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|  |
| **Clinical Ultrasound Electronic Solution**  **[Insert name of hospital]**  **Emergency Department** |
| |  |  | | --- | --- | | Prepared by: |  | | Prepared for: | Capital Expenditure (*update as relevant*) Committee | | Date: |  | | Version: |  | | Status: |  | |

# Business Case Template Document Control

### Document Information

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|  | Position |
| Document ID |  |
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### Document History

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### Document Review

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### Document Sign-off

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| Role | Name | Sign-off Date |
| *Project Manager* |  |  |
| *Senior Responsible Owner/ Project Executive* |  |  |

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Contents

[Business Case Template Document Control 1](#_Toc93937029)

[Document Information 1](#_Toc93937030)

[Document History 1](#_Toc93937031)

[Document Review 1](#_Toc93937032)

[Document Sign-off 1](#_Toc93937033)

[Abbreviations 3](#_Toc93937034)

[Purpose 4](#_Toc93937035)

[Strategic Case 4](#_Toc93937036)

[Strategic Context 5](#_Toc93937037)

[The Need for Investment 6](#_Toc93937038)

[The Case for Change 6](#_Toc93937039)

[Economic Case 7](#_Toc93937040)

[Critical Success Factors 7](#_Toc93937041)

[Identify Short-listed Options 8](#_Toc93937042)

[The Preferred Option 9](#_Toc93937043)

[Commercial Case 11](#_Toc93937044)

[Financial Case 12](#_Toc93937045)

[Management Case 13](#_Toc93937046)

[Next Steps 14](#_Toc93937047)

[References 15](#_Toc93937048)

[Appendix 1: Benefits Realisation Plan 16](#_Toc93937049)

[Benefit Summary 16](#_Toc93937050)

[Measure 1 16](#_Toc93937051)

[Appendix 2: Functional Requirements 18](#_Toc93937052)

# 

# Abbreviations

NPV - Net Present Value

ICT - Information & Communication Technology

ISG - Information Systems Group

PACS - Picture Archiving and Communication System

QIPS - Quality Improvement & Patient Safety

QU - Quality Assurance

PHI - Protected Health Information

EFAST - Extended Focused Assessment with Sonography for Trauma

AAA - Abdominal Aortic Aneurysm

Focused ECHO - Focused Cardiac Ultrasound

ED - Emergency Department

ICU - Intensive Care Unit

CMO - Chief Medical Officer

POE - Program of Execution

OpEx - Operating Expenses

IT - Information Technology

O&G - Obstetrics & Gynaecology

RFP - Request for Proposal

CEO - Chief Executive Officer

SQL - Structured Query Language

# Purpose

This business justification case seeks Capital Committee endorsement and CEO approval to invest up to **AMOUNT** in the **20xx/xx** financial year to purchase an electronic clinical ultrasound QA, credentialing and storage solution.

The investment’s impact on operating costs over its estimated 10-year life is **AMOUNT** for the service maintenance, support, licences, depreciation and capital charge. The Whole of Life Cost/NPV value of the project over 10 years is **AMOUNT.**

This initiative addresses clinical quality assurance issues, patient privacy risks and supports the continued accreditation of the **INSTITUTION** as a critical care training provider.

# Strategic Case

Clinical Ultrasound (aka point-of-care ultrasound) is defined as ultrasound performed and interpreted by a treating clinician on a portable machine. This is a critical skill for many healthcare practitioners and must be mastered with proper training, oversight and formal credentialing.

Varying degrees of ultrasound proficiency are mandated or strongly recommended as training requirements in many hospital specialities including Emergency Medicine, Critical Care, Respiratory Medicine, Cardiology, Obstetrics and Gynaecology, Ophthalmology, Renal, Rheumatology, Perinatal/Neonatal, Urology and Anaesthetics. Clinical ultrasound is in the curriculum of medical schools in approximately twenty countries and will be coming to New Zealand and Australia soon.

