Salisbury NHS
NHS Foundation Trust

Ophthalmology Electronic Medical Record
Output Based Specification

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SECTION 1 INTRODUCTION

1.1 Scope of Document

1.1.1 This paper documents the requirements for an Ophthalmology Electronic Medical Records (EMR) System for Salisbury NHS Foundation Trust (the 'Trust').

1.1.2 The timetable for the procurement can be found in § 9.1

1.1.3 The procurement will follow the statutory requirements for NHS procurements. The anticipated value of the contract is such that it is not subject to OJEU notice.

1.1.4 All tenders will be judged using the "Most Economically Advantageous Tender" method. I.E. Factors other than or in addition to price, such as quality, technical merit and running costs will be taken into account.

1.2 Purpose and Content of the Output Based Specification

1.2.1 The Output Based Specification describes the output requirements for the planned investment in software for an Ophthalmology EMR and outlines the constraints that apply to the proposed solution. It also includes information pertinent to the procurement and the management of the contract, details of the procurement process and instructions to bidding suppliers.

1.2.2 The Output Based Specification will be used to:

(a) Ensure potential suppliers have a clear understanding of the system requirements and expected benefits from the proposed investment.

(b) Provide the basis for the draft contract schedules regarding output requirements that will be inserted into the draft contracts with short-listed suppliers.

(c) Provide a baseline against which shortlisted suppliers can be evaluated.

1.3 Disclaimers and Caveats

1.3.1 The information included in this document is deemed to be correct at the time of print. Any changes to the specification will be notified as appropriate.

1.3.2 The Trust will not accept any liability for costs or expenses borne by prospective participants in responding to this OBS.

1.4 Confidentiality

1.4.1 The information contained in this Output Based Specification is issued in confidence and must only be used for the purposes of this procurement.

1.4.2 The Trust will treat any information provided by participants responding to this Output Based Specification in confidence, with the exception of any information it is obliged to share under the Freedom of Information Act or Environmental Information Regulations 2004.

1.4.3 The successful supplier will be asked to sign a Mutual Confidentiality agreement upon award of contract.

SECTION 2 BACKGROUND TO THE REQUIREMENT

2.1 Summary of the Requirement

2.1.1 Salisbury NHS Foundation Trust provides a wide range of clinical care, including general acute and emergency services to around 300,000 people across Wiltshire, Dorset and Hampshire. It also provides specialist burns, plastic surgery, cleft lip and palate, spinal, genetics and rehabilitation services to a much wider population of more than three million people across the south west of England. The Trust became a Foundation Trust on 1st June 2006.

2.1.2 The main outpatient centre for Ophthalmology within the Trust is Salisbury District Hospital, with peripheral clinics at Ringwood Medical Centre, Warminster Community Hospital and Westminster Memorial Hospital.

2.1.3 The Trust has approximately 4,000 staff and 470 beds.

2.1.4 The Trust is seeking to procure an Ophthalmology Electronic Medical Records (EMR) System. The objective of the system is to use Information Technology to improve the service offered by the Ophthalmology Department and enable better monitoring and reporting of clinical outcomes.

2.1.5 The system must provide specialised support for all of the following ophthalmic subspecialties:

(a) Cataracts;

(b) Medical Retina

(c) Diabetic Retinopathy;

(d) Glaucoma;

(e) Paediatric / strabismus;

(f) Oculoplastics;

(g) Corneal.

2.1.6 The scope of the project is as follows:

(a) Procure and implement an automated system for recording:

- patient demographics;
- pre-operative cataract details;
- visual acuity figures;
- co-morbidity before surgery;

- operation details (including Events during surgery & Events related to anaesthesia);
- Events recorded within 48 hours of surgery;
- Complications at three months after surgery;
- New ocular co-morbidity discovered after surgery.

(b) Establish documented procedures for operating such a system.

(c) Train relevant staff in the use of the system, including some 'system champions' who will take responsibility for training and supporting staff in their area.

(d) Enable Salisbury NHS Foundation Trust to develop a sense of accountability and ownership of the system, and the data contained therein, across the complete range of medical, nursing and admin staff involved in the treatment of ophthalmic patients.

(e) Provide a variety of outputs from the system e.g. documents, clinical activity, outcome reports and patient information leaflets. These will be used to achieve improved quality of care and productivity.

2.2 Strategic Context

2.2.1 The department now wishes to extend its use of electronic records across the ophthalmology service. The aim is to combine information from all subspecialties and eliminate the need for paper reports and individual platforms, enabling the clinicians to utilise a single login to access all information and images relevant to the patient. The timescale for the wholesale adoption of electronic working in the eye department is 2 years.

2.2.2 Management of diabetic retinopathy forms a large part of the workload in Ophthalmology. The new system must allow clinicians to view images taken by the Salisbury & North Hampshire Diabetic Eye Screening Programme simultaneously with any images produced by the Ophthalmology department.

2.3 Requirement scope

2.3.1 Users

The Trust employs 5 consultant Ophthalmologists and 2 Associate Specialists. The system must be available to all users of any grade in the Ophthalmology department and theatres up to a maximum of 30 concurrent users.

2.3.2 Workstations

The immediate requirement is that the system must support 30 workstations in concurrent use and be scalable to support additional workstations. These may be desktop PCs at fixed locations or laptop PCs moved between sites as required.

