

## Case study

# Hexagon Geospatial

## HP Workstation with HP Z Turbo Drive breaks through I/O bottleneck



**Industry**  
Technology

**Objective**  
Increase the speed of creating ortho-mosaic maps with geospatial software

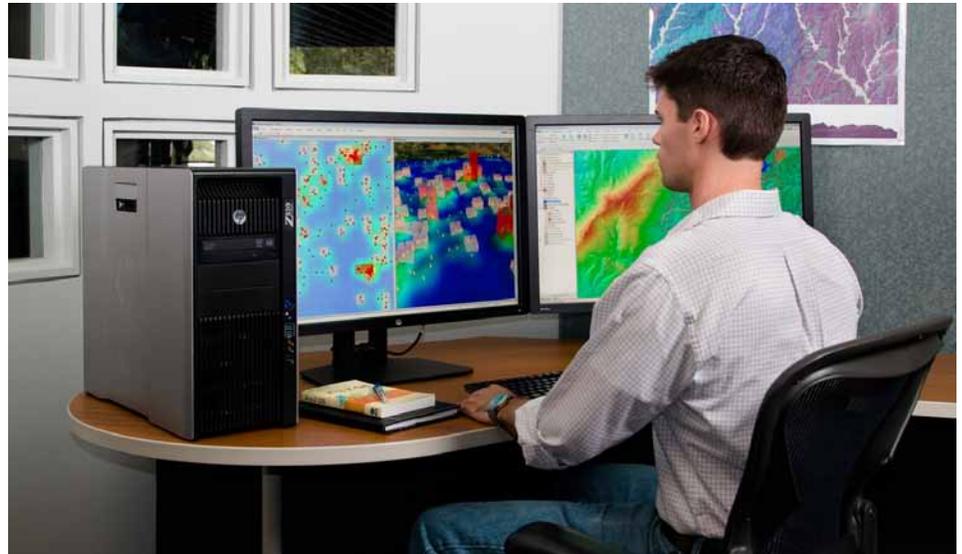
**Approach**  
Hexagon Geospatial deployed an HP Z820 Workstation with a Samsung-powered HP Z Turbo Drive SSD

- IT matters**
- Significantly faster I/O speed of HP Z Turbo Drive SSD broke through longstanding I/O bottleneck in workflow processing
  - I/O breakthrough provided insight into enhancements in upcoming software release

- Business matters**
- Country-wide mosaic project completed in hours rather than weeks
  - Performance breakthrough paves way for larger, more ambitious ortho-mosaic projects
  - Software to be rewritten to leverage new hardware capabilities



HP recommends Windows.



**“In the past, it would take us weeks to assemble the finished, compressed mosaic file. But with the HP Z Workstation and HP Z Turbo Drive, we completed it in less than 30 hours. It’s totally changing the scale for a project like this.”**

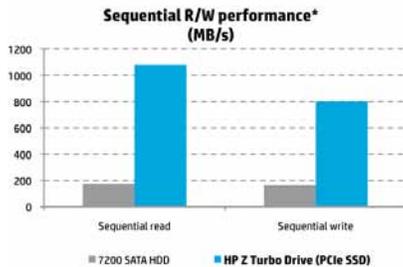
– Paul Beaty, Remote Sensing product manager, Hexagon Geospatial

Hexagon Geospatial helps its customers make sense of the dynamically changing world through geospatial software solutions for GIS, remote sensing, photogrammetry, data management and compression, and mobile geospatial data solutions. Hexagon Geospatial is a part of Intergraph Corporation. When the company recently tested an HP Z Workstation with HP Z Turbo Drive, the workstation’s performance dramatically improved Hexagon Geospatial’s workflow productivity and also removed a longstanding I/O barrier. This ultimately enabled Hexagon Geospatial engineers to identify needed software enhancements.

## HP recommends Windows.

### Making the most of a changing world

Hexagon Geospatial is a worldwide leader in geospatial technology. It helps customers ranging from mapping agencies and transportation departments to defense organizations, engineering and utility companies, and more. These organizations need to be able to quickly sense, decide and act as the earth changes, through powerful software that includes remote sensing, photogrammetry, data management and compression, and mobile geospatial data solutions.



Geospatial software solutions are classic “big data” applications. They deal with extremely large data files. Processing for software functions on traditional desktop computers can take days or even weeks.

“When we can speed up that process, our customers can provide faster and more informed management decisions. If you can process the same data in minutes or less, you’re able to make decisions that could contain the disaster and even save lives.”

– Steve du Plessis, director of Remote Sensing, Hexagon Geospatial

“For our customers, time is money. Any productivity improvement while running our software means direct, quantifiable savings,” explains Steve du Plessis, director of Remote Sensing at Hexagon Geospatial.

### Speed matters

In some cases, time savings can improve emergency response in a life-or-death situation. “When you’re trying to understand the extent of a flood or the spread of a wildfire, you want to be able to run processes and perform change detection across an entire region,” du Plessis continues. “When we can speed up that process, our customers

can provide timely and more informed management decisions.”

