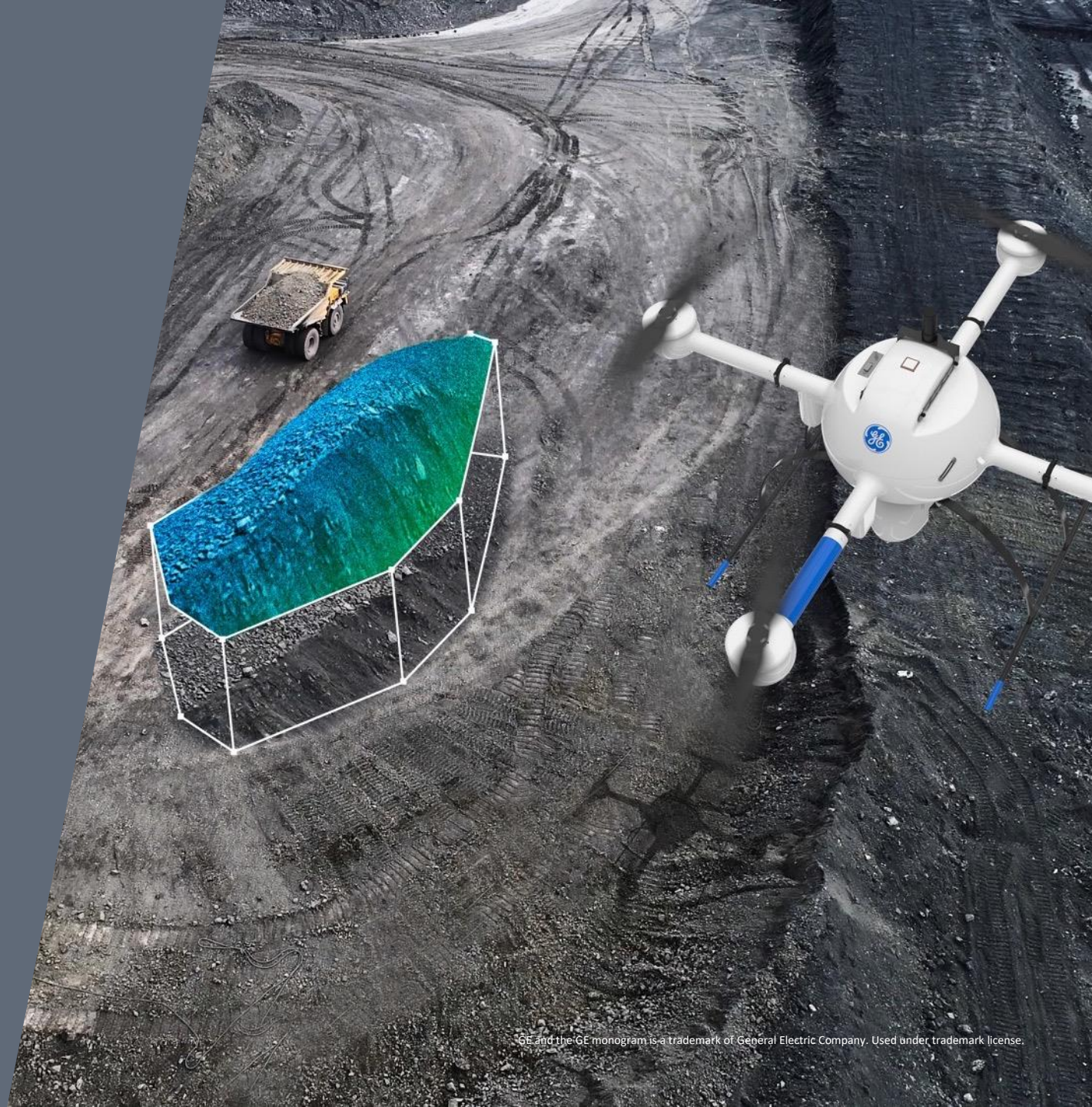
PUTTING MICRODRONES TO WORK FOR YOU.

General Presentation

Updated Feb 2022



LET'S CREATE THE FUTURE TOGETHER.

It all starts with one idea. One idea from one person who dares to rethink the way their company does what they do.

Unmanned aerial vehicles have inspired many to rethink processes, recreate their offerings, and redefine their companies and industries.

Innovation is about making things better and Microdrones is at the forefront, partnering with companies to make their work safer, more profitable, more efficient, more accurate, more effective – more *amazing.*

