

CAScination

Steigerhubelstrasse 3

3008 Bern

Founded in 2009

41 employees

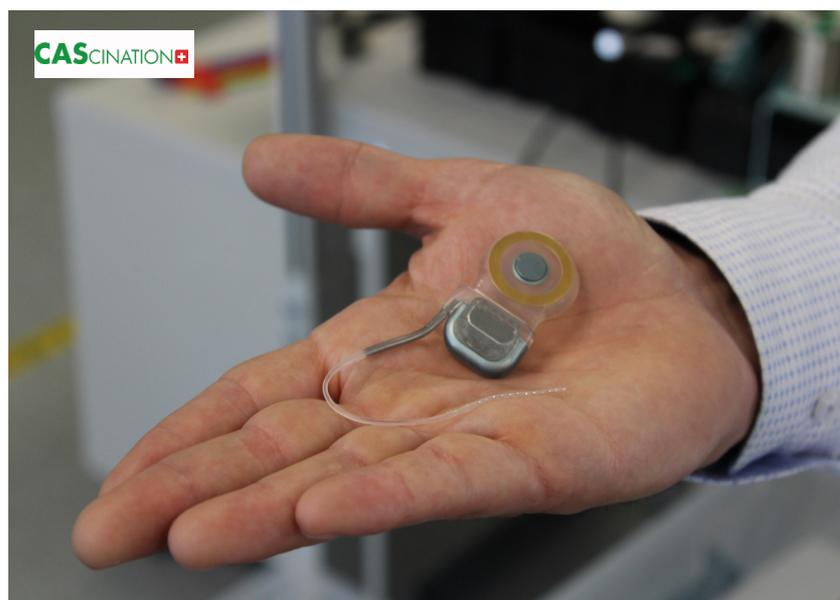


SWISS MEDTECH

The 'Ode to Joy' has been the anthem of the European Union since 1985. But on the occasion of the first performance of the ninth symphony in May 1824 – from which both versions are derived – they had to turn the maestro towards the audience as he was unable to hear its frenetic applause: Ludwig van Beethoven had been deaf since the age of 27. Today, the pioneer of romanticism would be in the good hands of the CAScination specialists: the leader in navigation solutions for open liver surgery and tumour ablation has now developed a robotic system for Cochlear implantation, a surgery involving the insertion of an electronic hearing prosthesis that restores hearing in the profoundly deaf.

To this end the CAScination experts – together with MED-EL, one of the innovation leader in hearing solutions - rolled up their sleeves and produced the world's first planning software for ear surgery, called OTOPLAN®, and the robotic microsurgery platform HEARO®.

Now the robot takes on the ear!



Engineering knowledge meets medical technology

The jointly developed method now gives the surgeon the opportunity to generate a 3D reconstruction and visualize the patient's inner ear. A patient specific and unique surgical plan for a minimally invasive access to the Cochlea can be generated and a matching implant convenient for the patient can be selected. "The HEARO robotic system enables cochlear implant surgery to be performed by the keyhole approach and

with micron accuracy", explains Stefan Weber, professor with a doctorate in engineering, who is the director of the ARTORG Center for Biomedical Engineering at the University of Berne and, with Matthias Peterhans (CEO) and Marco Matulic (CTO), a cofounder of CAScination. "With OTOPLAN and HEARO, ENT (ear, nose and throat) surgeons can achieve more consistent surgical outcomes in Cochlear implantation surgery, and patients can enjoy a personalized and more pleasant surgical intervention."



Left to right: Stefan Weber, Marco Matulic

Everything's fine... or possibly not?

Marco Matulic, adds: "It's true that the conventional Cochlear implantation is considered a safe procedure. But removing the inconsistency of manual implantation and preserving the sensitive structures of the Cochlea are improvements that could be achieved by new surgical tools." These questions are tantalising, as the CTO recalls: "What if we could precisely identify the optimal path into the Cochlea before the operation? What if every procedure could be standardized and the resulting consistency could significantly improve the performance of every Cochlear implant? And what if robotic surgery could expand indications in the future?"

Thanks to the experience of their partner MED-EL, the CAScina-

tion team were able to build upon latest knowledge. Today they can create an entry trajectory for a Cochlear implant through a pinhole that runs past the facial nerve at extremely close distance. The technology transfers the elements of surgery that are at the limits of sight. The valuable helper – the automated surgical robotic platform - has no such limits, as Matthias Peterhans confirms: "The HEARO is demonstrating its potential in clinical trials and is undergoing further product development together with MED-EL. Currently, some 70'000 cochlear implants are inserted each year around the world. The HEARO robotic technology could extend the ENT surgeon's ability to provide Cochlear implants to a much wider range of patients with hearing loss." The surgeon's skills and expertise would be applied to optimize the procedure at the com-

puterized planning stage using OTOPLAN, followed by precision execution through the automated HEARO robotic platform.

In a world of silence?

Remember that we are talking here primarily about human suffering: Today about 460 million people around the world have disabling hearing loss. In 2050 this figure will rise to a billion. Deafness is especially tragic for children and deaf-born babies, as children have to understand spoken language to be able to learn to speak authentically and autonomously. It is the mandatory requirement for a fulfilling life in society. The robotic procedure for Cochlear implantation is only the beginning of CAScination's commercial strategy to develop surgical robotic solutions for challenging procedures, for example in cranial and spinal neurosurgery. When it comes to automated surgical robotic technology, CAScination is a global pioneer in the domain and will keep Swiss surgical robotic technology at the forefront of medical technology development in the future.

And guess what was played at the inauguration of the Elbe Philharmonic Hall in 2017? The last completed symphony by Ludwig van Beethoven: the ninth, the chef d'oeuvre of a deaf composer.

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