

How SilTerra Used OnScale to Cut Cost, Cycle Time, and Engineering Development by 60%

“OnScale helps us to demonstrate our capabilities to our customers faster by greatly reducing the cycle-time for prototyping. OnScale provides us with key insights into the end product and enables us to tweak the design and performance to achieve optimized products faster.”

Mr. Arjun Kumar Kantimahanti, SVP, MEMS/Sensors/Life Science BU, SilTerra Malaysia Sdn Bhd.

OVERVIEW

SilTerra is a pure-play global semiconductor foundry based in Malaysia who has pioneered the integration of piezoelectric MEMS devices with CMOS. The engineering team at SilTerra chose to work with OnScale's cloud based ultra-fast solvers to simulate quality models early enough in the technology-to-product process to generate confidence to their end customers.

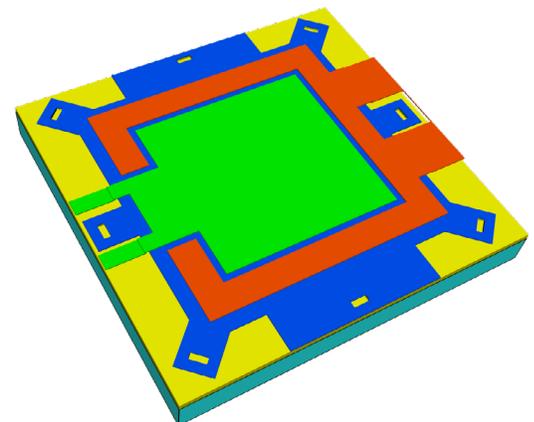
SILTERRA CHALLENGE

A major pain point for SilTerra has been the speed and cost in which it takes to convert technology to market-ready products. On average, it takes three to four years to get to the product stage, and part of SilTerra's success is ensuring their customers are confident in their designs throughout the entire product phase. Generating confidence to the end customer at an early stage is a tough task, and device level experimental data is not adequate to pull in customers. SilTerra needed a platform with enough horsepower to generate in-depth and conclusive multiphysics simulation results quickly and at a reasonable and scalable cost.

SilTerra's main roadblock was the financial constraints needed to invest in extensive software licenses and servers, which are hard to justify during early stage product development. In addition, other simulation software currently available on the market could only provide basic multiphysics simulation, and unable to simulate complex systems addressing the product level and time consumption due to limited processing speeds and the servers.

For this particular client, SilTerra had a specific requirement for the ultrasonic cell design. The client needed the design to mimic the ultrasound device performance under the media like water. SilTerra was looking to generate a product development kit (a set of models) to allow them to start using simulation as a tool for improving new designs and taking their customers' products to market.

The turnaround time for this process would typically take 7 months to get a working prototype back to the client - 1 month for design, 4 months for wafer fabrication and 2 more months for measurement under media.



THE ONSCALE SOLUTION

SilTerra's engineers leveraged OnScale's cloud based multiphysics software to virtually prototype this entire process, rather than the manual, cumbersome, and costly physical prototyping process that their clients are accustomed to. By using OnScale to simulate this project, SilTerra was able to quickly turnaround the ultrasonic cell design in 2-3 days for the client. Using OnScale provided 60% in cost savings, cycle time, and engineering development resources.

OnScale's multiphysics module with ultra fast solvers, software license flexibility, batch mode feature (the ability to run multiple simulations at the same time) is unmatched in the industry. These features, coupled with the pay per use core-hours pricing model helped concurrently reduce SilTerra's turnaround time by 60% as well as instill greater confidence in their customers at the early product stage.

SILTERRA RESULTS

- ✓ **Virtual optimization for PMUT cells:** OnScale's capability to run 1,000s of models in parallel enabled SilTerra to evaluate how certain design parameters affect performance and to identify top performing KPIs.
- ✓ **System level demonstration:** The ability to run very large models enabled SilTerra to simulate entire systems (100s of PMUTS in a mobile phone for example). SilTerra evaluated other tools available on the market, but determined that those tools would only allow them to simulate a small part of the system (a single PMUT) in a reasonable amount of time. The ability to simulate the entire system with OnScale allowed SilTerra to obtain much more valuable engineering insights.
- ✓ **Reduced time for virtual prototyping:** SilTerra was able to cut down cost and cycle time by 60% due to OnScale's parallelized simulation capabilities.

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.