

Section II: Schedule of Requirements - Lot 1

eSourcing reference: ITB/2024/52072

A. Summary of Requirements

Lot 1: Medical Imaging

B. Technical specifications for Goods and Comparative Data Table

Item No	Description	Quantity
01	ULTRAPORTABLE, INTELLIGENT ECHOCARDIOGRAPHY DEVICE	3
02	COLOR DOPPLER ULTRASOUND	2
03	INTRAOPERATIVE ULTRASOUND	1
04	VIDEO-ENDOSCOPY COLUMN	1
05	LINEAR DIGESTIVE ECHOENDOSCOPE	2

General requirements for :

Each device shall be CE marked, Conforms to the requirements as per MDR 745/2017 or MDD 93/42 or Provide a Regulatory approval and marketing authorization issued by FDA

Copy of the above mentioned certifications shall be included in the offer.

The supplier must provide Installation, User and technical manual in French preferably or English hard copy for the medical system during delivery on site.

- The bidder should provide the contact of the official representative in Tunisia for each of the equipment offered. **The brand representative or distributor will be in charge of the after sales services during the warranty period. In case the bidder is not the local brand representative, a statement from the manufacturer or the local distributor of the brand in relation to after sales services must be provided by the bidder.**

The supplier must provide with his/her offer the corresponding Price List of accessories, consumables and most significant spare parts for the items.

Associated services per site:

C. DELIVERY AND INSTALLATION

The supplier is responsible and in charge of supplying and installing goods following the below listed minimal conditions:

- 1) DPU Incoterms 2020 at the final user site for each equipment including unloading.
- 2) The transportation must be done following the manufacturer guidelines (storage conditions , temperature, humidity, movementation requirements, battery management...) on how to handle the equipment, accessories, consumables and reagents when applicable:
- 3) Every single box delivered must be labelled as follow

3.a- Label on the boxes

The supplier has to ensure that the boxes are labeled as per requirements and with reference to the “principles of Labeling for Medical Devices and IVD Medical Devices”, IMDRF/GRRP WG/N52 FINAL:2019 <https://www.imdrf.org/sites/default/files/docs/imdrf/final/technical/imdrf-tech-190321-pl-md-ivd.pdf>

The consignee of the equipment will be the Tunisian Ministry of Health

Region A Color code	Ministry of Health, TUNISIA		
Region: A	UNOPS Office Xxxxx , TUNIS, TUNISIA		
Beneficiary Hospital Data:	Tender: xxx	Lot xxx	Item xxx
Box	2	of	5
Box Weight kg	Length cm	Width	Height
xxx	xxx	xxx	xxx

3.b- Detailed Packing list of the box contents

The supplier has to ensure that the boxes are labeled as per requirements and with reference to the “principles of Labeling for Medical Devices and IVD Medical Devices”, IMDRF/GRRP WG/N52 FINAL:2019 <https://www.imdrf.org/sites/default/files/docs/imdrf/final/technical/imdrf-tech-190321-pl-md-ivd.pdf>

- 4) The boxes will be opened for contents check before starting the installation and a Report will be signed by the supplier and/or UNOPS:
- 5) All responsibility on the goods are transferred to the beneficiary Hospital once the installation , testing, training and commissioning is done and provisional acceptance documentation duly signed by Beneficiaries, UNOPS and Supplier representatives.
- 6) All the tools, instruments, products, solutions, simulators needed for the Transportation, Installation and testing as per manufacturer guidelines and country reglementation must be provided by the supplier during those activities.
- 7) Prior to shipment, the following documents should be sent to UNOPS:
 - Bill of Lading
 - Invoice
 - Packing List
- 8) Once UNOPS confirms that the information is correct, then you may proceed with the shipment.
- 9) UNOPS reserves the right to perform Pre-Inspection (virtual or physic) checks before packaging of goods for delivery.
- 10) After the goods are shipped, the supplier must provide to UNOPS an updated delivery plan/schedule at least 2 weeks before DPU delivery on the final beneficiaries sites. UNOPS will facilitate the necessary authorizations and coordinate & confirm delivery dates with the beneficiary hospitals.

- 11) The supplier must be flexible enough to accommodate variations in the deliveries and installation schedule.

D. TESTING AND COMMISSIONING

The supplier is responsible and in charge of Testing the medical system or equipment following the below listed minimal conditions:

- 1) Testing of all the essential functions of the equipment or system complete of accessories with the appropriate tools, measurement equipment, simulators
- 2) Testing of all the technical and clinical data according to manufacturer testing guidelines.
- 3) Recording and archiving of all the testing data. The testing report and test results will be annexed to the provisional acceptance documentation.
- 4) Formal commissioning and provisional acceptance reports must be Co-signed by Supplier, UNOPS, MoH for each site with reference to all the medical equipment or system supplied. The general commissioning is done after the training except if the Hospital delays the training for more than 2 weeks.
- 5) The signed provisional acceptance document is the reference for the warranty period start date.
- 6) Waste management: The supplier is in charge of the safe removal and disposal of all the waste produced during his interventions.
- 7) All the tools, instruments, products, solutions, simulators needed for the installation testing as per manufacturer guidelines and country reglementation must be provided by the supplier during those activities.
- 8) The supplier must be flexible enough to accommodate perturbation or delays due to the medical activities in some sites during his intervention.

E. TRAINING REQUIREMENTS

For all the following list of equipment and system , The supplier is responsible and in charge of providing appropriate training for users and biomedical technicians.

