

**PART A**  
**INVITATION TO BID**

<b>YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (NAME OF DEPARTMENT/ PUBLIC ENTITY)</b>					
BID NUMBER:	DOH(FS)20/2023/2024	CLOSING DATE:	12 JANUARY 2024	CLOSING TIME:	11:00 am
DESCRIPTION	SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF ENTERPRISE RIS/PACS FOR FREE STATE DEPARTMENT OF HEALTH.  PERIOD: ONCE -OFF PURCHASE AND FIVE (05) YEAR SERVICE MAINTENANCE PLAN.				
<b>BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)</b>					
DEPARTMENT OF FREE STATE HEALTH.  GROUND FLOOR, BOPHELO HOUSE, BLOCK C-WEST, OPPOSITE MAIN DOOR.  C/O CHARLOTTE MAXEKE STREET AND HARVEY ROAD, BLOEMFONTEIN.					
DEPARTMENT OF FREE STATE HEALTH.					
BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO			TECHNICAL ENQUIRIES MAY BE DIRECTED TO:		
CONTACT PERSON	T.J Sethunya		CONTACT PERSON	Mr. Joshua Moeketsi Ms. Judi Odendaal	
TELEPHONE NUMBER	051 408 1487/1457		TELEPHONE NUMBER	082 785 99112 / 051 405 3621	
FACSIMILE NUMBER	N/A		FACSIMILE NUMBER	N/A	
E-MAIL ADDRESS	SethunyaTJ@fshealth.gov.za		E-MAIL ADDRESS	OndendaalJ@fshealth.gov.za JoshuaM@fshealth.gov.za	
<b>SUPPLIER INFORMATION</b>					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		OR	CENTRAL SUPPLIER DATABASE No:	MAAA
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX]		B-BBEE STATUS LEVEL SWORD AFFIDAVIT		[TICK APPLICABLE BOX]
	<input type="checkbox"/> Yes <input type="checkbox"/> No				<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORD AFFIDAVIT (FOR EMES &amp; QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]</b>					
ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES ENCLOSURE PROOF]		ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?		<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, ANSWER THE QUESTIONNAIRE BELOW]
<b>QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS</b>					
IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?			<input type="checkbox"/> YES <input type="checkbox"/> NO		
DOES THE ENTITY HAVE A BRANCH IN THE RSA?			<input type="checkbox"/> YES <input type="checkbox"/> NO		
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?			<input type="checkbox"/> YES <input type="checkbox"/> NO		
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?			<input type="checkbox"/> YES <input type="checkbox"/> NO		
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?			<input type="checkbox"/> YES <input type="checkbox"/> NO		
IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 BELOW.					

**PART B**  
**TERMS AND CONDITIONS FOR BIDDING**

**1. BID SUBMISSION:**

- 1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
- 1.2. ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED—(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.
- 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
- 1.4. THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).

**2. TAX COMPLIANCE REQUIREMENTS**

- 2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
- 2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
- 2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
- 2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
- 2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
- 2.6 WHERE NO TCS PIN IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
- 2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

**NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.**

**SIGNATURE OF BIDDER:** .....

**CAPACITY UNDER WHICH THIS BID IS SIGNED:** .....

(Proof of authority must be submitted e.g. company resolution)

**DATE:** .....

## **EXPLANATORY MEETING CERTIFICATE**

BID NUMBER: **DOH (FS)20/2023/2024**

Attendance list number: \_\_\_\_\_

**DOH(FS)20/2023/2024: SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF ENTERPRISE RIS/PACS FOR FREE STATE DEPARTMENT OF HEALTH.**

**PERIOD: ONCE -OFF PURCHASE AND FIVE (05) YEAR SERVICE MAINTENANCE PLAN.**

**Attendance of the explanatory meeting is COMPULSORY**

An official of the Department must sign this certificate at the explanatory meeting. No certificate will be signed outside the meeting. The original certificate must be included in the bid document and will not be accepted after the closing time and date of the bid.

**COMPULSORY EXPLANATORY MEETING DATE: 18 DECEMBER 2023**

**TIME: 10H00**

**VENUE:** **Universitas Central Hospital**  
**Logeman Street**  
**C J Nel Hall**  
**First Floor**  
**Bloemfontein**  
**9301**

**CONTACT PERSON/S:** **Mr Joshua Moeketsi: 082 785 9912**  
**Ms Judi Odendaal: 051 405 3621**

This is to certify that \_\_\_\_\_ in his/her capacity as \_\_\_\_\_

\_\_\_\_\_ of the company \_\_\_\_\_ has attended the  
Compulsory Explanatory meeting on the \_\_\_\_\_ day of \_\_\_\_\_ 2023 and is  
therefore familiar with circumstances and the scope of the items to be supplied.

**SIGNATURE /DEPARTMENTAL  
OFFICIAL**

**RANK**

**SIGNATURE OF REPRESENTATIVE  
OF COMPANY**

**DATE**

**OFFICIAL DATE  
STAMP**

**\* Note: Only one certificate per company**



**health**

Department of  
Health  
FREE STATE PROVINCE

**INVITATION FOR PROPOSALS FROM SUITABLY  
QUALIFIED SERVICE PROVIDERS FOR  
INSTALLATION AND COMMISSIONING OF  
ENTERPRISE RIS/PACS FOR FREE STATE  
DEPARTMENT**

**PERIOD : OUTRIGHT PURCHASE AND FIVE YEARS SERVICE  
AND MAINTENANCE PLAN**

**INVITATION FOR PROPOSALS FROM SUITABLY QUALIFIED SERVICE PROVIDERS FOR  
INSTALLATION AND COMMISSIONING OF ENTERPRISE RIS/PACS AT UNIVERSITAS  
ACADEMIC HOSPITAL**

**FURTHER INFORMATION**

Bidders shall have the opportunity to request further information or meetings with regard to the bid. For further information regarding this bid, please contact: -

**Mr J Odendaal**

Universitas Hospital

Radiology department

Bloemfontein.

9300

Tel: (051) 405 3621

**Mr J Moeketsi**

Pelonomi Hospital

Radiology department

Bloemfontein.

9300

Tel: (051) 405 1242

## **SECTION A:**

### **GENERAL BID CONDITIONS**

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## 1. INTRODUCTION

This document is an invitation to suppliers of RIS/PACS equipment to bid for procurement of the following system:

**An integrated Radiology Information System (RIS) / Picture Archiving and Communications System (PACS) at Universitas Central Hospital and Pelonomi Tertiary Hospital in the Free State Department of Health.**

In order to accomplish a high-quality imaging service, it is necessary to conceptualize the relationship of the system with patient handling and care as point of departure. The functional system must therefore be able to handle huge numbers of patient data with a minimum effort from personnel.

- 1.1.1. The Department of Health objectives and priorities in entering the contracts can be broadly divided into Administrative and Clinical as follows:

### **1.1.2. Clinical Objectives**

1.1.2.1. The systems will be installed in Universitas Central Hospital and Pelonomi Tertiary Hospital and will be used for capturing, viewing, archiving and dissemination of patient data.

1.1.2.2. Imaging data must be readily available to ensure that the personnel in the hospital will provide effective patient care and treatment in the shortest possible time.

1.1.2.3. To provide a working paperless environment where doctors can request radiology examinations, view radiology images and related reports on any device, be it clinical review workstation, diagnostic workstations, smart phone or tablet is envisaged.

### **1.1.3. Proposed Implementation Approach**

1.1.3.1 The Bidder shall supply, deliver and install the equipment and issue a certificate of compliance with the regulations of the Radiation Control Directorate of the National Department of Health before official acceptance by the Hospital.

1.1.3.2 Training of personnel involved in the use of the units must be provided by the bidder.

1.1.3.3 The bidder must ensure that there is a minimum disruption of normal services.

1.1.3.4 Acceptance testing must be done. This testing must be done by a third party appointed by the bidder which must be approved by the Free State Department of Health. The cost must be covered by the bidder.

## 1.2. CONDITIONS AND FORMAT OF THIS BID

### 1.2.1. Conditions

1.2.1.0. The Bidder shall supply literature, brochures, etc. from the original manufacturer as part of their bid.

- 1.2.1.1. These bid specifications are the minimum requirements.
- 1.2.1.2. The conditions of GCC shall apply and form an integral part of these bid specifications.
- 1.2.1.3. With each bid condition in this document you must clearly indicate in the column provided whether you agree or not. If an explanatory note is needed, the paragraph reference must be noted in the space provided. Bids not completed in this manner will not be taken into account.
- 1.2.1.4. A detailed description of how the non-compliance is overcome must be provided.
- 1.2.1.5. Bids must be answered in the same order as this document. Information supplied must be concise. Cross-references to related questions/answers in other Chapters will be ignored. The above will ensure easier evaluation of this bid.
- 1.2.1.6. The Department of health reserves the right to terminate the contract at any time. The Department of Health further reserves the right to put out another bid for any of the items if deemed necessary.
- 1.2.1.7. The Free State Department of Health reserves the right to receive a price quotation from the bidder for the enhancement and adaptation of an item if necessary. This will be done before the awarding of the bid after approval has been granted by the Free State Department of Health.
- 1.2.1.8. It is envisaged that the total installation and commissioning be completed within 4 months after an official order has been placed.
- 1.2.1.9. Only new equipment may be proposed.
- 1.2.1.10. After the closing of bid, the bidders may be asked to furnish further information regarding the equipment, the software, the features, the components or design, the installation of equipment bided for, as well as any other information that the Free State Department of Health may require. Bidders must adhere to this request in the shortest possible time. If the request for additional information has not been met within seven days, it may be considered as sufficient grounds to disregard the bid. Responses to requests for additional information must be supplied free of charge by the bidder.
- 1.2.1.11. In the case of any non-compliance with the terms and conditions of the contract and specifications provided in the answers to the bid, the Department of Health will be refunded in full and the bidder will have to bear the cost of replacement of the system as a whole.
- 1.2.1.12. The bidder must produce documented evidence from original supplier of the equipment included in this proposal that they are the bona-fide importers and/or distributor, or bona-fide agent of the importer and/or distributor for the product in the Republic of South Africa. This must be clearly marked "**Annexure A**" and attached to the bid document
- 1.2.1.13. Where bidders bid for software, a guarantee from the original supplier of the software must be provided, indicating that updates and support will be provided. Proof to this effect must be provided and attached to the bid document, clearly marked "**Annexure B**".

- 1.2.1.14. The bidder must ensure that all equipment bided for is fully compatible and inter operable.
- 1.2.1.15. The details of the evaluation tests conducted by the Free State Department of Health will not be made available to any third party.
- 1.2.1.16. All items bided for must be commercially available as of the closing date of the bid. Items in Beta-phase are not considered to be commercially available.
- 1.2.1.17. All equipment supplied must be fully guaranteed and maintained at no cost to the Free State department of Health for a period of 1 year from the date of commissioning.
- 1.2.1.18. It is a requirement that sufficient spare parts be held in the country to ensure that the system is kept in good working order for ten (10) years after installation.
- 1.2.1.19. Notwithstanding any ambiguity and shortcomings of the bid specifications, the bidder must undertake to make allowances in the proposal for all components and their costs required to make up a fully functional working system.
- 1.2.1.20. Bidders may bid for individual items.

