

Increasing Children's Hospital Efficiency Through Effective Antenna Design



GREEN ANTENNA PTE LTD. is a professional antenna enterprise that provides antenna designs, solutions and consultancy services to local and international customers. Headquartered in Singapore, Green Antenna is highly engaged in the research and development of wireless products and holds six antenna innovation patents for cellular phones.

The Challenge

Green Antenna is renowned for designing innovative and successful antennas that are licensed to major cell phone and electronics manufacturers worldwide. They are dramatically pushing the boundaries of wireless products by using computer simulations to develop working antenna models as part of their design process.

Green Antenna was contracted by a client to develop antennas for the Patient Bed Tracking System used in the Kangar Kerbau Women's and Children's Hospital in Singapore. The tracking system was developed to manage bed allocation - increasing the efficiency of bed usage - while reducing wait times. The pre-existing antenna used in the tracking system performed poorly; barely lasting over a year before falling sadly short of customer requirements. Green Antenna's expertise was needed to identify the antenna problem and develop a precise and effective solution. A major barrier to the design process, however, was the lagging simulation time on a standalone PC due to insufficient computing power. The expected simulation cycle would take days to run, causing a backlog in workflow efficiency and preventing Green Antenna from fully capitalizing on the powerful simulation technology inside SPEAG's SEMCAD X. This delay would ultimately have a profound effect on the end client; further decreasing efficiency of the already crowded KK Women's and Children's Hospital.

The Solution

Green Antenna turned to Acceleware's GPU acceleration in combination with SEMCAD X to redesign the antenna. The massively parallel processing power delivered by the GPU resulted in a 400 MCell speedup; allowing simulations to be completed in a fraction of the time and providing the client with a CAD file for the PCB layout. Upon construction, the sample models

"SEMCAD X with Acceleware GPU acceleration is an excellent simulation tool for antenna design engineers. It helped us reduce the development cycle, predict antenna performance and consistently meet our customer needs within a practical timeframe."

 Yu Chee Tan
Founder of
Green Antenna Pte Ltd.

worked perfectly with minimal tweaking. With the additional GPU power, Green Antenna was able to take full advantage of the sophisticated parametric modeling and optimization with antenna performance end points as optimization goals. This level of automation within SEMCAD X provided simplification and insight to complex, multivariable design problems where dependencies between different geometric parameters could strongly influence the antenna performance. This enabled an iterative workflow and produced a high caliber design.

The Impact

Acceleware's added computing power combined with SPEAG's simulation technology enabled Green Antenna to efficiently improve the design and performance of the Patient Bed Tracking System antennas. The tracking system now monitors every hospital bed at the KK Women's and Children's Hospital, ensuring optimized and seamless flow of patients from care to discharge. Green Antenna has come to rely on Acceleware and SEMCAD X to consistently deliver timely, accurate results while meeting customer and market demands.