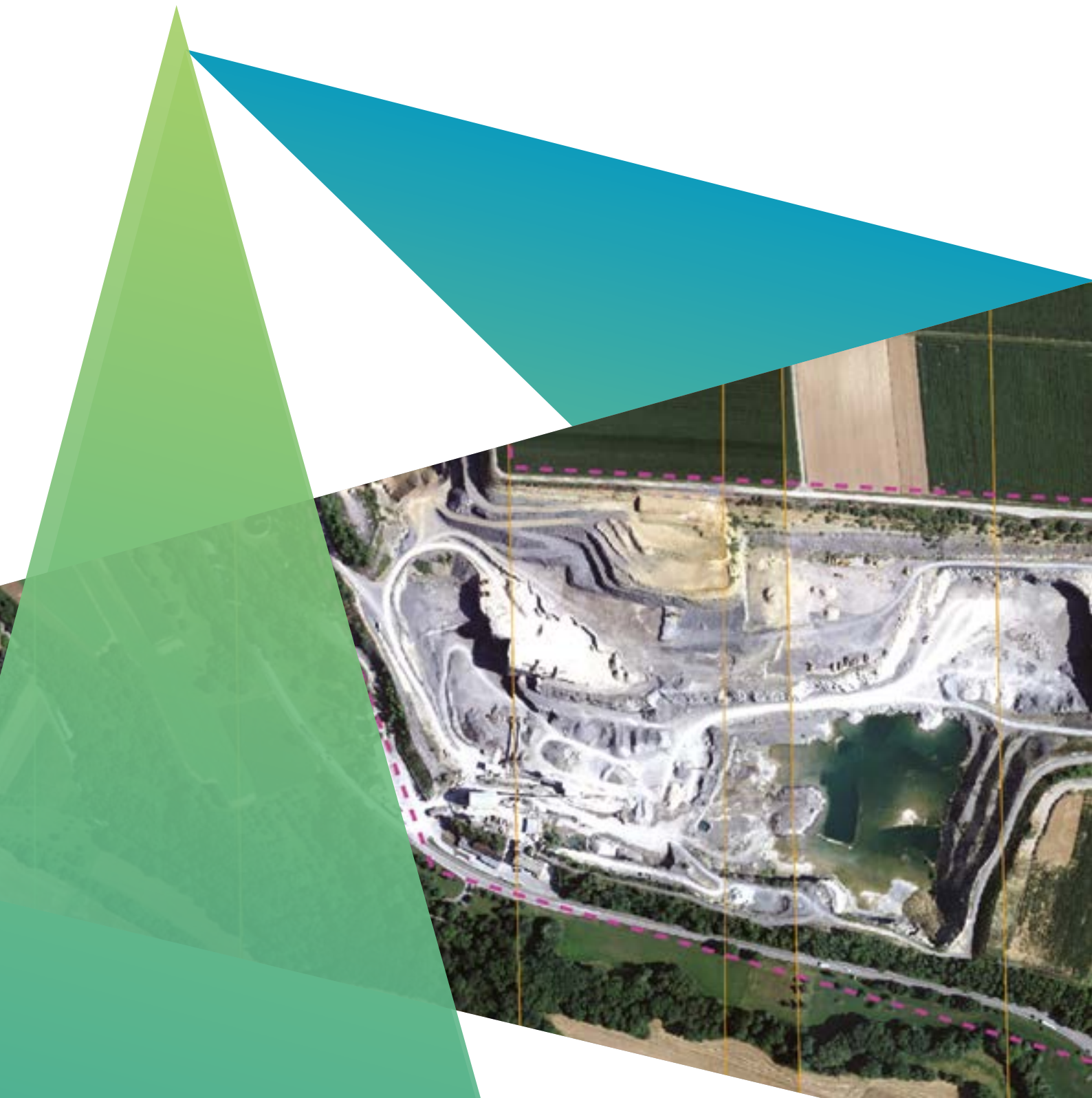


IMAGINE Photogrammetry

A Complete Suite of Photogrammetric Production Tools



State-of-the-art Photogrammetric Production Tools

How do you consolidate multiple photogrammetry projects into a single, fast, manageable workflow? Is it possible to reach new levels of production throughput without compromising the detail and accuracy your customers expect or the functionality you have grown accustomed to? How do you handle photogrammetric projects with a variety of different data types and formats?

