

to further reduce our costs across our entire suite of products.

LM: Between Ouster’s own heavy investment in R&D and the acquisition of Sense Photonics, is it fair to say that Ouster will launch multiple new products in 2022?

AP: Ouster announced its Digital Flash (DF) series solid-state lidar sensors for automotive late last year¹⁵ and we are focused on executing against that product roadmap. We expect to announce our new L3 chip later this year, which will power all of Ouster’s OS

¹⁵ ouster.com/blog/ouster-automotive-df-series/

sensors, and represents our single biggest performance jump to date. We have also discussed our plans to introduce software later this year. Aside from that, we are not pre-announcing any other products we plan to bring to market.

Endnote

The two memories of the Ouster visit were enduring: older premises atypical of the automotive lidar world; and a brilliant, sincere, self-effacing CEO who has hand-picked a superb leadership team that includes several fellow alumni. “SPAC to the future” witticisms have run their course, but surely the proof of the pudding will be in the eating. The

world is crowded with lidar suppliers, both public and those that can’t or don’t wish to take the SPAC step. The winners will be the ones that can use the SPAC funding effectively and rapidly. To do so will depend on sound technological undergirding, a deep appreciation of markets, and a talented, motivated team. Ouster seems well placed in all these respects and its 2021 results suggest that the company is on course. ■

Stewart Walker is the Managing Editor of the magazine. He holds MA, MScE and PhD degrees in geography and geomatics from the universities of Glasgow, New Brunswick and Bristol, and an MBA from Heriot-Watt. He is an ASPRS-certified photogrammetrist.

SPONSORED LISTING INDEX

The following pages provide an overview of key service provider, sensor hardware, software and component part manufacturers, in addition to system integrators. Visit the online directory at www.lidarmag.com for additional listings.

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SOFTWARE PROFILE

Outsight

APPLICATIONS

ROBOTICS

ITS

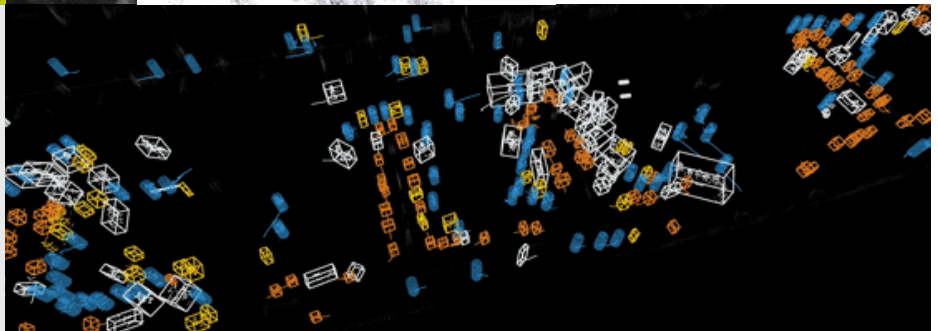
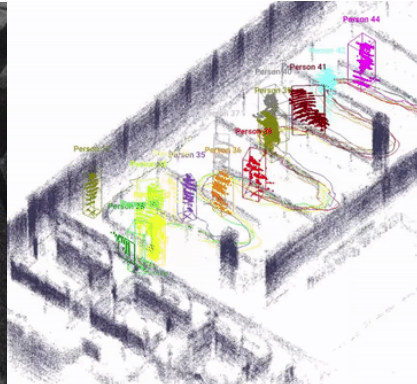
PEOPLE-FLOW

SELF-DRIVING

SECURITY

INDUSTRIAL

AGRICULTURE



COMPANY PROFILE

Outsight's mission is to make LiDAR-based Spatial Intelligence become Plug & Play, so it can be used by application developers in any market (*Vehicles & Robots, Smart Infrastructure and Industrial markets*).

The Augmented LiDAR Software is the industry's first pre-processor for 3D data, which performs all of the essential features required to integrate LiDAR into any project (*SLAM, Object Detection and Tracking, Segmentation and Classification*). With any LiDAR.

Our international team of scientists and engineers operates out of Paris and San Francisco.

We believe that accelerating the adoption of LiDAR technology through simple and scalable software will significantly contribute to the emergence of transformative solutions that will result in a smarter and safer world.

outsight

HQ: 2 rue de Bérite, 75006 Paris, France

USA Office: 77 Van Ness Ave, Suite 101
#1170, San Francisco, CA 94102, USA

Real-time LiDAR Processing Software

Outsight's 3D real-time software pre-processor offers four important benefits.

1. As a middleware, it creates a hardware abstraction layer that converts any 3D LiDAR sensor's proprietary input into a standard, future-proof open data format.
2. It executes in real-time and with a light-weight processing footprint (ARM CPU) the essential 3D capabilities required in most applications: LiDAR SLAM, Object Detection&Tracking, Classification...
3. Edge computing minimizes bandwidth and latency requirements by compressing 3D raw data into a narrow-band stream of relevant data.
4. Because no LiDAR hardware is ideal, you may need to mix an heterogeneous set of sensors. We take care of the complexity of this Fusion, so you don't need to.

As a user, you get easy-to-use standardised data instead of the complexity of dealing with enormous amounts of raw data.

Stonex USA



APPLICATIONS

SURVEYING

MAPPING

GNSS NETWORKS

GIS

3D SCANNING

MONITORING

PRECISION FARMING

CONSTRUCTION
INSTRUMENTS

COMPANY PROFILE

Stonex is an Italian company and is one of the world's leading companies in measurement and survey, with over 200 qualified distributors all over the world. Thanks to the integration of different positioning technologies and software, the wide range of solutions allows to meet the needs of multiple application and sectoral fields.