A recent survey showed an estimated **NUMBER** individual healthcare professionals across **INSTITUTION** are currently using clinical ultrasound to some degree. Numerous practitioners within **INSTITUTION**, from all healthcare professions, are using ultrasound in their daily practise.

Clinical Ultrasound is generally used in two ways:

1. Diagnostically: for rapid diagnosis of life-threatening conditions, to help differentiate the undifferentiated patient and to gauge response to treatment, but also in non-critical conditions to aid with diagnosis.
2. Procedurally: to ensure safe and effective invasive procedures.

Clinical ultrasound has been extensively studied and shown to provide the following benefits:

1. Increased patient safety
2. Increased patient satisfaction
3. Decreased emergency department length-of-stay
4. Decreased costs to healthcare systems

Though Clinical Ultrasound is a revolutionary technological advance in healthcare, it was recently listed by the ECRI institute as the #2 Health Technology Hazard for 2020 as “adoption is outpacing safeguards1.” There are a number of issues with the current situation:

**Inability to provide Quality Assurance (QA)**

* Missed critical findings
* Misinterpretation of normal scans
* Misinterpretation of procedural scans
* No formal image archiving therefore:
* no integration between diagnostic tools and patient’s electronic record
* no ability for supervisors to ‘over-read’ training or un-credentialed scans
* no ability for supervisors to provide technical feedback to practitioner scans
* unnecessary duplication of imaging by formal imaging services

**Inability to provide credentialing of individual practitioners**

* Clinical ultrasound is a procedure that requires formal credentialing *in* *each application* of *scanning* (Focused ECHO, EFAST, Abdominal Aorta Assessment, Lung, central line placement etc). This process necessitates a requisite number of logged, adequate scans and is nearly impossible without archiving and QA software.

**Inability to safeguard Protected Health Information (PHI)**

* Patient information currently stored on paper log sheets is not secure and often lost
* Images and PHI currently stored on thumb drive devices are not secure and could be lost
* Handheld devices upload images and PHI to a vendor’s cloud storage with the push of a button, bypassing hospital security and confidentiality safeguards.

**Loss of training accreditation without verifiable metrics and QA**

* Many specialties have strict ultrasound training mandates and must demonstrate robust ultrasound education. Trainees in these specialties must demonstrate ultrasound proficiency to progress. Failure of either will jeopardise training accreditation.
* Ultrasound has recently become a training requirement for Critical Care Medicine. To maintain accreditation with the College of Intensive Care Medicine supervisors need to demonstrate education and oversight of ultrasound images gained by their trainees.
* **Ultrasound has recently become a training requirement for Emergency Medicine**.

## Strategic Context

The scope of this project is to identify and implement an image archiving, quality assurance, credentialing and workflow electronic solution for clinical ultrasound.

Phase one, which this business case covers, will be to purchase the license for a platform for use at **INSTITUTION** and also licences for **5** departments (ED, ICU, Respiratory Medicine, General Medicine and Gynaecology (*update list as relevant*) at **INSTITUTION** who have an immediate need for this software. Phase two would be for individual services across the **INSTITUTION** to purchase their own license to use the software.

There are a number of strategic priorities that would be influenced by this initiative including:

* Improved quality, safety and experience of care:
* Clinicians at **INSTITUTION** will have access to archived ultrasound images and in the future this will be available to clinicians at **INSTITUTION**
* QA of scans will occur
* Formal credentialing will be possible
* Training accreditation will not be jeopardised
* Patient satisfaction and safety will increase
* Patient length of stay may decrease
* Cost saving:
  + decrease unnecessary formal imaging
  + decreased administration time required for matching images to electronic record
  + decreased administration time for completion and review of logbooks
* Best value for public health system resources as the recommended procurement process will allow us to select the solution that meets our needs while providing the most cost-effective solution.