“If it takes days or even hours to process the data, a natural disaster like a fire or flooding may have changed or impacted additional areas. Processing the same data in minutes or less, enables you to make decisions that could contain the disaster and even save lives.”

The experts at Hexagon Geospatial realized they were on the path to significant improvement when they recently tested an HP Z820 Workstation with an HP Z Turbo Drive SSD to run the company’s ERDAS IMAGINE software. ERDAS IMAGINE is a leading remote sensing application that leverages all geospatial data to provide a holistic picture. This includes satellite imagery and LiDAR data for mapping and assessing change over wide areas.

### From weeks to days on HP Z Workstation

The HP Z820 Workstation performance not only dramatically cut the time required to complete some key functions in ERDAS IMAGINE, but also provided insight into future software development possibilities.

On one project, the company is working with 4 terabytes of data in about 2000 separate image files covering the entire state of Oregon. Using ERDAS IMAGINE on the HP Z820 Workstation, the company combined the images in a digital mosaic to create a single, unified map, and then compressed the single file into Hexagon Geospatial’s proprietary ECW format for easier access and storage.

“In the past, it would take us weeks to assemble the finished, compressed mosaic file,” says Paul Beaty, Remote Sensing product manager. “But with the HP Z Workstation and the HP Z Turbo Drive, we completed it in less than 30 hours. It’s totally changing the scale for a project like this.”

The HP Z820 Workstation was configured with dual Intel® Xeon® E5, 8-core processors, for a total of 16 processing cores, 32 logical processors, 128 GB of RAM and the HP Z Turbo Drive powered by the Samsung XS1715 solid state drive. So rapid processing was never in question.

## HP recommends Windows.



### HP Z Turbo Drive breaks I/O barrier

What set the Z820 Workstation apart, though, was its HP Z Turbo Drive SSD. The HP Z Turbo Drive leverages both the exceptional speeds inherent in the enabling Samsung SSD technology and a unique PCIe interface. Testing shows the HP Z Turbo Drive is six times faster than a traditional hard disk drive, and roughly twice as fast as SSDs utilizing a SATA/SAS interface, with raw read performance of more than 1 GB per second. The enabling Samsung XP941 SSD at the core of the Z Turbo Drive delivers extreme performance with a PCIe 2.0 interface.



HP Z Turbo Drive featuring Samsung M.2 PCIe SSD technology

“Now we’re getting new insights into how to improve our software, based on what the HP Z Workstation with HP Z Turbo can do.”

— Steve du Plessis, director of Remote Sensing, Hexagon Geospatial

“Almost all of the things users do with the software are limited by I/O bottlenecks. Users have never had hardware that will get past these bottlenecks,” says du Plessis. “So now we’re getting new insights into how to improve our software, based on what the HP Z Workstation with an HP Z Turbo can do.”

Beatty says Hexagon Geospatial is already incorporating enhancements into the software that will impact how data is read and written to drives, and how it is managed in the future.

Those enhancements to Hexagon Geospatial’s software will clearly improve the software’s efficiency as those customers improve their own hardware platforms.

“Until now, we’ve typically seen users with 4–8 processing cores and up to 8 GB of RAM,” Beatty says. “Our experience with the Z820 Workstation has shown us the benefit of more processing cores, added RAM, and faster disks. Moving forward, we will write our software to leverage the kind of hardware advances HP is bringing to the marketplace.”

### New scope for geospatial projects

He says the combination of hardware and software advances will help to usher in a new era in geospatial projects. “In the past, almost everyone who needed to do a very large mosaic would have to turn to an outside resource to get the job done. Someone having 4 TB of image data to process is not uncommon, but having the hardware to manage it *has* been.

“But with HP Z Workstation and HP Z Turbo Drive technology, they can configure a commercially available piece of hardware and do a major mosaic themselves,” Beatty says.

du Plessis says true statewide mosaics might become more common. A state whose orthographic imaging requires 50,000 tiles of information creates both management and storage problems. Users didn’t have the processing and storage to create a true mosaic, so they relied on a “virtual” mosaic instead, that was more difficult and time-consuming to navigate.

## Customer at a glance

### Application

Geospatial remote sensing, data management and compression, ortho-mosaics

### Hardware

- HP Z820 Workstation
- HP Z Turbo Drive featuring Samsung M.2 PCIe SSD technology

### Software

- Hexagon Geospatial's ERDAS IMAGINE

## HP recommends Windows.

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Some of the other processes that may benefit from the HP Z Workstation technology include dense terrain extraction and image segmentation.

Hexagon Geospatial recently created a mosaic of an entire European country, starting with 38 TB of source images. The final compressed single image mosaic was under 1 terabyte using the ECW format and is indicative of the general industry trend towards ever increasing imagery sizes.

“These are the kinds of challenges we want to tackle,” du Plessis says. “Hexagon Geospatial software, running on HP Z Workstations, will enable our customers to do amazing things.”

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