Stonex offers different types of products such as:

- High precision GNSS receivers
- Handheld GPS/GNSS solutions for GIS and Mapping
- Total Stations
- Laser Scanners
- GIS, Topography and 3D scanning Software
- CORS Networks systems
- Rugged instruments for the construction sector
- Precision Farming solutions
- Solar sector solutions



Stonex USA

54 Regional Dr

Concord, New Hampshire 03301

Phone: 603-715-5771

E-mail: sales@stonexamerica.com

www.stonexamerica.com

Stonex Headquarters—Italy

Viale dell'Industria 53

20037 Paderno Dugnano (MI) – Italy

Phone: +39 02 78619201

E-mail: info@stonex.it

www.stonex.it

New SLAM Laser Scanners by STONEX

STONEX SLAM technology delivers more range, more points per second and best in class on board processing algorithms to reach unmatched speed of capture and reliability even in the more demanding environments.

Best in class sensors and real time processing: more range, more speed, more resolution, greater field of view, more reliability.

STONEX XH120 is a handheld laser scanner based on the newest STONEX SLAM technology.

This powerful scanner allows easy and fast capture of 3D models indoor & outdoor eliminating the need of collecting tens of scans from various stations and of complex multi-cloud registrations. Just move around the scene with XH120 and see the point cloud growing as more data is added in real time.

Boost your productivity reducing on site capturing time and post processing workload!



GreenValley International

APPLICATIONS

- GIS
- SURVEYING & MAPPING
- FORESTRY & FARMING
- POWER SYSTEM
- MINING
- BIM & AEC
- INFRASTRUCTURE
- CONSERVATION



COMPANY PROFILE

Headquartered in Berkeley, California, GreenValley International is a leading innovator of 3D mapping technologies. We provide a wide range of advanced aerial, terrestrial, and mobile LiDAR surveying and mapping hardware systems, as well as cutting-edge software and service solutions. We strive to bring to our customers the most effective products that will get the job done.



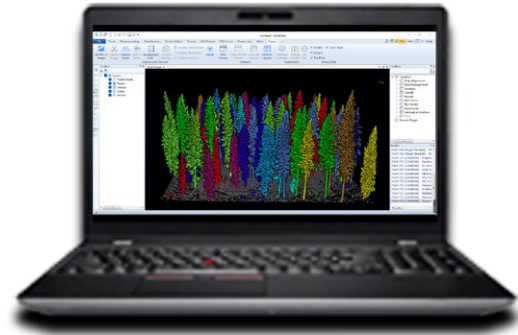
GreenValley International

+1(510)345-2899
info@greenvalleyintl.com
2120 University Ave
Berkeley, California 94704
greenvalleyintl.com

Accelerate Your Surveying

Our high-precision lidar scanning systems, such as LiAir (UAV/Fixed-Wing), LiMobile (vehicle-mounted), LiBackpack, and LiPod (terrestrial), help create smart cities and provide intelligent solutions in energy, agriculture, forestry, roadwork, mining, and more. GreenValley International's LiDAR360, LiPowerline, LiStreet, and other software solutions provide core processing and analysis for accurate point cloud editing and visualization.

While expanding, our primary business efforts focus on innovation and producing breakthrough technology to help create a sustainable future.



SBG SYSTEMS



APPLICATIONS

- AIRBORNE
- AUTOMOTIVE
- DEFENSE
- INERTIAL
- MAPPING
- MARINE
- SURVEYING
- UNMANNED

COMPANY PROFILE

SBG Systems is a fast-growing supplier of miniature, high performance, and innovative motion sensing solutions. SBG Systems is headquartered in Carrières-sur-Seine, France and operates in North America from its subsidiary in Santa Anna, CA, and in Asia with its subsidiary in Singapore. SBG Systems offers a complete line of inertial sensors, such as Attitude and Heading Reference System (AHRS) or Inertial Measurement Unit (IMU), based on the state-of-the-art MEMS technology. This technology combined with advanced calibration techniques offers miniature and low-cost solutions while maintaining a very high performance at every level. Our sensors are ideal for industrial, defense & research projects such as unmanned vehicle control, antenna tracking, camera stabilization, and surveying applications. From hydrography to mobile mapping and aerial cartography, SBG Systems offers a complete solution including the IMU, PPK software and services.



Founded 2007
 11–50 Employees
 Carrières-sur-Seine, France
 Santa Ana, CA

sbg-systems.com

New Quanta Micro

GNSS-aided INS for Pure Performance in the Palm of your Hand

SBG Systems announced its new Inertial Navigation System named Quanta Micro, completing the Quanta product line. This new GNSS aided INS offers a unique combination of navigation performance and SWaP-C. It leverages on a survey grade IMU for optimal heading performance in single and dual antenna operations. Highly versatile, Quanta Micro suits all applications: Land, Air, or Marine.

New Quanta Micro: Outstanding Navigation Performance with Incredible SWaP-C

Quanta Micro integrates a survey grade IMU featuring temperature compensation (0.8°/h class) and is calibrated from -40 to +85°C.

The INS/GNSS embeds a cutting-edge multi-frequency, multi-constellation GNSS

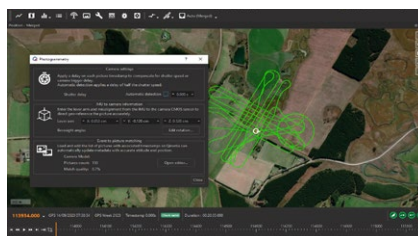
receiver and delivers outstanding accuracy (0.02° roll/pitch, 0.05° heading, 1cm positioning in RTK) in the smallest package in all conditions, even in vibrating environments. It is also compatible with SBG Systems' in-house post-processing software: Qinertia for even higher accuracy after data collection.