- The Training documentation (Operating manual, Technical manual, Training presentation, diagrams, schematics etc.) and training schedule/agenda in French must be provided to the UNOPS team at the latest 90 calendar days after contract signature. UNOPS reserves the right to provide suggestions or recommendations with regards to the training contents.
- The training must be held in French or translated in French
- The trainer(s) must perform the training Onsite (anti-covid prevention / medical insurance /appropriate vaccinations must have been be done by the trainers)

E.1 Training Group 1: Technical Training

Item	Description	Training location	Number of participants	Suggested duration	When
2	COLOR DOPPLER ULTRASOUND	Hotel (In Tunisia)	5	5 days	Before equipment installation
3	INTRAOPERATIVE ULTRASOUND	Hotel (In Tunisia)	5	5 days	Before equipment installation
4	VIDEO-ENDOSCOPY COLUMN	Hotel (In Tunisia)	5	3 days	Before equipment installation
5	LINEAR DIGESTIVE ECHOENDOSCOPE	Hotel (In Tunisia)	5	5 days	Before equipment installation

- All cost accommodations **and logistics** supported by the supplier
- Training duration: a training duration of 5 days for each category of equipment is suggested **but bidders must quote for the adequate number of days necessary for the advanced certifying training. Each training must be done separately.**
- Training location: Hotel
- Starting: On demo Equipment before Installation of equipment in beneficiary sites
- Theoretical and practical training sessions on the same model by the engineers or equipment specialists certified by the manufacturer
- Trained technicians will receive a manufacturer's training certificate (equivalent to field service engineer level).

E.2 Training Group 2: Medical users on the use and operation of equipment.

Item	Description	Training location	Number of participants	Minimum duration
1	MOBILE INTELLIGENT ECHOCARDIOGRAPHY DEVICE	Beneficiary sites (Where the equipment is installed)	5	1 day
2	COLOR DOPPLER ULTRASOUND	Beneficiary sites (Where the equipment is installed)	5	3 days
3	INTRAOPERATIVE ULTRASOUND	Beneficiary sites (Where the	5	3 days

		equipment is installed)		
4	VIDEO-ENDOSCOPY COLUMN	Beneficiary sites (Where the equipment is installed)	5	3 days
5	LINEAR DIGESTIVE ECHOENDOSCOPE	Beneficiary sites (Where the equipment is installed)	5	5 days

- Starting: After Equipment installation
 - Theoretical session / practical sessions
 - Trained Users will receive a manufacturer's training certificate
 - For items 1,3,5 Technical Assistance by clinical application engineers (in situ during operations on patients if applicable) for 2 weeks or at least 10 interventions to enable users to fully familiarise themselves with the equipment (the expected assistance requested during operations is: answering users questions in relation to the technologies installed, clarifications on how to find specific features on the equipments, users guidance during the use of the technologies...)
 - The Trainers must be a product specialist or field application engineer certified by the manufacturer
 - Credentials (certificates, cv,...) must be sent to UNOPS at least 7 days before the start of training.
- 1) Each trainee documentation in French, training accessories (pen, pencil, notepad) must be provided by the suppliers.
 - 2) All the video projectors, Parts, the tools, instruments, products, solutions, simulators, calibrators, internet needed for the training as per manufacturer guidelines and tender requirements must be provided by the supplier during those activities.
 - 3) A training report and attendance list must be produced to MoH & Unops
 - 4) Waste management: The supplier is in charge of the safe removal and disposal of all the waste produced during his interventions.
 - 5) The supplier must be flexible enough to accommodate perturbation or delays due to the medical activities in some sites during his intervention.

E.3 The training minimum objectives to achieve are:

a) Users

Theoretical session

- Introduction to the equipment (general presentation, description, functionalities)
- Presentation of the equipment parts and system components (Knobs, Display...) + accessories + Installation
- Presentation of accessories and their installation/integration
- Risks or conditions leading to incorrect operations of the medical system
- Functionalities, Parameters
- Reporting

- Safe start and stop for the medical system
- How to set up the parameters How to configure the equipment or system
- How to interpret/understand messages/warnings
- Mastering of the equipment use with reference to the expected clinical uses in the hospital
- Visual inspection, testing
- Hygiene and cleaning

Demo - Hands On - Practical session

- Demonstration, hands-on work
- Demonstration and hands-on use of all relevant safety devices, accessories and consumables.

b) Biomedical Technicians

Theoretical session

- Users training + scope of equipment, machine parameters, operating environment
- Equipment principles of operation
- Study of Circuits, block diagrams, circuit diagrams, electronic board, hydraulic circuit, pneumatic circuit
- Device units, Boards and electronics testing
- Common fault / Failures & Solutions
- Troubleshooting
- Routine Testing & Preventive Maintenance (planning of operations: frequency, tools required, overhaul kit and consumables or supplies).
- QC norms and standards

Demo - Hand On - Practical session

- Preventive and corrective maintenance (with fault simulation and correction): case studies.
- Quality control (control procedures, measuring equipment, standards, etc.).
- Parts replacements: Disassembly and assembly of machine units.
- Practical description of machine parameters (operating mode /programs).
- Describe the machine's technical parameters in practice (technical mode)

F. WARRANTY REQUIREMENTS

For all the equipment and system provided, The supplier is responsible and in charge of

- Preventive maintenance
- Corrective Maintenance / Repairs
- Technical support (remote/onsite) to the Hospital

These activities must be performed following the below listed minimal conditions:

- 1) All the Parts, the tools, instruments, products, solutions, simulators needed for the preventive maintenance, repairs as per manufacturer guidelines and country regulation must be provided by the supplier during those activities.
- 2) After the Maintenances a general Testing of all the essential functions of the equipment or system complete with accessories with the appropriate tools, measurement equipment, simulators and Testing of all the technical and clinical data according to manufacturer testing guidelines must be performed.