### **1.2.2. Format**

- 1.2.2.1. Bidders must provide detailed quotations, showing unit prices and a brief description of each unit offered.**

## **1.3. DELIVERY, INSTALLATION AND TERMS OF PAYMENT**

### **1.3.1. General**

- 1.3.1.1. The prices quoted must be for supply, delivery, installation and user training of the system.
- 1.3.1.2. The quoted prices shall be valid for 120 days.
- 1.3.1.3. Bidders are requested to indicate the period of delivery, calculated from the date of order.
- 1.3.1.4. With the submission of their bids, Bidders must quote on the following options:
  - 1.3.1.4.1. Outright purchase of the proposed system.**
  - 1.3.1.4.2. Other costs which have possibly not been specified, for the effective operation of the system.
- 1.3.1.5. The equipment will be deemed to be fully delivered and installed when it has been tested and demonstrated in an operational situation at the installation location. Payment of an invoice will be authorized upon receipt of a detailed account supported by a Departmental certificate of satisfactory execution of the work.

### **1.3.2. Documentation and Licences**

- 1.3.2.1. A complete set of all Operating Manuals, Standard operating procedures for maintenance, standard operating procedures for routine tests and technical surveys, etc. must be provided on delivery of the equipment
- 1.3.2.2. Should the hardware require an export license according to the law of the country of origin, this license, or sufficient evidence indicating that the license has been issued, must be presented as soon as possible but not later than 3 months after the acceptance of the offer.

- 1.3.2.3. Original manuals for all hardware supplied must be provided on delivery of the equipment.
- 1.3.2.4. Any changes made to hardware settings other than those stated in the manuals during installation shall be noted in the manuals.

**1.3.3. Compulsory Pre-bid meeting and site inspection.**

- 1.3.3.1. Only offers of bidders who attended the pre-bid meeting will be considered as: Bidders must acquaint themselves with the site where the units will be installed at both Universitas and Pelonomi Hospitals, since there will be no price adjustments after the bid has been awarded.

1.3.3.2. The site meeting will be arranged as follows:

**Date – 20 December 2023**

**Venue – Universitas Central Hospital**

**Logeman Street**

**CJ Nel Hall, first floor, Bloemfontein**

**Time: 10H00**

- 1.3.3.3. It is required that all bidders visit the hospital and facilities in order to familiarize themselves fully with the layout of the hospital, and facilities.
- 1.3.3.4. The responsibility rests with the bidder to ensure that the site is suitable for the system. Should any additional costs be incurred for this purpose after installation, it will be for the bidder's account.

**1.3.4. Bidder's experience**

- 1.3.4.1. Bidder must furnish names including telephone numbers of customers where similar systems have been installed and commissioned. State how long the equipment has been installed. Attach this information to the bid, clearly marked, "**Annexure C**". It is the intention of the Free State Department of Health to request references from such customers and to inspect the installations where possible to establish the bidder's bona-fides.
- 1.3.4.2. Bidders must be prepared to arrange visits to sites of the Free State Department of Health's choice where a system similar to the one proposed is operating successfully.
- 1.3.4.3. The bidder must provide as **Annexure "D"** a table of names, qualifications, experience and capacity of all people that will be directly involved in this project

**1.3.5. Bidder's liability in respect of defects**

- 1.3.5.1. Any defects or faults which may appear within twelve months of completion of the works due to materials or workmanship not being in accordance with the contract, shall be made good by the bidder within such a period as may be determined by the Free State Department of Health.
- 1.3.5.2. Should the bidder fail to rectify the defects or faults, the Free State Department of Health shall be entitled to rectify such defects or faults or to arrange

for the rectification there-of and to recover from the bidder any damages as a result of the bidders failure to comply with the terms of the contract.

#### **1.3.6. Project management**

- 1.3.6.1. It is required from the bidder to supply the Hospital with a complete implementation plan as **Annexure “E”**. The plan will include a project diagram with a list of activities showing starting and completion dates, project meeting dates (milestones), cash flow, resources and the deliverables.
- 1.3.6.2. The bidder will be required to manage the installation process of the system from site preparation to final acceptance by the Free State Department of Health. The Free State Department of Health must be notified of all related requirements which are essential for the successful implementation of the contract, i.e. upgrade power supply, etc. This includes the preparation of a project plan after consultation with all relevant parties. This responsibility lies primarily with the bidder.
- 1.3.6.3. The supplier must appoint a single project manager to be accountable and responsible for all supplier and sub-contractor activities from date of contract award through to final acceptance of the system and including maintenance contracts.
- 1.3.6.4. Project management will run under control of the Chief Executive Officer of the Hospital or his appointed representative and the project manager will report formally as agreed.

#### **1.3.7. Payment**

- 1.3.7.1. All prices must be quoted in South African Rands.
- 1.3.7.2. All prices and costs submitted in terms of this bid must include all costs in every aspect.
- 1.3.7.3. A complete price list with a detailed price breakdown on a per item basis must be enclosed.

#### **1.3.8. Taxes and levies**

- 1.3.8.1. All normal import duties and levies are payable by the bidder and must be included in the quoted prices.
- 1.3.8.2. All prices must include VAT.

### **1.4. SUPPORT SERVICES AND MAINTENANCE SERVICES**

#### **1.4.1. Support Services during the Warranty period**

- 1.4.1.1 The Warranty period will start on the day that the equipment is accepted as fully functional by the hospital by signing a formal letter of acceptance and will extend for two years.
- 1.4.1.2 All parts, services, maintenance and labour must be fully guaranteed for two years. This guarantee will include all parts.
- 1.4.1.3 The support service during the Guarantee Period must include:
  - 1.4.1.3.1 Safety & Quality checks
  - 1.4.1.3.2 Diagnosis & repair including all spare parts

- 1.4.1.3.3 Additional application training where necessary
- 1.4.1.3.4 Standby technicians for diagnosis & repair
- 1.4.1.3.5 All labour & travelling

#### **General conditions for Warranty period**

- 1.4.2.1 It is required that the successful bidder render a support service with a maximum response time of 30 minutes with on -site inspection within 4 hours.
- 1.4.2.2 The hours of coverage for Service, must be from 00:00 Monday to 24:00 Sunday.
- 1.4.2.3 Maintenance and service during the guarantee period in normal working hours will be between 07:30 and 16:00 Monday to Friday and carried out at no cost to the Hospital.
- 1.4.2.4 Overtime during the guarantee period is applicable between 16:00 and 07:30 from Monday evening to Saturday morning and will be carried out at no cost to the Hospital.
- 1.4.2.5 The repair process could be a physical exchange of the equipment or parts. It is envisaged that spare equipment be included in the bid of all units or parts of units in order to provide the required response times.
- 1.4.2.6 A reporting system must be utilized which is capable to accept calls 24 hours per day, 7 days per week and keep track of the progress and escalation of problems must be utilized. This reporting system will also keep historic information on all equipment by serial number, as well as information regarding the performance of the bidder in respect to all calls. No information will be archived or deleted without clearing it with the Free State Department of Health.
- 1.4.2.7 Bidders must indicate whether: -
  - 1.4.2.7.1 A remote support/diagnostic facility is available for 24 hours, how it would be carried out and any costs incurred.
  - 1.4.2.7.2 Local diagnostic, fault finding and aids for trouble shooting are supplied.
  - 1.4.2.7.3 Repair facilities are available in the Bloemfontein area.
  - 1.4.2.7.4 There is a technician deployed in the Free State.
- 1.4.2.8 Upgrades (new release) and updates of the system must be supplied for the duration of the contract. Bidders must include the costs associated with the installation of upgrades and updates for the duration of the contract.

#### **STAFF AND TRAINING REQUIREMENTS**

##### **1.4.2. Operating and Staffing Requirements**

- 1.5.1.1 The bidder must describe the operating requirements of the proposed system.
- 1.5.1.2 The bidder must provide details of the personnel required to operate the system.

##### **1.4.3. Training**

1.5.2.1 Bidders must describe how training is to be conducted. A complete implementation program, showing training at various levels, personnel involved and user support must also be provided.

## **SECTION B:**

# **TECHNICAL SPECIFICATIONS. (UNIVERSITAS CENTRAL HOSPITAL)**

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## **1. INTRODUCTION**

This document is an invitation to suppliers to propose an integrated Radiology Information System (RIS) / Picture Archiving and Communications System (PACS) solution for Universitas Academic Hospital in the Free State Department of Health.

The Universitas Academic Hospital is a 636-bed training institution and Radiology is handling on average 100 000 exams per year. It is a hospital covering all imaging modalities and all specialties and most importantly it is a Referring Centre for the province. Currently the hospital has a PACS/RIS solution with MEDITECH as our HIS (Hospital Information System), and all our modalities are fully digital.

## **2. PURPOSE OF THE TERMS OF REFERENCE**

It is the intention of the Free State Department of Health to enter into a formal contract with a service provider to provide the services described herein. These Terms of Reference will form a basis of the contract.

## **3. PURPOSE AND RATIONALE:**

The Free State Department of Health hereby invites proposals from reputable and qualified service providers for installation and commissioning of RIS/PACS at Universitas Academic Hospital.

## 4. SCOPE OF WORK

### 4.1.1 PACS/RIS Data Migration

4.1	PACS/RIS Data Migration	COMPLY	DOES NOT COMPLY/STA DEVIATION
4.1.1	<p>It is the intention of Universitas hospital to migrate all data from the existing PACS &amp; RIS solutions to the new PACS &amp; RIS solution. This includes Patient Demographics, Requests, Visits, Orders, Dictations, Reports, Users, Procedures Tables, Billing codes, Inventory, etc.</p>		
4.1.2	<p>Bidders are advised that the successful bidder shall migrate the current RIS/PACS data to the new RIS/PACS Archive. It shall be possible to view the current PACS images in the new PACS archive and the same shall apply for the RIS records, it shall be possible to view current RIS records and reports on the new RIS/PACS solution. The migration process shall in no way affect clinical imaging/ workflow activities. The successful vendor shall be 100% complete with migration within at least 12 months.</p>		
4.1.3	<p>Supply detailed description how migration will be performed. do the migration.</p>		
4.1.4	<p>Provide data migration methodology statement. If possible give details if you have previously transferred data from PACS and specify the PACS manufacturer</p>		
4.1.5	<p>An integrity data check and test patients must be done by the new vendor.</p>		
4.1.6	<p>Corrupted data identified during the migration process, shall be highlighted to hospital and successful bidder shall provide a viable solution to deal with corrupted data. Outline your solution for corrupted data</p>		
4.1.7	<p>Current images storage at Universitas and Annex Hospitals is about 40 TB in total. It will be desirable to supply more storage capacity as there will be an extension of the service to other areas.</p>		
4.1.8	<p>All expenses of data migration including any dealings with 3rd parties are to be funded by successful bidder i.e all costs for migration shall be at the expense of the bidder.</p>		

