

Sam O. Hirota, Inc. Takes Point Cloud Visualisation to the Next Level with Veesus Technology

Challenge	Solution	Results
<ul style="list-style-type: none"> ▶ Finding a single solution for compressing and visualising point cloud files from multiple vendors. ▶ Visualising large point cloud files on multiple devices quickly and easily. 	<ul style="list-style-type: none"> ▶ The Veesus Point Cloud technology, including VPC Creator, VPC Viewer, and the Zappcha App. ▶ Quick and easy visualisation of large point cloud data files on different devices. 	<ul style="list-style-type: none"> ▶ Increased social engagement and web traffic due to video content. ▶ Images used to create impactful client proposals and reports.



About the company-

Sam O. Hirota, Inc. provides consulting engineering and surveying services, including civil engineering, land surveying, 3D imaging, scanning, and printing. The company was established in 1963 in Honolulu, Hawaii. For 61 years, the firm has executed a wide range of engineering, planning, surveying, and mapping projects throughout Hawaii, the Trust Territories, and the South Pacific including Guam, American Samoa, and Palau. Projects have served Federal, State and local governments, and the private sector.

The Challenge

A single plugin for creating 3D scanning visualisations

Surveying and engineering firm Sam O. Hirota, Inc. (SOH) has always tried to do things differently than similar companies. President Dennis Hirota, PhD, PE, LPLS proudly describes his firm as a technology company always on the lookout for new and innovative ways to produce unique and valuable information for their clients.

One of these technologies is 3D colour laser scanning. The company has been using the most advanced 3D scanners in the market for more than 20 years, including products from Riegl, NavVis, Leica Geosystems, and Zoller+Fröhlich.

Dr. Hirota explains how 3D colour laser scanning technology can help architects visualise their designs using scanning's high-accuracy, photo-realistic 3D data: "The city of Honolulu wanted to redevelop specific areas of its historic Chinatown. The architects responsible for the area's re-design contacted us to scan the area and use the resulting data as accurate context for the new developments. We completed the area we were asked to scan super-efficiently using our company-owned Riegl VZ 600i scanner. The client and everyone in the office agreed the results were pretty amazing. We all just kind of looked at each other and said, let's keep going!"

Over the course of the next two weeks, SOH scanning crews captured approximately 1.15 million square meters and a perimeter of 5 thousand meters from more than 2,000 scan positions. The RTK GPS registration software generated a 5mm grid of the 24-billion original points, with each point having a geospatially correct x, y, and z position, and the removal of all moving objects, including vehicles and people. The end result was a huge 12-billion-point cloud encompassing parts of Chinatown, major areas in downtown Honolulu, the Capitol district, Federal and State office buildings, sections of the projected new rail line, City Hall, Police Headquarters, the Sam O. Hirota, Inc. building, and historic Thomas Square along major thoroughfares King Street, Beretania Street, Ala Moana Boulevard, and Nimitz Highway. For visualisation purposes, large files are compressed so they can be easily transferred to a different device or displayed smoothly in a web browser. Although commercial laser scanning processing software offers point cloud file compression, these are meant for individual proprietary solutions, which limit flexibility for the end user. Because SOH uses scanners from multiple vendors, Dr. Hirota wanted a single solution that could visualise large amounts of scan data across multiple scanning applications and devices, including cell phone, iPad, and workstation viewer.

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“The Veesus Point Cloud technology quickly displays very large point cloud files on workstations, iPads, and cell phones. While other platforms do this by just streaming from a cloud-based data source, the Veesus technology can actually load the scan right on the device, including iPhone and iPad. I can take my phone and iPad anywhere in the world, show people our work, and not have to worry about an internet connection. This is something no other software I’m aware of can do.”

Dennis Hirota, PhD, PE, LPLS

President Sam O. Hirota, Inc.

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The Solution

The Veesus Point Cloud (VPC) technology

Over the years, Dr. Hirota has developed a knack for finding new software and hardware that benefits his business and that of his clients. He still spends a significant amount of this time evaluating new companies on the online Laser Scanning Forum, a global online knowledge hub for geospatial professionals.

When he discovered the Veesus Point Cloud (VPC) technology, he knew right away it would help him create the point cloud visualisations he was looking for. Veesus has software for compressing and streaming point cloud files. The software converts different standard industry data formats, which provides SOH a single solution for challenging scanning projects. It also gives him more flexibility as to where to store and visualize the compressed file. “The viewer is very handy as it lets me store the files wherever I want, whether it’s on a phone, iPad, or workstation viewer”, he said.

The software is also fast, with the ability to process over one million points per second. This is where the real value of the software lies. Dr. Hirota explained, “The combination of file compression and the speed to display large point cloud files on my phone is what sets Veesus apart from other technology in the market.”

The Results

More flexibility for visualizing large point cloud data files on portable devices

Many people visit the SOH office to see what the company does. To display the 3D models and scans, Dr. Hirota built an impressive hardware setup with a large monitor to impress potential customers. With Veesus’ technology, he also has the software he needs to display his work on different devices easily. “I might be able to compress and visualise the files with other software, but not as easily. Veesus’ technology will generate a VPC file directly from other software, such as Autodesk ReCap. It can also immediately render the results inside the viewer or a browser”.

Until now, Dr. Hirota has not found a solution that combines the flexibility and speed of Veesus’ technology. “We are currently the only ones who use it for very large files, which puts us in a unique market position. It allows us to display expansive 3D spatial data, which nobody else in town can do. That data by itself is very valuable for customers, but having the right tool to display it is equally important. For example, I can also show it on my iPhone anywhere on Earth, or during conferences where I don’t have the same hardware and software setup as in the office.”



Close-ups of Chinatown’s North King Street area.



Ala Moana Boulevard along the downtown Honolulu Waterfront, looks almost photographic in detail and visual fidelity.



Over 2,000 scan positions and 12-billion points laid out on a 5 mm grid produced this representation of Honolulu's downtown vicinity.



For more information:

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