to point to tangible measurable improvements in their ability to deliver

improved care provision for patients. The Trust must outline their local roadmap with timescales and indicative resourcing commitments to progress from a paper to paper-light to paperless operating model over the coming years. We do not require a plan at the time of application but we will require a plan at the point that any funds are awarded.

Organisational Eligibility

The Technology Fund is available to all NHS Trusts and Foundation Trusts in England including acute, community, mental health and ambulance trusts.

Due of the nature of the funding route, Public Dividend Capital (PDC), it is not appropriate for networks, charities, social enterprises or commercial companies to submit an application to the Fund in their own right.

NHS organisations may choose to partner with other organisations and collaborate with one another to deliver the objectives they outline in their proposals.

Important Note:
Organisations already benefitting from specific support to introduce IDCRs or ePrescribing as part of the Local Service Provider (LSP) solution delivery or the South Local Clinical Systems Programmes will not be eligible for funding for the same project through the Safer Hospitals, Safer Wards Technology Fund. However if your organisation has the capacity and capability to successfully deliver a relevant project that is not currently being resourced via either of the above routes then eligible organisations should make a proposal to the Fund on this basis. The assessment panel will be particularly concerned to ensure that this project is viable and that it will deliver the intended benefits to clinicians and patients within the timeframe stipulated.

What Types of Projects are Eligible?

The purpose of the capital Fund is to support NHS organisations to increase the scale and scope of their use of digital information technology to provide better, safer care in three key areas:

- safe, digital record keeping underpinned by NHS Number as primary identifier
- integrated digital care records including information sharing within and between organisations
- electronic prescribing in secondary care
- advanced scheduling.

Applicants should familiarise themselves with the further information in the earlier chapters of this document for more details of the types of project we will be looking to support from the Fund.

What Types of Project are Not Eligible?

Examples of projects which are not eligible for funding from the Safer Hospitals, Safer Wards Technology Fund are:

- proposals which introduce systems to support the delivery of exclusively management information and not frontline care, e.g. data warehouse, business intelligence and dashboard solutions

- IT infrastructure-only projects without an associated capability that directly supports better, safer care e.g. a network upgrade only
- ICT outsourcing projects.

Communities of Practice

We will support the development of communities of practice and would encourage applicants to connect with other organisations applying to the Fund that are proposing to undertake similar projects. Applicants are expected to share their knowledge and learning and collaborate with others as they further develop and commence their projects.
www.technologystrategy.england.nhs.uk

9.2 Application Process

Application Process Overview

This section outlines the application process for NHS Trusts, the key dates and the process for evaluating applications to the Fund.