Workstations are connected to the Trust LAN. Outreach clinics are connected via Aruba devices or via the N3 network.

2.3.3 System Coverage (Sites)

It is intended that the system will be used at the following sites:

1. Salisbury District Hospital
2. Ringwood Medical Centre
3. Warminster Community Hospital
4. Westminster Memorial Hospital

2.3.4 Supporting Community and Outreach Services

The full range of system functionality and services should be available at supporting outreach locations.

The Trust is very interested in providing services to the wider community. Comments would be welcomed from suppliers illustrating how your system can support mobile clinics?

2.3.5 Activity Volumes

The ophthalmology service hosts approximately 25,000 outpatient visits per year.

The following procedures are conducted each year in clinic:

- 2,500 intravitreal injections
- 100 argon laser
- 200 SLT and YAG
- Around 300 minor procedures

The following procedures are conducted each year in theatre:

- 1,300 cataract procedures
- 60 trabeculectoies
- 60 strabismus procedures
- 300 Oculoplastics procedures

2.3.6 System Coverage (Clinical Scope)

2.3.6.1 The system will cover the requirements of the following ophthalmic subspecialties:

- Cataract
- Medical retina
- Glaucoma
- Paediatric / strabismus
- Oculoplastics
- Corneal
- Eye Casualty
- Diabetic Retinopathy

2.3.6.2 In addition, the system will interface with:

- The Trust's [1]PAS System via the Trust's Mirth HL7 integration engine.
- Zeiss IOL Masters (machines to measure eye length and recommend strength of

[1] currently iSoft Patient Manager migrating to CSC Lorenzo circa Q4 2016

intraocular lens implants)
- Zeiss Humphrey Visual Field Analysers
- Zeiss FORUM for image management
- The Salisbury & North Hampshire Diabetic Eye Screening Programme management system, Digital Healthcare OptoMize

2.3.6.3 Suppliers should bear in mind that although their abilities in relation to providing the basic system are the Trust's first priority, their potential to provide an extendable system for all ophthalmology work will also be evaluated when making a purchasing decision.

2.4 Technical Environment

2.4.1 PC Workstations

2.4.1.1 The Trust is currently upgrading its desktop fleet to Windows 7. The desktop specification varies depending on age but all are Windows 7 compatible.

2.4.2 Server Environment

2.4.2.1 The Trust has embraced virtual server technology as its preferred hosting environment.

2.4.2.2 Microsoft Windows Server 2008 R2 Standard is the Trust's preferred operating system.

2.4.2.3 Microsoft SQL Server 2008 R2 is the Trust's preferred database technology.

2.4.3 Local Area Network (LAN)

2.4.3.1 The Salisbury Local Area Network (LAN) covers all Ophthalmology sites. Outreach clinics are connected via Aruba devices or via the N3 network.

2.4.3.2 A switched 100 Mbs Ethernet connection is available at all endpoints.

2.4.4 Remote Access

2.4.4.1 The Trust currently has 2 preferred methods to support remote access for suppliers to maintain their systems. The most common access method is via an implementation of Microsoft Universal Gateway. The Trust also supports N3 access for suppliers that meet the necessary criteria. Suppliers must state how their solution will be remotely supported.

2.4.5 Related IT Systems

2.4.6 The Trust uses the Zeiss FORUM ophthalmic imaging system, which collates image data from various ophthalmic imaging devices including the IOL Master, the Zeiss Humphrey Visual Field Analyser, and optical coherence tomography data.

2.4.6.1 The Salisbury & North Hampshire Diabetic Eye Screening Programme service is run from Salisbury District Hospital using Digital Healthcare OptoMize software. The service is self-contained until a referral is indicated, upon which the patient enters the acute pathway.

2.5 Essential Features of Systems and Services to be provided

This section provides some of the background to the Trust's Ophthalmology requirements and explains the drivers behind the system. These have been further developed in data item and output lists (i.e. documentation/printed reports). The requirements stated in this document provide a structure on which Suppliers can base their proposals.

2.5.1 Approach to Detailed Functional Requirements

Suppliers will recognise that this specification will primarily seek to identify data required to be collected and output from the system, but it is inappropriate to specify in detail every functional requirement relating to every element of the system to be supplied.

2.5.2 Flexibility of Application Software

2.5.2.1 Suppliers should explain how the Trust's investment in the system will not be lost when new versions of the product are introduced.

2.5.2.2 The above requirement for flexibility is not to be confused with the Supplier's responsibilities for enhancing and updating applications etc.

2.5.3 Customising Applications Software

The Trust recognises that Suppliers are likely to base their proposals on off-the-shelf application software, and indeed encourages such an approach for reasons of cost-effectiveness, reduced risk etc. This raises the issue of customisation to our particular circumstances and needs. We recognise that users are concerned that all data items that are important to them are recorded and that such data can be displayed and/or acted upon in a suitable way and/or contained in suitable reports.

2.5.4 Definition of Operational Procedures

It is recognised that Suppliers are best placed to advise how their system can be used to best effect. The Trust confirms that it seeks a long term partnership with their Ophthalmology EMR supplier and that a readiness to review processes in order to harmonise them with the new system is implicit.