- 3) An Intervention report must be produced to MoH & Hospital after each intervention with indications of parts used code, tools, instruments, cost of the replacement parts or maintenance kits.
- 4) All the fees requested for providing the maintenance and technical support are supported by the supplier.
- 5) Waste management: The supplier is in charge of the safe removal and disposal of all the waste produced during his interventions.
- 6) The supplier must be flexible enough to accommodate perturbation or delays due to the medical activities in some sites during his intervention.
- 7) The supplier or local representative response delay in case of notification should be less than 2hrs
- 8) The time between the issue notification and the start of the intervention on site must be less than 48hrs .
- 9) The out of order time due to fault monthly should be less than 72 hours / 3 days
- 10) A minimum of one (1) preventive maintenance to be performed during the warranty years according to the manufacturer's recommendations.
- 11) The provisional acceptance will be done after the full commissioning of the medical system and the final acceptance will be done with the beneficiary representative after the warranty year following the evaluation of the performance of the equipment and after sales services provided by the local or regional representative.
- 12) A Warranty Services Level Agreement reflecting these conditions will be signed between each beneficiary hospital, the manufacturer and the local representative of the manufacturer to transfer the responsibility of the follow up during the warranty period from UNOPS to the end user hospital.

G. WASTE MANAGEMENT, HYGIENE, SECURITY AND SAFETY

The sites are functional hospitals with medical and logistical activities involving several categories of people, equipment and vulnerable infrastructures.

The supplier is responsible for the removal and safe disposal of all waste generated during its operations. Waste disposal must not be integrated into the beneficiary hospitals' waste processing chain.

- A preliminary waste management plan will be provided with the technical offer for evaluation. UNOPS reserves the right to request adjustments to the waste management plan in line with best practice in the country.
- A methodology or preliminary plan for the prevention of incidents and accidents involving materials, equipment and people during the supplier interventions (from delivery till commissioning) must be provided with the bid. UNOPS reserves the right to request adjustments to the plan in accordance with good safety and environmental management practices in force in the country.

The successful supplier will be required to take out an insurance policy covering accidents or incidents involving damage to persons or property in the beneficiary hospitals.

The supplier is responsible for the security of the materials, tools, equipment used to provide the requested services.

Item 1- ULTRAPORTABLE, INTELLIGENT ECHOCARDIOGRAPHY DEVICE

Item No	UNOPS minimum technical requirements	Quantity
1	High-level portable point of care ultrasound equipment use for real time general diagnostics imaging or monitoring during intervention	3
	The Manufacturer of the proposed equipment is ISO 13485 certified	
	Requirements: Electrical, Electromagnetic, Dimensions, documentation...	
	Provide a Regulatory approval and marketing authorization (FDA, CE); CE Certification as per MDR 745/2017 or MDD93/42	
	Power supply requirements: 230VAC +/- 10% , 50Hz single-phase	
	Internal protection against overvoltage and overcurrent.	
	Battery autonomy of at least 120min of continuous operation	
	All system components must have FRENCH or ENGLISH as interface language	
	The medical system will be supplied with : User manual in French or English- electronic and hard copy as well as all user passwords	
	Operational Features	
	Brand and Model	
	Provided detailed datasheets for Ultrasound device and transducers	
	Weight of device with battery below 2 Kg	
	ultra portable ultrasound unit and transducers used for general Point of Care exploration of the tissues or organs, providing interactive and timely information/ imaging; supports noninvasive Cardiac, Thoracic/Lung, Abdominal, Vascular/Peripheral Vascular, Musculoskeletal and interventional guidance (includes needle/catheter placement, fluid drainage, and nerve block).	
	DICOM 3.0 full licensed connectivity with at least the following services: Send, Print, Storage, Query, Retrieve	
	The equipment must allow software and hardware updates.	
	Back-up softwares to be supplied.	
	Image verification and adjustment	
	On-screen measurements	
	Multifrequency (fundamental, harmonic)	
	Image presets and parameter programming (patient data, examination types, imaging modes, annotations, measurements, calculations)	
	Freezed image and real time dynamic zoom	
	Zoom area control, with automatic image optimization.	
	256 greyscales and more	
	Predefined and programmable reports	
	Operating modes	
	2D mode	
	3D mode	
TM mode		
Doppler mode		
Features		

Automated examination protocolization
Automated measurements and calculations
AI-assisted measurements
AI-assisted interpretation
General measures, at least:
Distances.
Area.
Volumes.
Time interval.
Depth differences.
Speeds.
Stenosis percentage.
Angles.
Systolic/Diastolic ratio.
Heart rate.
Peak and average pressure gradient.
Monitor/Screen:
Built-in Wi-Fi and bluetooth
At least 5" full HD Monitor, 4K or better
Touchscreen
Menus, messages on screen
Text annotations
Body markers
Image orientation indicator
Storage and archiving:
Storage of patient data and images on an internal hard drive of at least 100 Gigabytes (GB).
It must allow video storage in commonly used formats such as: AVI, MPEG, MP4.
It must allow the storage of images in commonly used formats such as: BMP, JPEG, TIF.
Post-processing capacity for image and video files.
Communication, storage and transfer interface:
At least one (1) port for connecting peripheral devices.
Transducers:
1 or 2 if applicable broadband Doppler probes for: abdominal explorations and cardiac, thoracic, muscular, vascular explorations
Consumables and accessories Included
Supply of complete overhaul kit / preventive maintenance for the warranty years
Includes cleaning accessories / test tools for transducers
One (1) ultrasonography gel dispensing reusable bottles, each holding at maximum 350 ml.