INDUSTRY EXPERTS

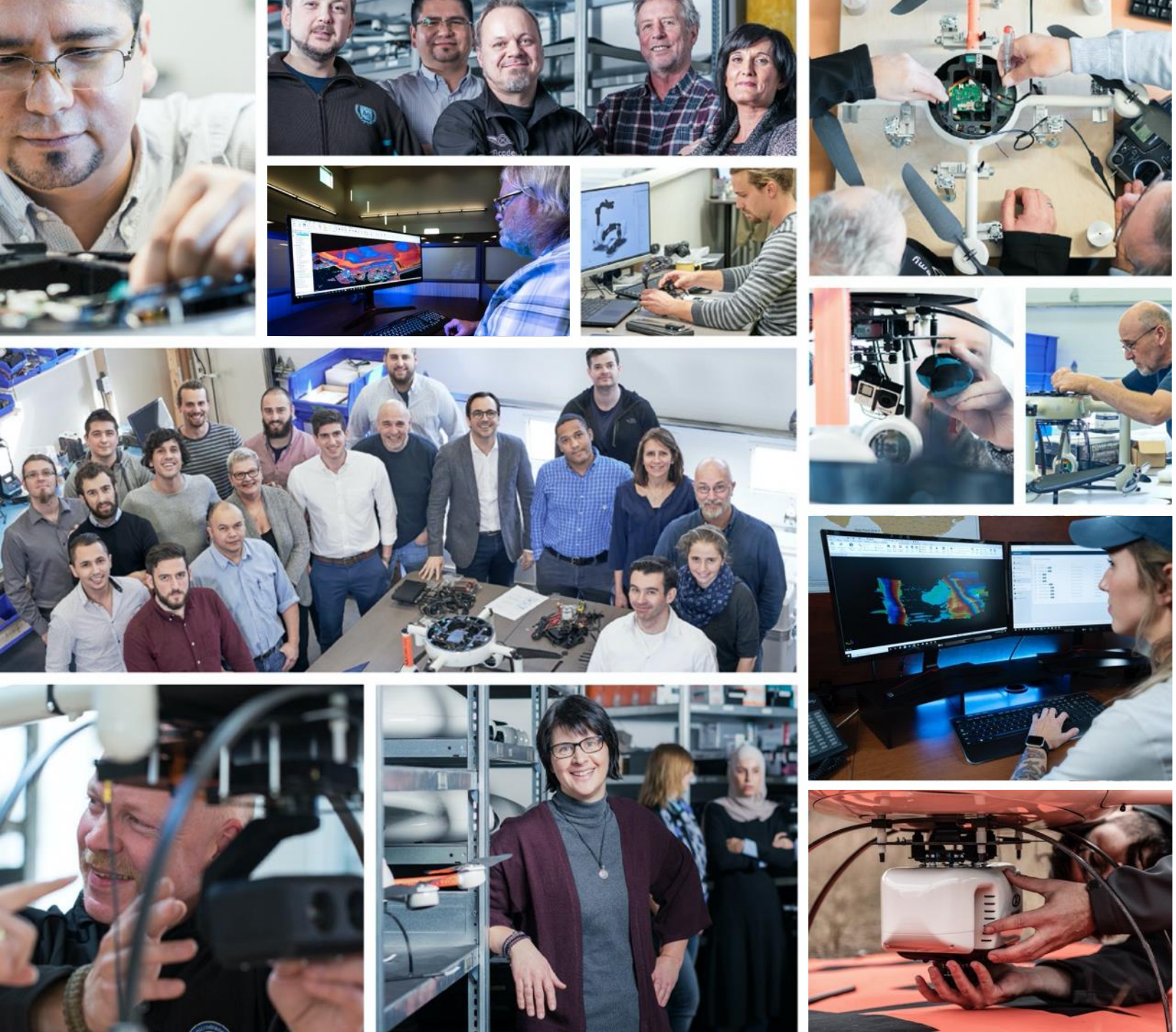
MORE THAN JUST A DRONE COMPANY

Sure we make powerful drone survey equipment, but there's much more to a Microdrones integrated system and that starts with your needs.

INDUSTRY EXPERTS

In order to qualify as a serious tool, a drone must be adapted and integrated with sensors and geospatial hardware. Industries are being revolutionized, not by drones, but by smart integration of drones with sensors that take advantage of a drone's ability to smoothly collect data from high above the earth.

We aim to provide fully integrated solutions to our customers that include: a drone, sensors, software, workflow, training and ongoing support.



INTRODUCING THE MOST INNOVATIVE TEAM IN THE UAV INDUSTRY

Microdrones products are of the highest quality in the world – and this is because we employ the world's greatest team.

Our people are passionate creators, forward thinkers, and driven to change the world for the better. They come from all over the globe but share a common vision of making great contributions to the progress of technology.

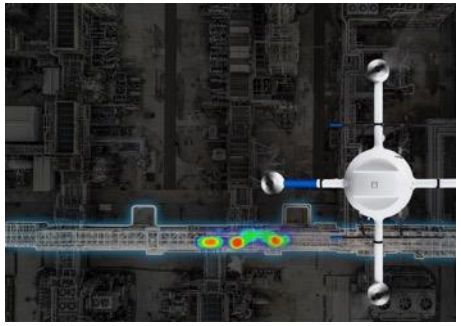
PROFESSIONAL DRONE SURVEY EQUIPMENT AND SOFTWARE FOR SURVEYING, MAPPING, GIS AND DIGITAL TWIN CREATION

Aerial surveying is not just about the aircraft. It’s about total UAV solutions, complete with all the tools geospatial pros need to perform jobs accurately, efficiently, and safely.

Our integrated systems are designed for quick learning and easy use, so you can get your UAV services off the ground quickly.

DRONE SURVEY AND INSPECTION SYSTEMS FROM MICRODRONES

Power lines. Cell towers. Railways. All of these and so many other types of industrial inspection are made easier, safer, and more efficient with Microdrones unmanned aerial systems.



THE INDUSTRY'S BEST DRONES FOR LAND DEVELOPMENT AND CONSTRUCTION

Offering everything construction companies need to get started, mdMapper and mdLiDAR systems make it easy to:

- Create accurate 2D and 3D data, maps, and models.
- Conduct surveys – before, during, and after construction.
- Easily provide more accurate project estimates.
- Efficiently gain and share real-time project overviews more effectively monitor progress.
- Inspect structures and job sites quickly, safely, and accurately.
- Track volumes and stockpiles.
- Precisely map roads, canals, pipelines, and other linear infrastructure in one line of flight with no ground control points.
- Reduce project waste.

THE AERIAL ADVANTAGE FOR AGRICULTURE

Microdrones unmanned aerial vehicles are empowering farmers and agronomists across the globe by equipping them with the information they need to identify potential issues and mitigate loss.

Our drones offer farmers the longest flight times on the market and resilience in harsh weather. The mdCockpit app simplifies flight planning, monitoring, control, and analysis – and allows you to survey the same field the same way as many times as you wish.

Microdrones modular payloads make it easy to swap out to perform a wider variety of applications. Agriculture pros who use options like multi-spectral imaging and thermal mapping have experienced great success in improving yields – this is how Microdrones UAVs pay for themselves.

DRONES FOR MINING: QUICK DEPLOYMENT. EXTREME EFFICIENCY. COST SAVINGS. EASE.

Microdrones UAVs are taking the global mining industry by storm.

Less expensive than the helicopters traditionally used by the industry to gain an aerial perspective, drones are providing mining companies with mapping abilities that provide better results and drastically improved flexibility for a fraction of the cost.

Many Microdrones mining customers use our systems to survey mine progress multiple times per day. The mdCockpit app makes it easy to plan, monitor, control and repeat missions and flight paths.

DRONES FOR SCIENCE AND ACADEMIC RESEARCH

Microdrones is honored to partner with researchers around the globe who use our drones to advance human knowledge as they seek solutions to the world's greatest problems.

Microdrones is the trusted UAV of researchers for many reasons, but the two most important are flexibility and performance.

ALWAYS KEEP IN MIND WHAT YOU ARE TRYING TO DO

Are you trying to:

- Survey land for construction projects?
- Determine volume of material in an open pit mine?
- Calculate surface run-off?
- Detect problems with crop health?
- Minimize waste in administering crop spraying?
- Inspect structures for wear and damage?

BENEFITS OF THE MICRODRONES AIRCRAFT

ROBUST HOUSING AND COMPONENTS

GNSS RECEIVER

A PLUS FOR EFFICIENCY

RELIABLE MOTORS FOR MINIMUM DOWNTIME

REMOTE ID ENABLED

LED LIGHT FOR SAFETY COMPLIANCE

STABLE FLIGHT FOR PRECISE RESULTS

GROUND COLLISION AVOIDANCE

RAIN AND HEAT RESISTANT

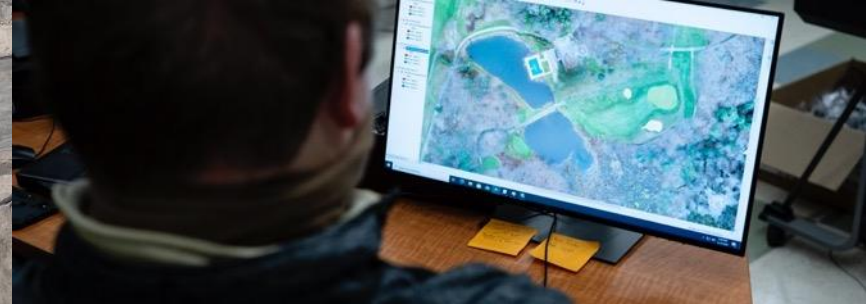
microdrones®

DON’T TALK ABOUT EQUIPMENT.

