Your first choice for training

Surgical Science and our pioneering LapSim® simulator can improve your training and patient outcomes simply and quickly. And by working together we can make virtual reality (VR) simulation an essential and cost effective component of your resident training.

The Only Proven Simulator

LapSim is the most comprehensive and only validated VR simulator on the market. Studies show that surgeons trained on a LapSim simulator perform better in the operating room (OR).[1]

The Only Validated Curriculum

LapSim is the only simulator that comes with a fully validated curriculum, the LapSim Certification Program™. Use this to set up a training program instantly or customize the parameters to fulfil your own training requirements.

Dedicated Support Team

We install and help maintain your simulators and provide yearly software updates. We also offer collaborative support to integrate VR simulation into your training, customize your own surgical program or modify the LapSim parameters and metrics.

State of-the-Art Technology

LapSim is an advanced simulator, with detailed graphics, haptic feedback and a new intuitive interface. It provides a rich and immersive, multi-sensory training experience that is unmatched in the market today.

Give your training centre a competitive edge

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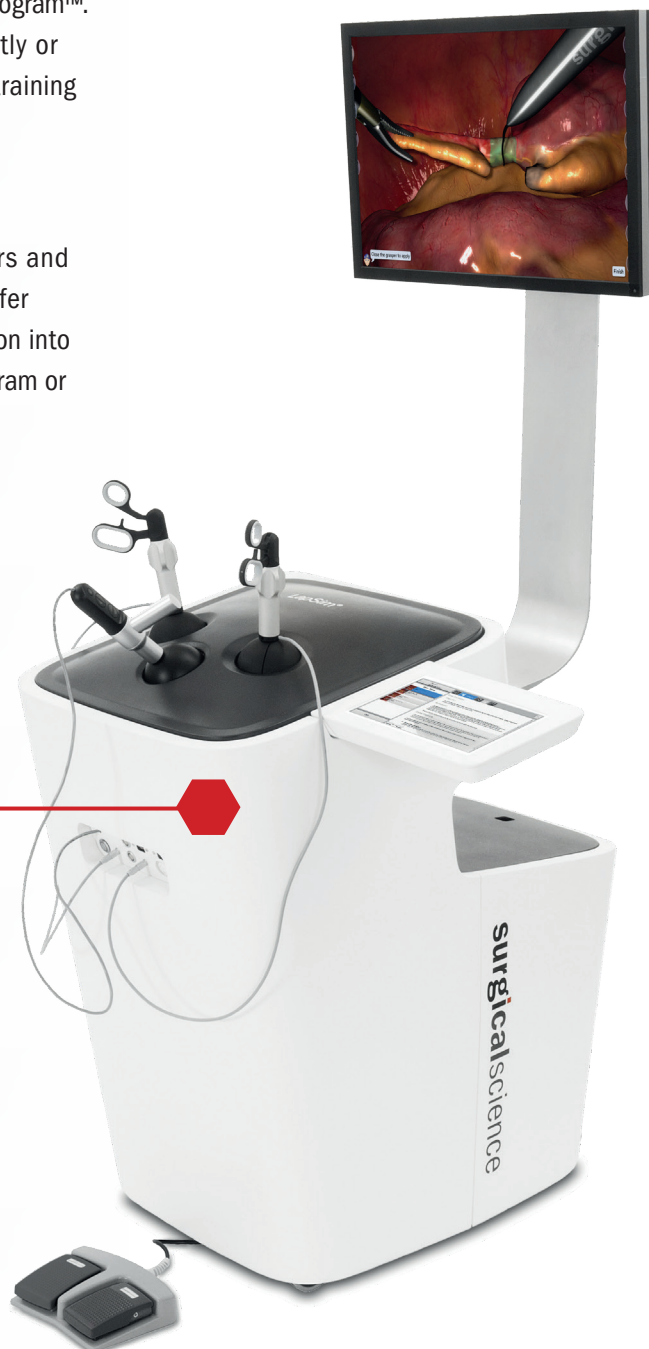
Prepare more confident surgeons