Establishing an image archiving, quality assurance, credentialing and workflow electronic solution for clinical ultrasound would allow for scans to be reviewed, reported (if required) and stored. The results would be readily available throughout the patient journey so that decisions can be made quickly without repeating diagnostic procedures.

## The Need for Investment

The need for a single electronic solution has been raised by many services at **INSTITUTION.** Support for a solution has been agreed upon by clinicians and the CMOs from **INSTITUTION.**

This project relies heavily on ICT/ ISG to support its implementation and integration and therefore **INSTITUTION’s** ICT/IT GOVERNANCE approach is being taken. This approach will aid the negotiation process and maximise limited ICT/IT GOVERNANCE resources required to implement and integrate the preferred electronic solution.

Appendix 1 gives more information about the need for investment and the risks to patients if this is not implemented.

A facilitated workshop was held on **DATE** with key stakeholders (Clinical Ultrasound leads from ED, ICU, Respiratory Medicine, Gynaecology, General Medicine, PACS administration representative, ICT/IT GOVERNANCE representatives and the Clinical Director of QIPS) (*update as relevant*).

The group agreed that:

* An electronic solution was required in the immediate future
* A specification list should be drawn up for the product
* A proposal should be written and presented to the relevant capital expenditure committee.

The proposal was approved at the Capital Expenditure (*update as relevant*) committee meeting on **DATE**.

## The Case for Change

Establishing an image archiving, quality assurance, credentialing and workflow electronic solution for clinical ultrasound would allow for scans to be reviewed, reported (if required) and stored. Having no QA, credentialing or storage solution for clinical ultrasound results in a risk to patient safety (see Appendix 1)

|  |  |
| --- | --- |
| Investment Objective One | Establishing an image archiving, quality assurance and workflow electronic solution for clinical ultrasound |
| Existing Arrangements | No solution is in place at the present time and QA of clinical ultrasound images happens variably throughout the **INSTITUTION** |
| Business Needs | Patient harm is known to have occurred because clinical ultrasound images were not reviewed. |
| Potential Scope | Implementation in five key areas (see above) and future expansion to other services at … and **NUMBER** other **INSTITUTIONS** (not in scope at present time) |
| Potential Benefits | Ensures QA and storage of clinical ultrasound images hence reducing patient harm. |
| Potential Risks | Risk to patients. |
| Constraints and Dependencies | The lack of QA results in US images not being reviewed and may result in patient harm. |

|  |  |
| --- | --- |
| Investment Objective Two | Establishing a credentialing electronic solution for clinical ultrasound |
| Existing Arrangements | No solution is in place at the present time |
| Business Needs | Multiple departments (ED, ICU, O&G, Respiratory) must meet mandatory, documented ultrasound training requirements or risk losing accreditation. |
| Potential Scope | Implementation in five key areas at **INSTITUTION** and future expansion to other services at **INSTITUTION/ HEALTH SERVICE** (not in scope at present time) |
| Potential Benefits | Ensures ongoing training accreditation in ED, ICU, O&G, Respiratory. |
| Potential Risks | Loss of Training Accreditation will result in the loss of talented SMO workforce, difficulty in attracting qualified registrars and hence inferior care to patients. |
| Constraints and Dependencies | Lack of a credentialing electronic solution will result in loss of training accreditation for some departments and hence loss of training registrars and difficulty in providing high quality services. |

# Economic Case

## Critical Success Factors

In addition to the investment objectives, the following assessment criteria will be used for screening the options:

|  |  |
| --- | --- |
| Critical Success Factor (CsF) | *Broad Description* |
| CsF 1:  Strategic fit and business needs | * *Does the option provide an appropriate solution for service needs* |
| CsF 2:  Potential Value for Money (VfM) | * *Does the option deliver the required benefits (QA, image archiving) for the best value for money* * *Does the option provide ongoing training accreditation for best value for money* |
| CsF 3:  Potential achievability | * *Does the option allow clinical leads to perform QA, credentialing for US* * *Is the option easy to integrate into current systems* * *Is an appropriate solution that IT can easily oversee.* |
| CsF 4:  Supply-side capacity and capability | * *Are the appropriate products available?* * *Are appropriately skilled people available to implement and maintain the solution?* |
| CsF 5:  Potential affordability | *How well the option:*   * *Uses funds wisely to the benefit of patients* |