Or at least not at first.

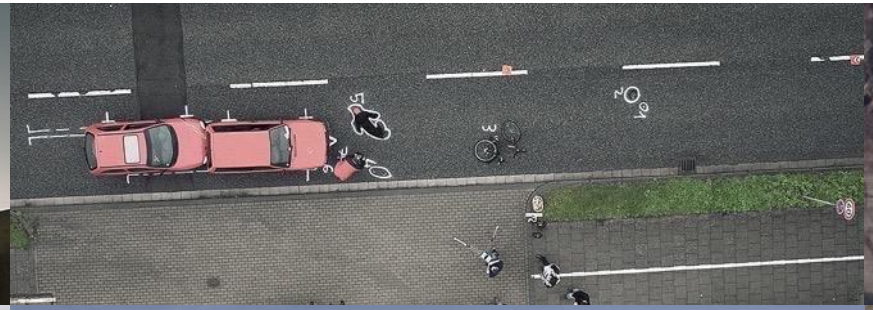
MORE THAN 1500 BUSINESSES WORLDWIDE TRUST MICRODRONES®

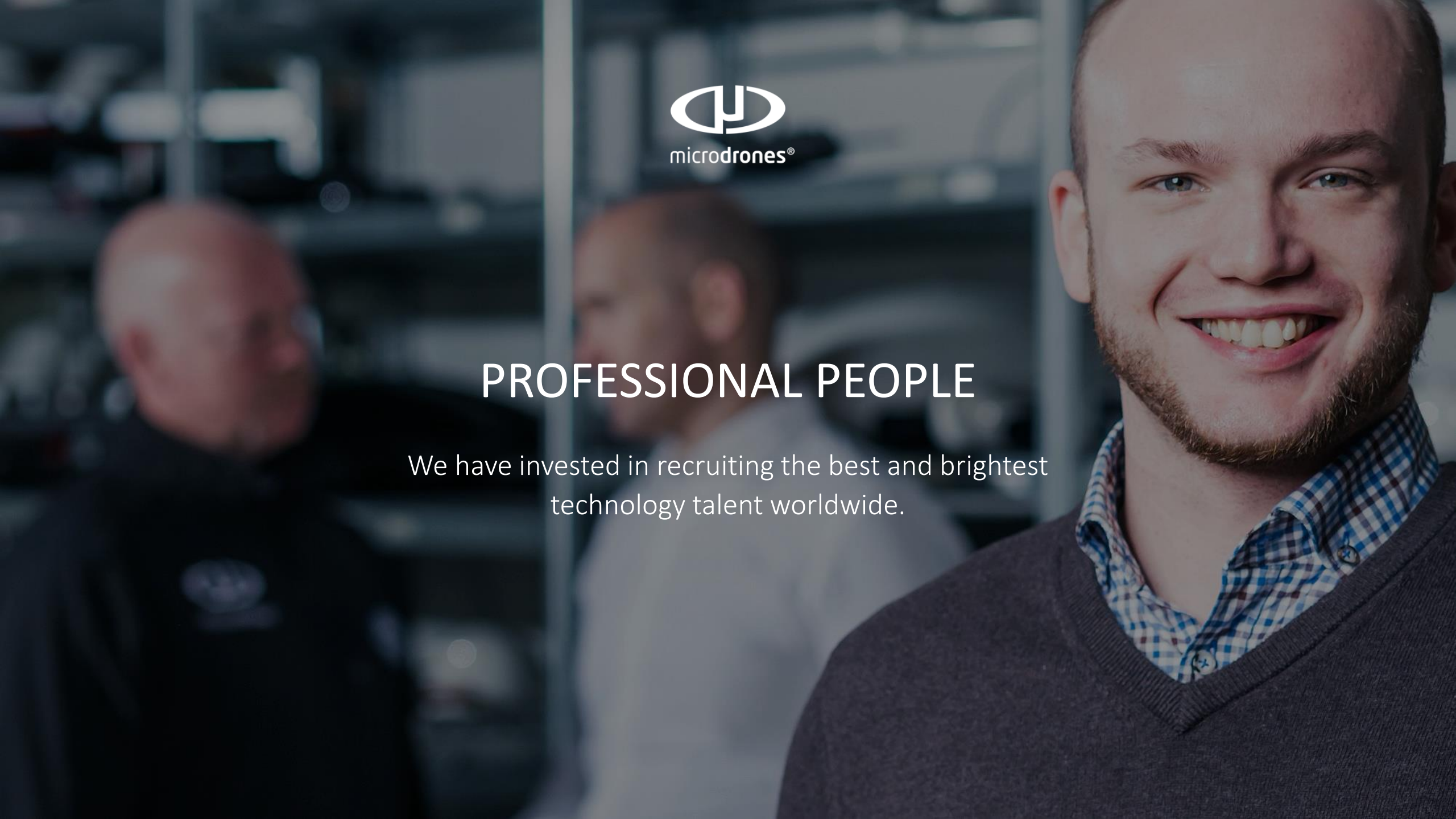
Since 2005, our passionate team of aircraft engineers, software developers and payload integration experts have lead the market for professional drone applications.



MADE TO DELIVER:
RELIABLE TOOLS FOR TOUGH JOBS

Surveying, land development, infrastructure inspection, environmental monitoring, precision agriculture, and digital twin creation are done more efficiently and effectively with the help of Microdrones systems and software.