There are many benefits to VR simulation training. It shortens the time it takes to gain surgical competency and delivers consistent cost-effective training that helps develop more prepared surgeons, reducing medical errors.[1]

Advanced, Effective Training

How are your residents trained today? Are they getting consistent training? Does it take them a long time for them to become competent? Are their skills good enough to enter the OR? With a LapSim simulator you get a standardized 24/7 guided training program that provides real-time feedback. This reduces the demands on supervision time and leads to more skilled and confident surgeons, ready for the OR.

Better Patient Care and Safety

This graph shows the learning curve for a typical resident. The role of a LapSim simulator is to shorten the time it takes your residents to be trained in fundamental surgical skills such as depth perception and instrument handling. LapSim makes sure residents are prepared, safe and confident to start laparoscopic surgery on real patients.[1, 2]

The role of the simulator

Fundemental skills

Technical skills

Time

Simulator   Operation room
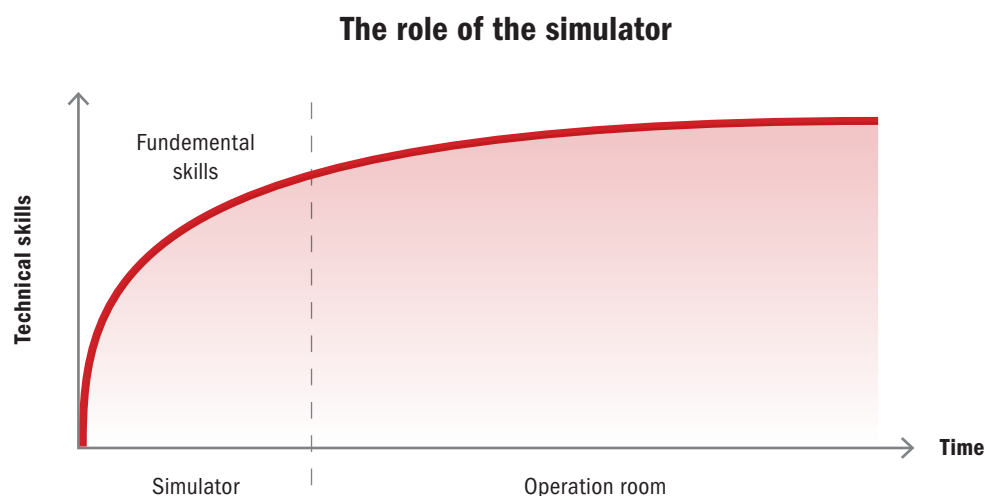
The Training Benefits of a LapSim Simulator:

▪ Train without risk to patients, reducing errors in first operations.

▪ Shorten the learning curve and be more prepared for real surgery.[2]

▪ Train more effectively compared to traditional methods.[3]

▪ Learn 24/7 and accelerate the time needed to gain competency.[2]

▪ Receive standardized, objective, data-driven feedback.

▪ Work at your own pace and reduce demands on supervision time.

▪ Practice entire surgical procedures and experience the realities of the OR.

New Cloud Portal

- Instructors can login anywhere, anytime.
- Synchronize all your LapSim simulators.
- Easily monitor residents' progress and support their needs.

Teach the skills that surgeons really need

The LapSim simulator comes with an improved and more intuitive interface, new performance and assessments metrics and an immersive 360 VR headset. This means LapSim is more effective at teaching laparoscopic skills than ever before.

The Next Level in VR Training

- With the latest haptic technology residents can master hand-eye coordination and psychomotor skills, and develop accurate manual dexterity.
- The new LapSim 360 simulation suite creates an immersive, multi-sensory training experience that allows residents to feel more involved and closer to the real OR experience.