Today, photogrammetry and production mapping experts are under pressure to produce more in less time, while maintaining a rigorous degree of accuracy. Hexagon's Geospatial division understands this challenge, and builds the tools to help you accomplish your goals on time, in scope, and to the preferred accuracy.

IMAGINE Photogrammetry, a seamlessly integrated collection of software tools, enables you to transform raw imagery into reliable data layers required for all digital mapping, raster processing, GIS raster analysis, and 3D visualization needs.

IMAGINE Photogrammetry is offered within the Producer Suite of the Power Portfolio. The Producer Suite empowers you to collect, process, analyze and understand raw geospatial data, and ultimately deliver usable information. This includes Hexagon's Geospatial division desktop-based GIS, remote sensing, and photogrammetry offerings.



A fully functional photogrammetry system packaged in a user-friendly environment, IMAGINE Photogrammetry provides results for everyone, from photogrammetry novices through advanced users. State-of-the-art photogrammetry technology, such as full analytical triangulation, digital terrain model generation, orthophoto production, producing orthomosaics, and extracting 3D features, has been included in the easy-to-use environment. By automating precision measurement and including flexible operations such as terrain editing and feature extraction, IMAGINE Photogrammetry increases productivity while ensuring high accuracy. IMAGINE Photogrammetry is the most flexible photogrammetry solution on the market, handling a variety of workflows including:

- Triangulation and orthomosaic production
- Broad area mapping
- Transportation planning
- Engineering and facilities mapping
- Defense applications
- Close-range applications

Tight integration with ERDAS IMAGINE® means that this is the ideal photogrammetric package for projects involving varied types of data and further processing and analysis of airborne and satellite imagery. The added power of IMAGINE Advantage® is included with every IMAGINE Photogrammetry license, enabling you to go beyond the standard photogrammetric outputs and deliver value-added products to your customers.

Increase Your Productivity

IMAGINE Photogrammetry maximizes efficiency without compromising quality and accuracy. Designed specifically for ease of use, it frees users from the steep learning curve often associated with photogrammetric software.

The clean, intuitive interface makes it easy to learn and easy to use. The workflow-driven toolbar guides the process, giving you everything you need to execute a photogrammetric project from beginning to end. Data interoperability is never an issue with the extensive variety of input and output formats that are dynamically supported, including data from other leading photogrammetric software.

IMAGINE Photogrammetry helps you save time in other ways, too. A process-driven workflow that efficiently transforms imagery into reliable geospatial content is the key to increased productivity. From classic frame photography, large-format digital and pushbroom sensors, to practically any satellite sensor, IMAGINE Photogrammetry supports numerous workflows.

Triangulation

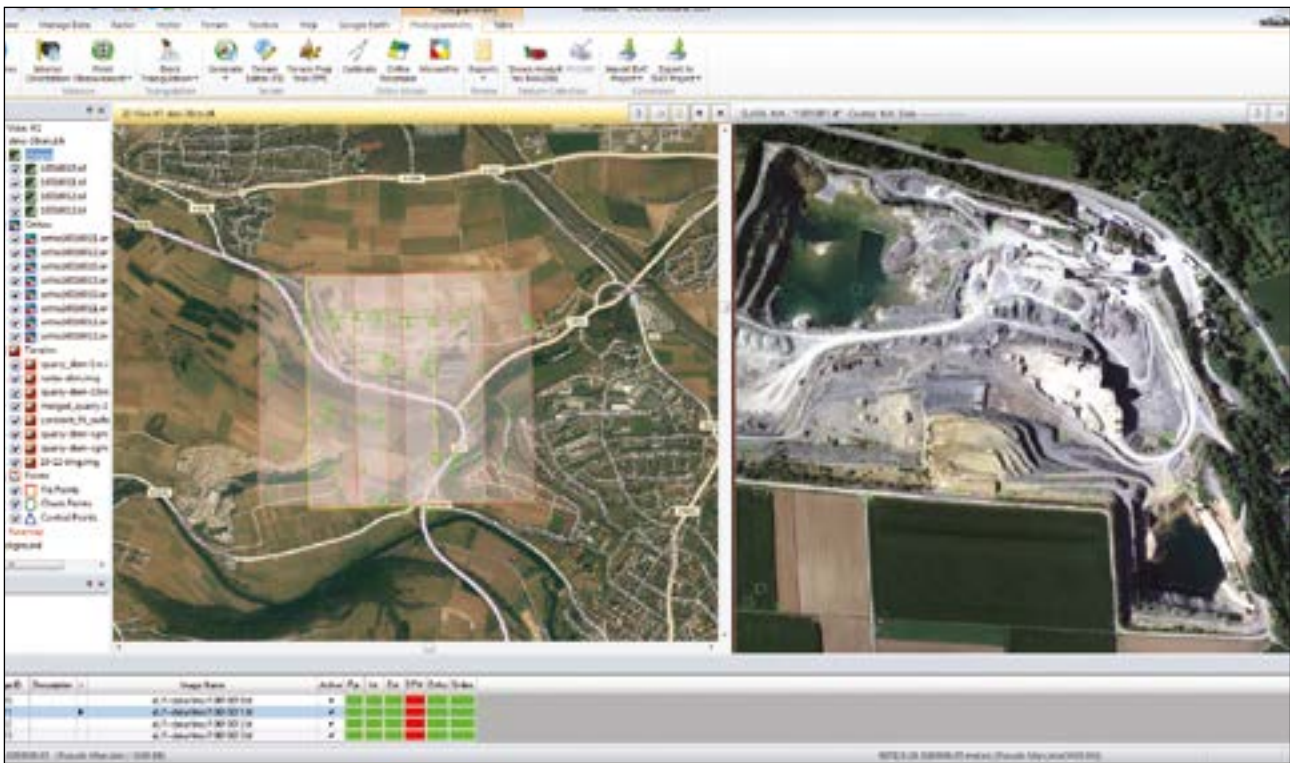
Tie imagery together and to ground reference points. Once images have been triangulated, additional data processing such as DTM extraction, terrain editing, orthorectification, and feature collection can be performed.