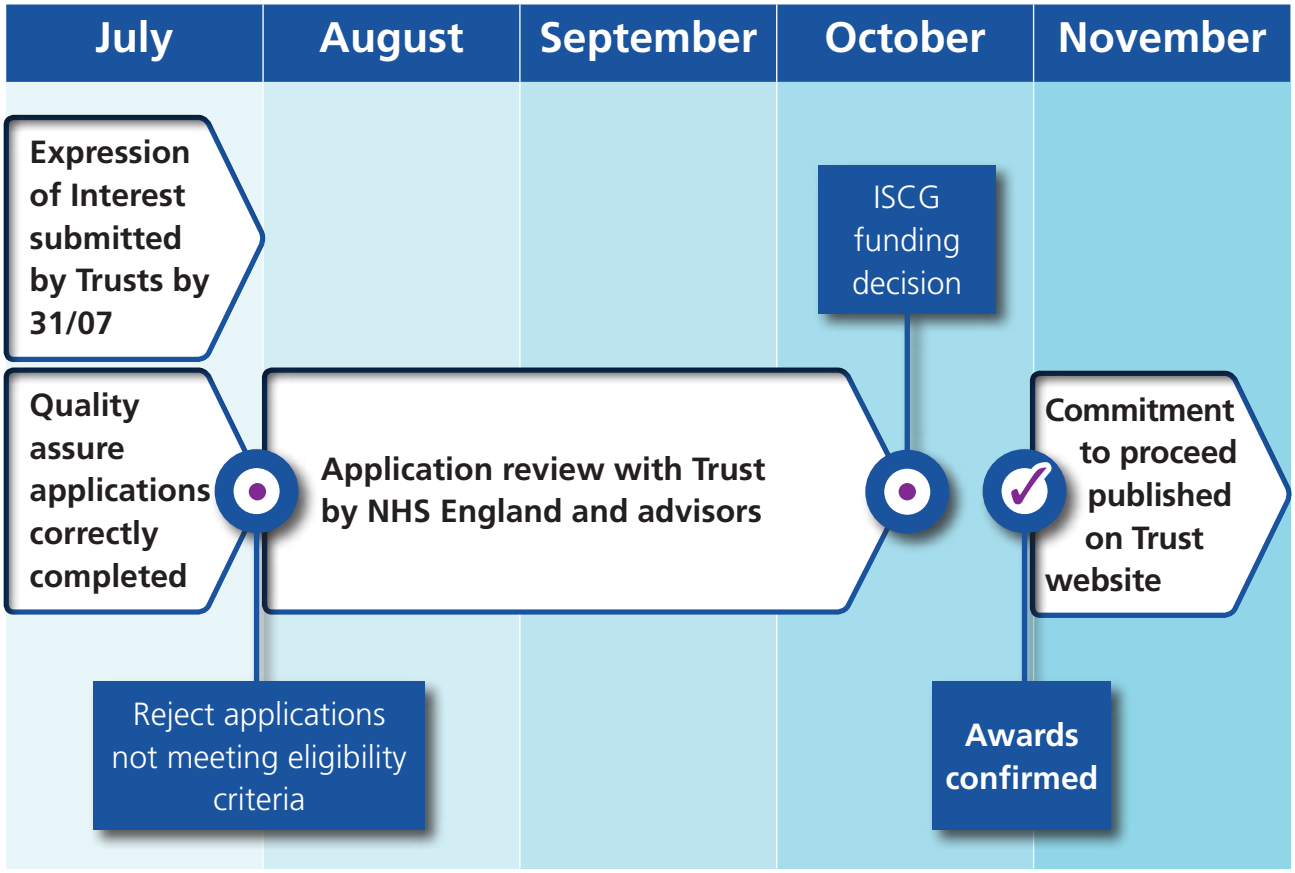
The scheme application materials include:

- the scheme application process overview including timescales (this document)
- an Expression of Interest application form (online form)
- associated communications materials and Frequently Asked Questions (FAQs).

These are available at http://www.england.nhs.uk/ourwork/tsd/sst/tech-fund/applying

Applications are made to the Fund through the submission of an Expression of Interest by the 31 July 2013. A Trust must submit a unique online Expression of Interest for each project they wish to be considered for funding. During August and September a panel of advisors will work with applying Trusts to review eligible applications. By the end of the review period we expect projects to have demonstrated how they meet the Essential Criteria, stated in the following section. Projects awarded funding will be notified by the end of October 2013.

The overall application and review process for the Fund is shown in the diagram below.



Essential Criteria

By the time funding is awarded, successful applications must have demonstrated the following:

- clinical ownership and support
- patient engagement in the design and delivery of their technology programmes
- informatics and operational support and capability within the Trust to deliver and support the project
- evidence that the project is deliverable in the proposed timescale. The Trust will be expected to demonstrate availability of the necessary programme team, with the appropriate skills to deliver the project along with a robust sourcing strategy
- clear strategic fit with the Trust's patient safety, quality improvement, information and digital adoption strategy
- justified project costs and demonstrable value for money in the proposals. We will compare applications to ensure consistency of costs and value for money between bids
- a sound finance model for the project confirming the capital applied for and the availability of revenue from the Trust to cover the cost of capital charges, depreciation and any other revenue elements of the implementation. The financial model must include any other funding the Trust has applied for, the viability of the project without this other funding and the status of the funding applied for (including dates when this third party funding has or will be confirmed)
- a clear benefits realisation plan.

Expression of Interest

Applications to the capital Fund are made through completing an Expression of Interest form.

The Expression of Interest form is an online form, accessible at: http://www.england.nhs.uk/ourwork/tsd/sst/tech-fund/applying.