INS/GNSS Post-Processing for all Applications with Qinertia

This full-featured software gives access to offline RTK corrections and processes inertial and GNSS raw data to further enhance accuracy and secures the survey, thus enhancing SBG Inertial Navigation Systems' performance.

Qinertia now supports third-party IMUs and all GNSS receivers and covers all surveyors' projects with its new GNSS license to post-process both static and kinematic GNSS data.

It now includes a brand-new Virtual Base Stations (VBS) feature to ensure a maximized, homogeneous, and robust position accuracy. With its new features for UAV Photogrammetry, such as image geotagging and specific outputs, Qinertia can dramatically reduce the need of GCP and maximize ROI with an optimal workflow.



Phoenix LiDAR Systems

APPLICATIONS

MAPPING

SURVEYING

UAV

GIS

MODELING

IMAGING

SCANNING



COMPANY PROFILE

Phoenix LiDAR Systems was the first to introduce commercial drone LiDAR to the market, in what is now a global industry. When organizations seek to digitize the physical world, whether for surveying, archeology, film, or more, Phoenix LiDAR builds them a fully integrated UAV LiDAR system, combining our hardware and software with an assortment of sensors to create a customized system that is ready to fly. Phoenix LiDAR Systems builds custom, survey-grade laser mapping systems, and automation software for flight planning, acquisition, and post-processing, enabling clients to collect detailed, 3D topographic information for a wide range of commercial and research applications, including engineering, construction, mining, and more.

PHOENIX LiDAR SYSTEMS

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Austin, Texas 78728, US
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sales@phoenixlidar.com

www.phoenixlidar.com



Highest Precision for the Lowest Cost

Phoenix LiDAR System's MiniRANGER-3 LITE + DJI Matrice 300 UAV

The MiniRANGER-3 LITE is an upgrade to the renowned miniRANGER-LITE—boasting a 3X increase in point density. This solution is designed to provide survey-grade LiDAR data and imagery (optional) on an ultra-lightweight platform. Packed with options, the miniRANGER-3 LITE leverages Phoenix's years of experience and industry leading LiDARMill software platform to provide a seamless user experience. Optional mobile and backpack mounting options along with several imaging sensor options provide the adaptability required to address any mapping application. With the photogrammetry package, operators of mid-size multirotors can now simultaneously

acquire survey-grade LiDAR data and high resolution 61 MP photogrammetry at up to 100 m operating flight altitude.

The MiniRANGER-3LITE is a dependable, lightweight system designed to be a cost-effective tool for meeting federal USGS Quality level 0 project standards, and is the only DJI Matrice 300 mountable system capable of meeting these strict specifications. This unstoppable combination reliably achieves sub 2cm precision on hard surfaces with up to 5 returns per laser pulse. The added benefit of Phoenix LiDAR System's real time data visualization empowers user confidence and offers peace of mind on high-value projects.

Oxford Technical Solutions (OxTS)

APPLICATIONS

NAVIGATION

GEOREFERENCING

AUTONOMY

MAPPING

SURVEYING

LOCALISATION & GROUNDTRUTH

COMPANY PROFILE

At OxTS we're passionate about inertial navigation and how we can help our customers with our technology. Our hardware and software solutions are used across the world for a range of applications including mobile mapping, LiDAR survey and more.

With over two decades of experience in combining the best of high precision GNSS receivers with inertial navigation expertise, OxTS' products have become the go-to inertial navigation systems (INS) in a wide and varied range of industries—particularly those where LiDAR is prominent.

If there is LiDAR-based project or application you're working on that requires highly accurate position and inertial measurements, speak with OxTS—we have the experience needed to help.



Park Farm Business Centre
Middleton Stoney, Oxfordshire,
United Kingdom, OX25 4A
info@oxts.com

www.oxts.com

OxTS INS Solutions

Create exceptionally accurate georeferenced 3D pointclouds

OxTS INS hardware and software solutions provide LiDAR surveyors with the tools they need to create the most visually appealing and accurate 3D pointclouds.

Users of OxTS INS devices for LiDAR surveying can be confident in the knowledge that they will receive centimetre-level position, and highly-accurate roll, pitch and heading measurements. Furthermore, using OxTS' LiDAR georeferencing software, OxTS Georeferencer, these measurements can be used to quickly and easily georeference raw LiDAR data, enabling the creation of 3D pointclouds that any LiDAR surveyor would be proud to present.

OxTS hardware devices and software applications have been developed with the user in mind. They are suitable for many data collection methods whether that be on land or in the air.

Our flagship INS, the Survey+, is our most accurate INS used primarily for land-based

mobile and manned aircraft mapping. It's more cost-effective counterpart, the xNAV650, is our smallest and lightest INS to date making it ideal for LiDAR surveying with a UAV or drone. However, despite its small size and light weight, the xNAV650 is equally suitable for mobile mapping applications owing to the accuracy of the data it creates.

Other software solutions within the OxTS product portfolio serve to provide users additional benefits. NAVsuite, OxTS' complimentary software suite, gives users the ability to configure, monitor, post-process and analyse their INS data. The step-by-step configuration wizard is particularly useful when setting up your INS for a LiDAR survey.

For areas where GNSS signal is intermittent such as under tree canopies and in urban canyons, gx/ix tight-coupling software ensures OxTS INS data is the best it can be.