New Metrics for Clear, Objective Feedback

- Residents get a comprehensive data-driven training report that analyses their skills in more detail than ever before.
- Assessment metrics are classified into easy to understand surgical terms so residents know what they are good at and what they are not.
- Each exercise can be recorded to provide detailed performance analysis. This supports skill development and encourages residents to train.
- All parameters are grouped according to the GOALS* rating scale, the validated assessment tool that measures training outcomes.

A More Intuitive Interface

- An effective goal-orientated environment helps residents learn and stay motivated.
- Easy to use and navigate, with easy-to-follow instructions and video guides.
- Clear overview of assigned courses and learning goals.

The complete training solution

Our 'Fundamental Skills' modules provide proficiency-based training to help students achieve the manual dexterity needed to perform surgery. Each exercise has increasing difficulty levels that challenge residents and keep them motivated.
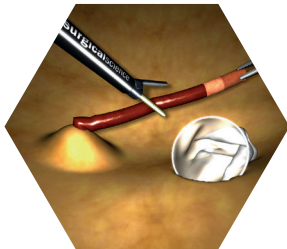

Basic Skills – Master the Fundamentals

A comprehensive portfolio of well-defined laparoscopic exercises, from basic navigation to advanced suturing. Includes real-time feedback for instant learning.
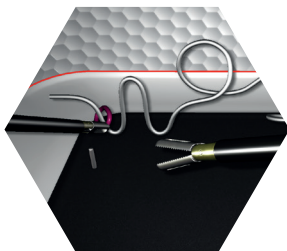

Task Training – Repetition and Refinement

Inspired by the Fundamentals of Laparoscopic Surgery (FLS), a standard developed by the Society of American Gastrointestinal Endoscopic Surgeons (SAGES), this module includes Peg Transfer, Pattern Cutting and Wireloop.
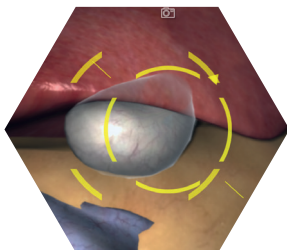

Camera Anatomy Training

This module teaches camera handling with straight and angled optics. Tasks are scored on multiple metrics, such as drift and economy of movements.

With the Surgical Procedure modules, residents can master essential elements of full surgical procedures and experience the true realities of the OR.
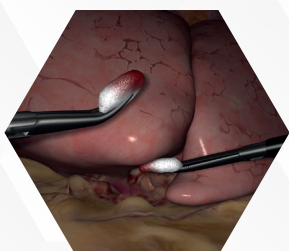

New VATS Lobectomy Full Suite

Training on key steps in the resection of each five lung lobes utilizing the Copenhagen Standardized Anterior Approach. With realistic anatomies improved tissue handling and enhanced graphics.
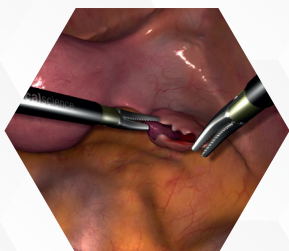

Gynecology - updated

Cutting edge simulations of 4 procedures: tubal occlusion, salpingectomy, salpingostomy and myoma suturing. This module has been proven to provide significant improvement in trainees' skills before they enter th OR.[1]
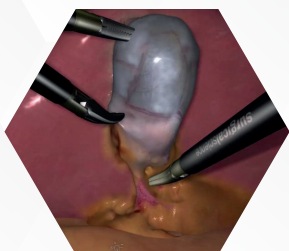

Cholecystectomy - updated

Includes each critical step in this frequently performed procedure, from clipping the cystic duct to removing the gall bladder. With scenario and skills-based customization, so instructors can introduce complications and target specific skill development.
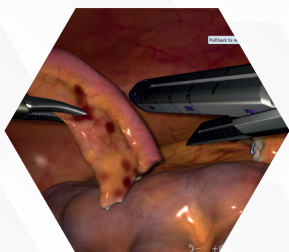