## 4.2 HOSPITAL INFORMATION & STATISTICS

### 4.2.1 Staff Establishment

	Role	Number
1	Radiologist	30(Concurrent Users)
	Radiographer (PACS Administrator)	44
2	Radiographers / Technologists	+ 30 Students ()
4	Receptionists	7 ( 7 Concurrent Users)
5	Physicians / Referring Doctors	100 ( 100 Concurrent Users)

### 4.2.2 MODALITY INFORMATION

#### UNIVERSITAS AND NATIONAL MODALITIES

MODALITY			NETWO RK	ANALO G/ DIGITA L	DICOM/N ON- DICOM	LOCATIO N	DICOM LICENSE			EXA MS PER YEAR	IMAG ES PER EXAM
BRAND	MODEL	TYPE					STO RE	WORKLI ST	PRIN T		
GE	Discover y HD 750	CT	Y	D	DICOM	Main Radiolog y	Y	Y	N	5500	2500
Philips	Igilia 3tesla	MR	Y	D	DICOM	Main Radiolog y	Y	Y	N	2000	500
Philips	Diagnost	Dura Diagnost (C-room)	Y	D	DICOM	Main Radiolog y	Y	Y	N	6000	3
Philips	Diagnost	Digital Diagnost (D Room)	Y	D	DICOM	Main Radiolog y	Y	Y	N	4000	3
Philips	Allura FD20/20	Vascular	Y	D	DICOM	Main Rad	N	N	N	500	70
Philips	Allura FD10/10	Adult Cathlab	Y	D	DICOM	Cath lab 2 <sup>nd</sup> Floor	N	N	N	800	60
Philips	Allura FD10/10	Adult Cathlab	Y	D	DICOM	Cath lab 1st Floor	N	N	N	650	50
Philips	B endura c arm	Mobile screening	Y	A	DICOM	Main Theatre	N	Y	N	1000	5

Philips	Veradius c arm	Mobile screening	Y	D	DICOM	Main Theatre				800	5
Philips	Bv endura	Mobile screening	Y	A	DICOM	Gastro	Y	Y	N	1000	5
Vertec	Hologic selenia	Mammogr aphy	Y	D	DICOM	Main Radiolog y	N	N	N	1030	4
Siemens	Ysio	X RAY	Y	D	DICOM	Main Radiolog y	Y	Y	N	4500	3
Siemens	Uroskope	Flouro	Y	D	DICOM	Theatre	Y	Y	N	300	7
Siemens	Artis MP	Flouroskop y (e room)	Y	D	DICOM	Main Radiolog y	Y	Y	N	600	5-15
Siemens	Multix MT	X ray(refferral )	Y	D	DICOM	Main Radiolog y	Y	Y	N	2000	3
Siemens	Mobilett e elara x 3	Mobile	Y	D	DICOM	Main Radiolog y	Y	Y	N	4000	2
Toshiba	Nemio XG	US	Y	D	DICOM	Main Radiolog y	Y	Y	Y	800	20
Toshiba	Xario 100	US	Y	D	DICOM	Main Radiolog y	Y	Y	Y	750	20
Toshiba	Aplio 500	US	Y	D	DICOM	Main Radiolog y	Y	Y	Y	1000	20
Toshiba	Aplio 500	US	Y	D	DICOM	Main Radiolog y	Y	Y	Y	1500	20
Toshiba	Aplio 100	US	Y	D	DICOM	Main Radiolog y	Y	Y	Y	1000	20
Agfa	5503	PRINTER	Y	D	DICOM	Main Rad	Y	Y	Y	200	2
Agfa	Xd 100-d	Mobile	Y	D	DICOM	Main Rad	Y	Y	Y	30	2
Agfa	Drystar 5435	Mobile	Y	D	DICOM	Main Rad	Y	Y	Y	30	2

Agfa	Cr-85-x	CR General	Y	D	DICOM	Block E	N	N	N	30	2
Agfa	Cr-85-x	CR General	Y	D	DICOM	Main Radiolog y	N	N	N	30	2
Agfa	Nx 5	CR General	Y	D	DICOM	Main Radiolog y	N	N	N	30	2
Agfa	Nx 5	CR General	Y	D	DICOM	Main Radiolog y	N	N	N	30	2
ZHIEM	Vario 3d	C-ARM	Y	D	DICOM	Main Radiolog y	Y	Y	Y	200	5
TECHMED	Brownier X 2	MOBILE	Y	D	DICOM	M Radiolog y	Y	Y	Y	500	2
SIEMENS	Symbia true point spectct t16	SPECTCT	Y	D	DICOM	Universi tas nuclear medicin e	Y	Y	Y	8	2000
SIEMENS	Symbia true point spectct t2	SPECTCT	Y	D	DICOM	Universi tas nuclear medicin e	Y	Y	Y	8	2000
SIEMENS	Symbia true point spect s	SPECT	Y	D	DICOM	Annex national	Y	Y	Y	4	1000
GE	Discover y hd 670	SPECTCT	Y	D	DICOM	Annex national	Y	Y	Y	8	1000
GE	Brightspeed	CT	Y	D	DICOM	National Annex	Y	Y	N	4000	1800
Toshiba	Aplio NXG	US	Y	D	DICOM	National Annex	Y	Y	Y	200	20
SIEMENS	Multix Pro	General	Y	D	DICOM	National Annex	Y	Y	Y	5000	20
Agfa	Nx 5	CR General	Y	D	DICOM	National Annex	Y	Y	Y	30	2

#### 4.3 PACS ARCHIVE SPECIFICATION

4.3	PACS ARCHIVE SPECIFICATION	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.3.1	A fully integrated solution which ensures communication between HIS, RIS and PACS shall be offered. The overall uptime of the system shall be able to meet the SLA of 99.99%.		
4.3.2	The PACS shall be able to send and view images to all other PACS operated institutions in the Free State Province and to a future central data repository (VNA), it shall also be able to receive images from other institutions i.e. the PACS shall include the DICOM Service Class license Query/Retrieve SCU and SCP		
4.3.3	The solution offered shall make provision for 5 years online (cached) storage.		
4.3.4	Bidders shall include a backup solution with the capacity to store all DICOM objects stored on the PACS/RIS solution.		
4.3.5	Based on the statistical information and notes made in 1.2, vendors are required to state their cumulative archive size for 7 – 10 years. Bidders are advised to take into consideration that 2021 to part of 2022 had COVID restrictions and provision shall be made for adequate storage.		
4.3.6	Vendors must be responsible to liaise with modality suppliers and ensure correct connection of all modalities to the PACS server. All modalities in section 1.2 shall be connected to PACS and configured to make use of modality worklist. Connection and any third-party dealings shall be at the expense of the successful bidder. Bidders shall also schedule connection configuration with all third parties during installation.		
4.3.7	The bidder shall provide an Uninterrupted Power Supply (UPS) with the capacity to keep the solution powered for at least two and a half hours.		
4.3.8	Vendors shall supply their own UPS's - independent of the Departmental UPS's currently available.		
4.3.9	Vendors shall supply quotations for 2 X aircons per server room as an extra optional.		
4.3.10	Bidders are advised that smart devices shall be able to view images and reports on archive via an android application, Apple IOS application or URL address i.e. zero footprint platform for image viewing		
4.3.11	Please note the backup solution is not a disaster recovery solution, but a solution to protect the DICOM objects in		

	<p>the case the primary PACS solution has a catastrophic failure and loses DICOM files. A full Disaster Recovery solution shall be provided.</p> <p>This implies that a separate archive solution shall be provided in a separate location within the hospital grounds or elsewhere. In the case of a complete disaster of the primary archive the disaster recovery solution shall provide the radiology department with a working archive solution seamlessly.</p> <p>This solution shall provide the same functionality as the primary archive. Please give details of your solution.</p>		
4.3.12	<p>The offered solution shall seamlessly operate on the existing network, complying with standards and infrastructure requirements. It shall make use of the current domain and related standards.</p>		

#### 4.4 PACS BASIC IMAGE MANIPULATION TOOLS

4.4	PACS BASIC IMAGE MANIPULATION TOOLS	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.4.1	<p>The performance of the PACS shall allow any user accessing images from the PACS solution to display the first image of the study in less than 3 seconds.</p>		
	<p>The solution shall support pre-defined window and centre settings for viewing CT studies.</p>		
4.4.2	An authorised user shall have the ability to view DICOM images stored on the PACS archive.		
4.4.3	An authorised user shall have the ability to change the screen layout based on predefined layouts.		
4.4.4	The PACS solution shall support predefined hanging protocols to support the consistent display of study and series images on the screen.		
4.4.5	These hanging protocols shall be configurable by the individual user.		
4.4.6	An authorised user shall have the ability to window/centre the image manually controlled by mouse inputs from the user.		
4.4.7	The solution shall support pre-defined window and centre settings for viewing CT studies.		
4.4.8	An authorised user shall have the ability to flip the image on the horizontal and vertical axes.		
4.4.9	An authorised user shall have the ability to rotate the image through 90° and 180° in the clockwise or anti-clockwise directions.		
4.4.10	An authorised user shall have the ability to zoom in and		

	out of the image.		
4.4.11	An authorised user shall have the ability to pan an image that is zoomed in.		
4.4.12	An authorised user shall have the ability to invert an image to a negative view.		
4.4.13	An authorised user shall have the ability to perform various measurements on the system. Measurements such as distance, angle, Cobb angle, a region of interest (ROI), freehand ROI and Hounsfield units for CT are required.		
4.4.14	An authorised user shall have the ability to add an annotation to the image. Annotations shall be arrow and text. It shall be possible to add multiple annotations to an image. It shall be possible to remove annotations from an image.		
4.4.15	An authorised user shall have the ability to remove DICOM displayed overlay data from the image view.		
4.4.16	An authorised user shall have the ability to export images as JPEG or similar for presentation purposes.		
4.4.17	An authorised user shall have the ability to scroll through a CT series using the mouse wheel or similar.		
4.4.18	An authorised user shall have the ability to automatically scroll through large cross-sectional CT studies with a cine loop function.		
4.4.19	It shall be possible to adjust the cine loop speed.		
4.4.20	An authorised user shall have the ability to link 2 or 3 CT series or studies, for the same patient, together and scroll simultaneously through the images.		
4.4.21	The performance of the PACS solution shall be such that scrolling through a single or linked CT series is fast, smooth, with no jitter or pixilation of images.		
4.4.22	When an authorised user manipulates an image, which is part of a series, the manipulation shall be applied to all images in the same series.		
4.4.23	The PACS shall support Multi-Planar reconstructions (MPR) in the following planes, axial, coronal, sagittal, and oblique.		
4.4.24	While viewing in MPR mode an authorised user shall have the ability to show reference cut lines on all the other planes being viewed.		
4.4.25	The PACS shall support changing slab slice thickness.		
4.4.26	The PACS shall support slab rendering based on maximum (MIP), minimum (MinIP) and average (AvgIP) intensity projections.		