Whilst systems themselves must be focused on supporting operational processes in line with clinical working practice, Suppliers can be assured that:

(a) clinicians accept that seeking to merely computerise existing working practices can fail to realise the benefits of electronic working,

(b) they are prepared to review and where necessary revise the way things are currently done if there are clear benefits to be accrued,

(c) It is accepted that once procedures have been agreed then staff have to adhere to them; there can be no opting out.

2.5.5 Benefits Summary

The success of the system will be evaluated by reference to a variety of measurable proposed

benefits. Appropriate benefits will be quantified and where appropriate, monetary values associated with them.

(a) Provision of, and improved access to information

- previous patient visit data,
- demographic data from the PAS,
- graphical images from optical equipment,
- eye measurement data e.g. IOP, retinal thickness, etc.

(b) accurate and timely recording of diagnosis and procedure codes,

(c) reduced expenditure on paper records following patients through the ophthalmology speciality,

(d) improved speed and accuracy of communication with GPs and optometrists,

(e) centralised access to a variety of patient documentation to ensure a more comprehensive package of care, e.g. discharge letters, paper copies of all data recorded on system - invaluable for patients treated in other specialties,

(f) the ability to select patients for audit without having to acquire lists from other hospital systems.

SECTION 3 CATEGORISATION OF REQUIREMENTS

3.1.1 Requirements for each of the three services are divided into 'functional requirements', which specify the functionality required from the Ophthalmology EMR, and 'constraints', which specify restrictions on the ways in which that functionality may be obtained.

3.1.2 Functional requirements are given in Section 5, while constraints are listed in Section 6.

3.1.3 Section 7 contains requirements for deliverables other than software or hardware, and Section 8 lists standards with which solutions must conform.

3.1.4 The following terminology is used in requirements throughout this document:

- The word 'must' indicates a primary requirement, i.e. a requirement which the Trust considers to be particularly important and which may (but will not necessarily) be treated as a mandatory requirement which a supplier must be capable of satisfying. Imperative phrases which are underlined, such as 'are requested to', should be read as must.

- The word 'should' indicates a secondary requirement, i.e. a requirement which the Trust considers at the outset to be of lesser importance, and which may (but will not necessarily) end up being treated as non-mandatory.

SECTION 4 SUMMARY OF THE PROCUREMENT

4.1 Objectives of the Procurement

4.1.1 The contract will be awarded on the basis of replies to the output-based specification offering the most economically advantageous tender balanced against the lowest overall risk. Factors other than or in addition to price, such as quality, technical merit and running costs will be taken into account.

4.2 Summary of the Expected Benefits from the Investment

4.2.1 Clinical benefits are expected to be:

- facilitate pre-operative operation assessment
- improve accuracy in recording pre-assessment measurements
- improve access to clinical notes, particularly for patients being treated at short notice
- enable cross-checking of notes against the ocular prescription on day of operation
- improve the consenting process; faster recording and reduced duplication
- permit easier access to medical history captured since installation of the system
- make possible storage of eye images and other electronic diagnostic data (retinal screening) alongside the patient's demographic details
- facilitate better waiting list comments leading to easier correction of problems and improvement of access times
- generate summary reports of medical history
- provide links between systems allowing easy access to additional patient information (for example, access to retinal screening history from fluorescein angiography clinic)
- improve the recording and collation of waiting list comments, allowing better patient management
- record comprehensive audit trails for pre-assessment and surgery
- provide a printed copy of clinical information (to be added to paper notes where required).

4.2.2 Management benefits are expected to be:

- reduce and eventually eliminate the use of paper clinical notes in ophthalmology clinics and theatres
- improve throughput during pre-assessment sessions
- vastly improve second-eye processing
- improve efficiency for pre-op ward rounds
- provide outcome data per clinician to demonstrate success rates
- improve waiting time data for in-patients and out-patients
- facilitate reporting of demographic and epidemiological data
- record periods of deferral & suspension
- cross-reference to PAS information using NHS number / hospital number
- improve activity data for attendance, operations, cancellations, non-attendances
- produce automatic coding and letters following discharge
- provide richer information relating to bookings and admissions.

4.3 Summary of the Scope and Procurement

4.3.1 The scope of the procurement is an integrated Electronic Medical Record which can be used to record clinical and surgical encounters with any ophthalmology patient. The data must be recorded in a structured way, allowing subsequent audit.

4.3.2 The Trust is concerned that the chosen system, although limited in scope, will maintain and enhance its reputation as a centre of excellence. Consequently the Trust is looking beyond its immediate needs for a Supplier that can demonstrate:

- a track record of supplying IT solutions to the healthcare marketplace
- commitment to developing software that covers all sub-specialities of Ophthalmology
- support for linking with other systems such as the Trust's ophthalmic imaging system and potential future systems offering document management.

4.3.3 It is important that the system has a proven track record of being used across multiple ophthalmic subspecialties in NHS Trusts of a similar size to the Trust. Suppliers with modular systems must specify which system modules are currently in use by other customers.

4.3.4 Suppliers must state if they are willing to offer managed service solutions based on the provision of the total Ophthalmology EMR including all supporting hardware and software and systems support up to point of access to the Trust's staff that would actually operate the application themselves.