<p>One (1) genuine suitcase for transporting and protecting each transducer.</p>	
<p>One (1) genuine suitcase for transporting the ultrasound machine</p>	
<p>One or two broadband Doppler transducers</p>	
<p>Include the respective interconnection accessories and power accessories of the different components.</p>	
<p>Protective covers with the Ultrasonography Equipment and its accessory equipment.</p>	
<p style="text-align: center;">Warranty</p>	
<p>Full Warranty 2 Years</p>	
<p>Ancillary Services Included</p>	
<p>The Bidder accepts the conditions of the On-site delivery, installation as described in Associated Services</p>	
<p>The Bidder accepts the conditions of the Testing & Commissioning as described in Associated Services</p>	
<p>The Bidder accepts the conditions of warranties (Preventive maintenance, repairs and technical assistance during the warranty) as described in the associated Services and Services level agreement</p>	
<p>The Bidder accepts the conditions of Training for medical & technical staff as described in Associated Services</p>	
<p>The images below are intended solely as a guiding support and should be considered as purely indicative and not restrictive of the expected item characteristics:</p>	
	

Item 2- COLOR DOPPLER ULTRASOUND

Item No	UNOPS minimum technical requirements	Quantity
2	Fully digital color Doppler multipurpose ultrasound scanner (digital beamformer) with the latest version of electronic scanning (sectorial, linear and convex) , for visceral, vascular, obstetrical-gynecological and soft-tissue explorations.	2
	The Manufacturer of the proposed equipment is ISO 13485 certified	
	Requirements: Electrical, Electromagnetic, Dimensions, documentation...	
	Provide a Regulatory approval and marketing authorization (FDA, CE); CE Certification as per MDR 745/2017 or MDD93/42	
	Power supply requirements: 230VAC +/- 10% , 50Hz single-phase	
	Internal protection against overvoltage and overcurrent.	
	All system components must have FRENCH or ENGLISH as interface language	
	The medical system will be supplied with : User manual in French or English- electronic and hard copy as well as all user passwords	
	The medical system will be supplied with : Technical manual in French or English - electronic and hard copy as well as all technical / access passwords	
	OPERATIONAL FEATURES	
	Ultrasound system made of Ultrasound machine, UPS, Thermal printer, Probes	
	Ultrasound machine Brand and Model	
	Provided detailed datasheets for Ultrasound machine, UPS, Thermal printer and Probes	
	Central processing unit on mobile cart with adjustable, swiveling display monitor, minimum 21" flat screen.	
	- Hard disk, minimum capacity 500 GB	
	- DICOM 3.0 full licensed connectivity with at least the following services: Send, Print, Storage, Query, Retrieve, Structured Reporting,Modality Performed Procedure Step (MPPS),ModalityWorklist.	
	Standard ports, including USB, Ethernet, video output	
	- DVD burner	
	- Back-up softwares to be supplied.	
	UPS for the entire ultrasound scanner and peripherals	
	Reprographic printer on B&W thermal paper	
	Convex broadband Doppler probe frequency including indicatively 4 - 7 MHz for adult abdominal exploration	
	Linear broadband Doppler probe frequency including indicatively 10 - 14MHz for peripheral vascular, soft-tissue (breast, thyroid) and musculoskeletal examinations.	
	Pencil or CW Doppler probe	
	Sectorial / Cardiac Doppler probe frequency including indicatively 3 - 7 MHz for cardiac examinations	
	Indicate the recommended gel brands and accepted disinfectants	
	Device using beamformers and digital signal summation: number of channels greater than 1 million	

Device Broadband Maximum frequency \geq 18 MHz
At least 18" full HD Monitor 4K or better
At least three active probe connectors in addition to the pencil probe
B mode, TM mode
Pulsed Doppler mode with orientable beam and optimized sounds.
Color Energy Doppler mode
Color mode: color associated with images (B; 2 B; B +D; D)
Automatic image optimization
Cineloop mode with continuous loop playback
Composite imaging
Harmonic imaging on both the requested probes
Slow flow detection
Variable depth scan fields $>$ 30 cm
256 gray levels minimum
2D image acquisition rate \geq 1500 fps
Zoom in real time and on variable frozen image
Electronic focusing on transmit and receive
Network card: 10/100 BT (R J 45 socket)
Dynamic gain $>$ 200 dB.
Gain curve adjustment
Reduction of artifacts generated by incidence angles and edge enhancement.
Pulsed Doppler and spectral analysis :
- Triplex mode (B + Color + Doppler)
- Adjustable sample volume: \leq 1 mm and \geq 15 mm
- Variable gain minimum 50 dB
- Variable PRF and HPRF
PRF min \leq 1 kHz
HPRF max \geq 20 kHz
- Automatic spectrum baseline adjustment
Color Doppler :
- Variable scan rate
- PRF max \geq 19 kHz
Consumables and accessories Included
Supply of complete overhaul kit / preventive maintenance for the warranty years
Qty 10: HD paper rolls
Qty 1: Ultrasound gel bottle
Qty 1: Genuine cart
Qty 1: UPS for the entire ultrasound scanner and peripherals
Qty 1: Reprographic printer on B&W thermal paper
Qty 1: Convex broadband Doppler probe
Qty 1: Linear broadband Doppler probe