4.4.27	An authorised user shall have the ability to store reconstructed planes as a new DICOM series within a study on the PACS solution.		
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## 4.5 PACS DIAGNOSTIC WORKSTATIONS AND RADIOLOGIST TOOLS

4.5	PACS DIAGNOSTIC WORKSTATIONS AND RADIOLOGIST TOOLS	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.5.1	<p><b>UNIVERSITAS:</b> For Radiology department</p> <ul style="list-style-type: none"> <li>17 X General Diagnostic workstation – Each workstation shall include 1 X 23" colour monitor and 2 X 3 MP minimum reporting monitor or 1 X 6 MP minimum fusion/dual colour monitor</li> </ul> <p>For Nuclear</p> <ul style="list-style-type: none"> <li>General Diagnostic workstation – Medicine Each workstation shall include 1 X 23" colour monitor and 2 X 3 MP minimum reporting monitor or 1 X 6 MP</li> </ul> <p>1 X Mammography Diagnostic workstation – Each workstation shall include 1 X 23" colour monitor and 2 X 5 MP minimum reporting monitor or 1 X 12 MP minimum fusion/dual colour monitor</p> <ul style="list-style-type: none"> <li><b>ANNEX :</b> 6 X General Diagnostic workstation – Each workstation shall include 1 X 23" colour monitor and 2 X 3 MP minimum reporting monitor or 1 X 6 MP minimum fusion/dual colour monitor</li> </ul> <p>1X PACS Administrator workstation</p>		
	<b>MONITOR SPECIFICATION</b>		
4.5.2	For the <b>PACS Administrator</b> workstation a 2 X minimum 23" Colour LCD monitor shall be supplied.		
4.5.3	The pixel resolution of the 23" monitor shall be at least 3 MP.		
4.5.4	The refresh rate of the 23" monitor shall be at least 75Hz. Please state refresh rate.		
4.5.5	For the <b>Radiologists</b> workstation 1 x 23" Colour LCD minimum monitor shall be supplied.		
4.5.6	The 23" monitor shall be a LCD monitor.		
4.5.7	The 23" monitor shall be a colour monitor		
4.5.8	The size of the monitor shall be 23" or larger		
4.5.9	The pixel resolution of the 23" monitor shall be at		

	least 1.3 MP.		
4.5.10	The 23" monitor shall be able to have a viewing angle of, at least 15-30° -Please state viewing angle.		
4.5.11	The refresh rate of the 23" monitor shall be more than 75Hz. Please state refresh rate.		
4.5.12	All graphics cards, connection cables, and power cables shall be supplied with the monitor.		
	<b>MEDICAL GRADE MONITORS</b>		
4.5.13	<p>For each general radiologist workstation  2 x 3 Mega Pixel/ 6 mega pixel (fusion/dual)  High Bright Medical monitors shall be supplied according to DICOM part 10 standards.</p> <p>For each mammography radiologist workstation  2 x 5 Mega Pixel/ 12 mega pixel (fusion/dual)  High Bright Medical monitors shall be supplied according to DICOM part 10 standards.</p>		
4.5.14	The vendor shall supply 17 concurrent radiologist Licenses + 1 floating license		
4.5.15	The PACS system shall allow DICOM images to be exported to an external media like CD, DVD and other external storage media on request by the user.		
4.5.16	The PACS application on the Radiologist workstation shall allow the user to move export selected images to JPEG format and TIFF format, and be able to adjust the image quality.		
4.5.17	A digital teaching file system option must be incorporated into the PACS.		
	<b>QUALITY ASSURANCE</b>		
4.5.18	The vendor shall conform with the latest Mammography Quality Standards Act (MQSA) regulations.		
4.5.19	<p>Quality assurance calibration shall be built into monitors to perform tasks such as luminance measurement and other quality assurance tests that are needed from radiation control for diagnostic monitors.</p> <p>If calibration tools are not build into monitors then calibration tools shall be included with diagnostic monitors. Explain what solution will be included.</p>		
4.5.20	<p>AAMP TG 18 test patterns shall be included with PACS and shall always be available on cache storage, it shall also be able to view dually on both diagnostic monitors.</p> <p>Explain your solution.</p>		
4.5.21	L-angle distance patterns shall be included with PACS and shall aslo be available on on-line storage.		
4.5.22	<p>Reject analysis software to be included.</p> <p>Explain if this software is available with your solution.</p>		
	<b>WORK LIST MANAGEMENT</b>		

4.5.23	The Radiologist PACS application shall support configurable work list management.		
4.5.24	The Radiologist PACS application shall have the contingency measure to search the PACS database for patient's Images, outside of the RIS application.		
4.5.25	The Radiologist PACS application shall allow for pattern searching within each of these fields. (Pattern searching refers to searching for a specific pattern of text or numerals, or symbols within the field).		
4.5.26	The Radiologist PACS application shall allow the User to use wildcards within the search criteria.		
4.5.27	The presentation of the work list to the user shall be configurable.		
4.5.28	The Radiologist PACS application shall open the appropriate patient images on the viewing monitors after the patient has been selected from the work list.		
4.5.29	The Radiologist PACS application work list shall display the overall Patient examination history once a patient has been selected.		
	<b>HANGING PROTOCOLS</b>		
4.5.30	When using the basic image manipulation app on a multi-monitor workstation, the user will be able to use hanging protocols. When using a single-monitor display it will be displayed according to the last and highest ranking presentation state, saved by a previous user.		
4.5.31	User defined hanging protocols shall be available to A specific users.		
4.5.32	System wide define hanging protocols shall be available to all users.		
4.5.33	The configurations of the Hanging protocols shall include the ability to change the screen layouts to user define layouts		
4.5.34	It shall be possible to change the layouts per monitor.		
4.5.35	It shall be possible to change the layouts across monitors. Hanging protocols must load selected image display features automatically, for instance- reference lines, synchronisation, zoom and pan, mirror image.		
4.5.36	It shall be possible to configure what is displayed in each segment of the display layout selected. Hanging protocols must load the advanced image manipulation application, and it must be a multi-modality hanging protocol.		
4.5.37	The Radiologist PACS application shall allow the User to save and label presentation states.		
4.5.38	These presentation states shall be saved as a presentation state object as part of the DICOM		

	record in the PACS system		
	<b>KEY IMAGES</b>		
4.5.39	Any images with annotations and measurements will automatically be saved as key images.		
4.5.40	These key images shall be saved as key images objects as part of the DICOM record in the PACS system.		
	<b>DESKTOP INTEGRATION BETWEEN RIS AND PACS</b>		
4.5.41	The Radiologist PACS application shall integrate seamlessly with the RIS application. A RIS/PACS solution is required from the vendor with seamless integration to HIS (MEDITECH).		
4.5.42	This integration shall automatically display the correct patient images in the PACS application when the patient is selected in the RIS.  Please state how this is done.		
	<b>VOICE RECOGNITION (30 licenses)</b>		
4.5.43	The voice recognition shall seamlessly integrate with the PACS and RIS		
4.5.44	The voice recognition shall be set up for each individual user/radiologist to enable the system to learn from each unique speech of the users/radiologists.		
4.5.45	When a radiologist is no longer present at the healthcare facility, it shall be possible to revoke his speech license and make it available for a new user.		
4.5.46	There shall be one floating license that can be used by more than one user.		
4.5.47	The solution shall be able to convert Conversational speech into the highest accurate written text on a PACS report.		
4.5.48	There shall be no need for restrictive voice commands for punctuation or formatting.		
4.5.49	The solution shall have an Automatic and continuous learning system.		
4.5.50	The voice recognition shall be able to adjust to a variety of indigenous accents to ensure best results.		

#### 4.6 RADIOGRAPHER, CLINICIAN AND PACS ADMINISTRATOR FUNCTIONALITY

4.6	RADIOGRAPHER, CLINICIAN AND PACS ADMINISTRATOR FUNCTIONALITY	COMPLY	DOES NOT COMPLY/STATE DEVIATION
	<b>RADIOGRAPHER FUNCTIONALITY</b>		
4.6.1	The Radiographers PACS software user interface shall be user friendly and intuitive.		
4.6.2	The PACS application shall be web based or client server based. Please give details as to your solution architecture.		
4.6.3	The PACS application shall allow DICOM images from an external media source like CD,DVD or		

	USB to be imported into the PACS system from the Radiographers workstations.		
4.6.4	The PACS system shall allow DICOM images to be exported to an external media like CD, DVD or USB on request by the user.		
4.6.5	When the DICOM images are exported a DICOM viewing program shall be automatically attached to the external Media.		
4.6.6	The PACS application on the Radiographers workstation shall allow the user to export selected images to JPEG format and TIFF format.		
<b>DICOM PRINTING</b>			
4.6.7	Authorized users may print to a DICOM printer from the basic image manipulation application.		
4.6.8	The Radiographers PACS application DICOM Print interface shall allow the user to select customizable layout formats.		
4.6.9	Please list the available print layouts your PACS application supports.		
4.6.10	The Radiographers PACS application DICOM Print interface shall allow the user to select different film sizes.		
<b>BASIC PACS ADMINISTRATOR FUNCTIONALITY</b>			
4.6.11	The PACS/RIS solution shall support a user audit tracking mechanism keeping a record of user activity on the solution.		
4.6.12	The PACS/RIS solution shall provide a PACS Administrator with the ability to create and manage user profiles on the solution.		
4.6.13	The PACS Administrator should be able to enable or disable the availability of functions based on a specific user group profile. i.e. radiology users have access to a different set of functions than clinicians users.		
4.6.14	The PACS/RIS solution shall provide the PACS Admin with the ability to add DICOM nodes to the solution		
4.6.15	The PACS/RIS solution shall provide a PACS Admin with the ability to change the value of DICOM tags to correct incorrectly entered data to ensure database integrity.		
4.6.16	In the case of a DICOM tags value being changed; these changes shall be applied to the original DICOM files stored in the PACS solution.		
4.6.17	The PACS solution shall provide a PACS Admin with the ability to import DICOM images from external media such as CD, DVD or memory stick as long as the data on the media is DICOM part 10 compliant.		
4.6.18	When the DICOM images are exported a DICOM viewing program shall be automatically attached		
<b>CLINICIAN FUNCTIONALITY</b>			
4.6.19	The Clinicians PACS application shall be web		

	based in which the images are pulled from the central server on request much like browsing the internet with all manipulation tools, measurement tools, worklist management tools and presentation state tools.		
4.6.20	The PACS application shall be web based. Please give details as to your solution architecture.		
4.6.21	The Clinicians PACS application shall allow the user to export selected images to JPEG format and TIFF format, DICOM format and export cine loops		

#### 4.7 RIS

4.7	RIS	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.7.1	The DICOM Modality Work list shall be available on all the modalities at the institution. Once the status of the exam changes to "EXAM PERFORMED" or "EXAM NOT PERFORMED" on RIS, the exam shall be removed from the work list automatically. See 1.2. for list of modalities that shall receive the work list. Explain if this possible with your solution.		
4.7.2	Preliminary reports shall be available on system and shall be able to move from preliminary status to approved status by a click of a button. Explain if this is possible with your proposed solution		
4.7.3	All approved reports shall be available on HIS (MEDITECH). Explain if this is possible with proposed solution		
4.7.4	Final report shall be simultaneously displayed with its relevant images and if an image has a final report then the report shall be displayed simultaneously.		

