

# SurgTime™

## A leap forward in arthroscopy and telemedicine mentoring

- **Sharing knowledge through mentoring and training is critical in medicine but traditionally has had to take place face to face.**
- **California-based orthopaedic surgeon Dr William Stetson has developed a telesurgery internet platform that enables clinicians to share knowledge from wherever they are in the world.**
- **The SurgTime™ platform provides two-way audio-visual communication between the surgeon and viewers, allowing up to 100 specialists and students to virtually attend the same procedure.**
- **Enabling surgical collaboration in real-time across the world, SurgTime™ is revolutionising medical training.**

There's an apt metaphor for sharing knowledge: a candle loses nothing lighting another candle. Within medicine, there are those actively sharing their skills, experience, and insight with others – educators training the next generation of healthcare professionals and practising specialists reaching out to less fortunate fellow professionals to build a global community in their field. For those holding the metaphorical candle, telemedicine provides a way to pass on the light of knowledge in ways previously unimaginable. In orthopaedics, one telesurgery internet platform is doing just that – revolutionising collaboration and mentoring by allowing specialists and students to scrub in on 'borderless operating theatres' from anywhere in the world.

In the history of medicine, it's not that long ago that instruction in surgery was limited to small groups of students and fellow doctors observing from nearby – usually within or above an operating theatre. Interaction in such cases was limited if allowed at all. However, there is a growing corps of experienced surgeons embracing telemedicine to expand the reach of traditional modes of surgical teaching. Dr William Stetson – a California-based orthopaedic surgeon, team doctor for the US men's and women's Olympic indoor volleyball teams, and volunteer professor of orthopaedic surgery at Los Angeles County +USC Medical Center (USA) – is part of that corps.

Sharing knowledge is key to Stetson's ethos. A specialist in arthroscopy – the use of keyhole surgery to examine and correct joints in the body – Stetson has travelled worldwide, teaching other surgeons his skillset via his non-profit organisation Operation Arthroscopy. He has now expanded the reach of his mentoring as the founder of SurgTime™, a patent-pending telesurgery internet platform that allows two-way audio-visual communication in the operating room.

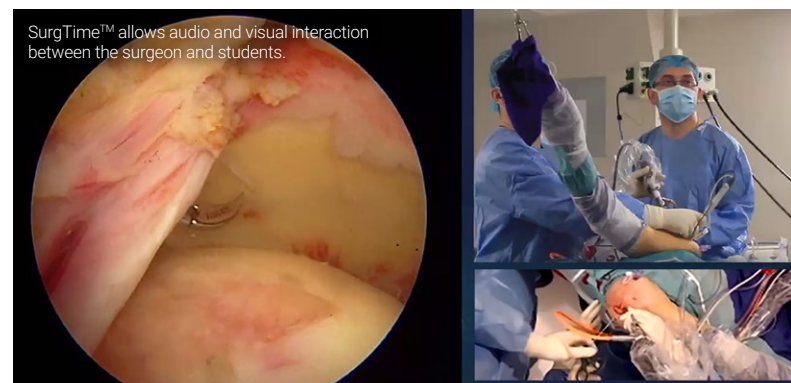
### SurgTime™: how it works

Like many other technical innovations in medicine, the SurgTime™ system is a simple idea with clever components. In essence, it's an array of equipment that plugs into an arthroscopy tower – the core

stack of equipment including a camera system and screen that guides an orthopaedic surgeon during procedures – and broadcasts what the surgeon sees on their tower screen over the internet. 'Broadcasts' is the operative term because the system includes an added camera that shows an external view of the procedure and a microphone that allows the surgeon to communicate with those watching and listening in real-time. That communication is two-way, and this is partly where the system comes into its own.

At the system's heart is the SurgTime™ platform, an internet-based platform that uses proprietary cloud-based software to allow up to 100 people to log on and be part of an operation; all they need is internet access and a standard web browser. And they are involved in the operation. The software allows audio and visual interaction between the surgeon and those logged on, who can use microphones on their computers to speak with the surgeon or their computer

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mouse to illustrate the visuals on the SurgTime™ screen with, say, a circle or arrow. This augmented reality 'telestrate' capability is a defining feature of the SurgTime™ software. Imagine a specialist being able to guide a surgeon's hand in a particularly challenging case from thousands of kilometres away using a digital pen on their tablet or the click-and-drag function of a simple computer mouse. Such telesurgery can bring together the skills of dozens of specialists worldwide in a single procedure – without them having to scrub in physically.