Qty 1: Pencil or CW Doppler probe	
Qty 1: Sectorial / Cardiac Doppler probe	
Warranty	
Full Warranty 2 Years	
Ancillary Services Included	
The Bidder accepts the conditions of the On-site delivery, installation as described in Associated Services	
The Bidder accepts the conditions of the Testing & Commissioning as described in Associated Services	
The Bidder accepts the conditions of warranties (Preventive maintenance, repairs and technical assistance during the warranty) as described in the associated Services and Services level agreement	
The Bidder accepts the conditions of Training for medical & technical staff as described in Associated Services	
The Bidder accepts the conditions of the service level agreement	
The images below are intended solely as a guiding support and should be considered as purely indicative and not restrictive of the expected item characteristics:	
	

Item 3- INTRAOPERATIVE ULTRASOUND

Item No	UNOPS minimum technical requirements	Quantity
3	High-level portable point of care ultrasound equipment use for real time general diagnostics imaging or monitoring during intervention	1
	The Manufacturer of the proposed equipment is ISO 13485 certified	
	Requirements: Electrical, Electromagnetic, Dimensions, documentation...	
	Provide a Regulatory approval and marketing authorization (FDA, CE); CE Certification as per MDR 745/2017 or MDD93/42	
	Power supply requirements: 230VAC +/- 10% , 50Hz single-phase	
	Internal protection against overvoltage and overcurrent.	
	All system components must have FRENCH or ENGLISH as interface language	
	The medical system will be supplied with : User manual in French or English- electronic and hard copy as well as all user passwords	
	The medical system will be supplied with : Technical manual in French or English - electronic and hard copy as well as all technical / access passwords	
	OPERATIONAL FEATURES	
	Ultrasound system made of Ultrasound machine, UPS, Thermal printer, Probes	
	Ultrasound machine Brand and Model	
	Provided detailed datasheets for Ultrasound machine, UPS, Thermal printer and Probes	
	Mobile ultrasound unit for general intraoperative exploration of the tissues or organs, providing interactive and timely information during surgical procedures	
	Central processing unit on mobile cart with adjustable, swiveling display monitor, minimum 18" flat screen.	
	Standard ports, including USB, Ethernet, video output	
	DICOM 3.0 full licensed connectivity with at least the following services: Send, Print, Storage, Query, Retrieve, Structured Reporting, Modality Worklist.	
	The equipment must allow software and hardware updates.	
	Connectivity through Ethernet port to DICOM interface, enabling file transferring.	
	DVD burner	
	Back-up softwares to be supplied.	
	UPS for the entire ultrasound scanner and peripherals , system autonomy at least 60 min	
	Reprographic printer on B&W thermal paper	
	Hardware and software configuration for: linear; convex; endocavity; microconvex; phased array; pencil.	
	Image verification and adjustment	
	On-screen measurements	
	Integrated illuminated keyboard and control buttons, scroll wheels, trackball/mouse pad (multilingual identification)	
	2D and 3D imaging	
Multifrequency (fundamental, harmonic)		
Image presets and parameter programming (patient data, examination types,		

imaging modes, annotations, measurements, calculations)	
Freeze image zoom of at least 10X.	
Real-time dynamic zoom of at least 4X.	
256 grayscales and more	
Predefined and programmable reports	
Minimum modes of operation:	
2D mode.	
M mode.	
B/M mode.	
Doppler modes:	
- Color Coded Doppler (Color Doppler).	
- Continuous Doppler (CW).	
- Pulsed Doppler (PW).	
- Power Doppler.	
- Spectral Doppler.	
Tissue harmonic images (THI) mode	
General measures, at least:	
Distances.	
Area.	
Volumes.	
Time interval.	
Depth differences.	
Speeds.	
Stenosis percentage.	
Angles.	
Systolic/Diastolic ratio.	
Heart rate.	
Resistivity index (RI).	
Pulsatility index (PI).	
Peak and average pressure gradient.	
Monitor:	
Monitor arm locking system	
At least 18" full HD Monitor, 4K or better	
Floating arm for flexible monitor positioning according to intraoperative needs.	
Color	
Control panel composed of:	
Alphanumeric keyboard or touch-screen for data entry.	
Trackball or touchpad for movements.	
Configurable buttons.	
Backlit for easy reading and location.	
Information display on screen:	

Menus, messages on screen.
Text annotations.
Body markers.
Image orientation indicator.
Storage and archiving:
Storage of patient data and images on an internal hard drive of at least 500 Gigabytes (GB).
It must allow video storage in commonly used formats such as: AVI, MPEG, MP4.
It must allow the storage of images in commonly used formats such as: BMP, JPEG, TIF.
Zoom display, with zoom area control, with automatic image optimization.
With the ability to review static and moving images, reports, measurements and prints.
Post-processing capacity for image and video files.
Communication, storage and transfer interface:
At least two (2) USB ports for connecting peripheral devices.
At least one (1) High Definition Multimedia Interface (HDMI) port.
The system must have a maximum dynamic range of at least 160 dB.
Capacity to use and availability of laparoscopic transducer.
Protocols for nerves, small parts, vascular,
Mechanical features
Medical system mounted to allow safe assembly and transport of the main equipment and its accessories
4 Wheels with at least 2 brakes
Multifrequency transducers of the same brand as the equipment offered with broadband technology must be included, with capacity for all the required studies.
Four (4) transducers:
One (1) T-shaped intraoperative transducer
Bandwidth [MHz]: 5 to 10 or wider range.
Application: Intraoperative, abdomen, pediatric.
One (1) Microconvex Intraoperative transducer
Bandwidth [MHz]: 5 to 9 or wider range.
Application: Intraoperative.
One (1) Hockey stick Intraoperative transducer
Bandwidth [MHz]: 7 a 12 or wider range.
Application: Musculo-skeletal, nerve, small parts, vascular.
One (1) Laparoscopic untrasound Transducer
Bandwidth [MHz]: 4 a 10 or wider range.
Application: Intra operative
Warranty
Full Warranty 2 Years

