

How Verathon Used OnScale to Cut Their Simulation Time by 80%

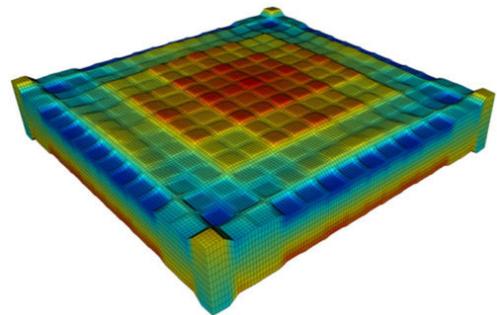
“The use of OnScale enables us to test a transducer technology that is radically different for Verathon on a shortened time scale and at relatively low cost. If we did not use OnScale, I expect that our technology development path would have slipped 1 year.”

- Dr. Kendall Waters, Sr. Manager, Research & Systems Engineering, Verathon Inc.

Verathon is a global leader in medical devices in over 60 countries and regions. The company pioneered a novel ultrasound medical diagnostics device and spearheaded product development for solutions that minimize infection and optimize efficiency for patients. The engineering team at Verathon chose simulation with OnScale while working on designing their most sophisticated ultrasound transducer to date, in order to cut down on prototyping and to drastically cut their development costs and time-to-market.

THE CHALLENGE

A pain point for Verathon has always been limited computing resources for crucial simulation work. For their ultrasound sensor technology, the engineering team needed to rapidly evaluate new transducer technologies and select the optimal design for participation in a multi-project wafer (MPW) run at a MEMS foundry. OnScale multi-physics simulation allowed the team to go from a whiteboard sketch to a complete sensor design in less than 2 months. This particular concept was Verathon’s most sophisticated ultrasound transducer to date, featuring a MEMS design, unfamiliar design rules, and performance trade-offs.



The engineers needed to optimize the MEMS design for clinical application, including MEMS drum dimensions and array layout. They had no way to meet these aggressive goals with in-house resources and solutions. Verathon previously used well-known legacy simulation software for MEMS transducer design purposes with no success. There was a clear design gap between Verathon’s simulation needs and legacy tools. This meant that the team would have to rely heavily on prototyping, making it very difficult to meet IC design requirements for this specific ultrasound transducer.

ONSCALE SOLUTION

Verathon's engineers leveraged OnScale's Cloud HPC multi-physics software to accelerate virtual prototyping which drastically cut their simulation time from months to hours. Implementing OnScale gave Verathon seamless control of the design, ease of integration with their mechanical CAD tool, and a reduced technical risk of new designs through virtual prototyping.

By using OnScale, Verathon gained the ability to more effectively eliminate design change options that are unacceptable from an ultrasound imaging performance perspective and focus on what works. OnScale also significantly improved the teams understanding of design trade-offs by presenting new insights from OnScale's ability to run 1000's of simulations with various design variations. This helped improve communications between Verathon's transducer, electrical, and mechanical engineering teams - which was critical at the initial product feasibility phase. As a result, Verathon is expecting their newest devices to be ready within a 2 month time frame, as opposed to the industry standard 18 month cycle.

VERATHON'S RESULTS

- ✓ Reduced time-to-market by 80%
- ✓ Realized the impact of complex trade-offs in the design
- ✓ Reduced technical risk on new designs via virtual prototyping

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ABOUT ONSCALE

OnScale develops on-demand scalable engineering simulation software, empowering engineers to accelerate innovation across next-generation technologies such as MEMS, Semiconductor, 5G, Biomedicine, and Autonomous Vehicles. OnScale combines powerful multiphysics solver technology used and validated by Fortune 50 companies for over 30 years, with the limitless speed and flexibility of Cloud High Performance Computing (HPC). By removing the constraints of legacy simulation tools, OnScale allows engineers to dramatically reduce cost, risk and time to market for cutting edge technologies.