#### 4.8 HL7 INTERFACES

4.8	HL7 INTERFACES	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.8.1	Bidders shall interface their RIS/PACS with hospital information system (MEDITECH) and the following interfaces shall be used for interfacing:		
4.8.2	HL7 ADT interface		
4.8.3	HL7 ORM interface		
4.8.4	HL7 ORD interface		
4.8.5	HL7 ORU interface		

4.8.6	HL7 DFT interface		
4.8.7	The cost of the interfacing shall be at the expense of the bidder.		

#### 4.9 DICOM COMPLIANCE AND IHE INTEGRATION PROFILES

4.9	DICOM COMPLIANCE AND IHE INTEGRATION PROFILES	COMPLY	DOES NOT COMPLY/STATE DEVIATION
<b>IHE INTEGRATION PROFILES</b>			
4.9.0	Bidders shall provide their complete IHE Integration Profile for the PACS and RIS solution offered, <b>failing to do so shall make the bid invalid and it won't be considered.</b>		
4.9.1	The PACS shall adhere to the IHE profile: patient information reconciliation (PIR)		
4.9.2	The PACS shall satisfy the "IHE Standard—Scheduled Workflow Profile		
4.9.3	The PACS shall adhere to the following IHE Standard: IHE Standards— Consistent Presentation of Images		
4.9.4	The PACS shall adhere to the following IHE Standard: IHE Standard: PACS shall support Audit Trail & Node Authentication		
4.9.5	The PACS shall satisfy the following IHE Standard: IHE Standard—Cross Community Access of IHE		
4.9.6	The PACS shall adhere to the IHE profile: Cross-enterprise Document Sharing for Imaging (XDS-I.b)		
<b>DICOM</b>			
4.9.7	Bidders shall provide DICOM conformance statement for the PACS and RIS solution offered. If the RIS is not providing any DICOM services, please indicate so. Electronic copy shall be included. Failing to do any of above statements shall make the bid invalid and won't be considered.		
4.9.8	The PACS solution shall support the DICOM storage service as SCP and SCU. Provide evidence of required service by referencing the appropriate section in your DICOM Conformance Statement.		
4.9.9	The PACS solution shall support the DICOM query and retrieve service as SCP and SCU. Provide evidence of required service by referencing the appropriate section in your DICOM Conformance Statement.		
4.9.10	The PACS solution shall support the DICOM print service as SCU. Provide evidence of required service by referencing the appropriate section in your DICOM Conformance Statement.		
4.9.11	The PACS solution shall support the DICOM Modality Performed Procedure Step (MPPS) service as SCP. Provide evidence of required service by referencing		

	the appropriate section in your DICOM Conformance Statement.		
4.9.12	The PACS solution shall support the DICOM Storage commitment service as SCP. Provide evidence of required service by referencing the appropriate section in your DICOM Conformance Statement.		
4.9.13	The solution shall support the DICOM Modality Worklist Service as SCP. This service may be implemented in the PACS or RIS solution. Indicate which solution will be providing this service. Provide evidence of required service by referencing the appropriate section in your DICOM Conformance Statement.		
4.9.14	The solution shall support all required DICOM SOP classes to store DICOM objects based on the modalities listed herein. Provide evidence of required SOP Classes by referencing the appropriate section in your DICOM Conformance Statement.		
4.9.15	Bidders shall provide DICOM conformance statement for the PACS and RIS solution offered. If the RIS is not providing any DICOM services, please indicate so. An electronic copy shall be included for both DICOM Conformance Statements and IHE integration profiles. Bidders shall clearly indicate where to reference DICOM and IHE Statements in their document. Failure to comply will invalidate the offer.		

## 4.10 BUSINESS INTELLIGENCE

4.10	BUSINESS INTELLIGENCE	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.10.1	The solution shall make provision for real-time business intelligence reports. Please indicate how your solution will provide this.		
4.10.2	The business intelligence should provide online analytical processing (OLAP), statistical analysis, forecasting, and data mining.		
4.10.3	The business intelligence should provide management with real time reports and statistical analysis.		
4.10.4	Business intelligence shall be able to analyse data from modalities, RIS, PACS. Please state whether software will be able to query HIS		
4.10.5	Features and Functions: OLAP (On-line analytical processing) Query and Reporting Advanced Analytics Corporate Performance Management (Portals, Scorecards, Dashboards) Proactive BI Clinical analytics		

#### 4.11 ADDITIONAL HARDWARE

4.11	ADDITIONAL HARDWARE	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.11.1	<p><b>UNIVERSITAS:</b></p> <p>15 X RIS Workstations with preferable specs below or better. The RIS monitor and desktop shall be a Commercially available of the shelf (COTS) colour monitors with a minimum size of 19 inches.</p> <p>Small form factor PC type and not AOI computers to be supplied with the following specifications:</p> <ul style="list-style-type: none"> <li>Processor: Intel(R) Core(TM) i7 or i5 -9700 @ 3.00GHZ 3.00GHZ</li> <li>RAM: 8GB</li> <li>Solid State Hard Drives</li> <li>System type: 64-bit</li> <li>Network Card</li> <li>Wifi enabled</li> <li>Keyboard and mouse</li> </ul> <p>10 X Theatre Viewing Workstations with preferable specs below or better. The Theatre Viewing monitor and desktop shall be a Commercially available of the shelf (COTS) colour monitors with a minimum size of 55 inches with 1080p resolution.</p> <p>Small form factor PC type and not AOI computers to be supplied with the following specifications:</p> <ul style="list-style-type: none"> <li>Processor: Intel(R) Core(TM) i7 or i5 -9700 @ 3.00GHZ 3.00GHZ</li> <li>RAM: 8GB</li> <li>Solid State Hard Drives</li> <li>System type: 64-bit</li> <li>Network Card</li> <li>Wifi enabled</li> <li>Keyboard and mouse</li> </ul> <p>Pricing of desktop computer shall be included in specification.</p>	COMPLY	
4.11.2	<p><b>ANNEX:</b></p> <p>4 X RIS Workstations with preferable specs below or better. The RIS monitor and desktop shall be a Commercially available of the shelf (COTS) colour monitors with a minimum size of 19 inches.</p> <p>Small form factor PC type and not AOI computers to be supplied with the following specifications:</p> <ul style="list-style-type: none"> <li>Processor: Intel(R) Core(TM) i7 or i5 -9700 @ 3.00GHZ 3.00GHZ</li> <li>RAM: 8GB</li> <li>Solid State Hard Drives</li> <li>System type: 64-bit</li> <li>Network Card</li> <li>Wifi enabled</li> <li>Keyboard and mouse</li> </ul>	COMPLY	

	<p><b>1 X Oncology clinical Viewing Station:</b> Pricing of desktop computer shall be included in specification.</p>		
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#### 4.12 NETWORK REQUIREMENTS

4.12	NETWORK REQUIREMENTS	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.12.1	Bidders are advised that the current network of Radiology is on its own private network. They are further advised that the same network infrastructure shall be employed/upgraded for the project and that any changes, additions, modifications; or service or maintenance of the network infrastructure shall be on their account for the duration of the contract.		
4.12.2	Bidders shall submit a detailed network infrastructure proposal as part of their bid.		
4.12.3	It is preferred that the network solution is subcontracted to a recognized network, cabling and infrastructure company. Bidders shall indicate if the networking infrastructure is outsourced and to which company.		
4.12.4	Bidders shall supply a cabled network infrastructure to support all the servers, workstations AND modalities that will be connected to the network.		
4.12.5	The network infrastructure shall allow Netcare access to the PACS to view images within the SITA legislative and regulatory framework. Currently Netcare has access to view images from Universitas PACS		
4.12.6	Bidders are advised to ensure that PACS access is granted to Oncology, NHLS, Two Cathlabs and Nuclear Medicine departments respectively, which include network infrastructure.		
4.12.7	Password-controlled remote access must be available to the PACS Admin, Consultants, Dep. Director through an internet connection, making use of the department's VPN application within the SITA legislative and regulatory framework.		
4.12.8	Bidders shall ensure that Universitas Annex and Nuclear medicine to transmit their images from their respective modalities to Universitas PACS Archive.		
4.12.9	<p>Bidders shall provide an ad-hoc WiFi connections for Universitas / Annex Hospital:</p> <ul style="list-style-type: none"> <li>• 5 X WiFi Access points at <b>Annex</b>.</li> <li>• 16 X WiFi Access points at <b>Universitas Hospital</b>.</li> </ul>		

4.12.10	Bidders shall supply the complete network infrastructure including switches, cabinets, patch panels, brushes, fly leads, network wall boxes, all cables in trunking and identification marking of network cables and port numbers.		
4.12.11	Bidders shall ensure that when installing cabinets the appropriate power source is available to power the network.		
4.12.12	The bidder shall show the pricing for the network infrastructure separately in their proposals		
4.12.13	All costs including professional services, implementation, travel and labour for the network infrastructure shall be included in the bid.		

#### 4.13 PROJECT IMPLEMENTATION

4.13	PROJECT IMPLEMENTATION	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.13.1	The project shall be implemented in a structured and strategic manner with specific milestones.		
4.13.2	<p>The adjudicated bidder and the hospital team will jointly clearly define and agree on the following documents.</p> <p>SOW – Statement of Work: Defines the scope of the work to be performed, deliverables, roles and responsibilities, project governance and project team structures.</p> <p>Project Plan: Defines and documents the tasks for each phase of the project, timelines and resource allocation in a Gantt chart identifying tasks, timelines, resource allocation, milestones and critical path to project completion.</p> <p>Test Plan: Defines and documents how the solution will be tested using predefined user acceptance tests (UAT).</p> <p>Training Plan: Defines and documents how the training will be delivered. The following user group shall be included in your training approach.</p> <ul style="list-style-type: none"> <li>• Radiographers (group training)</li> <li>• Super Users (Individual training)</li> <li>• Key Hospital Staff (group training)</li> <li>• Clinicians (group training)</li> </ul>		
4.13.3	<p>The following shall be considered milestones in the project:</p> <ul style="list-style-type: none"> <li>• Milestone 1: Project definition agreed and signed-off.</li> <li>• Milestone 2: PACS system ready for test</li> <li>• Milestone 3: Acceptance Test completed</li> </ul>		

	<ul style="list-style-type: none"> <li>• Milestone 4: Training completed</li> <li>• Milestone 5: Go-Live</li> </ul>		
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#### 4.14 Warranty Solution

4.14	Warranty Solution	COMPLY	DOES NOT COMPLY/STATE DEVIATION
4.14.1	The complete PACS/RIS solution including all components as defined in this document shall be covered by a solution warranty.		
4.14.2	The warranty period shall run for 24 months, starting on the day the system goes live into clinical use.		
4.14.3	The warranty period shall cover all costs associated with performing preventative and corrective maintenance where preventative maintenance is maintenance performed on the solution to ensure that it is running effectively and compliant with current regulations and corrective maintenance is maintenance that is performed on the solution to correct faulty components and/or dysfunctional software.		
4.14.4	The warranty shall cover all labour, travel and parts used in performing preventative and corrective maintenance.		
4.14.5	The warranty shall include at least 2 preventative maintenance trips to the site per year. To perform various tasks as defined by the vendor.		
4.14.6	Quality assurance test results according to the stipulated time frames must be handed to the departmental head during this 2-year period.		
4.14.7	<p>Server Greening service and maintenance solution shall be added on as an extra optional under service and maintenance and pricing shall be indicated separately as an extra optional.</p> <p>Server Greening solution entails ensuring that the latest operating software/firmware and hardware is available for the latest PACS/RIS software throughout the contract period and until the next version of the PACS/RIS is available.</p>		