Automatic, Classic Point, and Stereo Point Measurement

Measure ground points in a variety of methods. Automatically determine the corresponding image positions of ground points appearing on multiple overlapping images, measure ground and image points in monoscopic single or pair-wise view modes, and measure ground and image points in single-image and multi-image monoscopic and stereo modes, supplemented by automatic point correlation.

Orthorectification

Orthophotos are the ideal reference image backdrop necessary for the creation and maintenance of geographic information contained within a GIS database. IMAGINE Photogrammetry creates orthophotos by minimizing the distortion inherent in imagery caused by sensor orientation, topographic relief displacement, and systematic errors associated with imagery, resulting in planimetrically correct images representing ground objects in their true, 'real world' X and Y positions.



IMAGINE Photogrammetry workspace includes easy-to-use project and layers panels and linked viewers as part of its integration with ERDAS IMAGINE.

Project Setup and Management

Set up and manage photogrammetric projects with ease, including input and output of ground control, GPS data, triangulation data, imagery, vector data, scanned paper maps, and terrain files in a variety of popular formats. Comprehensive image viewing features such as drag and drop capabilities, reprojecting on-the-fly, opening multiple views and linking them, and applying image enhancements are provided. Calibrated cameras and lenses can be defined and saved, as well as interior orientation parameters.

Integrating IMAGINE Photogrammetry with the capabilities of ERDAS IMAGINE enables multiple workflows, including:

- Color balancing, mosaic, and compression
- Landcover mapping and terrain categorization
- Map composition, printing, and report generation
- Data conversion
- Feature capture and update
- Image processing and unsupervised classification

Streamlined and Accurate

We know how important accuracy is in the photogrammetry industry. Because of this, IMAGINE Photogrammetry uses state-of-the-art photogrammetric and image processing technology to fine-tune your data and report results.

IMAGINE Photogrammetry includes the ability to edit terrain and collect points in stereo, which saves time and increases accuracy. With the ability to have multiple stereo views open in a variety of viewing options—Stereo, Split Panel, Mono, and Tri-View (stereo and split-screen)—and the ability to operate in either fixed-cursor or fixed-image mode, IMAGINE Photogrammetry is flexible enough to let you be your most productive.

IMAGINE Photogrammetry is loaded with time-saving features like drag-and-drop images into the stereo views. Read a terrain model or use image matching to automatically place the cursor at the correct Z location, speeding up the collection process. Fast graphics rendering with on-the-fly resampling for subpixel cursor positioning and measurement mean that you can work quickly and accurately.

Expand Your Capabilities with Add-on Modules

Hexagon offers an array of add-ons that expand the core functionality of IMAGINE Photogrammetry, making your photogrammetry investment more versatile and productive.