4.3.5 Suppliers must give details of similar services using the same application(s) which they already provide.

4.3.6 Suppliers must be willing to act as prime contractor for the management of all services provided under this arrangement.

4.3.7 A detailed contract and service level agreement based on NHS Standard Terms and Conditions must be entered into between the Supplier and the Trust.

4.3.8 Suppliers must be responsible for all aspects of maintenance of all of the software listed in the service level agreement.

SECTION 5 FUNCTIONAL REQUIREMENTS

5.1 Introduction

This section gives details of the requirements specific to interfaces with existing systems and to the Ophthalmology subspecialties.

5.2 Integration with Existing Systems

The product must be able to be integrated with or interfaced to existing IT systems detailed below as seamlessly as possible. Where feasible, this should be through the use of current healthcare and IT standards such as HL7, a priority being to minimise the burden on the Trust in creating and maintaining new interfaces.

5.2.1 Patient Administration System

The Patient Administration System (PAS) performs a number of administrative functions, including the storage of patient demographic data. The system must integrate with or interface to the current PAS via the Trust's Mirth integration engine.

5.2.1.1 The PAS holds a unique PAS (Patient Administration System) number for a person, with a case-note number if they have been a hospital patient. The nationally specified identifier is the

NHS Number, but practice has shown that this is not absolutely reliable for a number of reasons. Therefore, the Ophthalmology EMR must be capable of identifying a patient through any of the identifier formats used by the Trust.

5.2.1.2 The system must support all Patient Identifier types used within the Trust.

5.2.1.3 All new registrations to the system must come from the Trust PAS.

5.2.1.4 It is expected that there are duplicate records within the PAS system. Suppliers must indicate how their system will handle this, in a manner that allows Ophthalmology users to quickly and easily identify the patient record they require with the maximum of accuracy.

5.2.1.5 The PAS system holds details of patient appointments. Suppliers should provide an interface with the PAS so that forthcoming patient appointments are displayed within the solution without the need to refer to a separate patient appointment list.

5.2.1.6 The system is primarily required for the recording of clinical data, for example treatments, visual acuity measurements, results of tests. The Data Management System must support the recording of these data.

5.2.2 Zeiss IOL Master

5.2.2.1 The system must interface with the Trust's Zeiss IOL Master Biometry machine.

5.2.2.2 The interface with the biometry machine must allow all biometry data to be transferred automatically into the system without the need to re-key measurements from the IOL Master.

5.2.3 Zeiss Humphrey Visual Fields Analysers

5.2.3.1 The Trust owns several Humphrey Visual Field Analysers. The system must interface with all Humphrey Visual Fields Analysers.

5.2.3.2 Before Zeiss HFA output data is associated with stored demographics on the Ophthalmology EMR, appropriate data comparisons must be made to preclude incorrectly associating data with the wrong patient record. At a minimum the following data items must be compared.

Forename
Surname
Sex
Date of Birth
PAS number - key field.

5.2.3.3 Any data that fails these comparisons must be held in a reconciliation or error queue. This will allow selective review of error logs and deletion once appropriate action has been taken.

5.2.3.4 It must be possible to re-submit a record that has failed and been included in the error log after amendment on either of the two systems. This facility relies upon the ability to select individual items for re-submission.

5.2.4 Zeiss FORUM

5.2.4.1 The Trust uses Zeiss FORUM for the management of ophthalmic images. The system must interface with Zeiss FORUM so that ophthalmic images can be viewed alongside clinical data, and so that users of the system are made aware of images captured into FORUM.

5.2.5 Digital Healthcare OptoMize

The system must support seamless management of referrals from the Salisbury & North Hampshire Diabetic Eye Screening Programme (which are managed through OptoMize), and must report any patient interaction whilst under Ophthalmology care to the Diabetic Eye Screening service. In addition, the Ophthalmology EMR should be capable of displaying retinal images captured by the Digital Healthcare OptoMize diabetic retinopathy screening system where these have been stored against a patient's identifier.

5.3 Procedure/Diagnosis Coding

5.3.1 Overview

5.3.1.1 Within the current climate of clinical governance the importance of accurate and timely coding information is paramount. Suppliers must demonstrate how this will be incorporated into their system.

5.3.1.2 The Trust currently supports modified ICD (international classification of diseases) coding. At present the following types of clinical activity is clinically coded:

- Inpatient activity
- Waiting list activity
- Some outpatient activity.

5.3.1.3 It is likely that the need to code outpatient activity will grow and will become a requirement for most, if not all, outpatient activity.

5.3.2 Specific Requirements

5.3.2.1 The system must allow patient processes to be coded using ICD-10 (international classification of diseases) and OPCS4 or SNOMED CT (Systematized Nomenclature of Medicine Clinical Terms), codes. Full mapping between the ICD and SNOMED CT is required to conform to Department of Health requirements.

5.3.2.2 To support the care pathways approach the solution must support the collection and coding of a working diagnosis. There should be no restriction on the number of diagnostic or procedure codes that can be entered on the system per visit.

5.3.2.3 The system must support the production of a range of operational reports identifying un-coded episodes. These reports should support user definable parameters.