## 5. FINANCIAL SCHEDULE

1	<b>COST PRICE (Outright purchase)</b>	R
2	<b>MIGRATION COST</b>	R
3	<b>ROOM PREPARATIONS (if any)</b>	R
4	<b>FIVE YEAR SERVICE AND MAINTENANCE COST</b>	R
5	<b>MONTHLY SERVICE AND MAINTENANCE COST</b>	R
	<b>TOTAL BID PRICE</b>	R

## **SECTION C:**

# **TECHNICAL SPECIFICATIONS (PELONOMI TERTIARY HOSPITAL)**



**health**

Department of  
Health  
FREE STATE PROVINCE

## TERMS OF REFERENCE

**THIS SERVES AS AN INVITATION TO SUITABLY QUALIFIED SERVICE PROVIDERS TO SUPPLY, DELIVER, INSTALL AND COMMISSION AN ENTERPRISE RIS/PACS AT PELONOMI TERTIARY HOSPITAL**

### 1. INTRODUCTION

This document is an invitation to BIDDERS to propose an integrated Radiology Information System (RIS) / Picture Archiving and Communications System (PACS) solution for Pelonomi Tertiary Hospital in the Free State Department of Health. The functional systems shall therefore make it easy for end users to be able access patient images and information, this will facilitate quick and correct patient diagnoses for all patients with a minimum effort from personnel. In order to accomplish a high-quality imaging service, it is necessary to conceptualize the relationship of the system with patient handling and care as point of departure.

It is therefore the intention of the Free State Department of Health to acquire a fully integrable(integratable) PACS (Picture Archiving Communication System) /RIS (Radiology Information System) system to the HIS (Hospital Information System) at Pelonomi Tertiary Hospital. A working paperless environment where doctors can request radiology examinations, view radiology images and related reports on any device, be it clinical review workstation, diagnostic workstations, smart phone or tablet is envisaged.

The Pelonomi Tertiary Hospital is a 750-bed training institution with a fully functioning Trauma Centre. It is a multi-modality hospital covering all imaging modalities and all imaging specialties. We currently have a Fujifilm PACS/RIS system integrated with Meditech HIS (Hospital Information System) and all our modalities are fully digital.

### 2. PURPOSE OF THE TERMS OF REFERENCE

It is the intention of the Free State Department of Health to enter into a formal contract with a service provider to provide the services described herein. These Terms of Reference will form a basis of the contract.

### 3. PURPOSE AND RATIONALE:

The Free State Department of Health hereby invites proposals from reputable and qualified service providers for installation and commissioning of RIS/PACS at Pelonomi Tertiary Hospital.

#### 4. PACS/RIS Data Migration

	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
4.1	It is the intention of Pelonomi Tertiary Hospital to migrate all data from the existing PACS& RIS solution to the new PACS & RIS solution. This includes Patient Demographics, Requests, Visits, Orders, Dictations, Reports, Users, Procedures Tables, Billing codes, Inventory, etc.		
4.2	Bidders are advised that the successful vendor shall migrate the current RIS/PACS data and the preceeding RIS/PACS data to the new RIS/PACS Archive. It shall be possible to view the current PACS images in the new PACS archive and the same shall apply for the RIS records, it shall be possible to view current RIS records and reports on the new RIS/PACS solution. The migration process shall in no way affect clinical imaging/ workflow activities. The successful vendor shall be 100%		
4.3	Supply us with a detailed description how you will do the migration.		
4.4	Provide us with your data migration methodology statement. If possible give us details if you have previously transferred data from a AGFA or FUJI PACS to your PACS.		
4.5	An integrity data check and test patients must be done by the new vendor.		
4.6	Corrupted data identified during the migration process, should be highlighted to Pelonomi and the successful bidder should provide a viable solution to deal with corrupted data. Outline your solution for corrupted data		
4.7	Storage capacity at Pelonomi Hospital for AGFA PACS is as follows: -Storage in Archive: 17.2 TB -Image PACS Redo: 5 GB -Oracles Files: 45 GB -Database Files 125 GB -Temp 10 GB		

4.8	Storage capacity at Pelonomi Hospital for FUJI FILM PACS is as follows: -Storage in Archive: ..... TB -Image PACS Redo: ....GB -Oracles Files: ....GB -Database Files ..... GB -Temp ..... GB		
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## 5. HOSPITAL INFORMATION & STATISTICS

### 5.1 Staff Establishment

	Role	Number
1	Radiologist	30 (Concurrent Users)
2	Radiographers / Technologists	46 + 30 Students (40 Concurrent Users)
3	Receptionists	11 (Concurrent Users)
4	Physicians / Referring Doctors	100 (Concurrent Users)
5	Orthopedic Surgeons	6 (Concurrent Users)

### 5.2. Modality Information

	MODALITY			NET-WOR-K	ANA-LOG/DI-GITAL	DI-COM/NON-DICOM	LOCA-TION	DICOM LICENSE			EXAMS PER DAY	IM-AGE S PER EXA M
	BRAND	MODEL	TYPE					STORE	WORKLIST	PRINT		
1	Siemens	Somatom	CT	Y	D	DICOM	Block E	Y	Y	N	20-30	2000
2	Siemens	Aera	MR	Y	D	DICOM	Block G	Y	Y	N	10-15	1000
3	Philips	Diagnost	Digital Diagnost	Y	D	DICOM	Block G	Y	Y	N	50	3
4	Philips	Diagnost	Digital Diagnost	Y	D	DICOM	Block G	Y	Y	N	50	3
5	Philips	Diagnost	Digital Diagnost	Y	D	DICOM	Block G	Y	Y	N	50	3
6	Philips	Diagnost	TH 80	N	A	NON-DICOM	Block G	N	N	N	50	3
7	Philips	BV Puls-era	Mobile screening	Y	D	DICOM	Block G	Y	Y	N	10	5
8	Philips	BV Puls-era	Mobile screening	Y	D	DICOM	Block G	Y	Y	N	10	5
9	GE	High-speed	CT	Y	D	DICOM	Block E	Y	Y	N	15-20	50
10	Hologic	Selenia	Mammography	Y	D	DICOM	Block E	Y	Y	Y	8-10	6
11	Toshiba	Infinix	Vascular	Y	D	DICOM	Block E	Y	Y	Y	10	20
12	Toshiba	Xario	US	Y	D	DICOM	Block E	Y	Y	Y	10	5-8
13	Toshiba	Xario	US	Y	D	DICOM	Block E	Y	Y	Y	10	5-8
14	Toshiba	AplioXU	US	Y	D	DICOM	Block E	Y	Y	Y	10	5-10
15	Toshiba	Aplio300	US	Y	D	DICOM	Block E	Y	Y	Y	10	5-10
16	Toshiba	Aplio300	US	Y	D	DICOM	Block E	Y	Y	Y	10	5-10
17	Siemens	Artis Zee	Fluorography	Y	D	DICOM	Block G	Y	Y	Y	10-15	5-10
18	Agfa	XD100	Mobile	Y	D	DICOM	Block G	Y	Y	Y	30	2
19	Agfa	XD100	Mobile	Y	D	DICOM	Block G	Y	Y	Y	30	2
20	Agfa	CR-85-X	CR Mammo	Y	D	DICOM	Block E	N	N	N	30	2
21	Agfa	CR-85-X	CR General	Y	D	DICOM	Main Ra-dioogra	N	N	N	30	2
22	Agfa	CR-85-X	CR General	Y	D	DICOM	Main Ra-dioogra	N	N	N	30	2
23	Agfa	CR-85-X	CR General	Y	D	DICOM	Main Ra-dioogra	N	N	N	30	2
24	Vertex	QDR Se-ries	Bone Density	Y	D	DICOM	Block E	Y	Y	Y	5	3

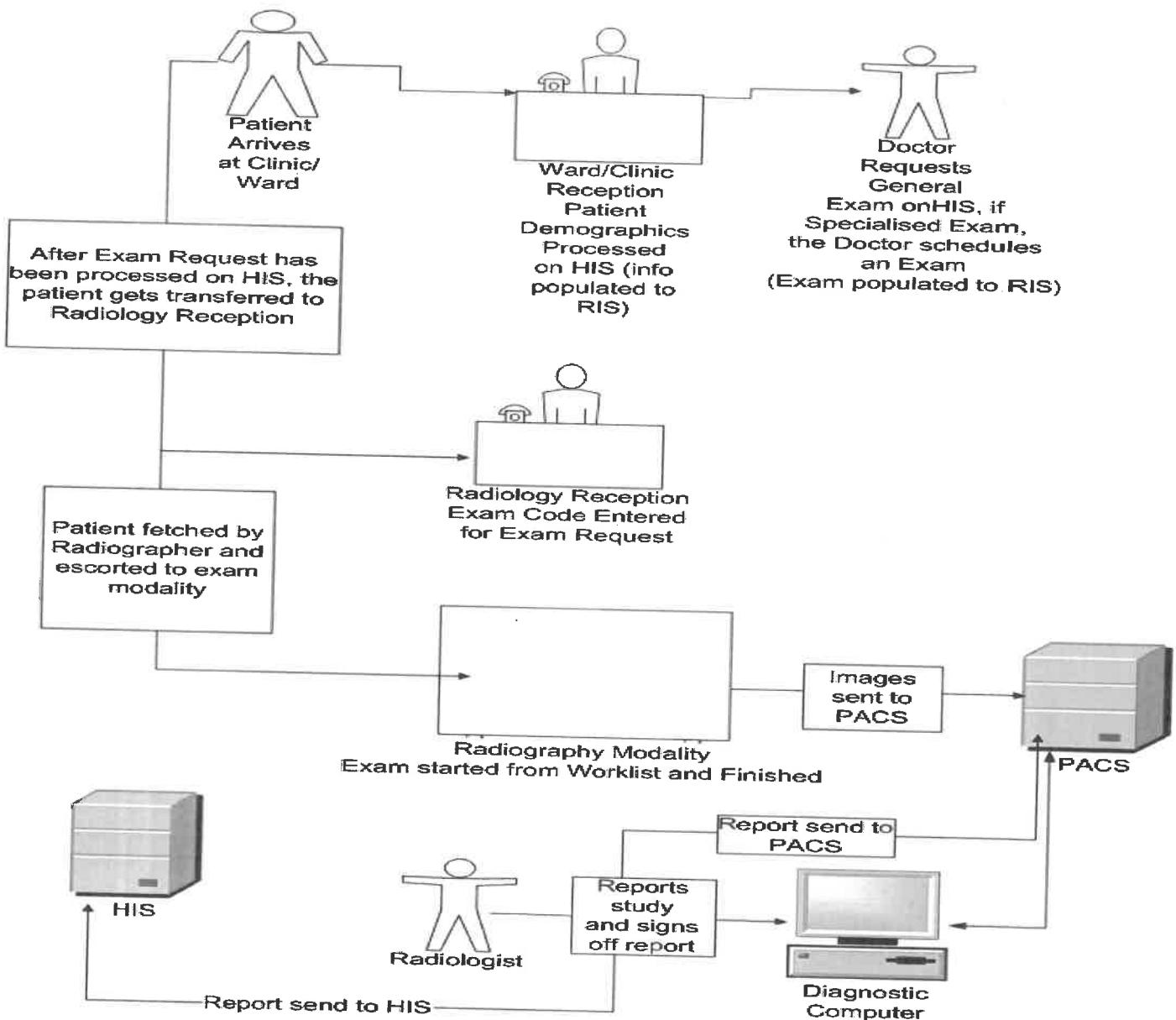
25	Axim	Planmeca	Panorex	Y	D	DICOM	Block E	Y	Y	Y	10	2
26	Lodox	Lodox	DR	Y	D	DICOM	Trauma Resusci-	Y	Y	Y	10	2

