Simple and fast
audio / video routing
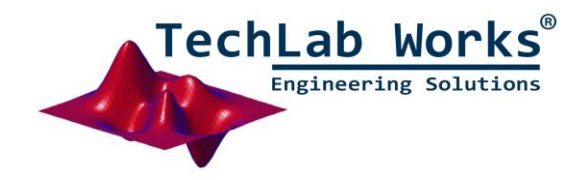
Integrated control
of the operating room

TechLab Works®
Engineering Solutions

Xe™

Xe™

Integrated control of operating room

Manage video signals in the operating room

Efficient and immediate control of the surgical environment

The Xe™ system is a platform made of several plugins: the video routing plugin, by means of which you can manage all video sources present in the operating room; the device manager plugin, by means of which you can control electromedical devices in a surgical environment; the connection plugin to get electronic patient records directly on the OR's monitor; the worklist plugin that shows the list of surgical procedure.

The video routing plugin, by means of an intuitive touchscreen interface, allows for the control all the video routing unit functions: from the multiplication of a video signal to be sent simultaneously to several monitors, to the routing of the video inputs to the recording or streaming units.

The plugin manages all the video signals in the OR. Each device will be connected to the video routing unit through optical fiber cables keeping the highest quality of the signals. Through audio/video outlets all the devices in the operating room can be connected (for ex. Arthroscopic or laparoscopic column, surgical lamp's video camera, brightness amplifier, etc.). The Xe™ system is a complete plug & play system.

Xe™ is a system of automation and management of surgical procedures and integrated management of surgical devices in the operating room. Integrated management includes management of video / audio signals, room lights, environment data, electromedical devices and integration with the Health Information System through a single control touchscreen panel.

Trough the Xe™ system, by a touchscreen display is possible to:

- Manage all video signals derived from video sources (X-Ray C-Arc, laparoscopic column, arthroscopic camera), sending them to the monitors inside OR and to the entire hospital allowing live stream and conferences;
- Manage room's lights (brightness, color, intensity, etc.);
- Control surgical lamps (focus, intensity, brightness, colour temperature);
- Control the operating table movements (tilt angles, degrees of freedom, etc.);
- Control electromedical devices (pump, light source, etc.);
- Control the audio system;
- Archieve videos and images, allowing compilation of surgical report with attached images;
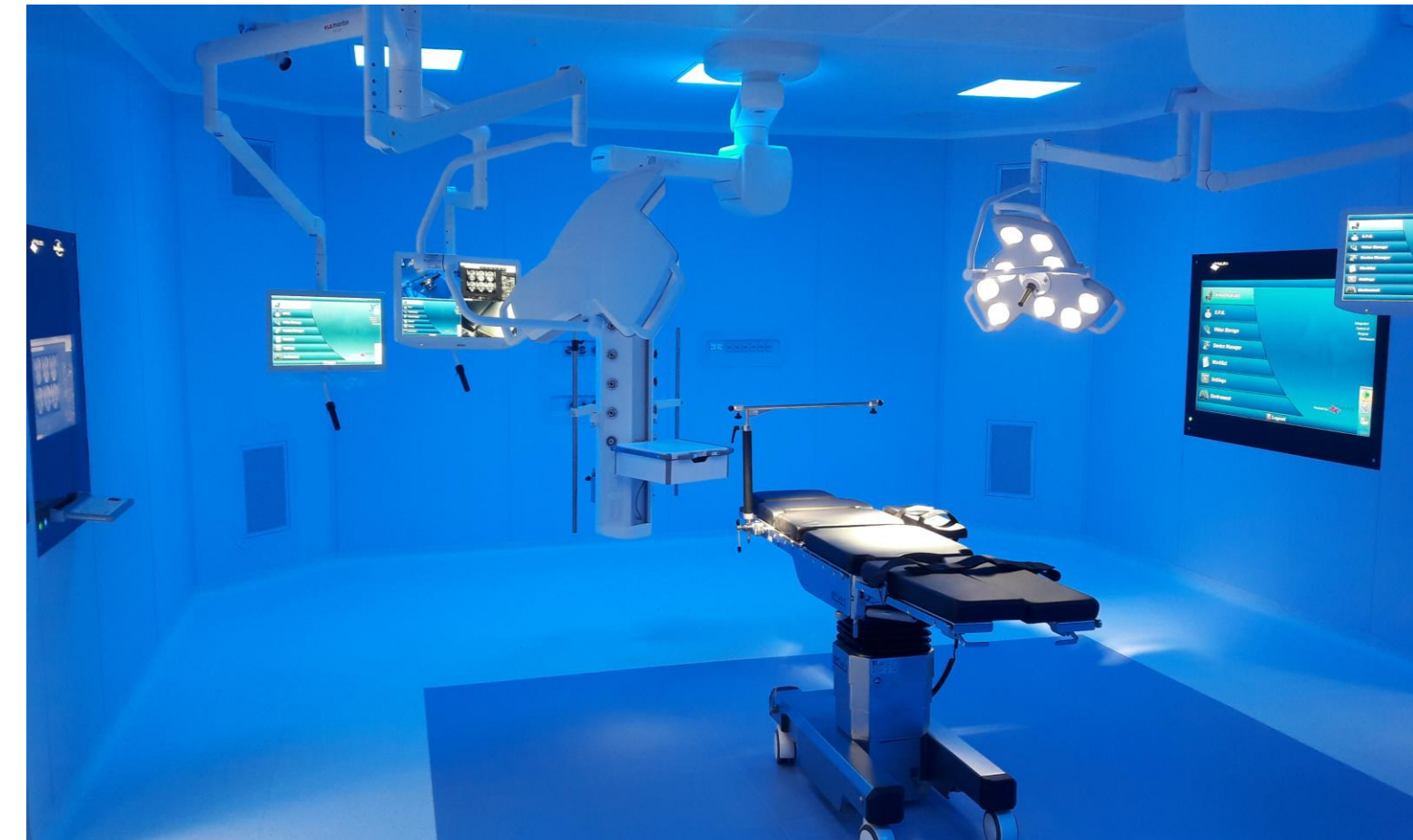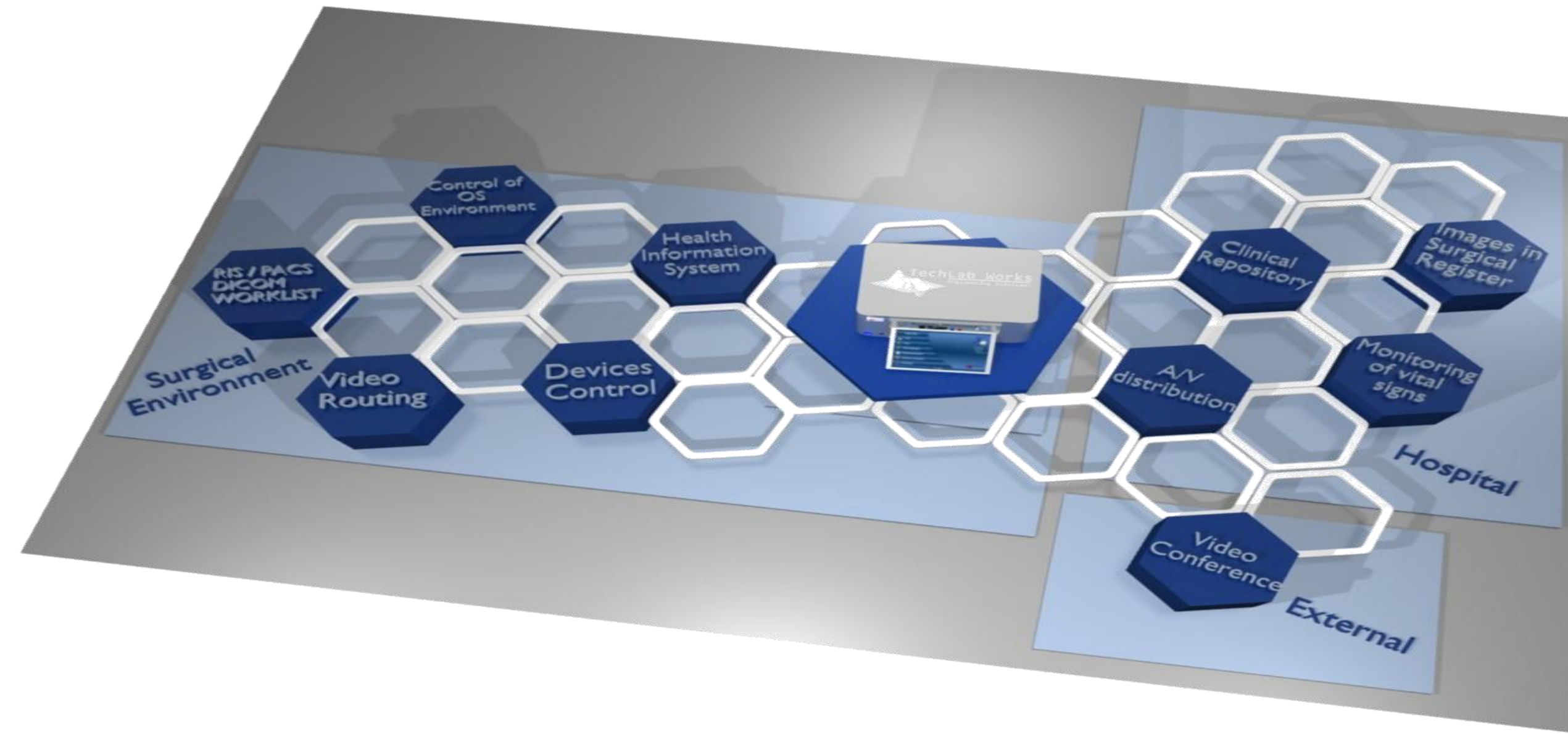- Monitor and control all the environment parameters in the operating room.