Appendectomy

Introducing residents to one of the most frequently performed surgeries. Challenges trainees' procedural knowledge and decision-making skills with extensive pathology variations and complications.
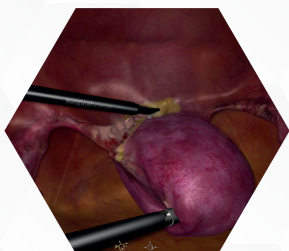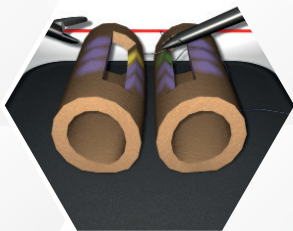

Hysterectomy

A comprehensive and customizable VR training experience that simulates the critical steps of a laparoscopic hysterectomy procedure. With expanded content and optional port placements.
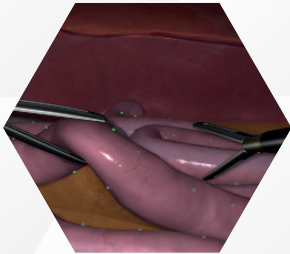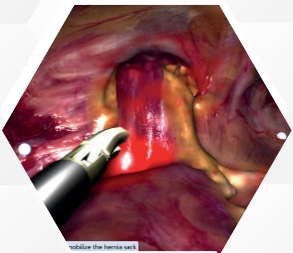
Bariatrics

Features procedural deconstruction. Includes simulations of four training tasks: lap-band suturing, jejunal suturing, inspection and measuring of the bowel.

Suturing & Anastomosis

Features a progressively complex, 10-step approach to suturing and knot tying techniques.

Inguinal Hernia

Includes key steps of Totally Extraperitoneal (TEP) approach, where the hernia sac is returned into the abdominal cavity. Anatomical landmarks included: epigastric vessels, triangle of doom, triangle of pain, vas deferens, gonadal vessels and Cooper's ligament.
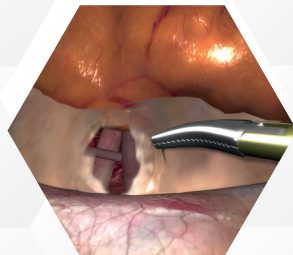
Nephrectomy

Features procedural deconstruction. Simulates training tasks, such as: kidney dissection and kidney clipping.
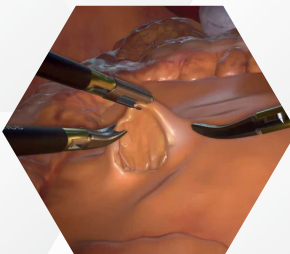
Hemicolectomy

A comprehensive and customizable VR training experience that simulates the critical steps of a laparoscopic right hemicolectomy procedure. With expanded content and assistant instrument.

Our simulators are the most scientifically validated in the world

The LapSim Certification Program™

Our simulators are the most scientifically validated in the world. Studies have proven [1,2] that our simulators work and that VR skills successfully transfer to the OR. We have applied these studies to create our own validated curricula, the LapSim Certification Program™.

The LapSim Certification Program is a validated curricula that makes sure your residents reach an accredited proficiency in laparoscopy. There are two certified residency programs:

General Surgery

Designed especially for residents in General Surgery and includes Expert Training and the Ahlberg Exam. It is based on a study published in the American Journal of Surgery that showed that training on a VR simulator to a level of proficiency significantly improves intraoperative performance during a resident's first 10 laparoscopic cholecystectomies.[1]

Gynecology

Designed especially for residents in Gynecology, including Expert Training, Salpingectomy and the Larsen Exam. It is based on the study "the effect of VR training on laparoscopic surgery" published in the British Medical Journal which showed the positive impact of LapSim training on patient outcomes[2].

These certification programs use the same parameters as these studies. You can configure these parameters - the difficulty levels, camera angles and metrics - to meet your own specific standards and requirements.

Develop a world class residents' program

LapSim is the only training simulator that comes with a customizable curriculum so you can develop and enhance your residents' program. The Yale University School of Medicine collaborated with Surgical Science to integrate VR simulation into their residents' training to create a successful simulation centre.

