

Digital care pathways: a necessity in healthcare

The **ZEISS Group** may be best known as a major player in the optical and optoelectronic industry, but the group also has a strong portfolio of software engineering services to offer clients in the healthcare industry. Leo Lindhorst, head of innovation health solutions, **Carl Zeiss Digital Innovation**, explains how clinicians, patients and MedTech companies can benefit from a digital care pathway and what it takes to realise it.

What is ZEISS Digital Innovation?

Leo Lindhorst: Carl Zeiss Digital Innovation GmbH is a 100% subsidiary of the ZEISS Group and provides end-to-end software engineering and quality assurance services to MedTech and Diagnostics companies. Our 400-plus employees in the health solutions team – located in Germany and Hungary – are dedicated to creating digital health solutions today that will improve people's health tomorrow. Our high specialisation in the medical technology and diagnostics industry enables us to effectively and efficiently support our clients. We assist them in overcoming complex challenges, such as data protection and technological disruption, as they drive the digitalisation of their product portfolios.

What is your role at the company?

I am head of innovation for health solutions at ZEISS Digital Innovation. My team is driving the strategic development, by identifying which medical technology and diagnostic solutions will be the most crucial for our clients in the future, and how we can specialise our teams to support our clients in the best way possible as they implement these products and solutions.

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Who are typical clients of ZEISS Digital Innovation?

We work with medical technology and diagnostics companies to develop software products and solutions that

help treat patients more efficiently. Our focus is on creating user-friendly and effective solutions that support patient care.

But of course, every MedTech client has unique visions on how to digitalise their product portfolio, therefore we do not have a typical client as such. However, what unites all our clients is the common drive to transform healthcare and drive efficiency for healthcare professionals and better patient outcomes through innovative digital solutions.

How do the company's services support the work of healthcare organisations?

Medical devices are a crucial part of almost all care processes. There is still tremendous innovation happening in classical medical device development that makes medical staff more effective, efficient and successful in treating and curing patients. Yet, there is an even bigger potential for innovation in digital medical products and highly software-driven medical devices.

I believe that our services help medical device manufacturers to develop such innovative new products more efficiently and successfully to help scale their

software development efforts so they can bring more of these next-generation medical devices and digital solutions to the market. This ultimately helps medical staff to achieve better patient outcomes

Leo Lindhorst,
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and enable patients to take more control of their health and treatment journey.

What are the major challenges you believe MedTech companies must overcome to get products into the clinic and keep them there?

MedTech companies will face increasing challenges in selling products as standalone devices to hospitals, due to the commoditisation of many types of devices and diminishing returns in classical device innovations. To succeed in this ever-evolving landscape, medical device and diagnostics companies should move to integrated solutions that meet the growing demand for connected and efficient care pathways. Clinicians are increasingly recognising the value of these integrated solutions along their clinical workflow, as they make care more efficient and improve patient outcomes.

Digital solutions play a pivotal role as they connect various stages of patient care through data integration. For these reasons MedTech and diagnostics companies should expand their portfolios to include digital tools and products. By generating and utilising data as a basis for solutions, these companies can provide valuable insights and effective support for healthcare professionals and patients. Through this approach, they can transform themselves from pure providers of devices to providers of

efficient digitalised clinical care pathways.

It should be considered that solutions might need to extend beyond the hospital's boundaries, encompassing outpatient care and various stakeholders, like laboratories, standalone practices, remote experts and the patient themselves to be able to support the patient journey.

How can these companies benefit from working with ZEISS Digital Innovation?

Drawing from our first-hand experience with clients across the ZEISS Group and our network of partners in healthcare, science, and technology, we understand the critical success factors in the industry. This knowledge enables us to accelerate the development of digital health innovations for all our clients.

That means we support our clients end-to-end in realising their ambitious software development projects; we know the typical challenges, regulations, standards and technologies of the industry. We are able to develop future proof software as a medical device (SaMD) products and modern embedded software for medical devices

efficiently, helping our clients to bring their innovative products to the market fast and successfully.

Can you give a real-world example to illustrate the value of investing in digitalisation to enhance a MedTech product?

Certainly. Digital care pathways have been shown to have a significant positive impact on efficiencies and quality in resource-intensive areas, like operating rooms. Several studies and articles have demonstrated real-world impact in hospitals. For example, a systematic review by Schudnat et al. (2023) found in 5 out of 22 articles that digitalisation and standardisation led to a reduction in OR-time of 6–22% per case, resulting in significant positive impact on efficiency and quality. We also see such results with the clients we work with – the benefits of the digitalisation of care processes can definitely be seen in the real world already.

Do you see this kind of digitalised care pathways becoming more common in the future, and care

becoming more data-driven?

I think this debate is already over: I have noticed a strong consensus within the healthcare industry that there must be a shift towards prevention and treatment supported by digital technology to improve patient outcomes and efficiency.

This transformation is already underway, with widespread recognition that digitalised care pathways are essential for effective prevention and treatment. While not every MedTech company is in the position to provide workflows for specific diseases or treatments, a considerable number are well-positioned to do so. However, every MedTech company should actively consider how they can integrate their products into a care pathway, either independently or in collaboration with other vendors.

Leveraging the potential of software solutions is key to ensuring the longevity and relevance of their product portfolios in the ever-advancing landscape of healthcare. As such, the shift towards a digitalised care pathway is not just a future possibility; it's a present necessity. ●

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