

## **Bold Award Submission – FundamentalVR for Boldest Healthtech**

Deadline for submission: Dec 31

Entry fee: Euro 189

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### **A Vision For The Future: FundamentalVR Helps Cure Avoidable Blindness Alongside Orbis International Using Virtual Reality**

FundamentalVR is a world-leading healthcare technology business that uses best in industry immersive technologies to train medical professionals globally. Through their virtual learning platform Fundamental Surgery, FundamentalVR is helping to enhance "pre-human competency" in clinical settings to improve patient outcomes. The Fundamental Surgery platform caters to learners by simulating medical procedures in a virtual environment, complete with virtual patients, to offer a safe and compliant environment to train and practice. This interactive and immersive form of skills transfer reduces risk to patients, improves medical outcomes, and—most importantly—provides surgical competency before any surgeon or healthcare professional enters an operating room. To improve skill acquisition and training globally, we collaborate with top medical device, pharmaceutical, and healthcare systems to achieve a gold standard of learning.

This new age of training in medicine is facilitated by Fundamental Surgery's multimodal design - built for blended learning that combines Cutaneous (tactile vibration) and Kinesthetics (force, feedback, and location) haptics in a single platform. The HapticVR™ modality, powered by the company's patented Haptic Intelligence Engine, is unparalleled in aiding medical training as it can deliver full Kinesthetic force feedback haptics into a variety of off-the-shelf VR hardware - ranging from base station held instruments to haptic gloves with submillimeter accuracy. Using this patented healthcare technology, a realistic environment is created where users can *feel* as well as see the differences in human tissue.

For those on the move, Fundamental Surgery simulations can be used on standalone headsets like the Oculus Quest and HTC Vive Focus Plus thanks to the StandaloneVR modality. StandaloneVR offers an even more portable and affordable training solution, as it allows users to carry these powerful learning experiences with them across the world while also being able to connect remotely with colleagues and trainers. A limitless number of people can connect, communicate, engage, teach, and work together in Fundamental Surgery's virtual classrooms and operating rooms because to this multi-user feature.

Numerous clinical studies have been carried out to validate the efficacy of virtual reality in training and evaluate the utility of haptics in VR medical simulations. In September 2022, a clinical trial reported in The Annals of Medicine and Surgery confirmed Fundamental Surgery's positive impact on medical training and skills transfer. The trial, carried out by Drs. Gani, Pickering, Sabri, Ellis, and Pucher, assessed the instructional value of haptic feedback integrated into a realistic VR bone drilling simulation on benchtop performance. The study at St George's University Hospital, London found that Fundamental Surgery's HapticVR™ technology significantly increased performance in the tibial bone drilling task compared with the non-haptic virtual reality simulator. This concludes that virtual reality with haptic feedback produces safer drill depths with reduced risk of injury to neurovascular structures. Objective structured assessment of technical skills (OSATs) ratings was also significantly improved in the haptic group. This study provides evidence that implementation of haptic feedback within surgical simulators will deliver a more effective and immersive experience for surgical trainees.

The work conducted with Orbis International, a global eye care nonprofit, is a fantastic illustration of the efficacy of FundamentalVR's game-changing technology in real-world settings. Orbis' mission is to eradicate avoidable blindness around the world, specifically in LMICs (low- and middle-income countries), and together with FundamentalVR they have created a manual small incision cataract surgery (MSICS) simulation that utilizes haptic feedback and affordable technology to help support this initiative.

The Fundamental Surgery platform's portability allows the simulation system to be set up quickly and effectively all around the world. Currently, 17 simulators can be found worldwide in locations with the greatest burden of preventable vision loss where user feedback is informing the development of the next generation simulation. As the simulation is fully equipped with HapticVR™ technology that replicates the precise sense of touch needed for this complex procedure, ophthalmic surgeons globally are able to gain the necessary skills that will improve patient outcomes. The goal of the innovative tech solution and collaboration between FundamentalVR and Orbis International is to train more eye surgeons for a fraction of the cost of existing simulators which will help in the effort to treat curable blindness.