## Identify Short-listed Options

Within the potential scope of this proposal, the following long-list options for providing the identified services were identified by key stakeholders:

Option 1: status quo or do nothing (not recommended).  
Does not address underlying issues that result in a risk to patient safety: having no QA, credentialing or storage solution for clinical ultrasound. Ignores reality of significant current adoption of clinical ultrasound within the **INSTITUTION(s)**, which will grow exponentially in the coming years.

Option 2: Introduce the solution for INSTITUTION only (preferred option).  
Go to market for Request for Product, to identify the best solution that meets the needs of the **INSTITUTION**. Introduce the solution for five **INSTITUTION** services only, as no other services are currently in a position to utilise this product. Individual departments are then able to purchase the electronic solution at a time when they are in a position to implement. This option also provides us with the ability to select the most cost-effective solution.

Option 3: (‘Do More’).  
Go to market for request for Product, to identify the best solution that meets the needs of the **INSTITUTION**. Purchase platform for all **INSTITUTION** and introduce the solution in all services in all **INSTITUTION**.

**Table one:** Possible long-list options classified by the five dimensions of choice

|  |  |  |
| --- | --- | --- |
| Dimension | *Description* | Options within each Dimension |
| Scale, scope and location | *The electronic solution can be implemented in some/all services at* ***INSTITUTION(S)*** | * *none* * Platform at ***INSTITUTION***, software in services have an immediate need * Across all services with need at all ***INSTITUTION*** |
| Service solution | *An individual software package is required for each service on top of a core package. Therefore, the more services that the solution is implemented in, the increase in cost.* | * *none* * Core for ***INSTITUTION*** plus ***5*** services * Core for ***INSTITUTION*** plus all services that have need now and in future |
| Service delivery | *IT will be involved in implementing the solution. Requirement for Clinical Lead in US in the individual service in order to utilise the product* | * *none* * ***5*** clinical leads identified at ***INSTITUTION*** * ***5*** clinical leads identified at ***INSTITUTION*** |
| Implementation | *The clinicians in the services that require this electronics solution have been identified and require the product asap. IT have been engaged about product implementation but no set timeline yet developed.* | * None * Clinicians ready to implement, liaising with IT * Clinicians ready to implement, liaising with IT |
| Funding | *Capital Expenditure (update as relevant) funding but will be some ongoing OpEx costs every year.* | * *None* * *IT Capital Expenditure (update as relevant) and OpEx and costs for core and 5 service software licenses* * *IT Capital Expenditure (update as relevant) and OpEx and costs for core and multiple service software licenses* |

On the basis of the initial assessment of the long-list options (by dimension), the following short-listed options were selected for further economic analysis:

* Option one: status quo or do nothing
* Option two: Implement platform and in 5 services at **INSTITUTION** (preferred option)
* Option three: Implement across all services in **INSTITUTION**

## The Preferred Option

For the purposes of the analysis the following assumptions have been made….

|  |  |  |  |
| --- | --- | --- | --- |
|  | Option 1: Do Nothing | Option 2: Intermediate | Option 3: Expanded |
| Appraisal Period (years) | N/A |  |  |
| Capital Costs | N/A | **.416m** | **>1m** |
| Benefit criteria 1 Upgrade technology to allow quality assurance of images and hence enhance safety and minimise risks to patients. | Benefit not realised | Benefit realised | Benefit realised |
| Benefit criteria 2 Ensure ongoing training accreditation | Benefit not realised | Benefit realised | Benefit realised |
| Benefit criteria 3 Archiving of images and reduction of hospital resources. | Benefit not realised | Benefit realised | Benefit realised |
| CsF 1 | Not realised | Realised | Realised |
| CsF 2 | Not realised | Realised | Realised |
| CsF 3 | Not realised | Realised | Realised |
| CsF 4 | Not realised | Realised | Realised |
| CsF 5 | Not realised | Realised | Realised |
| Preferred option | Not preferred | **Preferred** | Not preferred |

