



da Vinci® Surgical System Frequently Asked Questions (FAQ)

Q. Why is the company called Intuitive® Surgical?

A. The Company is called "Intuitive" Surgical because its technologies allow surgeons to draw on the same techniques learned in open surgery, while providing the opportunity for significantly better clinical results. The *da Vinci* Surgical System preserves the natural eye-hand-instrument alignment, depth of field and instrument control of an open procedure. Moreover, the System's *EndoWrist*® instrument tips can rotate like the human wrist, allowing surgeons to perform complex dissection or reconstructive surgery in the closed chest, abdomen or pelvis.

This "intuitive motion" is a dramatic improvement over traditional laparoscopic surgery, which requires specialized talent and training. Laparoscopic surgeons operate with long-shafted, non-wristed instruments, which is similar to using a single chopstick or knitting needle in each hand. In contrast, the *da Vinci* System can provide dramatically better dexterity, control and precision, allowing surgeons to use a minimally invasive approach for complex procedures.

Q. Why is the product called the *da Vinci* Surgical System?

A. The *da Vinci* System is called "da Vinci" in part because Leonardo da Vinci invented the first robot. da Vinci also used unparalleled anatomical accuracy and three-dimensional details to bring his masterpieces to life. The *da Vinci* Surgical System similarly provides physicians with such enhanced detail and precision that the System can simulate an open surgical environment while allowing operation through tiny incisions.

Q. What is minimally invasive surgery (MIS)?

A. The term MIS can be used interchangeably with laparoscopy or endoscopic surgery. Minimally invasive surgery is performed through dime-sized (1-2 cm) incisions — also called operating ports. This is in contrast to the much larger incisions used in traditional, open surgery, which are often as large as 6-12 inches long. In cardiac surgery, a conventional "open" approach also involves splitting the breastbone and opening the ribs.

The smaller incisions used in MIS typically enable shorter recovery times and result in less pain, less blood loss, fewer transfusions, fewer infections and reduced hospitalization costs. While MIS has become the standard of care for particular surgical procedures, it has not been widely adopted for more complex or delicate procedures - for example, prostatectomy and mitral valve repair.

Intuitive Surgical believes that surgeons have been slow to adopt MIS for complex procedures because they find that fine-tissue manipulation — such as dissecting and suturing — is more difficult and less precise using traditional MIS (laparoscopy or endoscopic surgery) than with open surgery. Intuitive Surgical's technology, however, enables the use of MIS technique for complex procedures.

Q. What are the benefits of using the *da Vinci* Surgical System when compared with traditional methods of surgery?

A. Some of the major benefits experienced by surgeons using the *da Vinci* Surgical System over traditional approaches have been greater surgical precision, increased range of motion, improved dexterity, enhanced visualization and improved access. Benefits experienced by patients may include a shorter hospital stay, less pain, less risk of infection, less blood loss, fewer transfusions, less scarring, faster

recovery and a quicker return to normal daily activities. None of these benefits can be guaranteed, as surgery can be both patient- and procedure-specific.

Q. Why can't surgeons perform complex procedures such as cardiac surgery through 1-2 cm ports today?

A. Complex procedures like cardiac surgery require an excellent view of the operative field and the ability to maneuver instruments within the chest cavity, abdomen or pelvis with precision and control. Surgeons historically have used the "open sternotomy" approach to heart surgery, which means splitting the sternum (breastbone) and pulling back the ribs - which typically requires a foot-long incision. This provides visibility and allows room for the surgeon to get his hands and instruments very close to the operative site.

More recently, smaller incisions have been used to perform a variety of cardiac procedures. However, many cardiac surgeons feel the reduced access may limit visualization and may impede access to the operative field. In contrast, the *da Vinci* System's unique *EndoWrist* Instruments and *InSite*[®] Vision System can provide better control, dexterity and visualization than with an open procedure.

Q. What procedures have been performed using the *da Vinci* Surgical System? What additional procedures are possible?

A. To date, tens of thousands of procedures, including general, urologic, gynecologic, thoracoscopic and thoracoscopically-assisted cardiotomy procedures have been performed using the *da Vinci* Surgical System.

Q. Has the *da Vinci* Surgical System been cleared by the FDA?

A. The U.S. Food and Drug Administration (FDA) has cleared the *da Vinci* Surgical System for a wide range of procedures. Please see the FDA Clearance page on our web site for specific clearances and representative uses.

Q. Where is the *da Vinci* Surgical System being used now?

A. Currently, the *da Vinci* Surgical System is currently being used worldwide, in major centers in the United States, Austria, Belgium, Canada, Denmark, France, Germany, Italy, India, Japan, the Netherlands, Romania, Saudi Arabia, Singapore, Sweden, Switzerland, United Kingdom, Australia, Turkey, Czech Republic and Greece.

Q. How many Systems are installed worldwide?

A. There are nearly 860 *da Vinci* Systems in use worldwide.

Q. Is Intuitive's technology patented?

A. Yes, Intuitive has an extensive patent portfolio of internally developed technology, as well as a variety of patents acquired or exclusively licensed from leaders in computer-enhanced robotics.

