Helion's Geospatial Capabilities Statement

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INTRODUCTION

Helion is an SBA-certified HUBZone Small Business headquartered in Tuscaloosa, Alabama. We specialize in user-friendly LiDAR technology, utilizing long range terrestrial systems, unmanned aerial vehicles (UAV) with customizable payloads, and unmanned surficial bathymetric systems (USV). This cutting-edge technology allows Helion to make survey grade deliverables and .las files that can fit seamlessly into any workflow of government and commercial clientele, allowing for easier planning and more efficient work that ultimately cuts costs and increases the quality of that work.

While we are a relatively young company, as a wholly owned subsidiary of Hyperion International Holdings Corporation (HIHC), we have significant reach back capabilities befitting that of a company with over 30 years of experience. This gives Helion the financial and professional backing needed to ensure we deliver consistently high-quality work to our clients.

Helion, through our UAV, USV, and Terrestrial capabilities, can provide a complete understanding of an area as well as capture data needed to create an accurate model of a project site. The data collected from these systems can be used to plot user-friendly survey grade georeferenced maps that, in turn, can be used to track locations using iOS software such as Avanza. These systems are also capable of determining the topography of landscapes and aquatic regions by land, air, and water in extensive detail, allowing us to generate shareable maps and models to be used in the planning and execution of a wide variety of efforts.

TERRESTRIAL LIDAR

Helion's Terrestrial LiDAR systems can determine the topography of areas that are normally expensive or time consuming to reach and, using that information, detail the best point of access into these locations through land and air. With our photogrammetric imagery, we can note specific georeferenced locations for existing infrastructure and potential design infrastructure.

Our Terrestrial capabilities can perform focused scans up to 6km to help our clients visualize and detail any type of topography or identify any item(s) of interest. By narrowing the field of returned reflected values to be displayed from our terrestrial LiDAR scans, we are able to differentiate between different types of materials and accurately judge the size/shape of items or persons of interest. Furthermore, by combining these capabilities with next-gen AI/ML and predictive analytics, Helion can produce these results with a high degree of accuracy in real-time or near real time, allowing for efficient allocation of resources in many scenarios. Applications of our Terrestrial LiDAR capabilities include, but are not limited to:

- Providing georeferenced positioning and detailed mapping of points of interest
- Calculating volume and other measurements
- Measuring change and make accurate predictions to inform urban development, disaster preparation, forestry and mining efforts, habitat change, and more.
- Using scans to determine exact measurements for quality control and assurance

UNMANNED AERIAL LIDAR (UAV)

The state-of-the-art capabilities provided by Helion, such as in our Unmanned Aerial Vehicle (UAV), allows researchers to collect 750,000 points-per-second puck using 32 individual lasers at an elevation of up to 100 meters above the ground surface. By creating a photogrammetric 3D point cloud and digitally rendered surface model, we can show a complete arial map and traverse corridor mapping of any field area. These georeferenced, survey-grade deliverables allow our clients to have detailed information on fields, structures, elevation, and material composition of an area with a minimal team, speed, and few constraints due to accessibility. Applications of our UAV capabilities include, but are not limited to:

- Mapping existing structures and impediments
- Gathering extensive data with minimal interruption
- Generating data point clouds that accurately recreate structures and landscapes with high fidelity
- Rapid and accurate modeling of micro and macro factors over large areas and through dense vegetation
- Highly efficient and user-friendly data sharing for effective communication

UNMANNED SURFICICIAL VESSEL (USV) BATHYMETRY

Helion's EchoBoat-160™ is a portable unmanned surface vessel (USV) and autonomous platform for hydrographic survey applications. The multi-payload vessel has ample thrust and stability to get reliable measurement in choppy inland waters. In addition, the moon pool in the hull allows for interchangeable instruments. The boat itself can be easily customized with the desired echosounder is supplied to accept existing equipment from Helion, such as onboard thermal cameras, sound velocimeter, velocity profiler or CTD, and onboard LiDAR.

All USV deliverables can be fabricated to include areas of avoidance to prevent collision of boats and other water transport with topographic hazards. This provides public or client information that will help prevent any lawsuits that may come about from unmarked areas that could be hazardous due to unseen shallows or obstructions beneath the surface of the water. Applications of our UAV capabilities include, but are not limited to:

- Providing detailed insight to underwater terrain
- Generating clear imagery and georeferenced mapping of underwater topography
- Measuring depth and makeup of various waterways
- Calculating sediment volumetrics in relation to surrounding terrestrial topography
- Measuring water-based risk to existing structures

DELIVERABLES

Mapping Deliverables*

Mapping deliverables are constructed using in-house software that includes georeferenced elevation color relief imagery, photogrammetric imagery, shaded contour intervals, georeferenced drainage pattern imagery, georeferenced watershed cells with drainage pattern imagery, property boundary identification illustrations, a cross-sectional topographic illustration that corresponds with cross-sectional lines located on existing deliverable imagery, as well as many other capabilities.

Modeling Deliverables*

Several modeling deliverables can be digested as raw data acquisition and processed .las files. These deliverables include .dat files, workable .dxf (vector and raster) files, .csv files, and USGS .dem file(s).

Calculation Deliverables*

Various types of calculations can be made using two or more different datum or gridded files. Additional volumetric calculations can be made for specific areas of interest such as boring pits and stockpiles.

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*Along with .las and .laz files Helion is capable of fabricating deliverables using a variety of software including, but not limited to: ArcGIS, Golden Software suite, HYPACK, and Visual MODFLOW.