The preferred option is 2 because it provides the best value for money and addresses the significant risks to patient safety that are present at the current time. The plan would be for other services to purchase the electronic product when they had appropriate support within the service in order to be able to effectively utilise all functionality. A designated Clinical Lead in Ultrasound in the service would be required for this to occur.

There is an immediate risk to patient safety which is not addressed by Option 1. Option 3 is the most expensive and would not be utilised appropriately by many services because of the lack of a designated Clinical Lead in Ultrasound.

# Commercial Case

The procurement strategy is to take this out to market for open tender. There is no provision for purchasing under any All of Government (AOG) (update as relevant) contracts.

The tender process will be openly advertised using the relevant jurisdiction’s website. The tender will be open for at least 18 working days. Once closed the submissions will be evaluated using a weighted attribute method. The evaluation team will be made up of clinical and ICT/IT GOVERNANCE subject matter experts. Depending on the number of responses the evaluation team may choose to create a shortlist of respondents who will then be invited to present their solution in person to the evaluation team.

The required services are a software package that enables the ultrasound images to be captured stored and archived. In addition to the software itself there will be ongoing support and maintenance costs.

The service risks could be apportioned between the organisation and supplier as follows

* Clear and concise requirements form both clinical and ICT/IT GOVERNANCE teams
* Clear and concise tender documents released to potential vendors from business owners and procurement
* Clear communication channels for potential vendors to ensure any queries are directed to the right people and answered as soon as possible
* Committed resources form ICT/IT GOVERNANCE, Clinical and procurements teams to ensure no delays to the procurement process

The proposed payment approach is an initial upfront Capital Expenditure (update as relevant) cost for the procurement process and implementation followed by ongoing OpEx for support and maintenance.

Specific contract terms include capacity to extend the solution out to other services. A standard syndication clause will be included to allow other services to join the contract if they choose too.

# Financial Case

Indicative costs based on quotes obtained from **VENDOR** for the project plus internal ICT/IT GOVERNANCE estimates for implementation, connectivity and project management and a 15% contingency is **AMOUNT.** These costs are subject to form market RFP and negotiation.

# Management Case

The proposed investment project is an integral part of safe and high-quality clinical ultrasound use.

Once the event that this investment proposal receives formal approval, the Procurement process will continue to be managed by the relevant working group under the auspices of Clinical Governance Board (update as relevant). Once the product is purchased the working group will disband and a clinical ultrasound committee formed, reporting to the Clinical Governance Board. This committee will oversee implementation of the product with Clinical Leads and provide ongoing governance of clinical ultrasound.

The Clinical Leads for Ultrasound in the five services identified will work with Procurement and the selected vendor to manage the training schedules, the risk associated with implementation and ensure the staff are well prepared for the introduction of new technology.

The RFP and the contract for purchase will include requirements for training and support to **INSTITUTION** during the implementation of the change.

The implementation of this project has been planned with the following milestones:

|  |  |
| --- | --- |
| Milestone | Date |
| Seek Capital Committee approval |  |
| RFP |  |
| Decision by working group on preferred product |  |
| Award vendor and initiate |  |
| Implementation |  |
| Go live |  |
| Project Closure & Benefits realisation |  |

|  |  |  |
| --- | --- | --- |
| Role | Name | Sign-off Date |
| Project Manager |  |  |
| Senior Responsible Owner |  |  |
| Sponsor |  |  |
| Project Closure will be completed by |  |  |
| Post implementation review will be completed by |  |  |
| Benefits will be monitored by |  |  |
| Benefits owners are |  |  |

|  |  |  |
| --- | --- | --- |
| **Checklist** | | |
| Has a Privacy Impact Assessment been made? | N/a | Result & Implication |
| Has a sufficient degree of engagement been made with functional experts? (cost impact of their involvement factored into the costings, milestone & delivery targets) | Yes | See Commercial section |
| Has the business unit management accountant/business service manager reviewed the financials/estimates? | No |  |
| Will this initiative require CEO signoff? | No |  |