IMAGINE Auto DTM

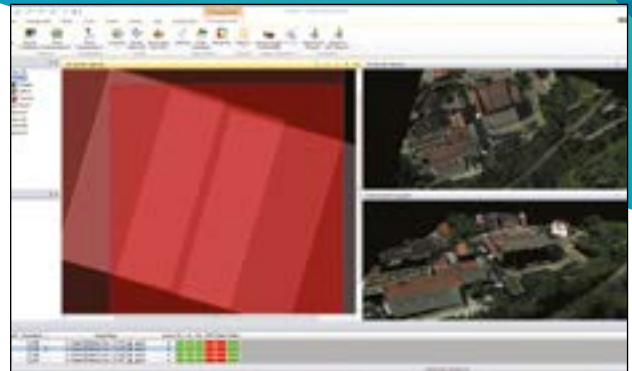
IMAGINE Auto DTM add-on module has capabilities for fast, accurate automatic terrain extraction from multiple images using sophisticated techniques with built-in accuracy reporting. This can operate in three modes: Sparse Matching, Dense Matching, and Semi-Global Matching.

Sparse matching, the fastest of the terrain extraction modes, allows you to automatically extract terrain from projects made up of aerial frame, Leica ADS, digital, video and non-metric cameras, as well as satellite sensors with stereo capability (Pleiades, SPOT, QuickBird, WorldView, GeoEye, and more). Customizable DTM extraction strategy parameters allow you to match the strategy to the terrain you are creating, maximizing the accuracy of your DTM. Embedded quality assurance, quality control, and accuracy reporting tools enable you to quickly and easily assess the DTM for fine tuning of the parameters or pinpoint locations for terrain editing later. Create a wide variety of DTM formats, including ERDAS raster formats, LTFs, TINs, 3D shapefiles, or ASCII files.

Dense Matching option is the only enhanced terrain generation solution that offers dense pixel-by-pixel correlation for high-density output terrain products, complete with integrated point classification for filtering and bare earth generation. You have full control over project visualization and image rendering, including project graphics such as image footprints, areas of interest (AOIs), seed data boundaries, and



Create highly-accurate RGB-encoded point clouds directly from stereo imagery using the pixel-by-pixel, multi-ray Dense Matching in IMAGINE Auto DTM.



Semi-Global Matching creates very dense, accurate RGB- or False-color-IR-encoded point clouds with image-like quality and buildings with sharp, high-definition edges.

processing element graphics. These dense, pixel-by-pixel surfaces have a high level of accuracy through the use of multi-ray matching to increase correlated terrain point reliability. Because they are so dense, you can utilize the thinning options to allow for a regularly spaced terrain output, or thin out redundant points on planar surfaces. Reduce processing time by simultaneously creating multiple output formats, including RGB-encoded LAS, TIN, and grid files.

Create merged surfaces, use a bounding box to define an output subset, or use the advanced terrain splitting options to further customize your outputs. Every run provides an XML accuracy report containing processing statistics and quality-based graphics to validate the output quality.

Semi-Global Matching (SGM) creates very dense RGB-encoded point cloud outputs. This method uses pixel correlation on stereo imagery from digital cameras like the Leica RCD30 and ZVI DMC along with UAV sensors. Using this Semi-Global Matching algorithm not only creates an accurate dense point cloud with high-definition hard edges on rooftops, but it also RGB or FCIR encodes the point cloud output combining for an image-like quality dataset. This automated extraction engine is quicker than the Dense Matching method, but only creates point clouds that can then be post-processed into raster or vector surfaces. The SGM method features a straight-forward, user-friendly interface to facilitate image pair selection, customize the processing strategy, and define your output options.

Increase throughput efficiency by running in multicore processing mode on a single computer system using ERDAS IMAGINE's batch tool or with distributed processing across a network of computer systems using HTCondor.

IMAGINE Terrain Editor

Once you have extracted the terrain, make editing the output fast, easy, and accurate using IMAGINE Terrain Editor. Displaying the terrain graphics as dynamic contours, TINs, breaklines, and points superimposed on stereo imagery provides an excellent baseline for editing. Visualize the ground control points from your block file to provide even more quality control. Improve the accuracy of your terrain by importing shapefiles that define breaklines and geomorphic paths. Add, delete, or modify individual terrain points, or save time by utilizing the linear and polygon selection tools to modify large numbers of points at once.