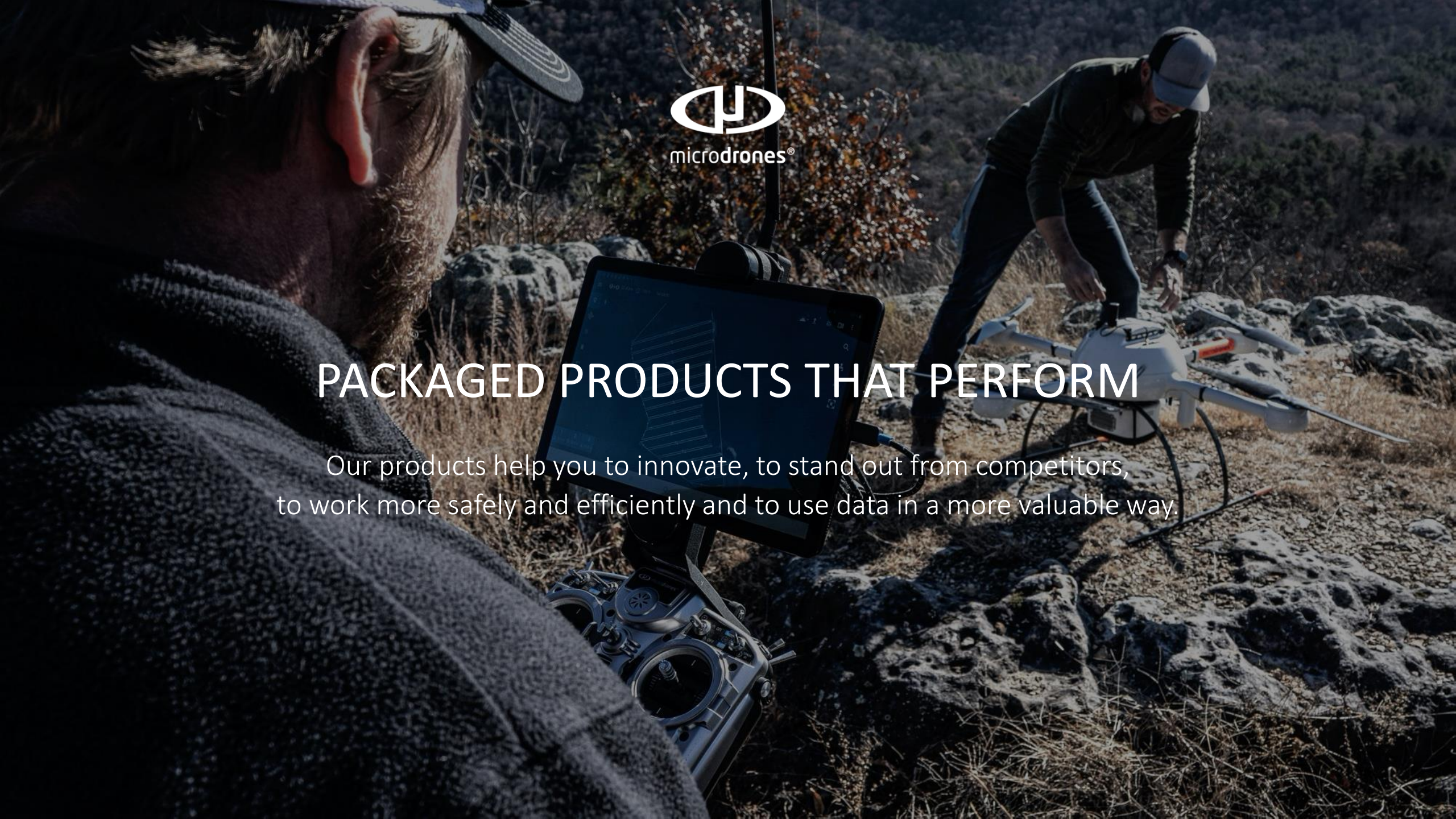


PROFESSIONAL PEOPLE

We have invested in recruiting the best and brightest technology talent worldwide.

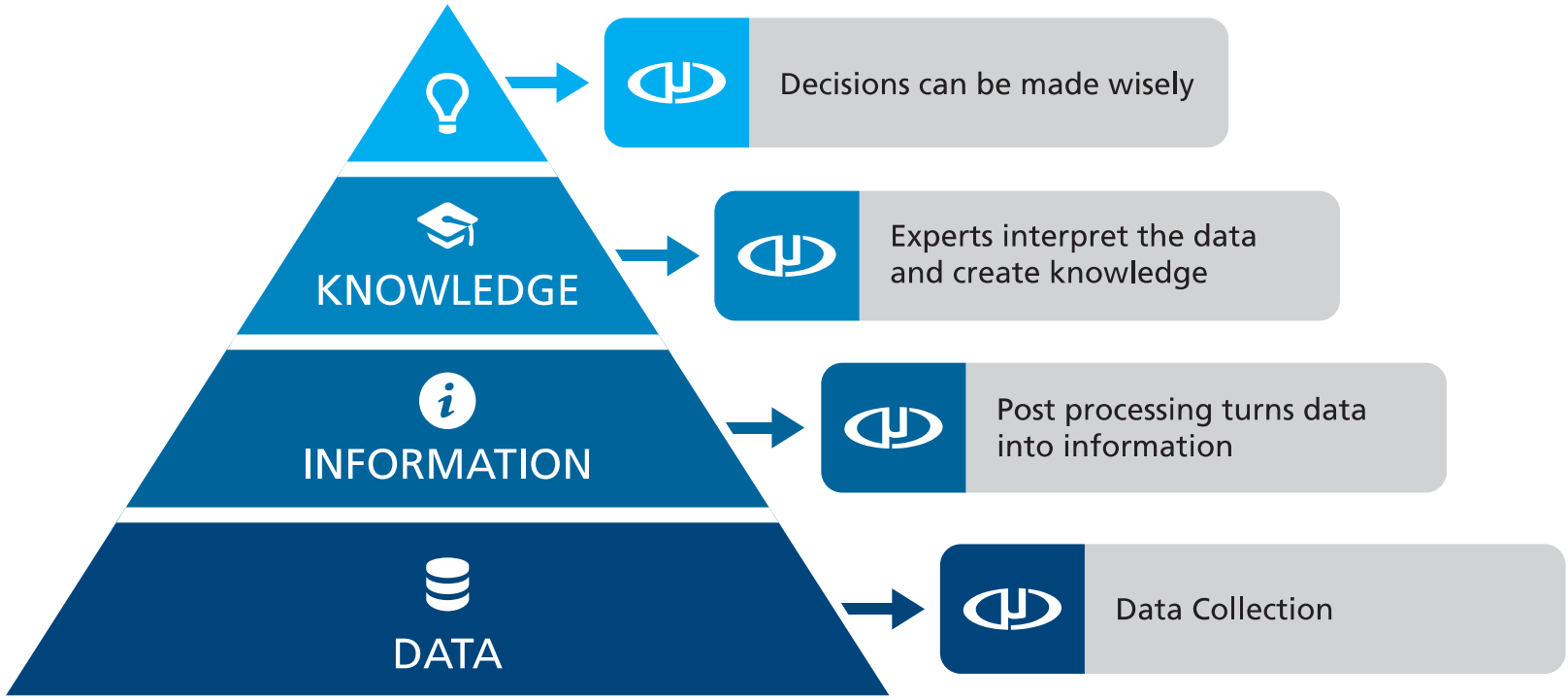
GPS: GLOBALLY POSITIONED FOR SUCCESS

Microdrones has strategically built an international footprint to efficiently distribute products while providing you the support you need in your market.



PACKAGED PRODUCTS THAT PERFORM

Our products help you to innovate, to stand out from competitors,
to work more safely and efficiently and to use data in a more valuable way.


KNOWLEDGE
INFORMATION
DATA
Decisions can be made wisely
Experts interpret the data and create knowledge
Post processing turns data into information
Data Collection

REMEMBER THE PHRASE,
“GARBAGE IN, GARBAGE OUT!”