# Next Steps

This business case seeks formal approval from capital committee to approach the market for services and progress the implementation of the preferred option two.

# References

1. ECRI Institute. Adoption of point-of-care ultrasound is outpacing safeguards. Hazard #2—2020 top 10 health technology hazards. Health Devices 2019 Sep 26.

Note: We acknowledge Dr Scott Bomann from Wellington, NZ and Dr Stuart Watkins from Gold Coast, QLD for their contributions to this document.

# Appendix 1: Benefits Realisation Plan

| Benefit Summary |  |
| --- | --- |
| Project Name | **Clinical Ultrasound Electronic Solution** |
| SRO |  |
| Alignment to Strategy | The project aims to improve patient safety by implementing an image archiving, quality assurance, credentialing and workflow electronic solution for clinical ultrasound. This aligns with organisational strategy as being innovative practise which will improve individual patient experience. |
| Benefit Number | Unique ID for the benefit. |
| Weighting |  |
| Benefit Description | Benefit 1: Upgrade technology to allow quality assurance of images and hence enhance safety and minimise risks to patients.  Benefit 2: Ensure ongoing training accreditation.  Benefit 3: Archiving of images and reduction of **INSTITUTION** resources |
| Benefit Owner |  |
| Benefit Recipients) | All clinical departments in **INSTITUTION** where USs are used. |

| Measure 1 |  | |
| --- | --- | --- |
| Description | Patient harm from lack of QA. | |
| Measure Owner |  | |
| Measure (include any calculation formulae) | Risk Exposures of patient harm from no QA of clinical ultrasound images. | |
| Tolerances | REs are not a reliable measure as they are completed voluntarily, but give an indication of the concern of staff around the issue. | |
| Baseline value, source and date | Explain how and when the current pre project value has been derived | |
| Target value for measures | The future state when the benefits have been realised. Include what type of measure this is e.g. $ Value, Volume, % Increase | |
| Assumptions | That all patient harm from lack of QA of US images is documented. | |
| Specific actions required to achieve this measure | Patient harm from lack of QA of US images available through Qlik/Square. | |
| Dates targets will be met | Planned Dates | % of End Value |
|  | 6 months after Project Closure | 100% |

# Appendix 2: Functional Requirements

**Priority of Functional Requirements**

The functional requirements in this document are divided into the following categories:

|  |  |  |
| --- | --- | --- |
| **Value** | **Rating** | **Description** |
| 1 | Critical | This requirement is critical to the success of the project and will not proceed without. |
| 2 | High | This requirement is high priority however the project may be implemented at a bare minimum without this requirement. |
| 3 | Medium | This requirement is important as it provides value, however the project may proceed without it. |
| 4 | Low | This is a low priority requirement, or a “nice to have” feature, if time and cost allow. |
| 5 | Future | This requirement is out of scope and has been included here for a possible future release. |