Yale University School of Medicine

Dr. Hulda Einarsdottir, the Director of Surgical Simulation at Yale University, introduced VR simulation training into her curriculum in 2015 and upgraded her training center with two new LapSim simulators.

To integrate the simulators into her residents' program she reached out to Surgical Science's customer support, "We talked together about my objectives, and they identified additional resources—particularly the LapSim Certification Program—to help me do what I wanted to do."

With the help of Surgical Science, Hulda adapted the program to suit her training needs "The program was already a validated curriculum, so it made sense to not reinvent the wheel. Instead, we simply built on this existing foundation and Americanized it."

Hulda's new training program was a huge success and she recently received a faculty award for contribution to education, "I was surprised and honored with this recognition. They didn't share the specifics of their decision-making, but I think it may have had something to do with the nights I spent in the simulation lab helping them with their mock exams!"

Dr. Hulda Einarsdottir,
the Director of Surgical Simulation
at Yale University
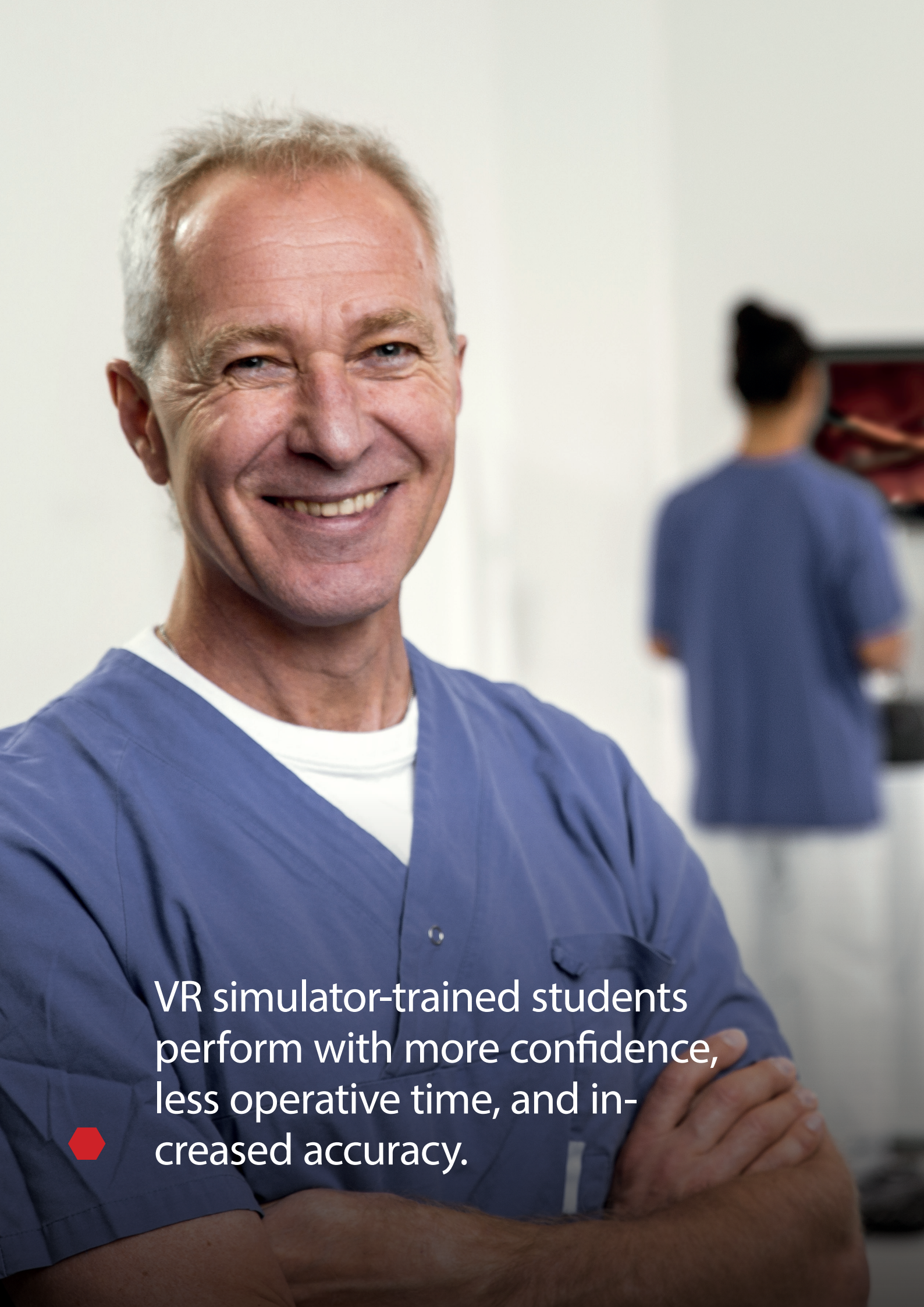
VR simulator-trained students perform with more confidence, less operative time, and increased accuracy.

