Digitalizing Centration for 25 Years at ZEISS

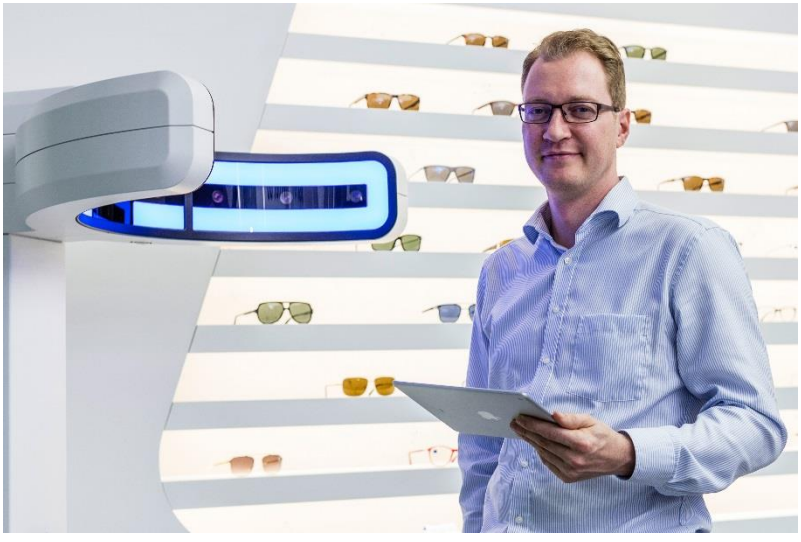
Rapid development challenges teamwork

The launch of ZEISS Video Infral, the world's first video centration system, back in 1992 marked a major step towards digitalization. In the wake of many subsequent innovations, the company now offers ZEISS VISUFIT 1000: a new, innovative platform that does far more than just capture centration data by utilizing the latest technology and future proofing eye care practices. The platform supports eye care professionals (ECPs) today while equipping them for the digitalization challenges of tomorrow. Due to its complexity, so called agile teams were formed to develop the software for the platform.

From the idea to the implementation

Thus far, around 50 ZEISS employees have been directly involved in the development of ZEISS VISUFIT 1000, and more than 100 contributed to product development as part of their daily work. "First, we wanted a system that would enable more high-quality centration data capture," explains Dr. Jörg Carls, Director of Research & Development for Vision Technology Solutions at ZEISS Vision Care. At the same time, the innovation had to be suitable for the digital future. "Our goal was to help our partner, the ECP, become even more digital. We asked ourselves how we could help them expand their brick-and-mortar business digitally. We came to the conclusion that the ECP needs a digital image of the patient," says Carls.

ZEISS VISUFIT 1000 provides exactly that: The nine cameras create a 180° view of the patient's face with just a single capture and save this in 3D. This image will be particularly important with future innovations like customized digital frame designs – a feature increasingly important to patients used to shopping online. "The platform should deliver a precise, high-quality 3D image that also looks good to the patient," says Carls. It was immediately clear that a product so closely networked with the digital world would require an entirely new software solution.



Jörg Carls: "Our goal was to help our partner, the ECP, become more digital."

Agile teams for flexibility and speed

The complexity of ZEISS VISUFIT 1000 is a consequence of not only the hardware but, most of all, the software. "If you don't know exactly what the end result will be when you start developing software, then agile project management can help," says Carls. The software was created in agile teams that complete work packages in quick stages known as sprints. "Agile development is really flexible. The entire team moves from one sprint to the next in three-week cycles. After each sprint, the situation is assessed before deciding what the next steps and goals should be." A Technical Lead is assigned for different topics. This person has sufficient in-depth knowledge to make new, crucial decisions during a sprint that set the course for further development.

This demonstrates what the term agile really means here: flexibility and short reaction times. This is crucial, because the development cycles for software are markedly different than for hardware. "While constructing a prototype takes several months, writing code is substantially faster," says Carls. "With software development, the hardware gives us a general framework. We then program a software fitting to an interface." Software and hardware are then integrated gradually.

Finding new paths through the jungle

Agile project management offers clear benefits: It minimizes the risks in the development process. The short sprint times and regular checks also make it less like that team members head in the wrong direction when developing individual software components. Moreover, the entire process is very transparent for everyone on the team – especially if the members come from different departments or divisions, as was the case with ZEISS VISUFIT 1000.

"In our case, the agile method was exactly the right choice for developing the ZEISS VISUFIT 1000 software," says Carls. "However, it's not a catch-all solution for every challenge. I think that you have to decide on a case-by-case basis which project management method is most suitable for the particular job." Jörg Carls likes to compare agile software development with the jungle: "You don't know your way through the undergrowth, so first you have to clear a path. Perhaps you will discover one or two new species along the way. What I mean is: Be flexible and adjust. You might say we are constantly finding new ways while we move forward." For the ECP, this ultimately results in a well-designed solution that has been put through its paces and whose development proves that this tool will serve them well in an increasingly digital future.

Four questions for Oliver Schwarz, Software Project Manager

Oliver Schwarz: "The software must accommodate the complexity and eventualities of all potential sequences."

What were the biggest challenges Software Development faced with ZEISS VISUFIT 1000?

The biggest challenge was taking ZEISS VISUFIT 1000 at the prototype stage and transforming it into market-ready software for different modules in next to no time. Various development teams with different basic requirements had to work closely and pull together to achieve a high-quality innovation.

What are the key aspects of agile software development?

First, each sprint review results in a new, carefully tested, high-quality software version– this requires close cooperation and a systematic approach. Project management software directly connected with software tools provides comprehensive planning support.

What are the biggest advantages of agile software development? Do you also see benefits for our customers?

While the developers are working on a new version, Product Management can try out the particular software with the customers – this way, the team gets quick feedback and can prioritize features that are particularly important for users. At the same time, presenting the results every few weeks after a sprint keeps the team motivated.

What complex tasks can be performed with the ZEISS VISUFIT 1000?

Three examples come to mind. First, creating a 3D image of the patient's face with the necessary precision for fitting the individualized frames requires major processing power for all software modules. Another highly complex task for the software is the fully automated identification of the frames and the eyes in the images. And finally, the software also provides the ECP with a user interface that leads them through the different steps for centration data capture, stores the information and is also equipped for simultaneous operation by multiple users. However, the ECP can intervene and move forward or backward at any point during the process. The software must accommodate the complexity and eventualities of all potential sequences.

To generate a photo realistic three dimensional image of the patient in a very short time requires major processing power for all software modules.