**Functional Requirements**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Requirement Type** | **Requirement** | **Priority** |
| **FR 1** | Security | User Active Directory (AD) authentication and/or system administrator to readily manage user accounts and security profiles that segment required role-based profiles. | Critical |
| **FR 2** | Workflow | Solution is user-friendly, with intuitive user interface which maximises automation of administrative processes.  Ability to consume from HL7 Feed and/or user to readily input;   * patient URN/MRN/NHI * patient name, DOB and contact details * appointment details (time, date, facility, clinic/room/bed) * Location (body part) of ultrasound | Critical |
| **FR 3** | Solution Maturity | The solution will be on-premise hosted with the server infrastructure leveraging the ITS shared VMware ESX environments and SQL 2016 cluster (*update as relevant*). |  |
| **FR 4** | Data Storage | The solution must be able to support short term image storage for annual growing storage, currently **AMOUNT** TB for Emergency Department and **AMOUNT** TB for **INSTITUTION**. |  |
| **FR 5** | Usability | The solution must be a POCUS workflow software solution that securely collects studies from all networked POCUS systems into a centralised location for peer review, reviewing for quality and accuracy, accreditation, and eventual archival to long term storage.  It must allow for appropriate staff to select images for patient record storage and archiving.  It must be able to provide the ability (dashboard) for a supervisor to review images, input into a logbook and provide feedback to practitioners as they move through their competency levels (credentialing). |  |

**Non-Functional Requirements**

|  |  |  |
| --- | --- | --- |
| **ID** | **Requirement Type** | **Requirement** |
| **NF1** | System Access | The system username and password policy **must** be compliant with **INSTITUTION** policies and standards.  Role based access to the system must comply with the **LOCAL STANDARDS**.  The system administrator must have the ability to readily add and remove users with required access. |
| **NF2** | Network Security | The Supplier **should** have established processes to periodically review and update current network security design, configuration, vulnerability (including penetration testing) and integrity checking to ensure that network level and user security controls are appropriate and effective. |
| **NF3** | Software | The solution **must** be Windows 10 compliant (*update as relevant*).  It must be compliant with **INSTITUTION** enterprise architecture guidelines. |
| **NF4** | Solution Type | **Support and maintenance of the solution is a requirement**. Supplier to inform whether the solution is available as either a cloud hosted and/or as an on-premise vendor supported solution and applicable pricing models. |
| **NF5** | Software  Licensing | The solution **must** include all licensing (and whether perpetual or subscription based) and critical functionality required to provide a fit for purpose solution for nominated administrative and clinical users. |
| **NF6** | Solution Maturity | The solution **must** have already been built, tested, and successfully deployed to an organisation of a similar size/complexity and/or be deployed in a large health-based environment.  Supporting references must be supplied. Supplier to demonstrate best practice processes to communicate and action system issues resolution, with planned testing and release management, which minimises the risk to contained data (and its integrity and security). |
| **NF7** | Operator Audit Logs | The Supplier **must** have auditable events for Administrators: log in, log out, file access. Administrators must not have modify or delete access to audit logs. |
| **NF8** | Usability | The solution **must** be easy to learn and use. The user interface **should** be intuitive, consistent and appropriate to the user's ability. Training help guides should be available both for the implementation and on-line. |
| **NF9** | Availability/Support | The solution **must** be accessible 24/7 x 365 days. Online support must be available during peak inpatient periods, with telephone support accessible to efficiently resolve technical issues during business hours.  **INSTITUTION** will provide and support Windows 2016 server as per supplier requirements. All other components and support **must** be provided by the supplier. |
| **NF10** | Enterprise Reporting | The solution **should** be able to present database information to the **INSTITUTION** enterprise data visualisation application (such as Qlik sense or other SQL database). |
| **NF11** | Interoperability | The solution **must** support HL7 patient demographic interface protocol or have a robust API platform which can consume patient demographic information identified by a unique reference number (URN) filtered by hospital facility codes. |
| **NF12** | Solution Performance | The solution **must** be responsive to users in real time on the current and future Windows Managed Operating Environment ideally from an approved browser (MS IE or Google Chrome) over business grade ethernet or WIFI connections. Reporting similarly must be real-time responsive through well-structured SQL queries, information and table indexing and optimal organisation. |
| **NF13** | Scalability /Relevance | The Supplier **should** have a roadmap for the solution to ensure that it requires minimal maintenance, and that it remains scalable to HHS wide and relevant to the stakeholders and users over the life of the product. |