If you base your decision-making on inaccurate data, you (or your clients) will make bad choices and have bad results.

mdSOLUTIONS

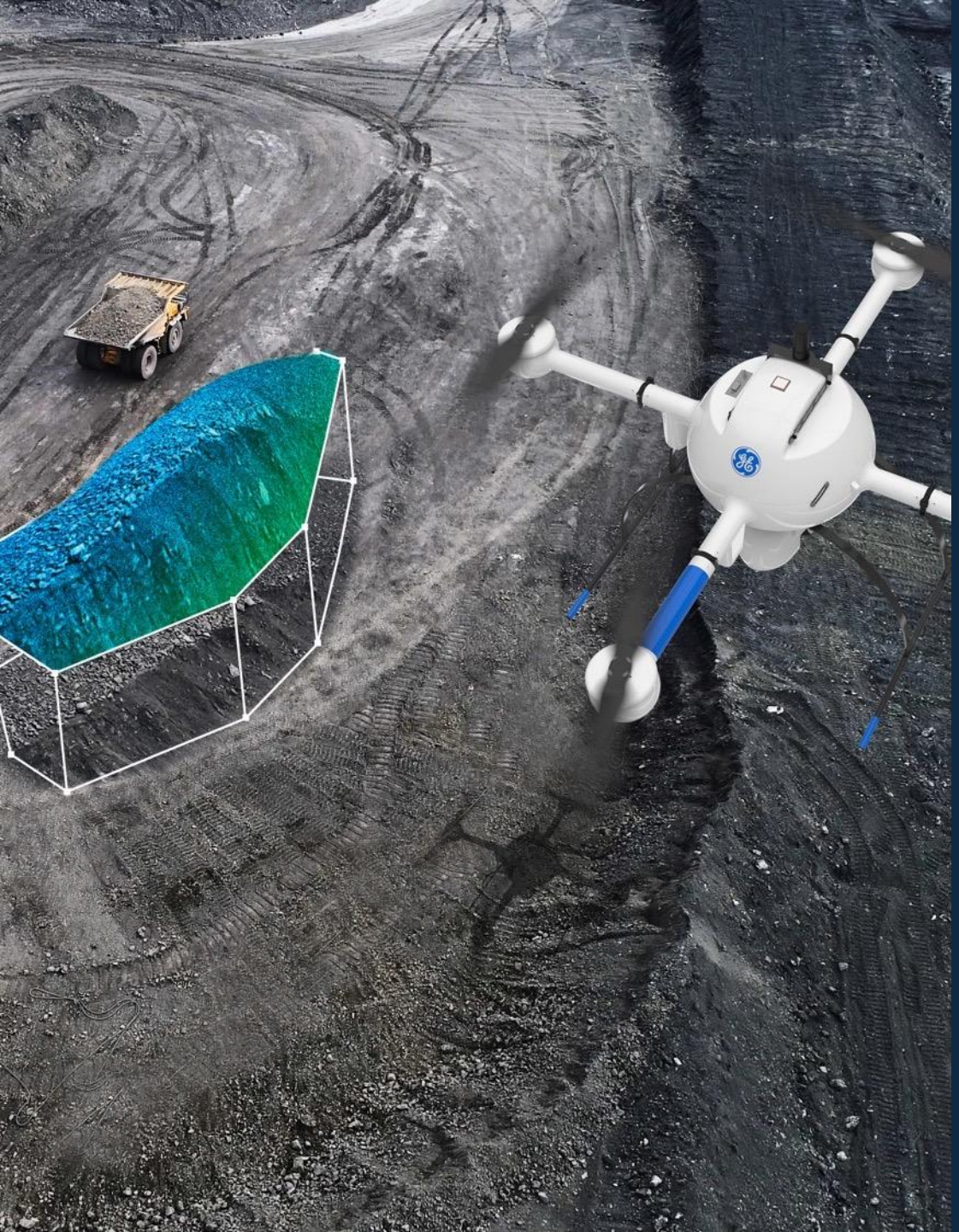
WORK SMARTER WITH MICRODRONES INTEGRATED SYSTEMS

Want to create powerful data deliverables like 3D pointclouds or orthomosaics? Microdrones Integrated Systems help you to collect data efficiently and safely while cutting costs, saving time, and converting data into useful information.

We currently offer two families of solutions that will improve your workflow for LiDAR, and photogrammetry

mdLiDAR

mdMAPPER



microdrones®

TWO INDUSTRY EXPERTS.
ONE SIMPLE CHOICE.

Microdrones® and GE, have joined forces to offer you a full line of workhorse industrial equipment.

All systems are fully integrated and include the aircraft, sensors, workflow, service and support to help you work smarter.

mdLiDAR
1000LR

GE industrial drone line

LONGER RANGE LIDAR & 26MP CAMERA ALL IN ONE, TO COVER MORE GROUND

mdLiDAR1000LR means longer range. You'll cover more ground from above. This translates to more efficiency than ever - the survey equipment, software, workflow, training and support that you need to be productive in the field.

SURVEY GRADE DRONE LASER SCANNING

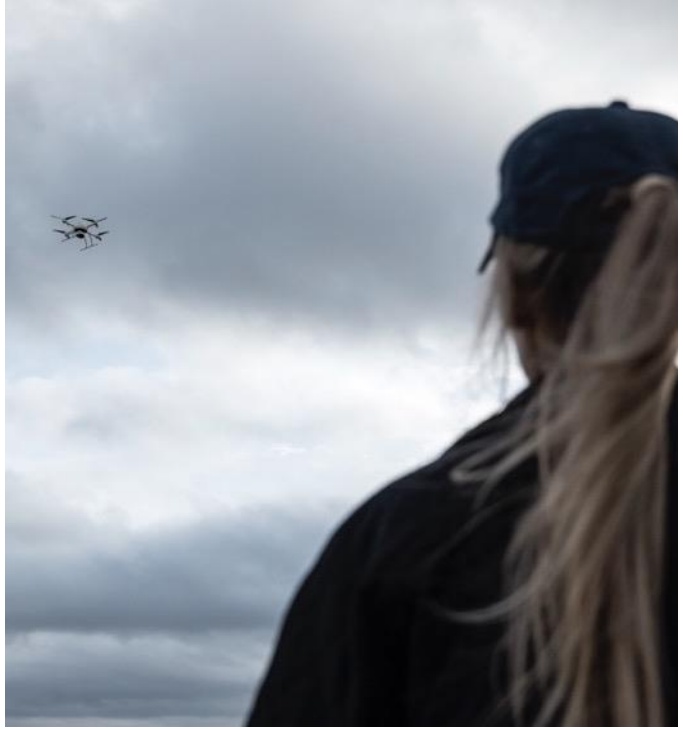
By combining our robust and field proven md4-1000 airframe, with a fully integrated high-resolution LiDAR & camera payload, you can capture ultra dense LiDAR data quickly and safely in the field, and then turn it into a 3D point cloud back at the office or on your laptop.