Aero-Graphics Inc

APPLICATIONS

- MAPPING
- SURVEYING
- PHOTOGRAMMETRY
- LIDAR
- INFRASTRUCTURE
- ENERGY
- AEC
- TRANSPORTATION

COMPANY PROFILE

GEOSPATIAL SERVICES TO POWER THE RIGHT DECISIONS.

Passionate about helping our clients discover solutions that uniquely meet their challenges making their jobs easier and projects more successful, we'd like to welcome you to Aero-Graphics.

Since 1965 we have established a nationwide reputation for helping our clients with high-resolution Photogrammetry, LiDAR and orthoimagery, UAS, and applied GIS. In fact, we've pioneering aerial mapping and imaging technologies to meet our client's most demanding schedules and budgets. We'd like to get to know you and how we can help advance your successes. Call us at 801.487.3273



aero-graphics

GEOSPATIAL SERVICES

info@aero-graphics.com

(801) 487-3273

40 W Oakland Avenue

Salt Lake City, UT 84115

Angela Arriaga

aarriaga@aero-graphics.com

Under Our Wings, Your Deliverable is Success.

We stand ready to quickly mobilize your project sites and our decades of aerial acquisition expertise ensure that we will deliver you the imagery and LiDAR that will make your project a success.

We have complete control of our flight schedule because we own four fixed-wing platforms and local strategic access to four Bell helicopters that are rigorously serviced, allowing for full-time aerial acquisition flights.

Aero-Graphics' sensor assortment includes the most advanced devices in the industry. Our aircraft and equipment are designed to provide successful deliverables on projects both large and small. We take pride in delivering you success.

CEPTON

APPLICATIONS

ADAS

AV

SMART CITIES

E-TOLLING

SECURITY

CROWD ANALYTICS

SMART INDUSTRIALS

AGV

COMPANY PROFILE

Cepton provides state-of-the-art, intelligent, lidar-based solutions for a range of markets such as automotive (ADAS/AV), smart cities, smart spaces and smart industrial applications. Cepton's patented MMT®-based lidar technology enables reliable, scalable and cost-effective solutions that deliver long range, high resolution 3D perception for smart applications.

Founded in 2016 and led by industry veterans with over two decades of collective experience across a wide range of advanced lidar and imaging technologies, Cepton is focused on the mass market commercialization of high performance, high quality lidar solutions. Cepton is headquartered in San Jose, California, with a presence in North America, Germany, Japan, India and China, to serve a fast-growing global customer base.



Founded 2016
399 West Trimble Road
San Jose, CA 95131

cepton.com



Lidar for Automotive and Smart Infrastructure

Founded in 2016 with a focus on mass-market ADAS lidars, Cepton has developed a unique MMT®-based lidar technology to achieve the right balance between performance, reliability and cost. With a vision to enable the future of safety, automation and advanced analytics across a range of industries, the company offers a comprehensive portfolio of lidar solutions.

Nova is an award-winning, miniature, wide field of view (FOV), near-range lidar intended to address major gaps in proximity detection of objects with current sensor technologies. Nova offers an unprecedented combination of compactness, FOV coverage and affordability. It is ideally suited for advanced driver assistance systems (ADAS), autonomous vehicles (AVs), autonomous ground vehicles (AGVs) and beyond.

Vista®-X is a family of state-of-the-art, automotive-grade lidars for long-range applications. Achieving an optimal balance between

performance, embeddability, manufacturability and affordability, Vista-X lidars are built to meet stringent OEM requirements to enable mass-market scalable ADAS and AV applications.

Vista®-P is a family of compact, award-winning lidars delivering long range and high resolution at an attractive price point to enable intelligent perception for various applications across markets ranging from automotive, smart cities, smart spaces, and smart industrials.

Sora®-P is a family of award-winning, ultra-high scan rate lidars for high-fidelity profiling of objects even at high speeds, ideal for e-tolling, vehicle and container scanning and similar applications.

Helius®: A groundbreaking, award-winning smart lidar system combining lidar sensors with edge computing and advanced perception software to enable 24/7, real-time, anonymous object detection, tracking and classification along with object velocity and dimension information.

HARDWARE PROFILE

RIEGL

APPLICATIONS

AIRBORNE

BATHYMETRIC

MINING

MOBILE

INDUSTRIAL

TERRESTRIAL

UNMANNED

WIDE-AREA

COMPANY PROFILE

With more than 40 years of experience in the research, development and production of laser rangefinders, distancemeters and scanners *RIEGL* delivers proven innovations in 3D.

The combination of *RIEGL*'s state-of-the-art hardware for terrestrial, industrial, mobile, airborne, bathymetric and UAV-based laser scanning with appropriate, equally innovative *RIEGL* software packages for data acquisition and processing results in powerful solutions for multiple fields of application in surveying.

RIEGL has always been committed to delivering the highest performance, quality, reliability, and longevity of all its products and services, and strict adherence to applicable international standards is a priority.

It is our ambition to perfectly fulfil measurement tasks fully satisfying the customers' expectations worldwide.



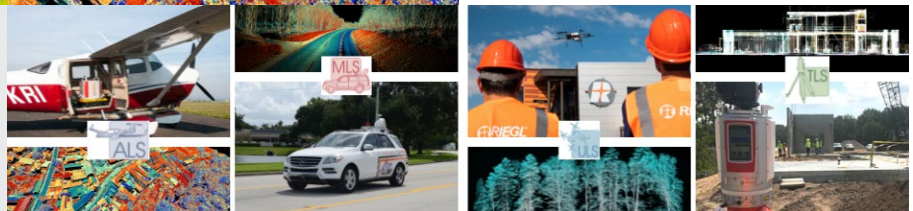
Founded 1977

240+ Employees

Horn, Austria

Winter Garden, FL USA

Riegl.com



Innovation in 3D

RIEGL Terrestrial laser scanners provide detailed and highly accurate 3D data rapidly and efficiently. Applications are wide ranging, including Topography, Construction, As-Built Surveying, Architecture, Archaeology, Monitoring, Civil Engineering and City Modelling.