### 5.3 Clinical Operations Overview

The current workflow is as follows:

- Patient arrives at Trauma Unit, Casualty, Clinic or Ward.
- Patient Demographics entered on HIS (MEDITECH).
- Doctor processes order request on HIS (MEDITECH) order entry.
- Patient arrives at Radiology Dept.
- Request processed at Radiology Department RIS system and Exam Code Entered and Patient status changes to arrive in the RIS.
- Radiographer fetches patient, performs study at Modality through selecting the right Patient from the Worklist.
- When finished, the study is closed on the modality and Images are sent to PACS and study is ready for Reporting.
- Radiologist reports study and signs, it off.
- Report is sent to HIS (MEDITECH) via the interfaces and is also available on PACS.

## 5.4 Workflow diagram illustration



## 5.5 CD DISTRIBUTION ROBOT

	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
5.5.1	A CD distribution robot shall be supplied. Vendor Shall provide a 5-year supply of cartridges for the Duration of the contract.		
5.5.2	The CD robot software shall receive data from the PACS system in latest DICOM format.		
5.5.3	The CD robot shall support CD media and DVD media. The robot shall support all CD and DVD formats.		
5.5.4	The CD Robot shall write the dicom images to the chosen media.		
5.5.5	The CD Robot shall write a DICOM viewing software onto the chosen media. The user has the option to include a viewer for the imaging on the disc. Specify if robot can write in any other formats other than DICOM (please list formats)		
5.5.6	The DICOM viewer shall be configured to use the autoplay function.		
5.5.7	Please state which operating systems the image viewer on the disc is compatible with.		
5.5.8	Specify the load the robot can carry-it must be at least 100 CD per day.		
5.5.9	Indicate the speed of burning, if it has 2 burners in Parallel.		
5.5.10	The maintenance cost of the disc burner shall be part of the total PACS/RIS maintenance contract.		
5.5.11	The CD Burner shall be able to write disc without label even if the ink is depleted		
	<b>System Specification</b>		
5.5.12	A high availability, comprehensive solution to be offered. The overall uptime of the system shall be able to meet the SLA of 99.99%. Please give details of your Archive architecture and explain		
5.5.13	There shall be high availability of hardware, software and databases of the PACS archive server supplied. An intelligent 48 port switch and software/firmware upgrades shall form part of hardware and software to be included. Please give details of how this shall be achieved and give indication of 5 year upgrade path.		

5.5.14	Vendors shall provide a full diagram and description of their whole solution including RIS-PACS, integration with HIS (MEDITECH), data migration, archiving options, server details of primary Archive. The PACS shall be able to send images to other institutions and to a future central data repository or VNA, it shall also be able to receive images from other institutions i.e. the PACS shall include the DICOM Service Class License Query/Retrieve SCU and SCP		
5.5.15	<b><i>The solution offered shall make provision for 5 years online (cached) storage. Explain how you will do this.</i></b>		
5.5.16	<b>In the event of a failure within the system, the system will automatically alert the PACS administrator and vendor of potential problems. A Total pro-active self-monitoring system of server room shall be provided and alerts shall also be done in the form of sms or any other messaging system to alert PACS administrator and vendor. Monitoring shall form part of contract. Please describe how this shall</b>		
5.5.17	A full Disaster Recovery solution shall be provided. This implies that a separate archive solution shall be provided in a separate location within the hospital grounds or elsewhere. In the case of a complete disaster of the primary archive the disaster recovery solution shall provide the radiology department with a working archive solution seamlessly. This solution shall provide the same functionality as the primary archive. Please give details of your solution.		
5.5.18	Based on the statistical information and notes made in 5.2.2, vendors are required to state their accumulative archive size for 7 – 10 years.		
5.5.19	Vendors are also required to state how this will be implemented, whether at the time of implementation or		
5.5.20	Vendors must be responsible to liaise with modality suppliers and ensure correct connection of all modalities to the PACS server. All modalities in section 5.2.2 shall be connected to PACS and configured to make use of modality worklist.		

5.5.21	Vendors shall ensure smooth transition from hospital power supply to UPS power when there is power-outages. Switch over configuration shall be seamless to switch over and uninterrupted. UPS for RIS/PACS servers to be responsibility of vendor. UPS shall be able to maintain servers for minimum an hour.		
5.5.22	Vendors shall supply their own UPS's - independent of the Departmental UPS's currently available.		
5.5.23	Vendors shall supply 2 X aircons per server room for the main and secondary server rooms, where 1 aircon will be used and the other will be off as a redundant measure. Vendors shall maintain aircons at their own cost.		
5.5.24	<p>Vendor shall supply and install their own monitoring system, available 24hrs a day. The CUSTOMER is Not obligated to provide the bidder with voice and data facilities. The bidder is expected to provide a server monitoring system</p> <p>With dynamic monitoring from reputable Monitoring System Company (power, humidity and fire etc.) for duration of the contract.</p> <p><b>A Total pro-active self-monitoring system of server room shall be provided and alerts shall also be done in the form of sms or any other messaging system to alert PACS administrator and vendor.</b></p> <p><b>1: Main server room has a ADSL line infrastructure</b></p> <p><b>2: Radiology department has ICLIX network infrastructure</b></p>		
	<b><i>Hardware Specification</i></b>		
5.5.25	<p>Quantity required:</p> <p>13 X General Diagnostic workstation – Each workstation shall include 1 X 23" color monitor and 2 X 3 MP minimum reporting monitor or 1 X 6 MP minimum fusion/dual color monitor</p> <p>1 X Mammography Diagnostic workstation – Each workstation shall include 1 X 23" color monitor and 2 X 5 MP minimum reporting monitor or 1 X 12 MP minimum fusion/dual color monitor</p>		
	<b>MONITOR SPECIFICATION</b>		
5.5.26	For the Radiologists workstation 1 x 23" Colour LCD minimum monitor shall be supplied.		

5.5.27	The 23" monitor shall be a LCD monitor.		
5.5.28	The 23" monitor shall be a colour monitor		
5.5.29	The size of the monitor shall be 23" or larger		
5.5.30	The pixel resolution of the 23" monitor shall be at least 1.3 MP.		
5.5.31	The 23" monitor shall be able to have a viewing angle of, at least 15-30° -Please state viewing angle.		
5.5.32	The refresh rate of the 23" monitor shall be more than 75Hz. Please state refresh rate.		
5.5.33	All graphics cards, connection cables, and power cables shall be supplied with the monitor.		
<b>MEDICAL GRADE MONITORS</b>			
5.5.34	For each general radiologist workstation		
5.5.35	The vendor shall supply 30 concurrent radiologist Licenses + 1 floating license		
5.5.36	The vendor shall supply 14 UPS's, 1 for each Radiologist workstation with a capacity to run for at least 2 hours without interruption.		

	<b>Software Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
5.5.37	<p>The following software packages shall be available</p> <ul style="list-style-type: none"> <li>-MR Spectroscopy – Processing Spectroscopy Images.</li> <li>-DWI – Diffusion weighted imaging (DWI).</li> <li>-DTI – Diffusion Tensor Imaging.</li> <li>-Orthopedic package (6 Concurrent Licenses).</li> <li>-Mammo (tomosynthesis) should be importable from Modality.</li> <li>MRI mammo package</li> <li>-3D/4D – Volume Viewer.</li> <li>-Neuro - 4D perfusion for neuro and brain view.</li> <li>-PET/CT - multi-modality.</li> <li>-CT Colonoscopy package.</li> <li>-Oncology package.</li> <li>-Vascular package.</li> <li>-Cardiac package.</li> <li>-Maxillo package.</li> <li>-Modality workstation integration of CT, MRI and Mammo shall be possible.</li> <li>Buit in streamlined Digital Teaching file system</li> </ul>		

5.5.38	Any other software package which the Vendor might deem necessary and applicable but not mentioned above, shall be listed with its functionality and available options.		
5.5.39	When reporting it shall be possible to have a drop-down menu of ICD 10 codes, shall be available on each report and approval of report shall not be allowed without ICD 10 code.		
5.5.40	The Radiologists PACS software user interface Shall be user friendly and intuitive. Please state how Your solution achieves this.		
5.5.41	Bidders are advised that smart devices should be able to view images and reports on archive via an android application, Apple IOS application or URL address without being connected to hospital network i.e. zero footprint platform for image viewing		
5.5.42	The PACS application shall allow the user while being busy with a VR report and performing user specific advanced manipulation, to place on hold the report and advanced image manipulation, enter nother case perform advanced image manipulation, then return back to original case and continue reporting an advanced image manipulation from where he left off. Explain how your solution will achieve this.		
5.5.43	The PACS system shall allow DICOM images to Be exported to an external media like CD, DVD And other external storage media on request by the user it shall also be possible to burn CD/DVD on the workstations.		
5.5.44	When the DICOM images are exported a DICOM viewing program shall be burn with images on a CD/DVD and configured to use the auto play function.		
5.5.45	The PACS application on the Radiologist Workstation shall allow the user to move export selected images to JPEG format and TIFF format, and be able to adjust the image quality.		
5.5.46	ICD 10 coding must be included.		
5.5.47	A digital teaching file system option must be incorporated into the PACS.		
<b>IMAGE MANIPULATION TOOLS</b>			
5.5.48	Flipping images on the Horizontal and vertical Planes shall be possible on all Radiologist workstations.		

