

## Exclusive Q&A: Surgical Display Systems

**As surgery becomes less invasive, facilities must ensure they have the adequate imaging and surgical display technology for surgeons to perform these procedures. Here, *Surgical Products* speaks with Anne Bondulich, Marketing Manager for Surgical Products at Sony, who discusses new advances in surgical display systems and what facilities should know when purchasing this technology now and in the future.**

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***Surgical Products:* How have surgical display systems evolved as surgery has become less invasive? What new features/capabilities have been implemented because of MIS? Why has that happened?**

**Bondulich:** The growth of MIS has had a significant impact on surgical display technology because of surgeons' increasing reliance on the display as the window into the patient's body. Therefore, displays need to provide the best possible visualization and, as a result, surgical monitors have evolved from SD CRT based models to HD flat panel widescreen LCDs that can display over 4 times the resolution of SD monitors.

Overall, I think HD technology has played a major role in enabling MIS to become more sophisticated. Today, HD endoscopic cameras capture precise detailed images deep within the body and transmit these images to an HD widescreen monitor that can display exactly what the camera is capturing. The 16:9 widescreen aspect ratio of HD displays delivers broader surgical view, enabling the surgeon to see more of a patient's anatomy than previous SD display technology.

Surgeons can also see color and texture variations not apparent through conventional SD technology. At the same time, HD is also allowing doctors to push the boundaries of MI techniques. A case in point is incision free Natural Orifice Translumenal Endoscopic Surgery (NOTES) which uses the mouth, nose, or other body opening as the surgical portal.

### ***Surgical Products: What has the rise of HD meant for surgeons and their ability to operate safely and efficiently?***

**Bondulich:** In any minimally invasive procedure, more accurate color and detail can help surgeons identify various tissue types and better distinguish tissue vascularization. HD technology offers this dramatically enhanced viewing capability. This better visualization, helps surgeons to perform better, safer, and more efficient procedures. The ability to differentiate between normal and abnormal tissue is remarkably improved with high resolution images. HD allows doctors to spend less time filling in the blanks not seen with lower quality SD images. HD helps surgeons more easily identify diseased tissue types and provides increased depth perception. The overall result- better, faster and more precise MI procedures.

### ***Surgical Products: When purchasing surgical displays, what should surgical professionals consider? Are there certain features/capabilities they should be sure to look for?***

**Bondulich:** Look for medical grade certification which is often required in the OR especially for use within the sterile field. Medical grade monitors generally are more ruggedized, meet higher electrical standards and can often be more easily cleaned and disinfected.

In addition, choose a wide-screen display with full HD capability 1920 x 1080 resolution which is quickly becoming the standard for most endoscopic camera systems. Wide-screen HD displays provide a larger view of the surgical field and allow the entire surgical team an excellent view of the procedure. Look for a monitor that provides consistent color accuracy. You want to choose a model which will display surgical images exactly how they are being captured by the endoscopic camera system. Consistent color accuracy is paramount in helping surgeons identify diseased tissue. As more and more digital OR integration occurs you will also want to look for a unit that provides multi-modality imaging capability. In these digital OR's it's important that displays can be connected to many different imaging systems.

Of course, you will want to consider the size and weight of the display. You may have size constraints and weight limitations to contend with. Is the monitor being mounted on a cart or a boom arm, etc? The size could also be impacted by the type of procedure. Most of all make sure the display is compatible with your current equipment. Will it work with both SD and HD systems? What is the video interface type for your current equipment? What will it be for future needs (DVI, HD-SDI, S-video, composite, RGBs, YPbPr, etc)?

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### ***Surgical Products: Where do you see the technology going in the future? How will 3D HD have an impact?***

**Bondulich:** I think that 3D is the next major technology break-through in HD surgical imaging. In the next 2 years, the industry will see a sharp increase in new 3D HD endoscopic and laparoscopic camera systems. Of course, these systems will require 3D HD medical grade monitors in order to display these 3D images. In fact, you will begin to see these next generation 3D camera systems and displays later this year. Sony has already begun working with these camera manufactures and plans to introduce a medical grade 3D monitor later this year.

### ***Surgical Products: Why is it beneficial for surgeons to be able to see in 3D?***

**Bondulich:** Being able to see the inside of a patient's body in 3D is far more natural for surgeons. Open surgery by its very nature is performed in 3D because our eyes and brain naturally process visual information that way. Up until now, surgeons have had to rely on 2D for minimally invasive procedures simply because 3D technology was not widely available. Feedback we received from a recent 3D surgical procedure indicated that 3D imaging provides a truer visual experience similar to natural sight. It improves depth perception and spatial orientation and as a result can help the surgeon to more easily grasp, cut, and suture tissue.

### ***Surgical Products: Are there other developments on the horizon in the way of surgical display systems surgical professionals should be aware of in the future?***

**Bondulich:** Besides 3D, Organic Light Emitting Diode (OLED) technology is another development that is currently being evaluated. OLED offers ultra-wide color gamut with an extremely high contrast that could definitely improve or enhance the current LCD technology that exists today. Furthermore, OLED technology enables development of thinner and lighter displays and offers reduced power consumption, both of which can potentially reduce integration costs in today's digital OR's.

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