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TechLab Works s.r.l.
Via Macello, 15 d
95030 – Mascalucia (CT) – Italy
www.techlabworks.com
info@techlabworks.com

The architecture

In the operating room, some touchscreen displays will regulate the interaction between the medical / nursing staff and all system's functions. Everything is done through the control of simple software interfaces. Medical devices will be connected to a rack cabinet, placed inside a technical room, to optimize space, a key resource in the surgical environment. The system also allows the control of the environment cameras that will allow the facilitator, usually the manager of the patient's reception in the ward during post-operative phase, to monitor the time schedule of the operating room and organize the department in a way that facilitates patients' reception. Environmental cameras allow to have further framings of the operating area during video conferences.

Video conference and video streaming

Xe™ system allows to make video conferences. It is possible to direct video sources to the hospital's LAN, and it is possible to view the live of the surgical or diagnostic procedure from any computer or mobile device.

Thanks to the use of microphones and sound diffusion devices, it is possible to create a conference room to which other conference rooms can be connected and can interact with the operating room. Using complex video elaborations, it is possible to have high quality video streaming with low bandwidth occupation. Telestrator function – through which you can draw on the touchscreen display graphical signs and forms, overlapping on live videos and sending them in video conference to underline specific contents – represents a very useful tool for educational purposes.

Moreover, Xe™ system – through the Quad View – allows to mix in a unique signal four video signals simultaneously.

Choosing different layouts, four different video sources will be visible in a single image.

The video signal deriving from the combination of the four signals can be redirected to all monitors, recorded and sent in video conference.

Operating report with images

The Xe™ system allows to record videos and images. All the video tools (microscopes, endoscopes, laparoscopic columns, cameras in the operating room, ECG, PACS, etc.) can be acquired through touch controls on screen and images can be recorded in digital format and attached to the patient's electronic record.

Using compression without loss of quality, images can be retrieved intact for the clinical and scientific purposes. The Xe™ system includes editing video tools to extract frames and edit videos. Each multimedia data can be saved in DICOM format on the PACS. The entire procedure (clinical data, video and images) can be backed up both on file system, or on external HDD or on optical support.

Medical devices control

Improving the ergonomics and work comfort for the surgical team is one of the Xe™ system's goals. The device manager plugin allows the operator to control all key devices in the operating room and their main functions: operating table movements, surgical lamp's intensity and colour, environment lights in the operating room, etc. The plugin has been designed to make its use easy and intuitive and the interfaces design allows an effective and immediate interaction between the operator and the system.

Highlights

Some of the benefits related to the use of the Xe™ system in the operating environment:
- Control of environment parameters in a single display for a constant monitoring of working conditions in the operating room;
- Immediate access to the patient's electronic record in a standard and readable format, enriched by images and videos, in order to have a unique reporting language, easy and immediate to read, and to reduce clinical risk;
- Management of the operating room's lighting, of its colour and brightness, to create different sceneries and adapt the environment to the different surgical procedures;
- Make video routing in the operating room through a touchscreen with simple controls allowing an improvement in comfort and ergonomics for the medical / nursing staff.