5.3.2.4 The system must allow automatic lookup from ICD/NACS coding tables and references.

5.3.2.5 The system must support retrospective recording of incomplete episodes.

5.4 Reporting and Clinical Audit

5.4.1.1 The system must provide a range of clinical reports and audits to assist with service evaluation and quality measurement. A range of relevant reports and audits must be available as part of the core system. It will not be sufficient for the system just to provide a reporting engine allowing users to create their own reports.

5.4.1.2 Suppliers must list the clinical reports and audits that are available within the system and provide a sample of report outputs.

5.4.1.3 The system must also provide a facility for users to define their own reports.

SECTION 6 CONSTRAINTS

6.1 Hardware and Interfaces

6.1.1 Availability

6.1.1.1 The Ophthalmology speciality operates 24/7, although the majority of the activity on the system is expected to occur between 8:30am and 5:30pm.The system will therefore need to be available with minimal interruption.

6.1.1.2 Suppliers must give estimates of scheduled down-time including the time taken to perform routine housekeeping and planned preventative maintenance. They must indicate which tasks are to be performed during the normal working day (assuming that these are to include frequently performed functions, i.e. daily system back-up), whether the system will accommodate routine work during the performance of these tasks and, if not, for how long it will be unavailable.

6.1.2 Infrastructure

6.1.2.1 The System must support industry standard internet and intranet protocols, network hardware and structured cabling. It must be accessible via networking on LAN, WAN and remote dial-up connections.

6.1.2.2 Suppliers must indicate the specification of the server required, so that the response time from a PC for interactive jobs does not exceed 2 seconds in 95% of program loads (i.e. from the time that a function is requested until the application is ready to receive user input). Suppliers must indicate which tasks are likely to affect the response times adversely. The system must be capable of measuring and recording all such performance criteria.

6.1.2.3 System performance will be assessed through performance benchmarks. Suppliers must provide details of any benchmark specification and the result of any benchmark exercises.

6.1.2.4 Suppliers must state the minimum server environment (CPU cores, RAM, O/S etc.) required to support the concurrent user base outlined in §2.3

6.1.2.5 Suppliers must state if their server solution is hostable in a virtual environment.

6.1.3 End-user Hardware

6.1.3.1 The end-user interface for the Ophthalmology EMR must be PC based. Suppliers must also specify how their system might work using different technologies.

6.1.3.2 Depending on circumstances the workstation might physically comprise a desktop PC or a portable PC (laptop or tablet). Suppliers must specify realistic minimum as well as optimum hardware and software workstation standards. Suppliers must specify the requirements for the platform installation, and train local personnel to perform the installation including connection to the Local Area Network.

6.1.3.3 Suppliers must state the method of client access e.g. browser; client server.

6.2 Software and Software Tools

6.2.1 Application and Operating System

6.2.1.1 The Trust's current preferred server environment is Microsoft Windows Server 2008 R2 Standard and Microsoft SQL Server 2008 R2. Suppliers must state that their solution is compatible and supportable within the Trust's current preferred environment.

6.2.1.2 Suppliers must state how long they are prepared to support their solution within the Trust's preferred environment before support is no longer available.

6.2.1.3 Suppliers must state if the Trust's preferred environment will inhibit the use of any current or future planned features or functionality.

6.2.1.4 The Trust recognises that at some future point in time it will be necessary to migrate to newer versions of operating systems and databases. Suppliers must provide their roadmap to illustrate at which point in time they plan to adopt newer versions of operating systems and databases.

6.2.1.5 The client application must operate under Microsoft Windows 7 using a Graphical User Interface (GUI).

6.2.1.6 Through the PC workstation, clinicians will be able to view, insert and manipulate patient-related data. All information on the patient available within the system must be accessible to suitably authorised users.

6.2.1.7 The workstation must perform in such a way that it does not impose time overheads on the clinical process. Screens should be grouped to assist in the most efficient use of the system.

6.2.1.8 The workstation must perform in such a way that it does not hold up the clinical process due to the absence of data, especially mandatory data. When mandatory data is not available the system should write details to a reconciliation log for administrative attention later.

6.2.1.9 Context sensitive help should be available within all parts of the application, as both reactive messages ('balloon help' or similar to indicate a data entry problem or a next step) and when requested by the user (by selecting a help option from a menu or pressing 'F1' or similar). Notation/language used in online help functions must be non-technical, written in plain English, and appropriate to a typical inexperienced system user.

6.2.1.10 The system must be able to support rapid, on demand reporting without affecting the response times of either data input or the retrieval of information. There must be a spooling

facility provided within the application, or an alternative means of easily administering output files.

6.2.1.11 Operational users must be prompted by the system to send and/or print documents appropriate to the current process e.g. letter production. The documents must be to modern desk-top publishing standards. Any letters produced by the system must be to Trust standards for letterheads (including the Trust's branding) and layouts. This includes correspondence sent electronically, for example via Keystone to GPs and via email to patients.

6.2.1.12 A fundamental feature of the application software should be its flexibility after implementation. In particular it should be possible for System Administrators to amend pull down menus and reference tables. This requirement for flexibility is not to be confused with the Supplier's responsibilities for enhancing and updating the system.

6.2.1.13 In order to be compatible with legacy systems, the solution must allow the system to import and export data in various formats including TIFF, PDF and JPEG images.