5.5.49	Rotating images 90 and 180 degrees shall be possible on all Radiologist workstations.		
5.5.50	Pre programmed window width and level settings shall be possible on all Radiologists workstations.		
5.5.51	Dynamic interactive brightness and contrast control selected on the mouse shall be possible on all Radiologists workstations.		
5.5.52	Dynamic interactive zoom in and out directly selected on the mouse shall be possible on all Radiologists workstations.		
5.5.53	Dynamic interactive PAN feature shall be possible on all Radiologists workstations.		
5.5.54	The user shall be able to activate a cine loop functionality, and customize the speed.		
5.5.55	The Radiologist PACS application work list shall display the overall Patient examination history once a patient has been selected.		
5.5.56	The user shall be able to set the speed of the cine loop to correspond to the actual cine speed when the data was acquired. This shall be the default setting.		
5.5.57	The user shall be able to customize whether the cine loop automatically repeats itself.		
5.5.58	The user shall be able to customize the direction Of the repeat. E.g. begin to end & end to begin OR begin to end & begin to end.		
5.5.59	The user shall be able to link the cine functionality (described above) across two or more frames.		
5.5.60	The solution shall intelligently match the correct Slice locations of the selected series/study. i.e. if 2 studies are being compared the slice location in each study shall be the same or as close as possible.		
5.5.61	The user shall be able to manually link two or More series/studies. This functionality will be used when the automatic link is inaccurate and will override the automatic link.		
5.5.62	The user shall be able to link image manipulation functionality across multiple frames. The linkable functionality shall be:		

5.5.63	Magnifications.		
5.5.64	Pan.		
5.5.65.c	Window width and level.		
5.5.66	It shall be possible for the user to apply imaging enhancement filters.		
5.5.67	Edge enhancement shall be possible		
5.5.68	Image sharpening shall be possible		
5.5.69	Image softening shall be possible.		
5.5.70	Scrolling in multiple plains		
5.5.71	Reference lines to show relative position.		
	<b>Measurement tools</b>		
5.5.72	Radiologists PACS application shall be capable of measuring distance on the displayed image.		
5.5.73	Multiple distance measurements on a single Image shall be possible on all Radiologist workstations.		
5.5.74	The Radiologists PACS application shall be Capable of measuring an angle on the displayed image		
5.5.75	Multiple angle measurements on a single image Shall be possible on all Radiologist workstations.		
5.5.76	The basic imaging manipulation interface of the imaging solution shall be capable of measuring a COBB angle on the displayed image.		
5.5.77	Multiple COBB angle measurements on a single image shall be possible on all Radiologist workstations.		
5.5.78	The Radiologist PACS application shall be capable of measuring a region of interest (ROI) on the displayed image		
	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
5.5.79	The measurement shall reflect average, minimum, maximum and standard deviation of the density within the ROI.		
5.5.80	Multiple ROI measurements on a single image Shall be possible on all Radiologist workstations.		
5.5.81	The following shapes shall be available for the ROI measurement on each Radiologist workstation. Circular, Rectangular, freehand drawn with mouse.		
5.5.82	The reference points for any measurements shall Be editable by the user. It shall be possible for the user to make text annotations.		

5.5.83	It shall be possible to delete measurements.		
5.5.84	Any image to which text or measurements have been added will automatically be stored as a key image.		
	<b>QUALITY ASSURANCE</b>		
5.5.85	The vendor shall conform with the latest Mammography Quality Standards Act (MQSA) regulations.		
5.5.86	Quality assurance calibration shall be built into monitors to perform tasks such as luminance measurement and other quality assurance tests that are needed from radiation control for diagnostic monitors. If calibration tools are not build into monitors then calibration tools should be included with diagnostic monitors. Explain what solution will be included.		
5.5.87	AAMP TG 18 test patterns to be included with PACS and shall always be available on cache storage, it shall also be able to view dually on both diagnostic monitors. Explain your solution.		
5.5.88	L-angle distance patterns shall be included with PACS and shall aslo be available on on-line storage.		
5.5.89	Reject analysis software to be included. Explain if this software is available with your solution.		
	<b>WORK LIST MANAGEMENT</b>		
5.5.90	The Radiologist PACS application shall support configurable work list management.		
5.5.91	The Radiologist PACS application shall have the contingency measure to search the PACS database for patient's Images, outside of the RIS application.		

	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
5.5.92	<b>The PACS application shall allow the user to search on the following DICOM fields from within the PACS application.</b>		
5.5.93	<b>Patients Last Name</b>		
5.5.94	<b>Patient Unique ID number or (MRN)</b>		
5.5.95	<b>Study Date</b>		

5.5.96	<b>Accession Number</b>		
5.5.97	<b>Study Description</b>		
5.5.98	<b>Referring Physician</b>		
5.5.99	<b>Modality</b>		
5.5.100	The Radiologist PACS application shall allow for pattern searching within each of these fields. (Pattern searching refers to searching for a specific pattern of text or numerals, or symbols within the field).		
5.5.101	The Radiologist PACS application shall allow the User to use wildcards within the search criteria.		
5.5.102	The presentation of the work list to the user shall be configurable.		
5.5.103	The columns that are presented to the user should be configurable based on the DICOM tag required. Please state what fields are configurable.		
5.5.104	The columns that are presented to the user shall be able, to be sorted ascending or descending.		
5.5.105	The order in which the columns are displayed should be configurable. Please give details.		
5.5.106	The Radiologist PACS application shall open the appropriate patient images on the viewing monitors after the patient has been selected from the work list.		
5.5.107	The Radiologist PACS application work list shall display the overall Patient examination history once a patient has been selected.		

	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
	<b>HANGING PROTOCOLS</b>		
5.5.108	When using the basic image manipulation app on a Multi-monitor workstation, the user will be able to use hanging protocols. When using a single-monitor display it will be displayed according to the last and highest ranking presentation state, saved by a		

	previous user.		
5.5.109	The Hanging Protocols shall be configurable based on the following criteria.		
5.5.110	User defined hanging protocols shall be available to A specific users.		
5.5.111	System wide define hanging protocols shall be available to all users.		
5.5.112	The configurations of the Hanging protocols shall include the ability to change the screen layouts to user define layouts		
5.5.113	It shall be possible to change the layouts per monitor.		
5.5.114	It shall be possible to change the layouts across monitors. Hanging protocols must load selected image display features automatically, for instance- reference lines, synchronisation, zoom and pan, mirror image.		
5.5.115	It shall be possible to configure what is displayed in each segment of the display layout selected. Hanging protocols must load the advanced image manipulation application, and it must be a multi-modality hanging protocol.		
5.5.116	<b>Which images are hung in which segment shall be configurable based on the following criteria.</b>		
5.5.117	<b>Study date</b>		
5.5.118	<b>Study time</b>		
5.5.119	<b>Body part</b>		
5.5.120	<b>The presence of previous patient examinations</b>		
5.5.121	<b>Modality</b>		
5.5.122	<b>Windows level</b>		
5.5.123	<b>Examination type</b>		

	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
5.5.89.h	<b>Presentation states</b>		
5.5.89.i	<b>Prior vs current</b>		
5.5.89.j	<b>Series description</b>		
5.5.89.k	<b>Study description</b>		

5.5.89.l	<b>Body position</b>		
5.5.89.m	<b>Laterality</b>		
5.5.90	The Radiologist PACS application shall allow the User to save and label presentation states.		
5.5.91	These presentation states shall be saved as a presentation state object as part of the DICOM record in the PACS system		
5.5.92	The user shall be able to change the font size And colour of the annotations.		
5.5.93	The user shall be able to add "arrow" annotations To the image.		
5.5.94	Multiple annotations shall be possible on a single image.		
5.5.95	A pre defined list of annotations shall be available for the user.		
5.5.96	The user shall be able to edit the positions of an annotation.		
5.5.97	It shall be possible to show/hide annotations.		
5.5.98	Spine annotations shall be possible in which the annotation automatically changes based on the previous annotation .e.g. L1 automatically changes to L2.		
5.5.99	Please state any other specific annotation Functions your software solution provides.		
5.5.100	Annotations shall be saved as an overlay on the image		

	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
	<b>DICOM PRINTING AND PRINTER</b> The Vendor shall supply a high definition x-ray imaging medical paper Printer.The printer shall be Capable of printing high Dicom images from CT, MR etc		
5.5.101	Authorized users may print to a DICOM printer from the basic image manipulation application.		
5.5.102	The Radiologist PACS application DICOM print interface shall allow the user to select customizable layout formats.		
5.5.103	Please list the available print layouts your PACS application supports.		
5.5.104	The Radiologist PACS application DICOM print interface shall allow the user to Select different paper sizes.		

	KEY IMAGES		
5.5.105	Any images with annotations and measurements Will automatically be saved as key images.		
5.5.106	These key images shall be saved as key images objects as part of the DICOM record in the PACS system.		
	<b>DESKTOP INTEGRATION BETWEEN RIS AND PACS</b>		
5.5.107	The Radiologist PACS applications shall integrate seamlessly with the RIS application. A RIS/PACS solution is required from the vendor with seamless integration to HIS (MEDITECH).		
5.5.108	This integration shall automatically display the correct patient images in the PACS application when the patient is selected in the RIS. Please state how this is done.		
	<b>MULTIPLANAR RECONSTRUCTION (MPR)</b>		
5.5.109	It shall be possible to construct a MPR view of CT or MRI studies from within the Radiologists PACS software.		
5.5.110	The user shall be able to see at least three frames		
5.5.111	The three frames shall be populated by a sagittal, coronal, and axial view of the loaded study.		

	<i>Specification</i>	<i>Comply</i>	<i>Does not comply, state deviation</i>
5.5.111	<b>Positional correction –</b> <i>Each plane is defined by its relative position in two other planes. E.g. an axial plane is defined by its relative position in both the coronal (to define the left to right angulations) and the sagittal plane (to define the anterior to posterior angulation).</i>		
5.5.112	The PACS application shall show two orthogonal lines per plane, demonstrating the relative position of the other two planes on the current plane i.e. reference lines.		
5.5.113	The user shall be able to view the orthogonal lines on all planes at all times.		
5.5.114	The user shall be able to hide/show the orthogonal lines.		
5.5.115	The user shall have an indication of which Orthogonal line is referencing which plain.		
5.5.116	The angle between the plains shall always be 90 Degrees in MPR mode.		

5.5.117	It shall be possible for the user to change the Position of the orthogonal lines dynamically.		
5.5.118	When an orthogonal line is changed the corresponding plane shall update in real time.		
5.5.119	It shall be possible to create a slab of data in any plane		
5.5.120	The thickness of the volume shall be able to be dynamically adjusted by the user.		
5.5.121	The user shall be able to dynamically adjust the thickness of the volume.		
5.5.122	The user shall be able to choose between the following different intensity projections of the data within the volume.		
5.5.123	MIP (Maximum Intensity Projection) shall be possible		
5.5.124	AveIP (Average Intensity Projection) shall be possible.		
5.5.125	MinIP (Minimum Intensity Projection) shall be possible.		

	<b>Specification</b>	<b>Comply</b>	<b>Does not comply, state deviation</b>
5.5.126	<b>Other Multiplanar Reconstruction Modes</b>		
5.5.127	<b>Multiplanar Reconstruction (MPR) Double Oblique</b>		
5.5.128	It shall be possible for the user to perform MPR Double Oblique function within the Radiologist PACS Application.		
5.5.129	The only difference between the MPR Double Oblique function and the standard MPR function shall be that the angle between the planes can change.		
5.5.130	All other function describe in the standard MPR requirements shall be possible in the Double Oblique modes as well.		
5.5.131	Please state if any functions are not possible.		
5.5.132	<b>Multiplanar Reconstruction (MPR) Curved Oblique</b>		
5.5.133	It shall be possible for the user to preform a MPR Curved Oblique function within the Radiologist PACS Application.		
5.5.134	In the curved MPR Mode the user shall be able to		