CASE STUDY

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Improving Learning Outcomes in Ophthalmic Surgery Training via VR

Surgical Skills Training Through Virtual Reality

Surgical competence is a long journey, following the Dreyfus model of skill acquisition. According to this model, a trainee surgeon must spend significant time in operating rooms, observing and learning, before they can become competent enough to perform procedures independently and progress to expert status.

Integra's client, a leading eye care provider, embarked on a mission to expedite trainee surgeons' time-to-readiness for surgical procedures. They approached us to create a simulated small-incision cataract surgery (SICS) solution, offering a safe environment for practice and achieving learning efficacy in the shortest duration possible.

Business Requirement

The client organization aimed to cut down the time-to-competency from several months to just a few weeks.

- Utilize cutting-edge technology to mimic a real-time surgical experience.
- Design a highly portable solution that requires minimal setup and can train numerous learners in a short period.
- Deliver a tactile experience akin to using actual surgical tools in a real-life situation.

Integra’s Approach

Recognizing the client’s training solution needs, Virtual Reality (VR) simulation was identified as the optimal path.

- Integra’s team of technology and learning solution experts dedicated hundreds of hours to research suitable development frameworks, prototyping, haptic device testing, and its integration with the simulation.
- Utilizing the Oculus Rift/Quest with the TouchX haptic device and Foot Switch, we crafted a simulation that guides a trainee surgeon through seven distinct steps of the procedure, culminating in an interactive surgery.
- The learner undergoes the simulation's interactivities from a first-person perspective using Microscopic Output and Dynamic Cut (soft tissue), mirroring a real-time experience.
- Integration with the TouchX haptic device and Foot Switch hardware, coupled with an Autorun 3D video (stereoscopic) version for TV/large displays, and supplemented audio & OST, enhanced immersion in the learning content.

Results

Implementing VR with haptic devices fulfilled the primary objectives of the training provider:

- Quicker time-to-competency in surgical skills.
- More virtual practice hours for each trainee surgeon, boosting confidence and on-the-job performance.
- The training proved highly scalable, accommodating a larger number of trainees in a brief period.
- Each trainee was allotted individual space and time to practice both surgical skills and the operation of advanced surgical equipment.

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ABOUT INTEGRA

Integra is a trusted partner in Business Process and Technology Services for many leading organizations worldwide. With a focus on providing end-to-end solutions for digital content, learning services, and content workflows, we help our customers realize transformational business value.

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