

Aerial Mapping Company Increases Productivity, Cuts Costs, and Gains Over \$1 Million in Benefits with Solution Including Hewlett-Packard Enterprise Virtual Array

IN BRIEF

- **Goal:** For Photo Science to increase the storage capacity of its digital airborne imagery equipment, reduce data download time, increase the number of flights per year, and decrease flight costs.
- **Solution:** Data-gathering and storage solution including the Hewlett-Packard StorageWorks Enterprise Virtual Array (EVA 5000 system)
- **Results:** A projected cumulative five-year net benefit of \$1,041,776, driven by additional revenue brought in by extra flights Photo Science will be able to make each year. An ROI of 447%, and a payback period of 13 months.

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Photo Science provides aerial imaging, mapping, and related services using highly specialized airborne digital mapping cameras. Flight time is expensive, and the company wanted to make as much use as possible out of every potential hour of flight. Its digital mapping cameras can hold up to 880 gigabytes of data, and mapping information is so data-intensive that a camera can fill up twice per day. This forces the aircraft to land, spend hours downloading the data from its camera, and then take off again. Photo Science was looking for a way to allow its aircraft to spend more hours flying and less time on the ground downloading data. It custom-built a solution for downloading data, including a Hewlett-Packard EVA, that copies data far faster than the previous solution, allowing Photo Science to spend more revenue-producing time in the air. The solution will yield a projected five-year net benefit of \$1,041,776, an ROI of 447%, and will have a payback period of 13 months.

NOTE: This case study was authored by the Case Study Forum. The Case Study Forum is dedicated to writing and publishing case studies for the IT community.

Benefits

Objective	Benefits Achieved
Increase the number of hours of billable flight time	The solution has allowed Photo Science to increase its number of billable hours, leading to a projected five-year increase in revenue of \$1,438,976.
Decrease staffing costs	By decreasing the time flight crews have to wait on the ground while data is downloaded from cameras, Photo Science will save a projected \$52,800 over five years.
More quickly download data from a digital mapping camera to a storage device	With the solution, data can be copied at four times the speed of the previous solution.
Increase storage capacity and provide reliable data backup	With the HP EVA solution, Photo Science has been able to get 39 terabytes of reliable storage, and can easily add more. In addition, no data has been lost since deployment.
Increase data processing speed	Using the HP EVA, Photo Science has been able to build a Fibre Channel solution for processing data, leading to a tenfold increase in data processing speed.

About Photo Science

Photo Science, founded in 1974, provides a wide range of aerial photography, photogrammetry, and digital mapping services to customers across a variety of markets. It has offices across the United States, and is staffed by licensed professional engineers and land surveyors and comprised of subject matter experts with solid scientific and engineering backgrounds.

The company provides a wealth of technologies and capabilities to collect and process virtually any type of geospatial information, including digital airborne imagery and traditional aerial photography, multispectral imagery, and airborne "Light Detection and Ranging" (LiDAR) data, as well as the equipment to process and deliver data collected from these sensors. It offers complete, end-to-end geospatial services for collecting, processing, analyzing, and delivering not just geospatial data for decision support, but smart solutions specifically designed to meet customers' unique spatial information needs.

The Challenge: Increase Storage and Speed Up Download Time While Increasing Revenue

Photo Science uses digital airborne imagery to provide photography, photogrammetry, and digital mapping services for a wide variety of customers in both the private and public sectors. In addition to providing mapping services, it also does analysis and interpretation.

"The more time we can keep our planes in the air, the more revenue we can take in. We need to be able to take advantage of every hour of every day that's good for flight, because you can't always count on the weather cooperating."

MIKE RITCHIE
CEO AND PRESIDENT
PHOTO SCIENCE

The company uses digital mapping cameras, flown at various altitudes in aircraft, to provide its services. To provide higher-quality images, it purchased a new, state-of-the-art airborne digital mapping camera that can capture images at extremely high resolutions, and can hold 880 gigabytes of storage.

The camera manufacturer sells a copy station that allows data to be downloaded from the camera to a storage device. But Photo Science had found that the copy station copied data too slowly for its requirements. It took 4.5 hours to download data from the camera, the same amount of time that it often took for the camera to fill up with images. Photo Science aircraft would have to land after 4.5 hours of flight, and spend 4.5 hours on the ground while data was downloaded, and then take off again – if the weather was still suitable for airborne photography.

All this meant that Photo Science aircraft were spending significant time on the ground, meaning they could take in few jobs per year.

While the aircraft were on the ground, Photo Science had to pay the flight crew, even though they were not flying.

Photo Science was looking for a high-capacity storage solution that would download data much more quickly, allowing the company to be in the air more, gaining more billable flight time, and spending less money paying flight crews when they were on the ground.

Driving the Need for a New Solution

Photo Science needed to find a storage solution for its new, high-resolution airborne digital mapping camera that would do the following:

- **Provide affordable storage.** It considered buying additional, specialized flight storage devices. But that was a costly solution, because customizing the devices for flight could push their prices up to \$300,000 each. It was looking for a more flexible, less-expensive solution.
- **Speed up data downloading.** Photo Science wanted to speed up data downloading time as a way to gain extra revenue and cut costs. The faster that data can be downloaded from a camera to a storage device, the more billable time an aircraft can spend in the air, and the less money the firm has to pay when the flight crew is on the ground, waiting for data to finish downloading.
- **Provide an easy way to download data.** The solution had to provide a portable, simple way for data to be downloaded, because downloading has to happen in the field, not at Photo Science headquarters.
- **Speed up data processing.** After data has been downloaded, it needs to be processed before it can be used. Speeding up data processing time requires a storage device with high-speed access.