### The real drawback

However, for Stetson, the real drawback of the SurgTime™ system is how a young doctor in Thailand can watch a senior surgeon operating in New York, ask them to explain what they are doing and virtually point to the part of a joint in question. Such real-time 'telesurgery mentoring' provides teaching surgeons with the opportunity to provide up-close instruction to a class spread worldwide or in a country where such procedures are rare. According to Dr Stetson, only six percent of the world's surgical procedures occur in developing nations, so SurgTime™ provides a significant leap in medical training.

There are other avenues for the system to accelerate learning. Observing procedures and how specialists use surgical equipment is vital for the equipment designers and manufacturers to refine their products and innovate others. Using the SurgTime™ platform, a surgeon can invite those industry representatives into a procedure and suggest opportunities for equipment improvement. The augmented reality system, therefore, can not only streamline education and training but also accelerate new product introduction and, for manufacturers, allow for faster and deeper market penetration.

Of course, sharing patient images has legal ramifications. Stetson and his team have ensured the platform is secure and complies with the US Health Insurance Portability and Accountability Act in protecting sensitive patient-health information. All surgeons who broadcast procedures register with the platform and are allowed to archive procedures for later viewing.

### Telesurgery triumph

Telehealth has limitations – an operating surgeon can't physically step aside for another observing from another room, let alone the other side of the world – and telesurgery mentoring cannot replace basic surgical skills or effective decision-making in preoperative treatment. However, digitally connecting specialists and student doctors via a web-based audio-visual platform to create borderless operating theatres does have multiple real-world benefits. Through a mobile unit that easily connects to existing operating room equipment, the SurgTime™ portal gives unprecedented access to operating rooms through two-way broadcasts that can be viewed on any mobile device. It allows deep, interactive, and valuable knowledge sharing with multiple users in real-time. In that respect, the SurgTime™ platform is lighting many candles.

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## Personal response

### *What, for you, is the most significant benefit of the SurgTime™ platform?*

SurgTime™ has the ability to collaborate with my surgical colleagues in real-time, across the continent, or across the world and teach surgery without having to travel long distances. Many of the procedures we do are technically difficult and there is a steep learning curve to do them properly. SurgTime™ allows us to accelerate the learning curve for surgeons in developing countries to learn these new surgical techniques.

### *What was the biggest challenge in designing the platform and how did you overcome it?*

While developing the SurgTime™ platform, we found that securing connectivity between the operating room and the viewing surgeons was the biggest challenge. We need uninterrupted access for surgeons and we overcame this with a lot of trial and error. We finally configured the system which allows the viewing surgeon to view the procedure without a lag or delay or glitch in the picture. This is critical when performing surgery and we learned that a broadband internet connection is vital for this.

### *How would you ideally like to see the platform being used?*

To begin with, I would like the platform to be used in teaching institutions across the globe to accelerate the learning of surgical skills and relieve some of the burden that we see in developing countries that lack the surgical care needed to care of their people.

### *How would you like to see SurgTime™ developed further?*

I would like the SurgTime™ platform to be incorporated into every company's arthroscopic tower so that every surgeon has the capability to interact, share, and teach surgical skills to anyone in the world regardless of geographical boundaries.

### *Looking ahead ten years – a long time in technology development – how do you see telemedicine shaping arthroscopic procedures?*

I see every operating room equipped with the ability to connect with a system that allows young and even experienced surgeons to interact with colleagues or mentors on difficult surgical cases which will allow all of us to help us to help deliver better surgical care to our patients.

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### Bio

Founder of SurgTime™ and award-winning orthopaedic surgeon, Dr William Stetson, is double board-certified in orthopaedic surgery and sports medicine. Team doctor for the USA's Olympic indoor volleyball teams, Stetson is also volunteer professor of orthopaedic surgery at LAC +USC Medical Center, Los Angeles, California, USA. Stetson teaches arthroscopic surgery internationally and founded Operation Arthroscopy.

### Further reading

Stetson, WB, et al, (2022) The use of telesurgery mentoring and augmented reality to teach arthroscopy. *Arthroscopy Techniques*, 11(2), e203–e207. [www.doi.org/10.1016/j.eats.2021.10.008](https://www.doi.org/10.1016/j.eats.2021.10.008).



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SurgTime™ gives unprecedented access to operating theatres, helping to deliver better surgical care to patients worldwide.