Airborne laser scanning is a rapid, highly accurate and efficient method of capturing 3D data of large areas, such as agricultural or forestry sites, wide area mapping, urban areas, industrial plants, etc.

RIEGL airborne laser scanners make use of the latest state-of-the-art laser and signal processing technology. They are exceptionally compact, lightweight and cost effective, and are designed to meet the most challenging requirements in airborne surveying.

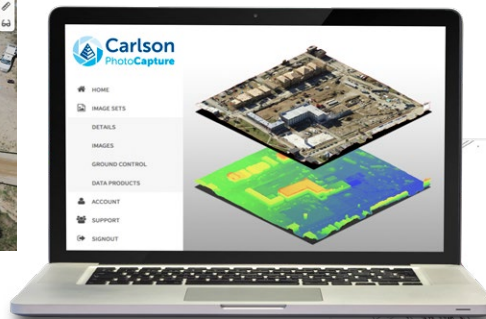
Unmanned Laser Scanning, utilizing high-end unmanned airborne platforms, provides the possibility to acquire data from dangerous and/or hard-to-reach areas, whilst offering a high cost to benefit ratio for numerous applications, for example Agricultural and Forestry, Defense, Wide Area Mapping, Flood Zone Mapping, Topography and Mining. For years, *RIEGL* Laser Scanners have been successfully used in this sector. Our current efforts in R&D guarantee to provide the user with state-of-the-art laser scanning engines of the highest quality, to meeting the specific challenges of surveying applications using advanced UAS/UAV/RPAS platforms. Furthermore, we are proud to be the first major LiDAR manufacturer to develop its own unmanned aerial system.

Both *RIEGL* 2D and 3D laser scanners are ideally suited for **mobile mapping** applications. In order to register scan data acquired from moving platforms, such as trucks, boats, trains, road and off-road vehicles, the laser scanner is supplemented by position and attitude sensors, for example GPS and IMU.

Carlson Software

APPLICATIONS

- (LAND) SURVEYING
- MINING
- (CIVIL) ENGINEERING
- GIS
- MAPPING
- MACHINE CONTROL
- CONSTRUCTION



Carlson Software has innovated for the land development and mining industries with software and hardware solutions built to work for the clients that depend on them every day. As a one-source solution, we provide CAD design software, field data collection, and laser measurement products for the surveying, civil engineering, GIS, and construction industries.

We have a large user base, and an exceptional rate of customer retention over our 37-year history, and we are the only company with free tech support since the day of our founding.

Our wide product range includes Carlson PhotoCapture for photogrammetry and UAV mapping, Carlson Precision 3D for engineering design in 3D, and solutions that include SurvPC data collection software, data collectors, GNSS receivers, robotic total stations, and laser scanners.



33 East 2nd Street
Maysville, KY 41056
606 564 5028
info@carlsonsw.com

carlsonsw.com

Integrated Photo-grammetry Solutions

Carlson's photogrammetry solutions take you from flight planning, through image processing, to point clouds, to surfaces, elevation models, and CAD deliverables.

Pre-flight, Carlson's CAD office software provides flight planning. Post-flight, Carlson PhotoCapture provides powerful, versatile, scalable photogrammetry processing. It is available in two versions:

Carlson PhotoCapture Online may be used on any device with access to the internet. All that's required is a yearly membership and the purchase of processing capacity as needed. No minimum monthly fees, and projects may be shared for collaboration with coworkers and clients.

Carlson PhotoCapture Standalone is for customers who need Carlson's photogrammetry solution but want to process locally. Now

anyone lacking high speed internet, working in remote locations, or requiring enhanced security now has the option of bringing the ease and power of PhotoCapture to their own computers.

Carlson Point Cloud provides powerful tools for processing of point cloud files from aerial or surface sources, whether of laser or photogrammetric origin. Employ the bare earth filters to create surfaces, or use the identified above-ground cloud for feature extraction of point clusters. Use point cloud files to create profiles, sections, contours, breaklines, and finished plats, or export surface models, points, etc. to CAD.

Whether you're working with free LIDAR data, fly your own UAV, or work with terrestrial scanner files, Carlson's industry-proven solutions provide the workflow options to produce the deliverables you need for your clients.

Yellowscan

APPLICATIONS:

- AIRBORNE
- CONSTRUCTION
- MAPPING
- MOBILE
- SURVEYING
- INSPECTION
- TRANSPORT
- UNMANNED



COMPANY PROFILE

YellowScan lidar products are fully-integrated systems designed for commercial UAV applications. Our lidar solutions include the laser scanner, IMU, GPS, embedded computer and batteries. The processing software provided enables the generation of a georeferenced point cloud in the projection of your choice. Output format is .LAS (lidar industry standard) or .TXT. YellowScan is committed to provide users with the most reliable fully-integrated lidar imaging systems and customer support for demanding UAV applications. Since 2012, the team's dedication to fulfill high resolution and high-quality survey requirements has fueled research and development. Our next generation of fully-integrated lidars are ergonomic, robust and easy-to-use, designed by surveyors to serve surveyors, civil engineers, archeologists and other professional users with a turn-key solution that can be mounted on most commercial-scale drones. The Mapper II, Ultra and YellowScan Vx models complete the "Just press the Yellow Button" product line, complementing the original YellowScan Surveyor, the successful world lightest fully integrated lidar for UAV.