6.3 Security

6.3.1 Access to the software must be by password control. Each user must be identified to the system by a unique identifier (Windows network username), and his or her access to the system will be granted in accordance with a particular user profile. Preference will be given to systems that use Microsoft Active Directory (AD) to manage user access.

6.3.2 In the absence of an AD interface, the system must provide a facility for users to change their own passwords as and when they wish.

6.3.3 In the absence of an AD interface, the system must limit the number of attempted login failures, providing an intruder detection/lockout facility.

6.3.4 The client system must not initiate any activities before the user has been authenticated.

6.3.5 A user's access privileges must be associated with a role based security model; i.e. the user will not have to enter multiple passwords to access different modules of the system hosted on the same computer.

6.3.6 All security / role based functions must be controllable by a system administrator.

6.3.7 The use of user profiles within the system must enable the system administrator to restrict the access of individual users to particular menu and field functions.

6.3.8 The system should automatically logout users after a user-defined period of inactivity without affecting system integrity, i.e. unsaved work must not be lost.

6.3.9 In the event of a system failure, it must be possible to perform a disaster recovery procedure capable of rapid restoration to the point of failure, with no loss of data.

6.3.10 Suppliers must state which data sets are encrypted and the encryption method and strength.

6.4 Data Validation and Integrity

6.4.1 The solution must be such that once a patient's details have been entered, it is not necessary to re-type them, which would risk misidentification of the patient.

6.4.2 Data must be validated at the time of entry and data errors must be handled in a user-friendly way which ensures data integrity without interrupting clinical procedures. For example, a system may display a meaningful error message where a user has failed to complete a required field, or keep a resolution log where certain data are not available at the time of contact with a patient.

6.4.3 The software must validate user input by using either/or check digits, range and limit checks, serial number checks, and data format and compatibility checks.

6.4.4 It must be possible to prevent users from entering certain codes as the primary diagnosis/procedure code, e.g. laterality codes.

6.4.5 Open access to data is required. The format of any database used must be specified such that the Trust can access all records and indexes. Database integrity and consistency must accordingly be ensured under all circumstances.

6.4.6 The design of the software must reflect the paramount importance of data integrity during data transfer. High risk data manipulation such as the modification or deletion of erroneous records must take place under strict control and must be reflected throughout the whole system.

6.4.7 Where duplicate records exist for a single patient, whether through the normal operation of the system or through the reconciliation process mentioned in section 6.2.1.8 above, the system must allow appropriately trained users to merge or link records in the Hospital main Patient Administration System. This process should be automated except where conflicting data items require further reconciliation.

6.5 System Interfaces

6.5.1 The System must have a mechanism for validating data prior to it being loaded to the application. The System Administrator must be provided with sufficient information to enable investigations of failed record loads to be completed.

6.5.2 The System must have a way of informing users when the proposed interfaces are not operational. This must inform users when they first log onto the system, and a message must also be sent to users already logged on.

6.5.3 The Trust must be confident that when interfaces or systems are reactivated, the System will handle retrospective interface file feeds in a controlled chronological manner.

6.6 Management Information Reporting

6.6.1 Every data item in the system, both entered and derived must be available to be used in reports. The data must be capable of being aggregated in any way according to purpose.

6.6.2 The database and associated data items must be accessible to common access methods such as SQL.

6.6.3 Where a Supplier chooses to implement a model that relies on one database for operational purposes and a second linked database for reporting purposes, the reporting database's data should be available for reporting within 24 hours of data entry. Furthermore output should not impact on the operational system and must be available real-time or as a batch process.

6.6.4 Operational reporting/documentation must be automated, where possible, and distributed in the most appropriate way e.g. electronically. The system must support both structured reporting (e.g. EDI) and any nationally approved encryption techniques.

6.6.5 There must be a facility to create libraries of user defined analyses/reports that can be re-run for differing time parameters.

SECTION 7 OTHER DELIVERABLES

7.1 Training

7.1.1 On delivery of the software, training in its use must be provided.

7.1.2 Training must be provided at a time and place that can be mutually agreed between the Trust and the Supplier. Suppliers are requested to provide full details of the proposed training package including use of the system and system administrator functions.

7.2 Help desk

7.2.1 Suppliers must provide ongoing problem-solving support, in which a single telephone number may be called no matter what the problem.

7.2.2 A guaranteed maximum resolution time must be specified.

7.2.3 Suppliers are requested to state the hours between which the help desk will be available.

7.2.4 Support should also be available via e-mail, online FAQs or a searchable knowledge base.

7.3 System Maintenance

7.3.1 Suppliers must provide support in the form of an engineer/technician who will attend any Trust site, in the event of a problem which cannot be resolved purely by use of the help desk.

7.3.2 Suppliers must indicate response times to software support calls, both during the working day and outside these hours. Suppliers must also indicate the maximum delay after which an engineer will attend the relevant site.

7.3.3 Suppliers must issue software updates in response to reported errors in the software.

7.3.4 Suppliers must state if the software can be locally tailored or configured.

7.3.5 Suppliers must provide details of the development plans for the solution.

7.4 Documentation

7.4.1 Suppliers must provide a minimum of one set of documentation with the system together with a description of the main topics each one covers per site for ALL the software supplied. Suppliers must also provide documents for subsequent upgrades during the period of the contract, in addition to documentation supplied electronically or on computer storage media.

