

ANNEXURE (I A)

CENTRAL DEVICE CONTROL AND DOCUMENTATION IN ONE OPERATION THEATRE

Central Device Control via Touch Screen in Sterile Area

Should have a 19" medical grade touch screen with 1280x1024 (SXGA) resolution in sterile field for central control of Surgical Devices , peripheral equipment , documentation and telemedicine .The touch screen should have a realistic user interface that mimics the actual panels of devices being controlled by displaying an identical image of the device panels. There should be capability to preset up to 100 preset configurations based on surgery type / Surgeon name in order to reduce turn around time between surgeries.

Should be able control Medical Devices and documentation of images from the same touch screen in the sterile area. There should be ability to connect to a telephone system and control it via the touch screen of the integration system from within the sterile field and simultaneously from the parallel Nurse Works Station (NWS).

Should have capability to control Devices eg. Endoscopic devices , Documentation System , High Frequency Unit , Motorized OT Table , Overhead Camera Room Cameras from the same central touch-screen in sterile area or through the parallel Nurse workstation . The system should be able to integrate and control OT tables of various manufacturers like Maquet / Trumpf / Berchtold / Steris), High frequency Units of various major manufacturers eg. Valley Lab.

The touch screen should also display the alert text messages, whenever a warning signal is emitted from any device, the touch screen should be able to display:

- The type of alert
- Identify the faulty device

Integration system should be capable of integrating PTZ room cameras, OT light Camera, and external / auxiliary medical devices like C-Arm, Ultrasound and Microscope

Nurse Workstation

The Nurse Station, located outside the sterile field within each operating room, shall consist of:

- An in-wall integrated frame with stainless steel front cover.
- A medical grade in-wall mounted 19" Touch Screen.
- A medical keyboard with a sensor that indicates the time for cleaning and disinfection.
- Track ball that can be disinfected.

The circulating nurse will be able to assist the surgeon or his assistant by controlling the same functions, as those of the spring arm mounted Touch Screen, through the Nurse Station.

HD Documentation System

The HD documentation system should be supplied with all functions for integrated and precise documentation of endoscopic procedures and open surgery in a single system. The HD documentation system should have user-friendly operation to facilitate quick and simple management of electronic

patient files. It should be able to record still **HD** images, video sequences and spoken comments of findings in intra-operative procedures and be controllable from same touch screen located within the sterile field. It should have a possibility of voice entry of the OT report while viewing video and image files. It should have transparently structured user guidance and a clearly arranged menu control, with the possibility of being controlled by means of above mentioned touch screen and also by camera head and foot switch

All the Devices and documentation system should be controllable from same Touch Panel

The **HD** documentation system should be able to perform following functions :

- Digital storage and advanced editing of still images, video sequences and audio files.
- Digital alternative to video printer, video recorder and dictating machined
- Sterile, ergonomic operation via touch screen, camera head buttons and/or footswitch.
- Efficient archiving on DVD, CD-ROM or USB stick, both multi session and multipatient.
- Network storage should be possible.
- Automatic creation of standard reports
- Computers and monitors for use in the OR area certified according to EN 60601-1

The **HD documentation system should be compatible with DICOM PACS and HL7 compliant HIS systems**

PI. Note – Tenderer should also supply following Endoscopic equipment in the integrated operation theatre :

1. **Full HDTV 3- chip Camera system** : The camera should have resolution of 1920 x 1080 Progressive scan , image acquisition and transmission in 16 : 9 format from the camera head .The Camera head buttons should be able to control documentation system for directly capturing and recording surgical videos and stills. The camera should have following video outputs : S-Video, DVI , SDI for display and DV for recording
2. **Xenon Light Source** : A high intensity 300 watt Xenon Light source with spare Xenon Lamp with Colour temperature of 6000 K or more should be supplied. A suitable fibre optic light cable of length 250 cm and diameter of 4.8 cm should also be supplied
3. **High speed Arthroscopy Shaver System** : Should have rotation speed varying from 1000 rpm up to 12000 rpm and Oscillation speed varying from 200 rpm upto 2500 rpm with automatic blade detection. Should have pre-programmed user defined memories for selection of rotation speeds and can be changed from foot switch. The hand pieces should be auto clavable and blades should preferably be reusable.

4. **Fluid Management System (Arthroscopy Pump)**

Fluid Management System should have following features :

- Irrigation pressure and flow rate should be electronically controlled.
- Should be supplied with 30 disposable tubing sets.
- Facing Digital display of operating parameters.
- Set values and actual values should be displayed for easy monitoring.

- Memory functions for pre selectable values of irrigation and flow.
- Pressure Regulated (mmHg): Should be 0-200 (26.6 kPa).
- Flow Regulated: Should be 0-1000.
- Power Supply: 100-240 VAC, 50/60 Hz.
- Weight: not more than 7 kg.

All the above mentioned Endoscopic equipment viz. Full HDTV Camera system, Xenon Light Source , high speed Arthroscopy shaver system and Fluid Management System should be compatible with Integration system for remote controlled operation via the touch screen located within the sterile field and simultaneously from mouse and keyboard of Nurse works station (NWS) positioned outside the sterile field. The touch screen should be able to mimic the front control panels of these endoscopic equipment by displaying their identical image .This is necessary for the ease of control and to ensure that anybody familiar with the key functions on the device will also be able to operate the device by using the touch screen.