YellowScan

Founded 2005
25-50 Employees
Montferrier su lez, France
Utah, USA + Tokyo, Japan

Yellowscan-lidar.com



Fly & Drive

YellowScan Fly & Drive is a combo that can-do mobile mapping & aerial survey using the same lidar (Surveyor or Surveyor Ultra). It combines high resolution laser scanning and precise positioning to collect georeferenced point clouds for a wide range of applications. This will move the user into another level of possibilities and productivity. The swap can be done in less than 5 minutes. It reduces project duration through fast implementation, collection and data analysis.

Fly & Drive can be rapidly deployed on road vehicles as well as on any types of UAVs (multirotor, helicopter, VTOL or traditional fixed-wing), expanding the range of applications and thereby hastening your return on investment.

Fly & Drive is an extension of our Surveyor and Surveyor Ultra, consisting in set of mobile mapping gear: a pod, an adaptable bracket and a GNSS antenna.

The possibility to switch the lidar system from UAVs to land vehicles and vice versa, allows the user to perfectly complement a top view acquisition of building roofs with a detailed façade survey. Or, in a light forest, a canopy and tree trunks survey.

It also allows to survey flight restricted zones, such as urban areas, power plant, refineries and more. The main purpose of the point clouds you acquire with Fly & Drive are road, pipeline, renewable energy construction pre-survey or quarries in presence of vegetation.

As the swap is easy and fast to operate, both acquisitions can be done in 1 day.



APPLANIX

APPLICATIONS:

- AIRBORNE
- MAPPING
- MOBILE
- OEM
- SURVEYING
- INERTIAL/IMU
- GNSS
- UNMANNED/UNCREWED



COMPANY PROFILE

Position and Orientation Solutions

For nearly 30 years Applanix, A Trimble company, has offered complete and customized mobile mapping solutions while championing the technology revolution that allows pinpoint positioning in any condition. Applanix is the standard for organizations that depend on accuracy and quality and who value experienced partners.

Our turnkey and OEM GNSS-Inertial solutions are designed for pinpoint accuracy, efficiency and ease of use, supporting applications for aerial survey and remote sensing, land-based mobile mapping, and autonomous vehicles. Whether you require a complete airborne mapping solution for generating directly georeferenced lidar data or guidance and Advanced Driver Assistance Solutions for vehicles, Applanix has your solution.



Founded 1991

51-200 Employees

Ontario, Canada

applanix.com

APX-18 UAV

The Trimble APX-18 UAV is an OEM GNSS Inertial solution with dual GNSS antenna input, designed to georeference lidar and other imaging data when collected from Unmanned Aerial Vehicles (UAV) at low speeds or when hovering. Comprised of a small single OEM board containing a precision GNSS receiver with two antenna heading and inertial sensor components plus POSPac UAV Differential GNSS-Inertial office software, the Trimble APX-18 UAV produces a highly accurate position and orientation solution for directly georeferencing lidar point clouds and imagery.

High accuracy, extremely small package

Measuring just 100 x 60 mm and weighing only 62 grams, the APX-18 UAV provides unparalleled performance in an extremely small package. With the included POSPac UAV postmission software, it produces a highly accurate position and orientation solution for direct georeferencing of cameras, lidars and other UAS sensors.

Key features:

- High-performance Direct Georeferencing solution for improved efficiency and accuracy of mapping from small Unmanned Aerial Vehicles
 - Reduce/eliminate GCP's
 - Reduce sidelap
 - Accurate lidar georeferencing
 - Instant alignment through dual GNSS antenna heading
- Compact single-board OEM module complete with survey-grade multifrequency GNSS receiver and MEMS inertial components
- Applanix IN-Fusion™ GNSS-Inertial and SmartCal™ compensation technology for superior position and orientation performance
- POSPac UAV Differential GNSS Inertial post-processing software for highest accuracy
- RTK real-time position for precision landing applications
- Supports all common RTK corrections such as CMR, CMR+, RTCM

GEOCUE GROUP INC.

APPLICATIONS

MAPPING

PROCESSING

SURVEYING

UNMANNED

AERIAL

CONSULTING



COMPANY PROFILE

GeoCue is the largest supplier of kinematic lidar processing tools in North America and LP360 is one of the world's most widely used tool for exploiting point cloud data. In 2014, GeoCue Group started a division focused on using small Unmanned Aerial Systems for high accuracy mapping. Leveraging our expertise in production, risk reduction, and point cloud processing tools, we are continuing to bring new services and products to market to provide surveyors and other geomatics professionals exciting tools for geospatial data extraction using low cost drones including Loki, our plug-and-play PPK direct positioning system, and now our new True View® Drone LIDAR/Imagery fusion sensors.



Founded 2003

11-50 Employees

520 6th Street Madison, AL 35756

geocue.com



True View 3D Imaging Sensors

Powerful LIDAR + Dual Camera Sensor integrations, post processing software and data management for high accuracy drone mapping applications.

Fly, Process, Deliver— All in One Solution

GeoCue's True View 3D Imaging Sensors offer an innovative drone mapping solution supporting LIDAR, photogrammetry, and direction geo-referencing solutions integrated in lightweight payloads. GeoCue focuses on offering full solutions rather than individual parts. Unlike other drone LIDAR providers, GeoCue includes post-processing software and a data management portal to provide users with a complete solution from flight to post-processing and data delivery.