7.4.2 Suppliers must describe the scope and the content of the documentation that will be delivered during the implementation of the system.

7.4.3 Prior to new versions of the software being released Suppliers must provide Release Notes that inform the Trust about the nature of the system changes. These should provide sufficient detail to provide a comprehensive picture of the changes, and implications for staff training as a result.

7.5 Remote Access

7.5.1 Suppliers requiring remote access to the Trust network must comply with the relevant Trust's Security Policy.

7.5.2 It is the responsibility of the Supplier to guarantee that any of their staff authorised to access the system must treat any data viewed with confidentiality based on the Data Sharing Protocol, the Data Protection and Computer Misuse Acts.

7.6 Storage Capacity

7.6.1 Suppliers must provide details of a storage facility with adequate capacity to store sufficient patient data, taking into account foreseeable increases in system use.

7.6.2 The system must give appropriate warnings if storage is nearing its capacity.

7.7 Upgrade Path

7.7.1 Upgrades to the application and its database are the responsibility of the Supplier. However, the Trust will decide at its sole discretion whether to accept a software upgrade upon receipt of the relevant release notes. Suppliers must not force a software upgrade unless the upgrade has been authorised in advance by the Trust.

7.7.2 Suppliers must ensure that any local investment in specific changes will not be lost when new versions of the product are introduced.

7.7.3 Suppliers must ensure that application upgrades can be rapidly applied whilst minimising disruption to the operational use of the system.

7.7.4 Suppliers must outline the implementation method and frequency of updates (or new releases) of software and hardware, and how this will impact on the Trust. The responsibility for the Quality Assurance of the new development software needs to be specified (e.g. costs, downtime, and training). The Trust requires that availability and performance are not impacted adversely by the update process.

7.7.5 Suppliers must describe what level of user availability there would be during; minor application upgrades; major application upgrades, and application patches, and how this would be achieved.

7.7.6 During the lifetime of the contract, the Trust expects to work with the Supplier to identify and introduce new technologies that become available and are appropriate to the needs of the Trust. An example of a technology that may contribute is voice recognition.

SECTION 8 STANDARDS

8.1.1 All software must have appropriate levels of in-built security with a suitable audit trail process.

8.1.2 Suppliers must be compliant with the latest version of the NHS Information Governance Toolkit.

8.1.3 Suppliers are required to provide copies of their data protection and information governance processes.

8.1.4 The solution must be HL7 version 2.7 compliant.

8.1.5 The system must be GS1 compliant and enable GTINs on medical devices and GSRNs on patient's wristbands to be scanned and stored with a patient's record.

8.1.6 Any aspects of the system pertaining to people with diabetes, such as information held about patients referred from a diabetic eye screening service, must conform to the national Diabetic Eye Disease dataset, available on request from The Royal College of Ophthalmologists.

8.1.7 The system must support the National Cataract Dataset, available on request from The Royal College of Ophthalmologists.

8.1.8 The system must support automated submissions into the National Ophthalmology Audit, administered by The Royal College of Ophthalmologists.

SECTION 9 PROCUREMENT PROCESS

9.1 Procurement Timetable

Respond to Supplier questions	Friday 18th December 2015
Receive Supplier responses via Ariba portal	Friday 8th January 2016
Evaluate suppliers' responses	w/c 11th January 2016
Demonstrations and site visits	To be confirmed
Award contract and conduct post award administration.	To be confirmed

9.2 Procurement Procedures

This Output Based Specification will be used to evaluate Supplier submissions. Following this evaluation, suppliers will be invited to begin contract negotiations. NHS Terms and Conditions will be used with the associated schedules to the contract being drawn up using this Output

Based Specification as a reference.

9.3 Evaluation Criteria and Method

9.3.1 Suppliers will be assessed, according to NHS & the Trust's standard procedures, with regard to:

(a) Legal and fiscal probity.

(b) Financial and economic standing.

(c) Technical/support capability including resource capacity.

(d) Product and market experience.

9.3.2 Tenders will be assessed using the following criteria:

(a) Technical - Quality of solution/cultural fit.

(b) Experience – previous implementations and support.

(c) Security and governance arrangements – NHS security compliance.

(d) Attributable internal & external costs as well as bid price.

9.3.3 The Contract will be awarded to the most economically advantageous offer that is judged to present the best technical solution and lowest supplier risk.

9.4 Implementation Timetable

9.4.1 The Trust will require a phased implementation of software - a timetable of which will be agreed with the supplier. Suppliers must undertake an analysis of the implementation needs of the Trust and suggest an implementation plan and timetable. The supplier must give details of the implementation stages with realistic and achievable timescales.

9.4.2 Suppliers must indicate the level of expertise they expect the system administrator to possess and how much time they estimate is required for system administration during set-up, and once the system is fully operational.

9.4.3 Suppliers must indicate based on their past experience, what level of support and training will be required for each user. The Trust would appreciate such estimates to be based on similar Ophthalmology departments in other Trusts.

9.4.4 The installation and commissioning of the system must be carried out with the minimum of disruption to the work of the Trust. Suppliers must indicate if it will be possible to carry out installation and future system upgrades out of normal office working hours i.e. 9.00am to 5.00pm.