Constantly evolving, always improving

For over 20 years, Surgical Science has been committed to being at the forefront of simulation technology. We are constantly changing, updating and expanding our simulators and working with new partners with one goal in mind, to keep our customers happy.

20TH ANNIVERSARY
SURGICAL SCIENCE
1999-2019

1999-2014

2015

- Introduction of advanced Haptic technology.
- Easier course administration
- Easily & Quickly implement default metrics.
- New Instruments: Atraumatic graspers, Maryland graspers.
- Additional Courses: Access more than 50 new courses.

2016
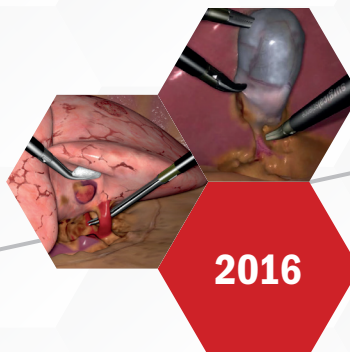
- Cholecystectomy module: full-length exercise mode.
- VATS module: Pulmonary Artery included.
- Port position display is now shown of the location of surgery.
- Upgrades to Teacher Mode.

2017

- New generation of Appendectomy
  Latest technology platform and with new graphics.
- New generation of Gynecology
  A major remodelling with new technologies and graphics.
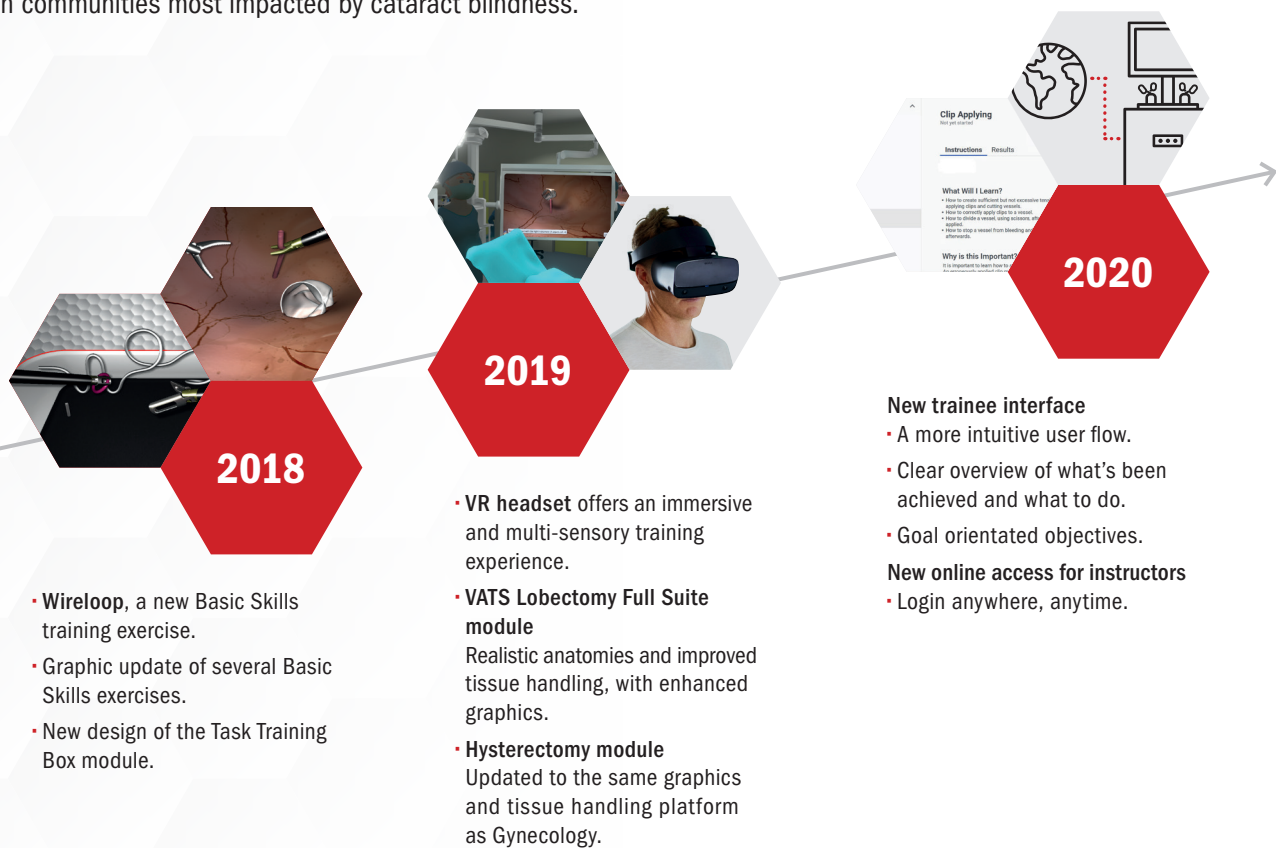- Instrument selection made easier.

Our Vision

Our vision is that every patient undergoing a medical procedure is certain that the care giver is trained and certified in a simulated environment.

Our Partnerships

We work with many industrial partners to develop different types of medical simulation devices, from robotic-assisted surgery to ultrasound simulation. We also partner with a charity called Help Me See and provide eye surgery simulation training for doctors in communities most impacted by cataract blindness.

Our Fantastic Service