Additional Consumables and accessories Included	
	Supply of complete overhaul kit / preventive maintenance for the warranty years
	Includes cleaning accessories / test tools for probes
	Dedicated or integrated 4-wheel antistatic cart with brakes and accessory compartment (shelf/drawer).
	Including drawers/shelves for accessories and printer.
	Including holders for probes and gel bottle
	Two (2) ultrasonography gel dispensing reusable bottles, each holding at least 250 ml.
	One (1) genuine suitcase dedicated for transporting and protecting each specific transducer.
	One (1) Medical thermal printer: Resolution \geq 300 dpi for high quality images.
	Ten (10) rolls of HD paper for thermal printer
	One (1) T-shaped intraoperative transducer
	One (1) Microconvex Intraoperative transducer
	One (1) Hockey stick Intraoperative transducer
	One (1) Laparoscopic ultrasound Transducer
	Twenty five (25): Sterile Cover for intraoperative use for each probe supplied if applicable
	Include the respective interconnection accessories of the different components.
	Protective covers with the Ultrasonography Equipment and its accessory equipment.
Ancillary Services Included	
	The Bidder accepts the conditions of the On-site delivery, installation as described in Associated Services
	The Bidder accepts the conditions of the Testing & Commissioning as described in Associated Services
	The Bidder accepts the conditions of warranties (Preventive maintenance, repairs and technical assistance during the warranty) as described in the associated Services and Services level agreement
	The Bidder accepts the conditions of Training for medical & technical staff as described in Associated Services
	The Bidder accepts the conditions of the service level agreement
	The images below are intended solely as a guiding support and should be considered as purely indicative and not restrictive of the expected item characteristics:


Item 4-VIDEO-ENDOSCOPY COLUMN

Item No	UNOPS minimum technical requirements	Quantity
4	A digestive video endoscopy column for examining the digestive tract.	1
	The Manufacturer of the proposed equipment is ISO 13485 certified	
	Requirements: Electrical, Electromagnetic, Dimensions, documentation...	
	Provide a Regulatory approval and marketing authorization (FDA, CE); CE Certification as per MDR 745/2017 or MDD93/42	
	Power supply requirements: 230VAC +/- 10% , 50Hz single-phase	
	Internal protection against overvoltage and overcurrent.	
	All system components must have FRENCH or ENGLISH as interface language	
	The medical system will be supplied with : User manual in French or English- electronic and hard copy as well as all user passwords	
	The medical system will be supplied with : Technical manual in French or English - electronic and hard copy as well as all technical / access passwords	
	OPERATIONAL FEATURES	
	Medical System consisting of at least : Video gastroscopy, Video colonoscopy, Video Duedonoscopy, Image processor, HD medical digital video recorder, Printer. The processor enables image control and distribution to peripheral devices (printer, video, monitor, etc.).	
	Provide detailed data sheet of each component of the medical system	
	- Waterproof keyboard, protected against liquids.	
	- Color and brightness control or adjustment feature	
	- Electronic zoom, minimum 1.5X magnification or full-screen magnification	
	- Real-time image capture	
	- Ports for image and video transfer	
- High-definition image processing		
- HD output for high-definition image transfer		
- Electronic endoscopic coloration feature		
2/ A cold light generator :		
Brand and Model		

Minimum power 300w
Xenon lamp with a service life above 500 hours.
Emergency light with adjustable insufflation pump.
3/ A monitor :
Brand and Model
A minimum 19" HD high-definition color LED monitor for medical use, mounted on the cart.
4/ Adult video gastroscope :
Brand and Model
Equipped with a high-definition HD color CCD sensor
Distal tip diameter: ≥ 9 and ≤ 10 mm
Depth of field: from 4 to 100mm minimum.
Operating channel diameter: ≥ 2.8 mm.
Tip angulation
- Top $\geq 200^\circ$
- Bottom $\geq 90^\circ$
- Right / Left $\geq 100^\circ$
Useful length ≥ 1000 mm
Field of view angle $\geq 140^\circ$
Processor, monitor, cable and endoscope must be compatible to produce a high-definition image.
5/ A video colonoscope :
Brand and Model
Equipped with a high-definition HD color CCD sensor
Distal tip diameter: < 14 mm
Depth of field: from 4 to 100 mm minimum.
Operating channel diameter: ≥ 3.2 mm.
Tip angulation
- Up $\geq 180^\circ$
- Bottom $\geq 180^\circ$
- Right $\geq 160^\circ$
- Left $\geq 160^\circ$
Field of view $\geq 140^\circ$
Useful length ≥ 1500 mm
Water jet function
Processor, monitor, cable and endoscope must be compatible to produce a high-definition image.
6/ A video duodenoscope :
Brand and Model
Equipped with a color CCD sensor with minimum resolution 400,000 pixels or equivalent