The form is also included in Section 9.5. This document may be shared with dedicated subject matter experts across the organisation for completion of relevant sections but a collated response is required from the organisation as a whole. Applicants must **not** submit the document attached in Section 9.5; the only valid way to apply to the Fund is by using the online form.

Applicants submitting an Expression of Interest to the capital Fund will receive an email within 48 hours confirming receipt of their Expression of Interest.

Any technical problems experienced in completing the online Expression of Interest resulting in the applicant being unable to complete their submission to the Fund before the closing date must be reported to england.nhstechfund@nhs.net before 17:00 on 31 July 2013.

Late applications will not be accepted. The online form will not allow an Expression of Interest to be submitted after 17:00 on 31 July 2013.

The Expression of Interest submission must be supported by the Trust Board and the relevant local commissioning organisation.

Expression of Interest – Information Required

The Expression of Interest form includes:

- applicant organisation
- any other NHS Trusts or partner organisations involved if this is a joint bid
- project title
- lead project contact and contact details of key personnel including Chair, Chief Executive and CCIO, or where no one person formally performs this role Medical Director, Director of Nursing, Director of IM&T
- a description of the project, the aims and associated benefits
- a description of the roadmap that the organisation is pursuing to move from paper to paper-light to paperless and an indication of the step progression that an award of funding would make in terms of scope, scale or speed
- the project delivery approach including confirmation whether the project has already started
- the sourcing strategy and suppliers involved (if known) and the likely procurement approach and timescales
- detail on the due diligence and capability assessment that has been made regarding the envisaged supplier partner
- whether the project wishes to adopt the VistA product
- the fit of the project with the Trust's information and IT strategy and current level of IT infrastructure and capability

- an indication of the total project costs by year, the profile of the costs split by capital/revenue, the amount of capital sought from the Fund and the funding provided by the Trust. Please indicate any known tolerances in the costs and funding model
- whether the organisation has made multiple applications to the capital Fund and the priority ranking of the application
- any other funds applied for (or required for the project's viability).

Guidance for Completing the Expression of Interest

When completing your Expression of Interest please give concise answers as word limits apply.

If you are unsure about the specific information required in a section of the Expression of Interest then please submit an enquiry to england.nhstechfund@nhs.net. Applicants must note that whilst we aim to respond to these enquiries quickly, a specific response time cannot be guaranteed especially if the volume of enquiries is particularly high immediately prior to the closing date.

Throughout July we will add to the list of published "Frequently Asked Questions" on the NHS England website where we see a wider benefit in sharing the answers we have provided to individual Trusts. These are available at: http://www.england.nhs.uk/ourwork/tsd/sst/tech-fund/applying.

If you are unable to complete a particular section of the Expression of Interest form then we would prefer that you **clearly state that the information requested is not available at this time**. This could be the case where detailed plans for the project have not yet been developed in full by the Trust. Expressions of Interest are able to progress to the next stage of the process where Trusts explicitly state that some information is simply not available at time of application. During the due diligence phase of the process in August and September we would expect Trusts to develop this detail iteratively with ourselves. Applicants must demonstrate that they have given due care and attention to completion of sufficient elements of the Expression of Interest form that their proposal can be considered genuine.

Confirming the Eligibility of Expressions of Interest

All Expressions of Interest will be reviewed to ensure both the project and organisation meets the eligibility criteria for the capital Fund. Any Expressions of Interest which patently do not meet the eligibility criteria will be rejected at this stage. The applicant will be notified via email and may choose to resubmit if the timescales permit and they can advance a genuine proposal within the scope of the Fund. If we require further information to confirm eligibility of the Expression of Interest we will be in contact to request this.

Acceptance of an eligible Expression of Interest at this stage is not a commitment to allocate funding.

What is the Process for Reviewing Eligible Expressions of Interest?

For those projects which have advanced through the Expression of Interest stage, we will work jointly with local project teams to understand their application in more detail during August and September 2013. We will use the information included in the Expression of Interest form as the basis of this. We are aiming to complete this review by the end of September 2013.