SECTION 10 DETAILS OF RESPONSE REQUIRED

10.1 Instructions for Layout of Proposals

10.1.1 Suppliers must respond to each of the requirements in sections 4 to 8 (inclusive) of the Trust's specification using the attached matrix.

10.1.2 Suppliers must indicate their degree of compliance with each of the requirements in this specification, according to the following levels:

(a) Fully met. The requirement is provided by the standard software in the way required, and will be available from the date of implementation.

(b) Partially met. The requirement will be provided by an alternative method. Note in this case details must be provided stating how the requirement will be delivered.

(c) Will be met. The requirement will be delivered by modifying the standard software. Note in this case the supplier must provide the following information:

- Any cost to the Trust of making the amendment where the amendment is additional to the indicative cost of the system.
- The contracted timescales within which the amendment will be made.
- Whether or not the modification affects the on-going maintenance and operation of the system.

(d) Not met. The requirement will not be delivered.

10.1.3 The supplier is also requested to include indicative/budgetary commercial proposals for the solution to be provided. The proposals should be clearly identified under the following headings:

(a) Costs

- Funding arrangements
- A full breakdown of all implementation charges in Year 1
- Support Service charges per annum over 5 years
- Any other costs associated with this procurement.
- Cost for providing a Managed Service (if applicable)

(b) Corporate capability and capacity

- Company Profile
- Business Volume, Annual Turnover
- Willingness to act as Prime Contractor
- Sub-contracting Arrangements
- Staffing Levels and Competencies in the company

(c) Details of options and alternative proposals

10.2 Information Required from Suppliers re Deliverables and Assumptions

10.2.1 All hardware necessary to run the software will be supplied by the Trust. Suppliers are required to identify the minimum and recommended specification required for their solution.

10.2.2 The supplier must give details of any items which will need to be supplied by the Trust, including but not limited to:

(a) Computer hardware;

(b) Applications software and licenses;

(c) Systems software and licences;

(d) Communications software and hardware;

(e) Interfacing hardware and software;

(f) Storage media (fixed and removable).

10.2.3 The supplier must provide configuration details where these will not be self-evident to Trust IT personnel familiar with the operation of client/server systems.

10.2.4 The supplier must state the local responsibilities of the Trust for supporting the system once implemented.

10.2.5 Suppliers are required to provide an overview of their proposed solution. In doing so the suppliers must clearly indicate:

- whether sub-contractors, and if so who, will be providing any element of functionality or service
- whether and where the application functionality being offered is currently operational within the UK.

10.2.6 Suppliers must indicate their view as to what local management arrangements should be put in place to secure a timely and successful implementation. In particular they should address the local resources, skill-sets and associated timescales required to re-engineer both operational ways of working and implementation processes, and then to complete the task of product configuration/localisation.

10.2.7 Suppliers are required to describe their general approach to configuration, managing security, confidentiality, authorisation and log on, and the need to improve the efficiency and effectiveness of the clinical process.

10.2.8 In their responses to this specification Suppliers should:

- comment critically, in the light of their experience at other sites, on benefits as identified by the Trust
- describe how during the contract negotiation process they would assist the Trust in the establishment of a definitive benefits baseline
- describe how, if they are awarded the contract they would propose working with the Trust to ensure that the anticipated benefits were delivered.

10.3 Information Required from Suppliers re Costs

10.3.1 Suppliers must itemise all costs that will be incurred to the Trust, including, but not limited to:

(a) Individual items and total cost of hardware

(b) Applications software and licences

(c) System software and licences

(d) Communications hardware and software

(e) Annual cost of any removable storage media required

(f) Training/user and technical manuals

(g) Cost of system set-up

(h) Provision of training

(i) Provision of help-desk facility

(j) System maintenance, including supply and installation of application software upgrades, and provision of a call-out service.

10.3.2 Suppliers should outline their approach to the development of interfaces with new ophthalmic equipment and third party systems.

10.4 Details for the Return of Proposals

The Procurement process is being conducted via the Trust's Ariba procurement portal. Interested bidders should email **tenders@salisbury.nhs.uk** with the project title including full named contact details, with telephone, email and address, for the person responsible for preparing their response. The Trust will then register the bidder on the Ariba portal, and the bidder will automatically receive an Ariba event invite key. **Please ensure email systems are set to whitelist from the ariba.com domain.**

During the Procurement, technical or procurement questions should be asked via the Messaging function on Ariba, not direct to individuals. For Ariba technical queries or help, please contact Ariba Support on 0800 358 3556. Bidders approaching either our consultants or Trust staff (outside Procurement) directly will risk having their bids disqualified. All site visit requests must be pre-arranged via the Ariba portal.

10.5 Acceptance Testing

10.5.1 The Trust will require a formally agreed acceptance procedure to be carried out. This must include staged Conformance Certificates, especially in relation to interfaces with other systems.

10.5.2 The Trust will indicate what stages of acceptance they anticipate being required and what they entail. These should include as a minimum:

(a) System software acceptance

(b) Application acceptance

(c) Interface acceptance

(d) Completion of training

(e) System go ‘Live’

(f) Post implementation review and benefits assessment.