“Our new high-resolution camera is extremely ‘pixel-hungry’ and it fills up twice a day. We had to find a reliable, affordable way to download and process its data more quickly so that we could keep our planes in the air more.”

MIKE RITCHIE
CEO AND PRESIDENT
PHOTO SCIENCE

Photo Science Chooses Hewlett-Packard EVAs

To meet its challenges, Photo Science built a customized copy station and storage solution, including a Hewlett-Packard StorageWorks EVA. The company custom-built a copy station inside a light, extremely durable aluminum cabinet. When a plane fills up its Flight Data Recorder (FDR) with data, it lands, and the data can be quickly downloaded to the copy station – data can be downloaded in as little as 15 minutes, compared to from four to ten hours previously. The copy station includes a Fibre Channel connector, and the copy station uses that connection to copy the flight data to the EVA.

Photo Science chose HP EVAs because they provide high-capacity, scalable, reliable storage, and allow data to be downloaded and accessed at the speeds the company requires. The solution offered the best mix of price and performance. Photo Science staff had used HP hardware previously, and had found it to be thoroughly reliable, and they were impressed with HP's track record for service and support.

Photo Science's bottom line for the project: A projected cumulative five-year net benefit of \$1,041,776, a ROI of 447%, and a payback period of 13 months.

Photo Science chose an HP EVA because it provides high-capacity, scalable, reliable storage, and allows data to be downloaded and accessed at the speeds the company requires. The solution also offered the best mix of price and performance. Photo Science staff had used HP hardware previously, and had found it to be thoroughly reliable, and they were impressed with HP's track record for service and support. The solution built around the HP EVAs was less expensive and offered higher performance than the copy station offered by the manufacturer of the digital mapping camera.

The Bottom Line for Photo Science

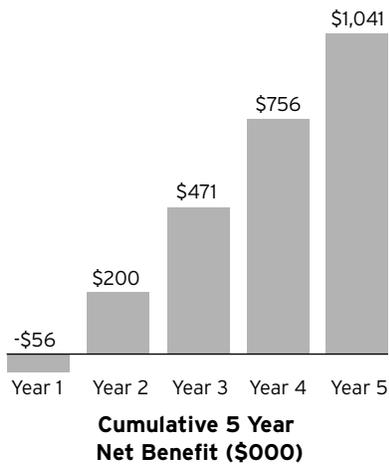
A detailed analysis of the implementation shows that Photo Science will gain a projected cumulative five-year net benefit of \$1,041,776 from the project. It will yield an ROI of 447%, and has a payback period of 13 months.

The benefit is made up primarily of additional revenue that Photo Science will gain because it will be able fly more flights during the course of a year. Using the solution, data can be copied at four times the speed of the previous solution. As a result, Photo Science will be able to double the amount of flights it can take in a year because of the faster download speeds of the HP solution. Additionally, because of the high performance of the EVAs, processing time after the data has been downloaded has increased by a factor of ten.

Photo Science will also reduce its costs using the new solution. Because download time has been reduced, Photo Science will be able to significantly reduce the time that flight crews are on the ground waiting for data to download, spending far less for non-revenue-producing time.

With the HP EVA solution, Photo Science has been able to get 39 terabytes of reliable storage that can be quickly and easily scaled. The solution has been extremely reliable; no data has been lost since it has been installed. Photo Science is also able to tap into the EVA's advanced capabilities to allow the company to immediately get back storage space after data processing is done.

The following chart provides a detailed, five-year analysis.



Project Summary						
ROI	447%					
Payback Period (in months)	13					
Cumulative Net Value	\$1,041,776					

Project Costs	Start Up	Year 1	Year 2	Year 3	Year 4	Year 5
	\$300,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
TOTAL PROJECT COSTS	\$300,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000

Benefits	Year 1	Year 2	Year 3	Year 4	Year 5
Increased Revenue	\$263,175	\$276,334	\$290,150	\$304,658	\$304,659
Cost Reductions	\$10,560	\$10,560	\$10,560	\$10,560	\$10,560
TOTAL BENEFITS	\$273,735	\$286,894	\$300,710	\$315,218	\$315,219

Financial Analysis	Start Up	Year 1	Year 2	Year 3	Year 4	Year 5
Net Value	(\$300,000)	\$243,735	\$256,894	\$270,710	\$285,218	\$285,219
Cumulative Net Value	(\$300,000)	(\$56,265)	\$200,629	\$471,339	\$756,557	\$1,041,776
Net Present Value	\$824,918					
Payback Period (in months)	13					
ROI	447%					
Internal Rate of Return	81%					

“HP’s EVA solution has allowed us to make more flights and to cut costs. It has also been extremely reliable – we haven’t lost any data since we’ve installed it.”

MIKE RITCHIE
CEO AND PRESIDENT
PHOTO SCIENCE

Photo Science Looks to the Future

The HP-based solution allows Photo Science to double the number of flights it can make in a year, so it is well-positioned to expand its business. In addition, it is considering using HP EVAs for data archiving and for backup so that it will be able to have a permanent, secure record of all the data for all of its flights.

It is also considering using EVAs for a new, revenue-producing service to offer customers – data archiving. Clients can have a difficult time storing, accessing, and backing up all the data that Photo Science provides for them, and Photo Science is studying whether it should introduce archiving as a value-added service.