Utility-Grade to Survey-Grade 3D Imaging

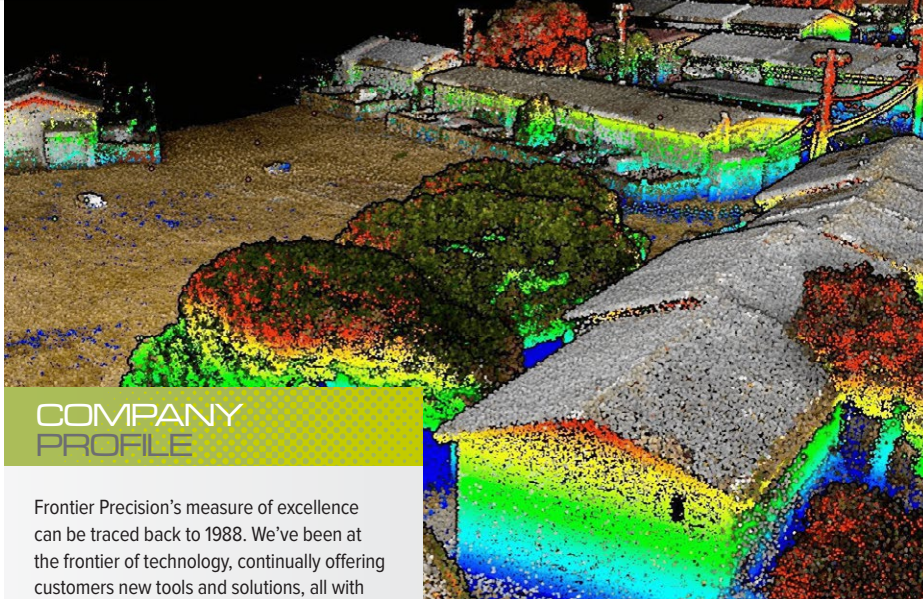
GeoCue offers a series of True View 3DIS systems ranging from utility grade to survey

grade ensuring successful drone mapping projects no matter the application. The True View 3DIS includes all the components and software necessary to collect LIDAR and RGB image data and process these data to a 3D colored point cloud in LAS format. True View systems use Applanix POS for best-in-class position and orientation accuracy.

Drone LIDAR Sensor Subscription Offering

Explore drone LIDAR at low risk and low cost. This unique business model that allows customers to acquire a True View 410/515 3DIS under a subscription model for periods as short as ONE MONTH! This is an excellent model for seasonal use and surge capacity.

Frontier Precision



COMPANY PROFILE

Frontier Precision's measure of excellence can be traced back to 1988. We've been at the frontier of technology, continually offering customers new tools and solutions, all with our end goal of making our customers more efficient, productive, and profitable with today and tomorrow's technology. Frontier Precision is an employee-owned company—offering solutions in Survey, Mapping & GIS, Drones/UAS/Unmanned, Construction, Scanning/Imaging, Mosquito & Vector Control, Water Resources, Invasive Plant Control. We became one of Trimble's largest geospatial dealers worldwide by offering our customers the solutions they need. Every day, we bring it to life by seamlessly connecting our physical and digital worlds to use technology to improve how we all interact better with the earth—in all kinds of meaningful ways.



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APPLICATIONS

SURVEY

MGIS

UNMANNED

SCANNING

MONITORING

CONSTRUCTION

MOSQUITO
& VECTOR CONTROL



The Best Flight Plans Start Here

Frontier Precision has the latest innovations in drone aircraft and sensors to fit your job or application. We offer industry leading products and software from Autel, DJI, Delair, Inspired Flight, Quantum-Systems, YellowScan, Green Valley International, MicaSense, FLIR, Pix4D, and many others to make sure you get the right product for the right UAS application. Our UAS applications include geospatial surveying & mapping, agriculture, construction, energy, forestry, infrastructure, mining, mosquito and vector control, oil and gas, and public safety.

With LiDAR, your first mapping and survey point should be with us. Our staff has the knowledge and real-world experience to help you implement LiDAR into your business. Just as important, with our range of LiDAR technology, you'll find a solution that works perfectly with your budget.

Use the industry's leading-edge technology without committing long-term capital to technology that may not have a long-term fit. The expert team at Frontier Precision UAS/Imaging Services can help when you have a need for mobile/static scanning or UAS services, but lack the expertise or equipment to meet the requirements of the job. Frontier Precision offers data-driven professional services for aerial surveying and photogrammetry applications using unmanned aircraft systems. We're expanding operations to include additional drones, sensors, and platforms to accommodate your data needs. Whether you are interested in operating drones yourself, or sub-contracting a service provider to collect data for a project, Frontier can help you incorporate this exciting technology into your workflow to collect high-precision aerial data.

DEWBERRY

APPLICATIONS

REMOTE SENSING

TOPOGRAPHIC LIDAR

TOPOBATHYMETRIC LIDAR

GIS

APPLICATION DEVELOPMENT

MODELING

ASSET MANAGEMENT

ANALYTICS

COMPANY PROFILE

Dewberry is a leading, market-facing firm with a proven history of providing professional services to public- and private-sector clients. Established in 1956 and headquartered in Fairfax, Virginia, our professionals are dedicated to solving clients' most complex challenges and transforming their communities. The firm harnesses the power of geospatial science to offer complete end-to-end remote sensing and mapping services starting with state-of-the-art airborne lidar sensors to automated processing, surveying, web/mobile GIS, and advanced data analytics. Dewberry creates, analyzes, and builds geospatial data and tools, to help clients integrate, share, and simplify the use of information allowing for more effective and efficient decision making. To learn more, visit www.dewberry.com.