Rapidly smooth, thin, bias, flatten, fit to surface, and interpolate selected areas in your data. To accelerate your editing, IMAGINE Terrain Editor also supports customizable motion devices for precise interactive cursor control and point collection.

Stereo Analyst® for ERDAS IMAGINE

Collect, interpret, and visualize 3D geographic information from imagery using Stereo Analyst for ERDAS IMAGINE. It also serves as a feature capture environment when added to IMAGINE Photogrammetry. Providing support for collecting both planimetric and volumetric features with textures, in 3D, Stereo Analyst for ERDAS IMAGINE also serves as an excellent quality assurance and quality control tool for photogrammetric data.

ORIMA

ORIMA provides sophisticated production photogrammetry software for block triangulation and analysis. Perform production-focused aerial triangulation for analog, digital frame, and Leica Geosystems ADS40 and ADS80 imagery with outstanding intuitive graphical diagnostic tools, support for GPS/IMU corrections, self-calibration, and boresighting.

IMAGINE Defense Productivity Module (Classified Usage Only)

IMAGINE Defense Productivity Module extends the already large suite of sensors and formats provided in IMAGINE Photogrammetry with support for NTM data in TFRD and NITF formats, including AMSD metadata and provides additional defense-oriented capabilities.

Interoperable Photogrammetric Modules

PRO600 is a set of cartographic presentation tools to use within a Bentley® MicroStation® environment for large-scale digital mapping using stereo imagery, including signs, symbols, colors, line thickness, user-defined line types and forms. PRO600 also includes terrain-oriented tools for projects that require both feature and terrain data. Based on the same stereo viewing technology as the IMAGINE Photogrammetry platform, you can expect the same seamless, accurate stereo environment in PRO600.

Stereo Analyst® for ArcGIS®: Tightly integrated with ArcGIS®, Stereo Analyst for ArcGIS enables stereo collection inside your GIS environment to which you are already accustomed. IMAGINE Photogrammetry can be used to produce oriented imagery and terrain data for use in Stereo Analyst for ArcGIS. Collect features and add or update attributions, as well as update existing feature datasets with 2D to 3D feature conversion tools.

Power Portfolio	Product & Interaction
Producer Suite	Open or create your Photogrammetry project directly in ERDAS IMAGINE with the IMAGINE Photogrammetry suite.
	Enhance Imagery in ERDAS IMAGINE before or after processing your images in IMAGINE Photogrammetry.
	Import 3rd party projects into IMAGINE Photogrammetry
	Extract DTM and Point Clouds using the IMAGINE Auto DTM add-on module.
	Perform any final edits using IMAGINE Terrain Editor in a stereo viewing environment.
Provider Suite	Extend the capabilities of your project into a MicroStation environment using PRO600
	Orthorectified imagery created in IMAGINE Photogrammetry may be published to ERDAS APOLLO for managing and cataloging.
	Raster backdrops can be streamed, using the ultra-fast ECWP streaming protocol, by ERDAS APOLLO.



No need to digitize around domes when you use the pre-defined templates in ERDAS Extensions for ArcGIS. Collect a cone feature in two clicks.





Contact



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About GEOSYSTEMS

GEOSYSTEMS is a software vendor and service partner for geospatial solutions and helps public authorities, private companies and educational organizations to easily transform location-based data into actionable information. As Hexagon Geospatial platinum partner, GEOSYSTEMS offers not only leading-edge products for remote sensing, photogrammetry, GIS and data management, but also Hexagon Smart M.App solutions for easy-to-use dynamic map experiences. In addition, GEOSYSTEMS develops customized applications, implements tailor-made workflows and provides excellent trainings.

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About Hexagon

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications. Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's Geospatial division creates leading platforms, applications and solutions for visualizing, analyzing, and deriving insight from location data. By interconnecting the geospatial and operational worlds, we help customers of all sizes – from sites to cities to nations – use 5D location intelligence to solve real-world, mission-critical challenges.

From snapshots in time to real-time streams, our technology enables autonomous connected ecosystems that deliver reliable, repeatable location information. We shorten the loop from data acquisition to action, helping clarify what was, what is, what could be, what should be, and ultimately, what will be, so we can build a thriving, sustainable world.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 4.3bn USD. Learn more at hexagon.com and follow us @HexagonAB.