Q. Is this "robotic surgery"?

A. Although the general term "robotic surgery" is often used to refer to our technology, this term can give the impression that the robot (the *da Vinci* System) is performing the surgery. In contrast, the *da Vinci* Surgical System cannot - in any manner - run on its own. Instead, the System is designed to seamlessly replicate the movement of the surgeon's hands with the tips of micro-instruments. The System cannot make decisions, nor can it perform any type of movement or maneuver without the surgeon's direct input.

Q. Will the *da Vinci* Surgical System make the surgeon unnecessary?

A. Absolutely not. On the contrary, the *da Vinci* System is designed to help surgeons advance their technique by enhancing their ability to perform complex minimally invasive surgery. The System replicates the surgeon's movements in real time. It cannot be programmed, nor can it make decisions on its own to move the surgical instruments.

Q. Is a surgeon using the *da Vinci* System operating in "virtual reality"?

A. While he/she is seated at a console a few feet away from the patient, the surgeon views an actual image of the surgical field while operating in real time, through tiny incisions, using electromechanically enhanced instruments. At no time does the surgeon see a virtual image or program/command the system to perform any maneuver on its own or outside of the surgeon's direct, real-time control.

Q. While using the *da Vinci* Surgical System, can the surgeon feel anything inside the patient's chest or abdomen?

A. The System relays some force feedback sensations from the operative field back to the surgeon throughout the procedure. This force feedback provides a substitute for tactile sensation. This feedback is augmented by the enhanced vision provided by the high-resolution 3D view.

Q. Is this telesurgery? Can you operate over long distances?

A. The *da Vinci* Surgical System can theoretically be used to operate over long distances. This capability, however, is not the primary focus of the company and thus is not available with the current *da Vinci* Surgical System.

Q. Is Intuitive Surgical developing the *da Vinci* System for telesurgery in the future?

A. In the interest of expediting surgeon training and expanding training programs, Intuitive Surgical is exploring telesurgery as a means to facilitate surgeon-to-surgeon proctoring and coaching. We see telesurgery as a tool that may allow surgeons to get up to speed in robotic-assisted surgery under the guidance of leading specialists - with less disruption to their clinical schedules and less impact on their patients.

Q. Why isn't Intuitive Surgical getting involved in the Defense Advanced Research Projects Agency (DARPA) Defense Sciences project to develop robotic technology for use on the battlefield?

A. Surgeons could theoretically use Intuitive Surgical's *da Vinci* Surgical System to safely operate over long distances. However, optimizing the *da Vinci* System for remote or telesurgery applications is not the primary focus of the company's product design and development efforts, and this capability is not available with the current *da Vinci* Surgical System.

While the company is supportive of the forward-looking research that Stanford Research Institute (SRI) is engaged in, Intuitive Surgical is focused on optimizing its products for applications in minimally invasive surgery today. We are committed to the development of products that can extend the benefits of minimally invasive surgery to the broadest possible range of patients. Our strategy to achieve this includes the development of products that allow physicians to rapidly expand their surgical technique and capabilities. Our robotic surgical platforms currently enable surgeons to perform complex procedures using a minimally invasive approach.

Q. What is Computer Motion?

A. Intuitive Surgical acquired Computer Motion, Intuitive Surgical's primary competitor, in June 2003. Computer Motion played a significant role in transitioning the surgical community from current open procedures to endoscopic procedures that are less painful and traumatic to the patient. This merger combined the intellectual property of the two companies, eliminated costly patent disputes, and allowed the combined resources of two companies to return their focus to developing robotics designed to extend the benefits of minimally invasive surgery to the broadest possible base of patients.

Upon the acquisition of Computer Motion, Intuitive Surgical consolidated all research and development, manufacturing, sales and administrative functions into Intuitive Surgical's Sunnyvale, California headquarters. All former Computer Motion products became the intellectual property of Intuitive Surgical.

Q. What were Computer Motion's products? Does Intuitive Surgical sell these?

A. Computer Motion's products included the ZEUS® MicroWrist™ Robotic Surgical System for minimally invasive surgical procedures and the HERMES® Control Center, a centralized system that enabled the surgeon to use voice control to a network of "smart" medical devices. The AESOP® Robotic Endoscope Positioner was the first surgical robot to be made commercially available in the U.S. The company's SOCRATES™ Telecollaboration System facilitated surgeon collaboration using video and audio conferencing, shared control of the endoscopic camera, and video annotation on the surgical image in the operating room.

While Intuitive Surgical supports Computer Motion's former customers, most hospitals and institutions that had Computer Motion's ZEUS® MicroWrist™ Robotic Surgical System for minimally invasive surgical procedures have chosen to participate in a trade-in program and now have *da Vinci* Surgical Systems.

While clinical studies support the use of the da Vinci® System as an effective tool for minimally invasive surgery, individual results may vary. Always ask your doctor about the risks and benefits of all available treatment options.

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