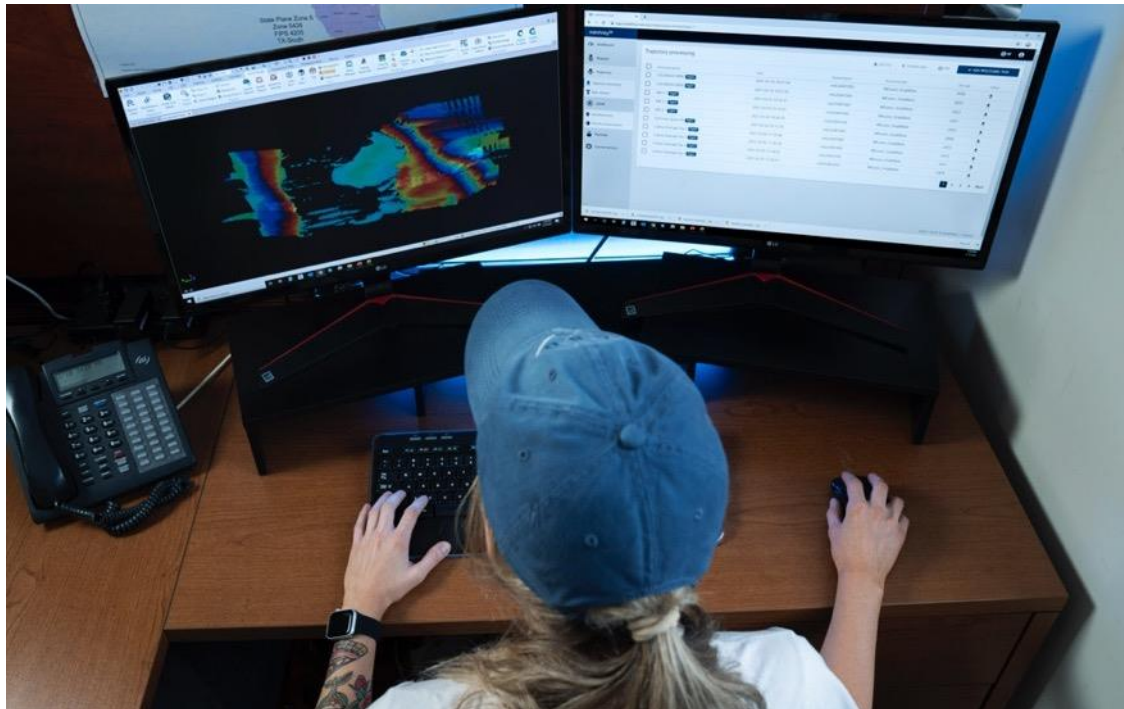
mdLiDAR
1000LR

LiDAR + mdaaS + EASY TO USE mdInfinity SOFTWARE = EXTREME GEOSPATIAL PRODUCTIVITY, NOW IN HIGH RESOLUTION

Microdrones has developed an end-to-end LiDAR solution combining a drone, a LiDAR payload, a fully integrated LiDAR processing and photogrammetry software workflow, and world class support to consistently provide quality deliverables.

mdLiDAR1000LR is a fully integrated system for producing 3D point clouds optimized for land surveying, construction, oil & gas and mining applications.





mdLiDAR 1000LR

WHY SHOULD YOU INVEST IN DRONE BASED LiDAR?

The mdLiDAR1000LR can help streamline your current workflow to become more efficient, while helping you to complete more projects.

EASY END-TO-END WORKFLOW:

mdLiDAR 1000LR

- Simple mission planning using mdCockpit
- User selects flying height, drone speed and LiDAR strip overlap

- Fully automated mission execution, realtime monitoring, and flight control using mdCockpit

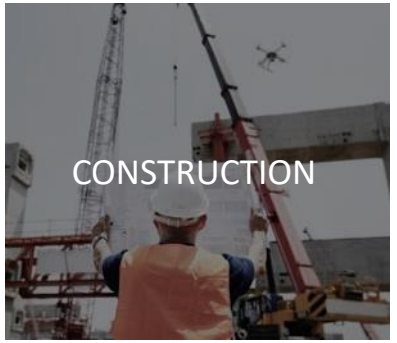
- Thorough georeferencing data processing using the Applanix APX-15 UAV DG and mdInfinity Software
- Automated final point cloud processing using mdInfinity processing software

- Final point cloud in standard ASPRS LAS format, View your deliverable in mdInfinity software, or export to use within any GIS or CAD software environment that you currently use

mdLiDAR 1000LR

WHAT CAN YOU DO WITH IT?

mdLiDAR1000LR is a versatile package that can be used for a wide range of applications. Some of the most common uses are:



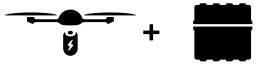
SURVEY EQUIPMENT

mdLiDAR 1000LR

PLATFORM

md4-1000

md4-1000



Charger, Flight Battery & Rugged Carrying Case

Integrated Cooling Covers

Mag-less Navigation

LED Light Rings

COMMUNICATIONS

Encrypted Digital Data Link

mdRC

Extended Communication Range Operation

Multiple Tablet Control

Remote ID Enabled

NDAA-Compliant Options

SURVEY EQUIPMENT

mdLiDAR 1000LR

PAYLOAD

Fully Integrated High Resolution LiDAR & Camera

Applanix APX-15 UAV DG

Trimble POWERED

SURVEY EQUIPMENT SOFTWARE

mdCockpit Tablet Software

Tap & Fly

mdInfinity | mdaaS | DG ENABLED

DATA PROCESSING MODULES

mdLiDAR 1000LR

mdINFINITY IS A POWERFUL ECOSYSTEM THAT WILL ENABLE YOU TO QUICKLY AND EFFICIENTLY PROCESS GEOSPATIAL DATA, WITH CONVENIENT PAYMENT OPTIONS.

Available Data Processing Modules:

- Trajectory processing
- Georeferencing
- Boresight calibration
- Strip adjustment
- Precision enhancement
- Point Cloud Direct Colorization
- FORMap
- Ground Classification

mdInfinity is available in online and desktop versions.

