

Your Surgeon Is Training with Virtual Reality

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The VR World show is always a fairly rich source of innovative firms. Last year, I came across [Roto VR](#), and this year was certainly no disappointment. One of the most exciting concepts I saw was from the rather unassumingly titled Generic Robotics. Its idea is far from ordinary though; it wants to transform the way doctors, dentists and surgeons learn. This is done through a combination of virtual reality, touch feedback (haptics) and advanced simulation technology.

Its prototype kit looked a little homemade – but the potential was very clear. This is like the big brother of the game “Operation”, which we all played as children. It’s an education and training concept that’s really going places. I even got to practice a dental injection – without my cack-handed technique maiming anyone.

I hope you’re as excited as I am about this unusual field – so I’ll now hand you over to Generic Robotics’ two directors, Dr Alastair Barrow and Tom Smith.

AL: What got you into this?

AB: We spent years building experience in engineering, robotics, and haptics – and in developing specialist simulation software that solved real world problems. I worked as a research associate on various simulation projects at the University of Reading and King’s College London. I helped build the technology behind a workstation that allows trainee dentists to practice cavity preparation before working on a real patient. This went really well; we built 14 simulators which were successfully integrated into the curriculum at King’s College London Dental Institute. Dentists could physically feel the difference between skin, soft tissue and bone – as if they were doing it for real. That’s great groundwork for then doing it in reality.

TS: I ran my own engineering company delivering a range of software and mechatronic projects, in the field of human-computer interaction – working in academic, industrial and commercial settings. I enjoyed leading multidisciplinary teams, and working on multinational specs. Combining this with Ally’s lead in clinical matters, our joint network of contacts meant we had the seeds of a potentially great company.

AL: What does the firm do, at present?

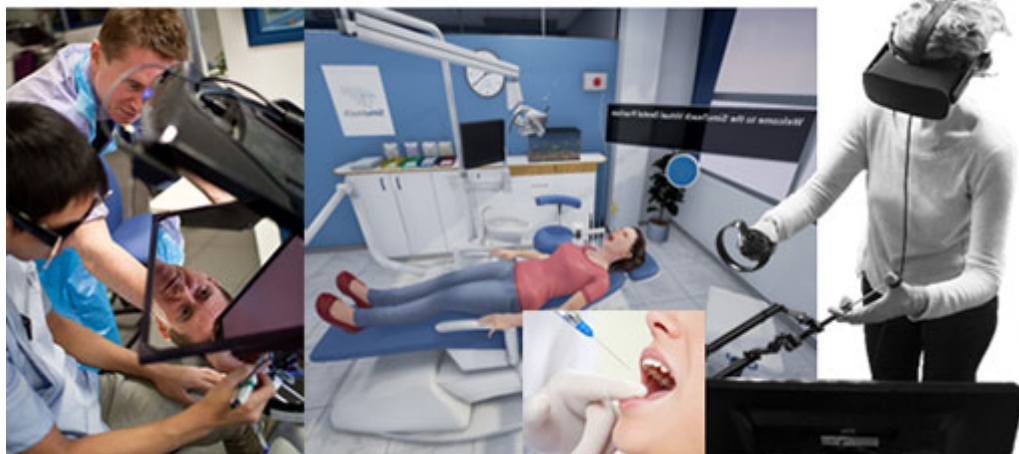
TS: Generic Robotics uses hardware, software and detailed courseware to build simulators that train a broad range of clinical skills. We’ve begun by making the world’s first injection simulator for dental training. There is natural crossover with similar procedures such as epidurals and lumbar punctures – so from this starting point we already have a first teaching module that aligns with our overall company strategy to cater for other clinical disciplines.



AL: Can you tell me more about the product?

AB: Imagine you’re a first-year dental student about to give an injection for the first time. Now imagine being the patient about to be given an injection by someone who’s never done it before – you’d want them to have tried it at least once wouldn’t you? Our technology gives trainees the chance to practice giving injections as many times as they like on a virtual patient before performing the task for real.

TS: Along with the vast majority of procedures, our injection module doesn’t exist anywhere else on the market at the moment. We’ve seen a major gap which we can fill – to provide universities and teaching hospitals with a training platform that caters for dental, surgical, medical, even veterinary sectors. We’ve already done tons of work in these areas – now we want to pull it together, and offer a package that supports best practice, and provides the best in patient care.



AL: Why is your solution superior to other training techniques?

TS: It is now widely accepted that computer simulation will become standard practice in clinical skills training – just as it is now in the aviation industry. Top-level decision makers want clinicians to train using simulators and students will want an alternative for developing core manual skills. We are working to make affordable options available as fast as possible, without compromising quality.

AB: While there are a number of clinical training simulators on the market, they all fall foul of a highly restrictive limitation – each is designed to service only one kind of clinical procedure. For example, a simulator for knee surgery is of no use for dental training; nor is it possible to use a laparoscopic system to train spinal injections. This standard approach limits the growth of the market. Specifically, it results in high development costs and low volume of sales per product. Our approach is to start from the ground up and build a universal platform. This is done in partnership with universities, so we know we're making a product people really want.

AL: What money are you raising?

TS: We're seeking £2m-3m to propel development on the injection simulator, and to push into the universal clinical skills domain. Top priorities also include building the business development and sales team, so we can expand into servicing Europe, the US, Middle East and Asia.

AL: What's your future plan?

AB: We want to become the primary global supplier of universal clinical training workstations. We also want to democratise haptics by offering a software library (Toia) that becomes the standard technology package used to add the sense of touch to any VR computer interaction experience. Both have wide markets; the Generic Robotics product line embraces multiple disciplines as yet untapped by any other similar company, while Toia has applications in gaming, creative, engineering and educational industries – to name a few.

What do you think of the robotic future of surgery? andrew@southbankresearch.com.

Best,

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