A team of expert advisors will work with Trusts to review the eligible Expressions of Interest. The advisors will include clinical, financial, commercial and technical representatives. These will be drawn from a number of organisations including NHS England, the Department of Health, the Health and Social Care Information Centre, NHS Trusts, provider organisations and industry.

The advisors will be looking to satisfy themselves that the Trust has demonstrated it can meet the essential criteria stated earlier.

The exact nature and level of contact between the advisors and any particular Trust will vary depending on the quality and comprehensiveness of the information submitted in the Expression of Interest, including the complexity of the project, the current stage of the development of the project, the type of project proposed and the amount of funding requested. The likely level of involvement is shown in the table.

Perceived Project Delivery Risk Based on Expression of Interest	Review Process
High Potential Value – Low Perceived Delivery Risk	Telephone conference between relevant Trust representative(s) and appropriate NHS England advisors Submission of additional evidence if required
High Potential Value – Medium Perceived Delivery Risk	Face to face interview with relevant Trust representative(s) and NHS England advisors Submission of additional evidence when required
High Potential Value – High Perceived Delivery Risk	Panel interview Submission of additional evidence as required

Fund Priorities

In the event that the Fund is oversubscribed, priority will be given to those projects which meet the following criteria. This list is in priority order.

1. Due to the capital investment profile (£90m is available for FY2013/14) priority will be given to those proposals which are in an advanced state of readiness and can demonstrate an ability to deliver by March 2014

2. Projects which express an interest in adopting a centrally developed, Open Source NHS solution that would provide a core platform for digital care records, using the NHS Number and allowing integration with other standard clinical systems over time. See Section 6 for more information

3. ePrescribing projects

4. Trusts with a low level of digital maturity, proposing projects which see them move from paper to paperless or paper-light. These projects are not deploying Open Source solutions and will achieve implementation before March 2015

5. Trusts with a high level of digital maturity who want to achieve interoperability across multiple care settings within their health economy.

In the event that the Fund is oversubscribed priority will be given to those applications identified as a Trust's first choice. Trusts which submit multiple applications must state in their Expression of Interest the priority order of their applications. These must be ranked in priority order, stating which the Trust's first choice submission is, second choice and so on.

Where a Trust has indicated that they are interested in further dialogue and engagement with NHS England, specifically to determine the potential benefits and viability of an NHS Open Source IDCR solution, the organisation should also detail what their alternative roadmap would be to move from paper to paper-light to paperless. This dialogue may determine that an NHS Open Source IDCR has potential, however we do not envisage the roll out of an Open Source IDCR solution at scale or pace within the life cycle of this Fund. As a result organisations must be capable of describing a viable alternative.

We may propose part-funding a project. This decision will only be taken following dialogue with the applying organisation. We recognise that a project may become non-viable if the full amount of requested funding is not awarded.

Governance and Approvals

The Investment Approvals sub-group of the Informatics Services Commissioning Group will make the final decision on the awarding of capital from the Safer Hospitals, Safer Wards Technology Fund on 22 October 2013.

The expert advisors will make recommendations to the group regarding which bids have demonstrated they meet the essential criteria during the review process.

Applicants will be informed of the decision to allocate funding by the 31 October 2013.

The group's decision is final.

Commitment to Proceed

Trusts awarded funding will be expected to publish a "Commitment to Proceed" document on their public website. This will include:

- an overview of the proposed project
- the benefits to patients and clinicians
- the key delivery milestones and resource profile
- the total amount of funding awarded to the Trust.

We will provide a template for this.

We expect Trusts to publish an update on progress throughout the project. NHS Choices will publish updates on funded projects twice a year.

9.3 Public Dividend Capital and Funding Considerations

Financial Information

The Department of Health (DH) capital funding for this initiative is only available to NHS Trusts and Foundation Trusts.

The capital funding will be made available as Public Dividend Capital (PDC). Funding can only be spent on items that score as capital expenditure in Trust accounts. The PDC funding to successful Trusts will be issued in line with the NHS Trust Development Authority Capital Regime and Investment Business Case Approvals Guidance for NHS Trusts (paragraphs 2.20 and 2.21): http://www.ntda.nhs.uk/. As funding for this initiative is strategic capital, the normal PDC rule that Trusts must exhaust their internal cash reserves prior to drawing PDC will be waived.

