Moving the dental world from analogue to digital: 3Shape’s success story continues

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During SCANDEFA, a major dental fair in Scandinavia, DTI recently visited the 3Shape headquarters in the heart of down-town Copenhagen to learn about the company’s new products and future strategies. The historical building alongside Kongens Nytorv square and the Royal Danish Theatre has light and airy rooms, a perfect environment for a young, passionate and ambitious organisation driven to develop the best technological solutions in 3-D scanning and CAD/CAM.

Often referred to as the “Google of the Dental Industry”, 3Shape was launched eleven years ago in a one-room apartment by two young and ambitious graduate students from the Technical University of Denmark and Copenhagen Business School—Tais Clausen and Nikolaj Deichmann. At the time, Clausen was completing his master’s thesis on a groundbreaking 3-D scanning technology and Deichmann was finalising his Master’s degree in Finance and Economics. Having met through friends, they joined forces to participate in the prestigious Venture Cup business plan competition, established by McKinsey and Co., in which they finished second. Throughout the competition, they constantly considered the manner in which the technology could be commercialised and thus the idea of launching 3Shape was born.
Initially, Clausen and Deichmann approached companies in the hearing-aid industry with the idea of developing a quality-control system for hearing-aid shells and ear moulds. Similar to a dental restoration, the devices need to be custom fitted to the patient's hearing canal and are traditionally made by taking an ear impression that is then manually sculpted, cut and used to make a mould—a time-consuming, manual procedure.

"During these first meetings, we realised that we could actually create a mass customisation production system," Deichmann remembered. "So instead of just checking the quality we decided to go directly for changing the workflow completely, from a manual process, where you spend several hours shaping the hearing-aid shells, to a completely digital workflow."

3Shape digitised the entire manufacturing process by introducing a 3-D scanner for ear impression taking, as well as the management software and CAD software needed to simulate the position of all the electronic components that need to fit into the patient's ear along with the shell, taking up minimal space and using CAM software for controlling the manufacturing equipment. They developed the system for a specific hearing-aid manufacturer but retained the rights to sell the technology to others. At the time, there were only six companies that controlled approximately 90% of the global hearing-aid market and within a period of three years, all of them went from a completely manual to an entirely digital production. Today, about 90% of all hearing-aid devices are produced using 3Shape's technology.

"Perhaps the most important lesson we have learned is that innovation is only successful if it moves and is guided in directions that truly benefit professionals in their daily work," Clausen, CTO and head of the 3Shape development team, pointed out.

Today, CAD/CAM has conquered dental laboratories and clinics, ensuring high profitability by maintaining top-level quality through standardised and controlled treatment and production processes that also benefit the patient. In Germany, traditionally an early adopter of new technologies, approximately 82% of all ceramic restorations are already produced using CAD/CAM technology. "The question today is no longer if CAD/CAM will endure in the industry, but rather when all dental professionals will be taking advantage of it," Clausen said.

After having conquered the dental laboratory industry, 3Shape also extended the proven technologies to dental clinics. "We analysed all existing scanning systems on the market and defined what we like and what we didn’t like about them. We wanted to create a system that incorporated all the advantages and eliminated all the drawbacks of the existing systems. Our solution really needed to be faster, easier, more accurate and more reliable," Deichmann said.

At the opening day of IDS 2011, 3Shape launched its newest achievement, the TRIOS intra-oral scanning solution, which aims to revolutionise the dental
One of the TRIOS 3-D scanner’s notable features is that it does not require dentists to apply spray or powder to coat the patient’s teeth, making scanning an easy, fast and comfortable process that does not ruin scan accuracy by adding material to teeth surfaces. In addition, it can scan any material, such as metals, semi-transparent materials and skin. It only requires minimal training for use in clinical practice. The scanner captures over 3,000 2-D images per second, which is 100 times faster than a conventional video camera. Dentists who viewed the presentations at IDS stated that an “impression-free” dental practice seems to be just around the corner.

An open communication interface allows dentists to send the scanned data via the Internet directly to the laboratory of their choice, where the technician can start designing the restoration immediately using 3Shape Dental System software or the appropriate interface to third-party software. The TRIOS communication software includes a tool to visualise the technician’s solutions for the patient, for example on an iPad, while the patient is still in the chair, which is especially important for anterior cases.

But even with ten years of outstanding history, 3Shape never stops looking ahead. The company believes that the age of fully digital dentistry is only a few years down the road (of course there will always be smaller, traditional dental practices).

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