With Surgical Science, you are getting the best and latest simulation technology available. Issues are rare, but if they do occur, our dedicated service team will make sure your simulator is back working in no time.

2018

- **Wireloop**, a new Basic Skills training exercise.
- Graphic update of several Basic Skills exercises.
- New design of the Task Training Box module.

2019

- **VR headset** offers an immersive and multi-sensory training experience.
- **VATS Lobectomy Full Suite module**
  Realistic anatomies and improved tissue handling, with enhanced graphics.
- **Hysterectomy module**
  Updated to the same graphics and tissue handling platform as Gynecology.

2020

New trainee interface
- A more intuitive user flow.
- Clear overview of what's been achieved and what to do.
- Goal orientated objectives.

New online access for instructors
- Login anywhere, anytime.

We are the only company that offer annual updates with significant module additions, updates and improvements.

References

1. Proficiency-based virtual reality training significantly reduces the error rate for residents during their first 10 laparoscopic cholecystectomies. Ahlberg et al Am J Surg. 2007 Jun;193(6):797-804.

2. Effect of virtual reality training on laparoscopic surgery: randomised controlled trial, Larsen Christian R, Soerensen Jette L, Grantcharov Teodor P, Dalsgaard Torur, Schouenborg Lars, Ottosen Christian et al BMJ 2009; 338 :b1802.

3. LapSim® more effective than a box trainer, Youngblood PL et al, J Am Coll Surg. 2005 Apr;200(4):546-51.

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