It is vital in order to meet HM Treasury rules that payments are not drawn down in advance of need. As the funding for projects may run over two financial years it is important that the profile of funding is identified at an early stage in the capital planning process and updated as necessary through the year in capital plans.

Capital funding is available in FY2013/14 and FY2014/15. Trusts must match the capital funding applied for from the Fund with a corresponding amount of Trust funding for the project. Whilst the central funding is capital the match funding can be a mixture of revenue and capital and can be matched over three years. Trusts are responsible for the revenue implications of the capital applied for and must be able to cover these costs. Revenue costs can be included as part of the match funding with the exception of depreciation charges.

All central capital funding must be spent by March 2015. If the project slips, there is no guarantee that central capital funding will be made available in subsequent years.

Discrete elements of large capital projects are eligible to apply for funding from the Safer Hospitals, Safer Wards Technology Fund. However, elements awarded capital from this fund must be operational by March 2015. Applicants should make it clear how the funding for the rest of the project is being secured. Examples of this type of project may include where a Trust is already implementing a Trust-wide enterprise level IDCR system and is bidding to the Fund for a discrete element of this, such as the implementation of ePrescribing within the Trust.

The funding is provided on the condition that the cash is held in the Trust's Citibank account until payments are made. Trusts should only draw down the cash as closely as possible to when the expenditure is incurred.

Capital Classification

For the purpose of this programme, capital is classified as work that generates a physical asset, with an expected life of more than one year. Capital resources may only be used to finance the delivery of what, under International Financial Reporting Standards (IFRS), are regarded as non-current assets (tangible, intangible or investments).

A key requirement of non-current assets is that there is a reasonable probability that they will deliver future economic benefit (i.e. valuable service) over more than one year (in most cases many years).

A non-current asset can be bought or enhanced with capital funds. Expenditure to maintain an asset at its current state is not normally regarded as capital expenditure and cannot be funded with DH capital.

A threshold value of £5,000 per item inclusive of VAT must generally be reached before expenditure can be funded with capital. Exceptions may be allowed, where the assets form part of a group of assets that aggregates to more than £5,000.

To qualify as a group, the assets must meet all of the following criteria:

- functionally interdependent (e.g. an equipment network)
- acquired at the same date and likely to be disposed of at about the same date
- under single managerial control
- each component asset of the group must cost £250 or more.

Only costs that are directly attributable to bringing a non-current asset into being and into appropriate condition for their intended use can be capitalised and funded with DH capital.

If selected to participate, applicants will be expected to:

- set a framework of principles and aims for their project
- identify a board member or senior officer as local project sponsor and champion
- comply with the project requirements including project reporting and data collection as this is developed between local organisations and the Technology Fund team (project monitoring and evaluation framework)
- ensure ongoing communication with the Technology Fund team to ensure that their project runs as smoothly as possible and to help resolve any issues that arise

- contribute to the programme evaluation and dissemination of lessons learnt activities
- contribute to ongoing activities to define and capture clinical digital maturity information about NHS organisations and care economies
- co-fund the audit and assurance element of fund governance and benefits realisation
- participate in ongoing activities to quality assure suppliers.

We are keen to hear about progress throughout the life of a Trust's project and are committed to sharing learning from the projects funded through this programme with the NHS England, Department of Health and any other interested parties. It is expected that all organisations which receive funding will share best practice and produce case studies to demonstrate how their project has brought benefits to patients and clinicians.

Once your project is complete we will ask for:

- a brief final report detailing what you have achieved, what you would have done differently
- a more detailed case study to aid other NHS Trusts undertaking similar projects in the future.

9.4 Public Sector Equality Duty

For information on the Equality Duty please refer to the Government Equalities Office at the link below: http://www.homeoffice.gov.uk/publications/equalities/equality-act-publications/equality-act-guidance/equality-duty?view=Binary

The public sector Equality Duty applies to any decision made, any policy developed, any programme implemented and any practices driving activity. It also applies to functions and services provided by others on behalf of a public body. In order to be compliant, applicants will need to demonstrate how they have paid due regard to the three aims of the Duty which are:

- eliminate unlawful discrimination, harassment and victimisation
- advance equality of opportunity between people who share a protected characteristic
- promote good relations between people who share a protected characteristic and those who do not.