Distal tip diameter: ≤14 mm	
Depth of field: 5 to 60 mm minimum.	
Operating channel diameter: ≥ 4.2 mm.	
Tip angulation	
- Top ≥ 120°	
- Bottom / Right / Left ≥ 90°	
Field of view ≥ 90°	
Useful length ≥ 1200 mm	
Processor, monitor, cable and endoscope must be compatible to produce a high-definition image.	
7/ Laser Color printer: high photographic quality	
Brand and Model	
Resolution image: ≥ 1200 dpi	
8/Original mobile cart	
Brand and Model	
Cart with a minimum of 03 levels.	
Integrated multiple socket including power cable.	
Antistatic wheels with braking system.	
Additional Consumables and accessories Included	
Supply of complete overhaul kit / preventive maintenance for the warranty years	
- Qty 20 disposable biopsy forceps	
- Qty 01 leak tester.	
- Qty 02 cleaning brushes.	
- Protective cases for scopes/probes transport	
Warranty	
Full Warranty 2 Years	
Ancillary Services Included	
The Bidder accepts the conditions of the On-site delivery, installation as described in Associated Services	
The Bidder accepts the conditions of the Testing & Commissioning as described in Associated Services	
The Bidder accepts the conditions of warranties (Preventive maintenance, repairs and technical assistance during the warranty) as described in the associated Services and Services level agreement	
The Bidder accepts the conditions of Training for medical & technical staff as described in Associated Services	
The Bidder accepts the conditions of the service level agreement	
The images below are intended solely as a guiding support and should be considered as purely indicative and not restrictive of the expected item characteristics:	


Item 5-LINEAR DIGESTIVE ECHOENDOSCOPE

Item No	UNOPS minimum technical requirements	Quantity
5	A digestive echo-endoscopy system for examining the digestive tract and visualizing the structures of the digestive tract (esophagus; stomach; duodenum; sigmoid colon; rectum, as well as certain organs adjacent to the digestive tract such as pancreas; biliary tract; mediastinum; pelvic cavity.) using high-definition endoscopic & ultrasound images.	2
	The Manufacturer of the proposed equipment is ISO 13485 certified	
	Requirements: Electrical, Electromagnetic, Dimensions, documentation...	
	Provide a Regulatory approval and marketing authorization (FDA, CE); CE Certification as per MDR 745/2017 or MDD93/42	
	Power supply requirements: 230VAC +/- 10% , 50Hz single-phase	
	Internal protection against overvoltage and overcurrent.	
	All system components must have FRENCH or ENGLISH as interface language	
	The medical system will be supplied with : User manual in French or English- electronic and hard copy as well as all user passwords	
	The medical system will be supplied with : Technical manual in French or English - electronic and hard copy as well as all technical / access passwords	
	OPERATIONAL FEATURES	
	I- Echography Features	
	Brand & Model; Provide detailed datasheet	
	- Digital beamforming and signal summation technology	
	- Mode B, Mode Time Motion	
	- Pulsed Doppler mode	
	- Color Doppler mode	
	- Energy Doppler mode	
	- Elastography mode	
- Cineloop mode with continuous loop review		
- Harmonic imaging		
- Network 10/100 BT ; RJ 45 socket		
- Variable depth scan fields		

- Zoom in real time image
- Zoom in frozen image
- Electronic focus
I.a - Image pre-processing :
- Variable dynamic gain
- Gain curve adjustment
- Edge enhancement
Doppler characteristics :
a) Pulsed Doppler and Spectral Analysis :
- Steerable Doppler:
- Specify adjustable sample volume in mm
- Variable Gain in dB
- PRF and HPRF variable in KHz:
- Spectrum baseline setting:
b) Color Doppler :
- Variable scan rate in i/s:
- Variable PRFin kHz:
I.b - Image storage and management systems :
- Image storage on hard disk and flash disk or flash card:
- DICOM 3.0 full licensed connectivity with at least the following services: Send, Print, Storage, Query,
- DVD burner
II- ENDOSCOPIC FUNCTION :
II.a - Optical system :
Linear probe :
Brand & Model; Provide detailed datasheet
- Erector for therapy probe
- Operating channel diameter ≥ 3.7 mm
- US Maximum Frequency ≥ 10 MHz
- Field of view $\geq 100^\circ$
- US Exploration field $\geq 150^\circ$
- Oblique direction of vision $\geq 40^\circ$
- Depth of vision ≥ 5 to 100 mm
- Tip angulation
Up / Down $\geq 120^\circ / 90^\circ$
Right / Left $\geq 90^\circ / 90^\circ$
- Fitting length (insertion tube) L ≥ 1250 mm
- Total length L ≥ 1550 mm
Radial probe :
Brand & Model; Provide detailed datasheet
- Operating channel diameter ≥ 2.2 mm