TECHNICAL SPECS

mdLiDAR 1000LR

SOLUTION COMPONENTS

Platform
md4-1000

Payload
- LiDAR Sensor: Velodyne PUCK VLP-32
- Camera Sensor: Microdrones CMOS APS-C 26MP (23.5mmx15.6mm)
- Georeferencing: APX-15 UAV

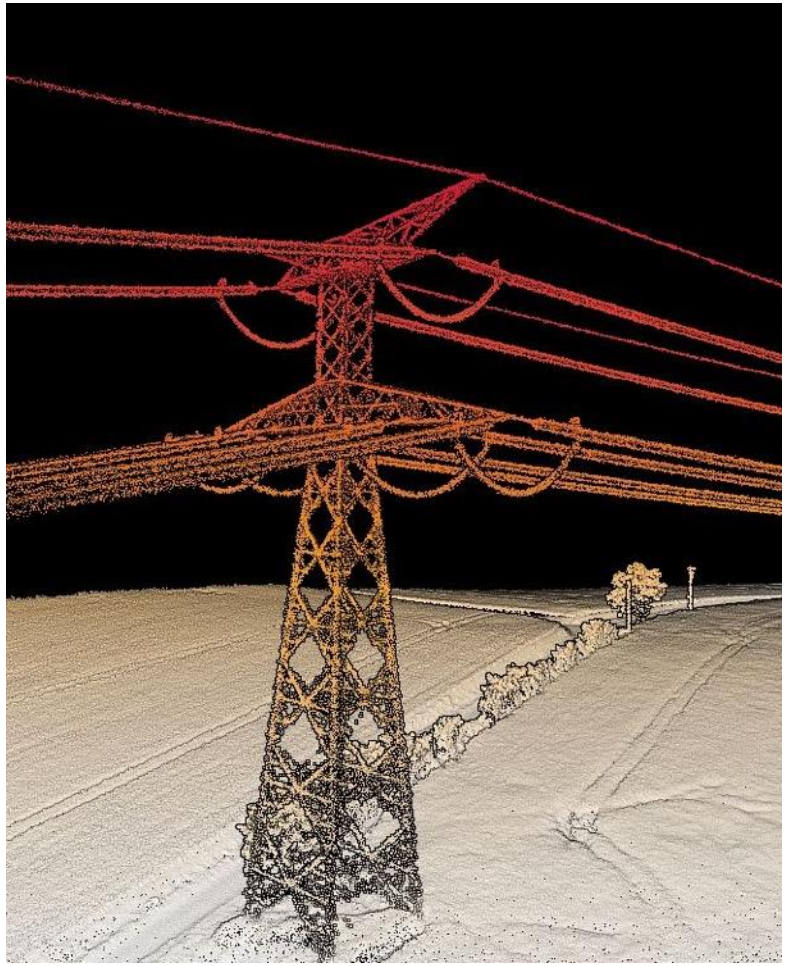
Software
- mdCockpit
- mdInfinity

TECHNICAL SPECIFICATIONS

Takeoff Weight (TOW)
6400 g

System Operational Temperature
-10 °C to 40 °C
14 °F to 104 °F

System Accuracy
- LiDAR Point Cloud:
    - 4 cm RMSE
- Photogrammetry:
    - Horizontal: 2-3 pixels
    - Vertical: 3-5 pixels



TECHNICAL SPECS

Flight Altitude AGL [1,2] (ft/m)	200/60	300/90	400/120
Speed (m/s)	**Covered square area at 30% sidelap (ac/ha)**		
4	94/38	116/47	126/51
6	128/52	155/63	222/90
8	158/64	235/95	297/120
Speed (m/s)	**Average Point Density in pts/m ^{2} [2,3] (square area/1 scan line)**		
4	368/313	245/208	184/156
6	245/208	163/139	123/104
8	184/156	123/104	92/78
Camera GSD (mm)	9	13.5	18
Number of Laser Returns	2	2	2
Swath Width (ft/m)	400/120	600/180	800/240

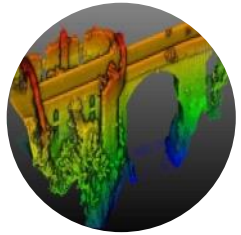
[1] Flight Altitude Above Ground Level (AGL)
[2] Coverage estimated for approximately 25 minutes of flight time
[3] Average density calculated with 30% overlap on 5 lines, average density will depend on surface type.

mdLiDAR
1000HR

GE industrial drone line

PROVEN INDUSTRY LEADING DRONE LIDAR SURVEY EQUIPMENT AND SOFTWARE

mdLiDAR1000HR: HR means high resolution pointclouds and increased coverage is made easier and more accessible than ever.



SURVEY GRADE DRONE LASER SCANNING

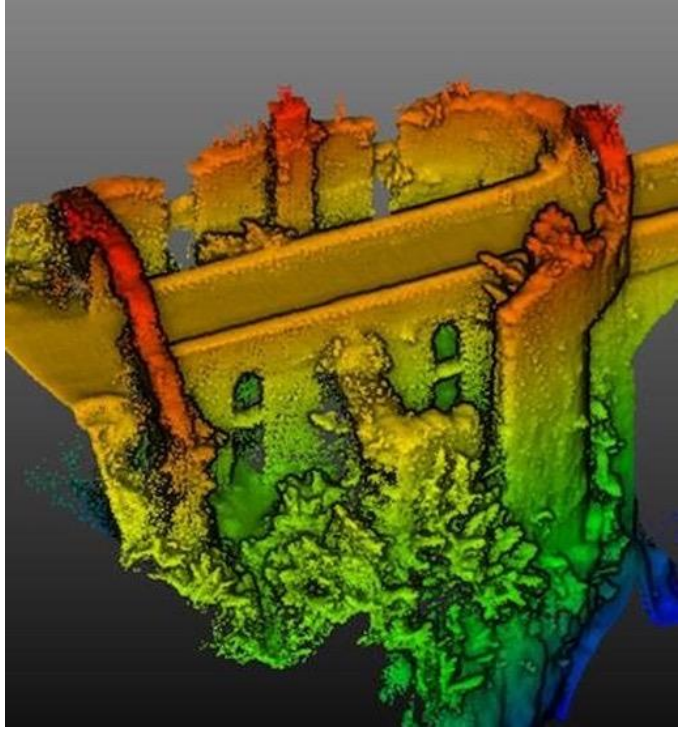
By combining our robust and field proven md4-1000 aircraft, with a fully integrated high-resolution LiDAR & camera payload, you can capture ultra dense LiDAR data quickly and safely in the field, and then turn it into a 3D point cloud back at the office or on your laptop.

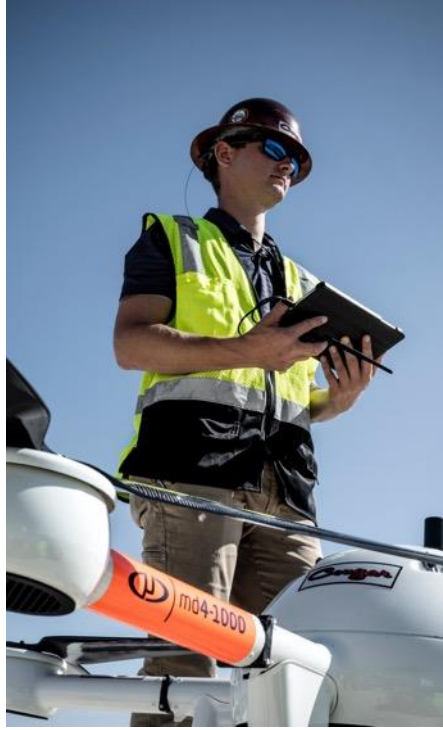
mdLiDAR
1000HR

BRING HIGH RESOLUTION LASER FOCUS TO YOUR DRONE LiDAR SURVEYING PROJECTS

Microdrones has developed an end-to-end LiDAR solution combining a drone, a LiDAR payload, a fully integrated LiDAR processing and photogrammetry software workflow, and world class support to consistently provide quality deliverables.

mdLiDAR1000HR is a fully integrated system for producing 3D point clouds optimized for land surveying, construction, oil & gas and mining applications.





mdLiDAR 1000HR

WHY SHOULD YOU INVEST IN DRONE BASED LiDAR?