The overall aim of the Duty is to make sure that public bodies take equality into account as part of their decision making process. What this means is that in decisions and activity there is a need to:

- remove or minimise disadvantages suffered by anyone with a protected characteristic
- take steps to meet the needs of people who share a protected characteristic where these are different from the needs of other people
- encourage people with a protected characteristic to participate in public life or other activities where their participation is low.

The Duty covers the following protected characteristics: age; disability; gender reassignment; pregnancy and maternity; race; religion or belief; sex, sexual orientation, marriage and civil partnership, (in respect of the requirement to have due regard to the need to eliminate discrimination) and carers 'by association' with people sharing some of the characteristics.

In order to demonstrate compliance with equalities legislation and, specifically, the public sector Equality Duty, you will need to provide any evidence you have that demonstrates the impact or potential impact your work may have on people sharing protected characteristics.

9.5 Expression of Interest Form

Only applications made online via the NHS England website will be accepted. This Word version of the form is included for the convenience of applicants but must not be submitted. The online form can be accessed at: http://www.england.nhs.uk/ourwork/tsd/sst/tech-fund/applying

The Safer Hospitals, Safer Wards Technology Fund Expression of Interest	
Applicant Name	State the organisation name for the project application. In order to be awarded funding, the applicant must be an eligible organisation as defined in the prospectus and must have lead responsibility for the project
Applicant Address	State the contact address for the organisation
Is this a joint application?	If so please give details of partner organisation(s)
Project Title	Provide the title by which the project is known

Key Project Contact Details	Name: Tel No: Address: Email:
Project Aim & Description	Provide a description of your project. Explain what you are seeking to achieve and the expected benefits for patients, clinicians and efficiency **(400 words maximum statement)**
Digital/Paperless Roadmap	Provide organisation's roadmap to move from paper to paper light to paperless. This should include an indication of the progression that an award of funding would make in terms of scope, scale or speed. **(400 words maximum statement)**
Project Delivery Approach	Provide an outline of the intended approach for delivering the project, confirming if the project is currently in flight **(400 words maximum statement)**
Sourcing Strategy	Provide an outline of the sourcing strategy and suppliers involved (if known) and the likely procurement approach and timescales **(400 words maximum statement)**
Supplier Partner Capability Assessment	Provide details on any delivery capability and capacity assessment that has been made regarding the envisaged supplier partner(s) involved **(400 words maximum statement)**
NHS VistA Solution	Confirm your interest in being involved in the development and adoption within your organisation of an NHS Open Source IDCR, 'NHS VistA', that would provide a core platform for digital care records. **(YES/NO)**

Strategic Alignment	Describe the fit of the project with the organisation's information and IT strategy and the current level of infrastructure and capability **(400 words maximum statement)**
Total Project Cost	Please state the total cost of the project (£k)
Total Amount of Funding Requested	Please state the total amount of capital funding requested in this application (£k)
Financial Breakdown	Provide a breakdown of total project costs by year, the profile of the costs split by capital/revenue. This should include the amount of capital sought from the fund per year and the amount of funding provided by the organisation (capital and revenue). Please indicate any known tolerances in the costs and funding model. Include any other funds that have been applied for (or are required for the project's viability) and the status of this funding.
Delivery in FY13/14	Please state if your project will begin to deliver and incur capital spend from the fund by March 2014 **(YES/NO)**
Is this a multiple application?	Please indicate if your organisation has made multiple applications to the fund and please rank your applications in priority order, (1st, 2nd, 3rd etc). This priority ranking may be considered if the fund is oversubscribed.
Medical Director Contact Details	Name: Tel No: Email:
Finance Director Contact Details	Name: Tel No: Email:

Director of Nursing Contact Details	Name: Tel No: Email:
Director of IT/ Informatics Contact Details (or equivalent)	Name: Tel No: Email:
Chief Executive Contact Details	Name: Tel No: Email:
Chair of the Board Contact Details	Name: Tel No: Email:
Date	

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First published in July 2013
Published to NHS England website, in electronic PDF format only.

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