- US Maximum Frequency $\geq 10\text{MHz}$
- Field of view $\geq 100^\circ$
- US Exploration field 360°
- Depth of vision ≥ 5 to 100 mm
- Tip angulation
Up / Down $\geq 130^\circ / 90^\circ$
Right / Left $\geq 90^\circ / 90^\circ$
- Fitting length (insertion tube) $L \geq 1250\text{ mm}$
- Total length $L \geq 1550\text{ mm}$
II.b - Video processor:
Brand & Model; Provide detailed datasheet
- A digital processor for image control, processing, freezing... distribution to peripherals such as printer, monitor, computer
- Waterproof keyboard, protected against liquids
- Color and brightness adjustment system
- Electronic zoom, minimum 1.5x magnification or full-screen display
- Digital output for image and video transfer
- Image processing
- Chromo endoscopy
II.c - Cold light generator :
Brand & Model; Provide detailed datasheet
- Compatible with video echo-endoscope system
- Xenon lamp illumination, minimum power 300 W ,
- back-up lamp included
II.d - Monitor :
Brand & Model
$\geq 18"$ HD high-definition color monitor for medical use, 4K or better
- Mounted on the mobile cart
- Allow simultaneous display of the endoscopic and ultrasound images
EXPECTED CONFIGURATION AND ACCESSORIES
- Ultrasound unit:
- Pulsed Doppler module:
- Color Doppler module:
- Memory loop (cineloop):
- Color Energy Doppler Module:
- Harmonic Imaging Module:
- Linear and Radial Probes
- On-line inverter for the entire echo-endoscope and peripherals Brand & Model; Provide detailed datasheet
- Digital video processor:
- Light generator:

- HD- monitor	
- Laser printer (B&W and color)	
- Linear echo-endoscopic Doppler probe for digestive tract exploration and therapy.	
- Radial echo-endoscopic Doppler probe for digestive tract investigations.	
- Leakage tester for both echo-endoscopic probes	
- Dedicated genuine mobile single cart for all echo-endoscope system components, Antistatic wheels with braking system ; containing a minimum of 4 shelves, 1 keyboard holder and supports for the echo-endoscope probe .	
- CO2 insufflator: Brand & Model; Provide detailed datasheet	
- Disposable biopsy forceps Qty 40	
- Cleaning brushes Qty 4	
- Protective case (for transport) for each probe	
- Supply of complete overhaul / Preventive maintenance kits for the whole system for the warranty years	
Warranty	
Full Warranty 2 Years	
Ancillary Services	
The Bidder accepts the conditions of the On-site delivery, installation as described in Associated Services	
The Bidder accepts the conditions of the Testing & Commissioning as described in Associated Services	
The Bidder accepts the conditions of warranties (Preventive maintenance, repairs and technical assistance during the warranty) as described in the associated Services and Services level agreement	
The Bidder accepts the conditions of Training for medical & technical staff as described in Associated Services	
The Bidder accepts the conditions of the service level agreement	
The images below are intended solely as a guiding support and should be considered as purely indicative and not restrictive of the expected item characteristics:	
	

H. Delivery requirements and Comparative Data Table

UNOPS Requirements	
Delivery time	<ul style="list-style-type: none"> - The Bidder shall deliver all the equipment no later than 16 weeks after contract signature. - The Bidder shall complete the installation for the units no later than 4 weeks after the delivery (20 weeks after the contract signature).
Delivery place and Incoterms rules	Tunisia DPU (Consignee-wise quantity distribution list) UNOPS and/or the consignee will submit all tax exemption documentation to the selected supplier- The bidder must submit all shipment documents to UNOPS before departure of the shipment from the FCA point.
Consignee details	Ministry of Health in Tunisia
UNOPS Right to vary requirements	At the time the Contract is awarded, UNOPS reserves the right to vary the quantity of the goods and associated services specified above, provided this does not exceed +/- 20, without any change in the unit prices or other terms and conditions of the ITB.

Consignee-wise quantity distribution
Beneficiaries:

TUNIS	LA RABTA	CCVT	MOBILE INTELLIGENT ECHOCARDIOGRAPHY DEVICE	1
SFAX	HOP H BOURGUIBA	CCVT	MOBILE INTELLIGENT ECHOCARDIOGRAPHY DEVICE	1
SFAX	HOP H BOURGUIBA	REAN MEDICALE	MOBILE INTELLIGENT ECHOCARDIOGRAPHY DEVICE	1

TUNIS	HOP CHARLES NICOLLE	UROLOGIE/POST OPER	COLOR DOPPLER ULTRASOUND	1
TUNIS	CNGMO		COLOR DOPPLER ULTRASOUND	1

TUNIS	HOP LA MARSA	CHIRURGIE	INTRAOPERATIVE ULTRASOUND	1
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TUNIS	HOP LA MARSA	HEPATOASTROENTEROLOGIE	VIDEO-ENDOSCOPY COLUMN	1
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TUNIS	HOP LA MARSA	HEPATOASTROENTEROLOGIE	LINEAR DIGESTIVE ECHOENDOSCOPE	1
Nabeul	CHU Taher Maamouri	HEPATOASTROENTEROLOGIE	LINEAR DIGESTIVE ECHOENDOSCOPE	1

I. Related services requirements

Service	UNOPS minimum requirements for services	Place where services will be performed	Final completion date(s) of services
1.	Delivery as per Distribution list	Tunisia (As per the distribution list)	Delivery should be made in fully as follows: - The Bidder shall deliver all the equipment no later than 16 weeks after contract signature.
2.	Installation		- The Bidder shall complete the installation for the units no later than 4 weeks after the delivery (20 weeks after the contract signature).
3.	Testing and Commissioning		Should be done at the end of the installation
4.	Preventive Maintenance, Corrective/Repair and technical assistance for users 2 years		Must be valid for 2 years (Warranty period)
5.	Training Group 1: Technical Training		Should be done before the installations (- Section E: TRAINING REQUIREMENTS)
6.	Training Group 2: Medical users on the use and operation of equipment.		Should be done at the end of the installation (No later than weeks) (Section E: TRAINING REQUIREMENTS)