

Nor-Tech's Portable Cluster helps render urban 3D modeling a reality



Using 3D modeling technology, soldiers can better anticipate what's around the corner in complicated urban landscapes.

The Challenge

For today's military, patrolling an unfamiliar area requires in-depth understanding of the urban terrain. Satellite imagery, while providing an aerial overview, simply isn't sophisticated enough to determine what soldiers on the ground will encounter from one street to the next. However, emerging technologies are being developed to allow patrol planners to virtually see around corners.

One such project, funded by DARPA, uses vehicle-mounted video, GPS and LIDAR sensors in conjunction with 3D modelling software to scan the city streets during routine military patrols. Advanced software, developed by a major defense contractor, processes information collected from the sensors, compares it with airborne data and updates the urban model. Urban models are presented in holographic displays that give planners 3D views of the city from any vantage point. This results in up-to-date and very high fidelity terrain models of patrol areas and an invaluable tactical advantage.

However, it also comes with fairly demanding hardware requirements. In order to make this a practical solution for military use, they needed something powerful enough to process the data expediently, yet still function within the limitations of energy and space that come with working in the field. Additionally, the entire package needed to comply with military regulations for weight and be tough enough to endure more than just the occasional bump in the road.

The Solution

Nor-Tech's solution was a compact, ruggedized Portable Cluster with eight compute nodes. Realizing they could leverage computation capability through GPU acceleration, they included a graphics processing unit in each compute node. This helps maximize the processing power of the cluster, while still allowing it to run on a single 20 amp electrical circuit. The rugged custom sized cabinet is specially designed for air transport. Thanks to its multi-terrain, steel soft-faced casters and shock-mounted internal rack, it rolls smoothly even over rough ground.

Though it came down to weighing individual nuts and bolts, Nor-Tech managed to meet all of the requirements, including the military's 280 lbs. four-man lift restriction.



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