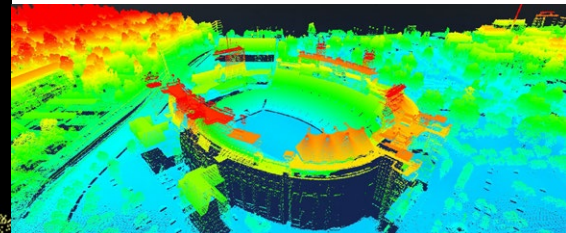
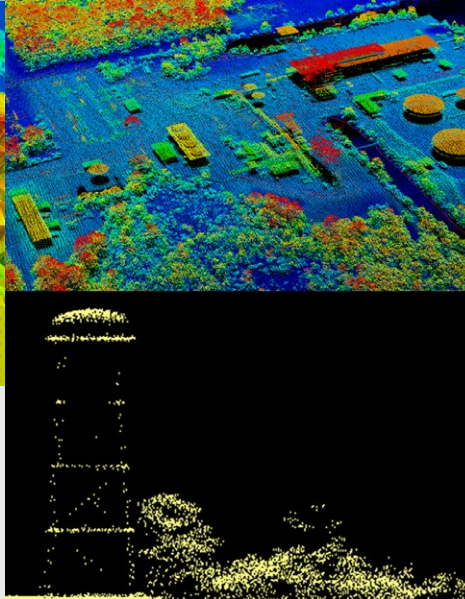
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Dewberry's Geospatial and Technology Services

Dewberry's geospatial and technology services team creates, analyzes, and builds tools to share geospatial data, and helps clients integrate these tools into their daily lives. By fusing multiple data sets together, Dewberry provides clients with easy-to-use tools that simplify the use of information to allow for more effective and efficient decision making.

Dewberry recently purchased two sensors—the RIEGL VQ-1560 IIS topographic airborne lidar sensor and the CZMIL SuperNova, a powerful topobathymetric mapping sensor. This investment allows Dewberry to expand its mapping capabilities with current clients, keep the entire acquisition lifecycle in-house, and monitor the quality of its products. The firm is excited to empower their clients with access to the most innovative technology to meet their topographic/lidar needs, delivering hi-definition lidar datasets quickly and efficiently.

The firm's solid performance processes in geospatial technologies and corporate IT services led to it being appraised at Level 3 of the CMMI Institute's Capability Maturity Model Integration (CMMI) in Services and Development Models. In 2020, Dewberry also received the International Lidar Mapping Forum (ILMF) and Lidar Magazine's 2020 Outstanding Enterprise Achievement in Lidar award.

Dewberry works seamlessly to provide geospatial mapping and technology services across various market segments. With more than 30 years' experience, the firm is dedicated to understanding and applying the latest tools, trends, and technologies. Dewberry employs the latest GIS software and database platforms, including the full suite of ESRI products. The firm's products and services include application, web, and cloud-based development; system integration; database design mapping; data fusion; and mobile solutions.

INTEGRATOR PROFILE

LiDAR USA

APPLICATIONS

- AIRBORNE
- EDUCATION
- MAPPING
- MOBILE
- INDUSTRIAL
- MILITARY
- UNMANNED



COMPANY PROFILE

We are an aggressive team of pioneers in geomatics searching for new, innovative, and affordable solutions. We build economical UAV & mobile mapping systems, that push technology to the edge using the latest tools for scanning, imaging, and navigation.

The idea to develop the Snoopy and ScanLook LiDAR systems came out of our need to find an affordable light weight solution that was easy to use and operate. We have developed solutions for indoors and outdoors. The key technologist and principal investigators are Daniel and Jeff Fagerman. We are experienced in photo control work with conventional total stations, levels, etc., and also with the latest GPS technology. We consider software development a particular interest and hardware integration something we excel at. We seek out ways to improve workflows using existing technology in an unconventional way.



Founded 1999
20+ Employees
Alabama, USA

lidarusa.com

LiDAR USA—We Are LiDAR!

Snoopy A-Series HiWay Mapper HD + UAV Package

Weighing in at only 2.5kg, Snoopy A-Series is a smaller, evolved version of our Snoopy. This unit is also configurable but is designed to be an extremely accurate solution for multi-vehicle mounting. The A-Series is light-weight and easy to use. With just a click of a button on your smartphone you can scan anywhere with this little guy.

M200 Series Snoopy LiDAR Package

The M200 Snoopy Series LiDAR Package is designed specifically for the ever-popular DJI M200/ M210 UAV. Custom designed for the Velodyne A-Series Scanner and weighing only 1.63kg, the M200 Snoopy Series is light, fast and easy to use. With deployment from an easy to carry case and just a click of a button on your smartphone, you are ready to scan. The M200 Snoopy Series is a smaller, evolved version of our Snoopy system. This unit is designed to be an affordable yet extremely accurate solution.

Revolution 60, 120 and HD

Ready-To-Fly-Ready-to-Scan package. Endless coordinate systems; LAS/LAZ, etc., formats; Control point registration; Point Cloud filtering; Coordinate measurement update tool.

We also offer the Snoopy Mini-VUX and VUX (RIEGL); Snoopy Dual-VUX (Riegl); SCANLOOK TreX, for Trimble shops; our PhaseOne Photogrammetry Package, a host of supporting products and more! Sensors we integrate and resell include the Velodyne Puck Hi-Res, Velodyne Puck LITE, Velodyne HDL-32E, Velodyne Puck. Sensors we integrate include the FARO FOCUS 3D, Quanergy M8 and the Z+F Profiler.