PART – C

AUDIO VIDEO COMMUNICATION IN ONE OPERATION THEATRE (in the same OT which would have central device control & Documentation)

Audiovisual communication System (Functions and Control)

The operating rooms should be connected to the Conference room for video conferencing and live transmissions. Suitable cable should be laid accordingly.

All video sources shall be routed through a video matrix system via touch screen located in the sterile field or Nurse Works Station (NWS), that enables the display of any image from any source to any destination in the OR, or outside the OR. The routing in the integrated OT to the HD display monitors should be for full HD (DVI) Signals

The Audio/ Video Router system should have the minimum following outputs.

- 8 S-video inputs and 4 S-Video outputs
- 3 x Fiber Optic video Output
- 4 DVI-D (Full HD) inputs & Outputs
- 2 x Audio line-in
- 1 x Wireless microphone Input & line out
- 1 X Loudspeaker out
- Streaming out with Audio Talk back

The room shall have the following video sources and destinations:

Sources	<u>Destinations</u>
Room Camera	Flat Screen Monitor No 1
Endoscopy Camera	Flat Screen Monitor No 2

Overhead camera		Touch Screen Monitor
CD/DVD (Playback)		Conference Room.
Documentation /Archiving system		Director's Room

All videos shall be controlled via the touch screen installed within the sterile field or from the nurse station unit. Furthermore, the room should be equipped with an Audio switcher in order to be able to direct the audio signals from any audio source to any audio destination. The room shall have the following audio sources and destinations:

SOURCES
Microphone
CD PLAYER
Patch panel audio connections

DESTINATIONS
LOUDSPEAKER
Patch panel audio connections

An active loudspeaker shall be installed within the Operating Room and shall have the following specifications:

Following enhancements should be supplied along with the integration and communication system.

1. ROOM CAMERA –system

A room camera shall be installed in the operation theatre at the most suitable place for the best possible view of the room showing the complete operating room. The room camera should be wall mounted.

The surgeon and his team should be able to send the video signal of the Room Camera with S-Video signal to the conference room via the touch screen of the integration system located in the sterile field or Nurse Works Station (NWS) for its movement, pre-set positions and zoom functions.

The room camera should be controlled by the touch screen of the integration system located in the sterile field or Nurse Works Station (NWS) for its movement, pre-set positions and zoom functions. Suitable cable material and a patch panel should be offered as per the position of the Room camera.

2. LOUDSPEAKER SYSTEM

3 channel Loudspeaker with Digital volume control and Audio mixer and Audio equalizer should be installed at a most suitable place. Suitable cable material and a patch panel should be offered as per the position of the Loudspeaker.

Loudspeaker should be compatible with the integration system for any feedback as to whether any equipment is switched off. Any alarms or feedback from the endoscopic equipment should be audible from the same system.

All audio routing should be controlled via the touch screen of the integration system from within the sterile field and simultaneously from the Nurse Works Station (NWS). Furthermore, volume should be controlled from the touch screen.

3. TELESTRATION SYSTEM

The Telestration system should allow the transmission of visual marking via the integrated Touch screen to enable remote teaching.

This system should allow the operating surgeon to send any impression made on the touch screen from within the sterile field and simultaneously from the nurse station to any destination along with the video with S-Video signal for the purpose of tele-teaching. This will help the surgeon to take precise opinion during communication.

Suitable cable material and a patch panel should be offered as per the requirement of the system.

4. TELEPHONE SYSTEM

A digital telephone system shall be connected to the system and shall allow the surgeon or his assistant to make telephone calls by Dialling from the touch screen. The telephone system should be controlled via the touch screen from within the sterile field and simultaneously from the nurse station. A user can place and/or receive telephone calls by using ceiling mounted directional microphones. The sound will be transmitted through the powered speaker. An In-ear monitoring system should be provided to allow the caller to make discrete telephone conversation.

The system should allow presets for Direct Dialling. Suitable cable material and a patch panel should be offered as per the requirement of the system.

5. CONTROL OF PERIPHERALS

The system should allow the surgeon or his assistant to control some of the functions within the operating rooms from the touch screen this shall include but not limited to:

- Switching the OR lights on/off

6. A/V COMMUNICATION TO CONFERENCE ROOM

The Surgeon and his team should be able to do Audio/ Video communication from OT to Conference Room. and to the director's room

Suitable cabling should be laid from the Operation Theatre to the Conference Room and the director's room. Suitable Number of Sets of Transmitters, Receivers and Cable Material should be offered as per the requirement. The communication system should be controlled via the touch screen from within the sterile field and simultaneously from the nurse station.

7. VIDEO CONFERENCE SYSTEM

A video conferencing system should be offered for external communication from the operating room. The Surgeon and his team should be able to transmit Video signals via S-Video signals and audio signals via ISDN lines or IP Service from the Operating to the Outside world.

The ISDN lines or IP Service shall be provided by the hospital at a position suitable to the system requirements. The system should be able to transfer high quality real time images and audio signals from multipoint via minimum 2Mb Codec.

The system should be compatible to both NTSC and PAL system with resolution up to XGA for transmission over the ISDN lines or IP Service.

The conferencing system should be controlled via the touch screen of the integration system from within the sterile field and simultaneously from the Nurse Works Station (NWS) for routing of Routing of A/V signals and dialling of Numbers.

Suitable Number of Sets of Transmitters, Receivers and Cable Material should be offered as per the requirement.