In areas of high vegetation do you spend hours cutting line to topo the site? This system can help streamline your current workflows to become more efficient, while helping you to complete more projects.

EASY END-TO-END WORKFLOW:

- Simple mission planning using mdCockpit
- User selects flying height, drone speed and LiDAR strip overlap

- Fully automated mission execution, realtime monitoring, and flight control using mdCockpit

- Thorough georeferencing data processing using the Applanix APX-15 UAV DG and mdInfinity Software
- Automated final point cloud processing using mdInfinity processing software

- Final point cloud in standard ASPRS LAS format, View your deliverable in mdInfinity software, or export to use within any GIS or CAD software environment that you currently use

PROCESS

ACCURACY ASSESSMENT

Provided by Microdrones Geomatics department

- Test Area in Siegen, Germany
- 16 Check Points
- Varrying surfaces

mdLiDAR 1000HR

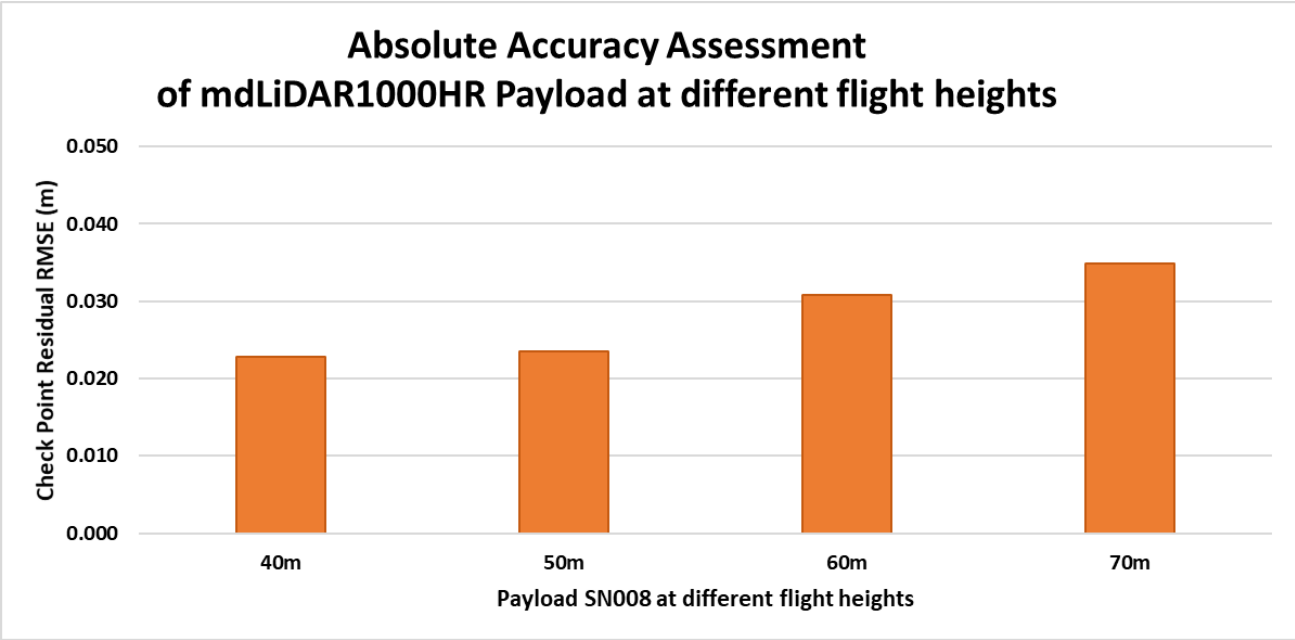
GCP ID	Horizontal Accuracy (m)	Height Accuracy (m)
G1	0.009	0.009
G2	0.009	0.008
G3	0.009	0.009
G4	0.009	0.009
G5	0.009	0.008
G6	0.008	0.008
G7	0.008	0.008
G8	0.008	0.008
G9	0.008	0.006
G10	0.008	0.006
R11	0.008	0.006
R12	0.009	0.009
R13	0.009	0.009
R14	0.009	0.009
R15	0.009	0.009
R16	0.008	0.006

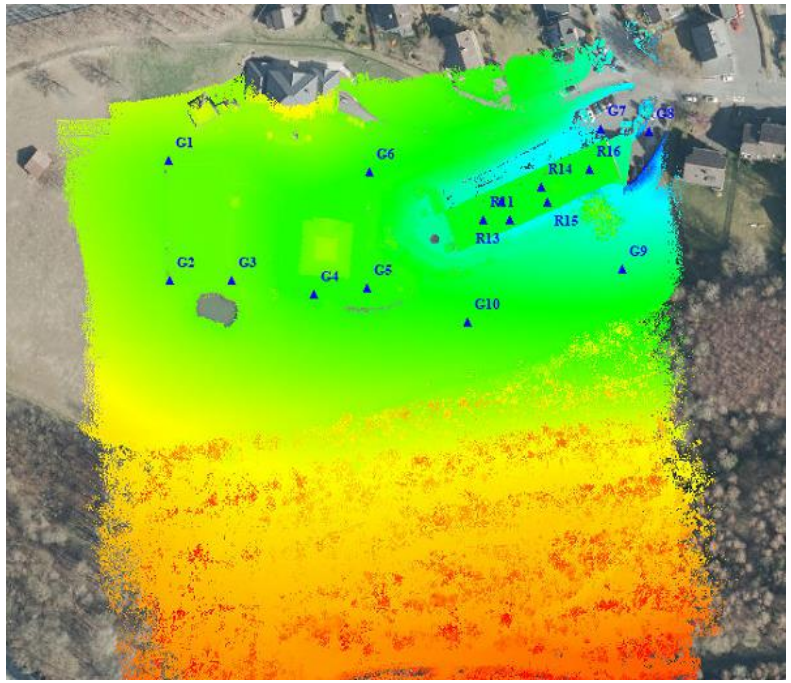
PROCESS

ACCURACY ASSESSMENT

Provided by Microdrones Geomatics department

- Test Area in Siegen, Germany
- Vertical accuracy 2cm-4cm RMSE





Processed through mdInfinty and evaluated with Global Mapper

VISUALIZE

POINT CLOUD DATA

Provided by Microdrones Geomatics department

mdLiDAR 1000HR

Flight parameters

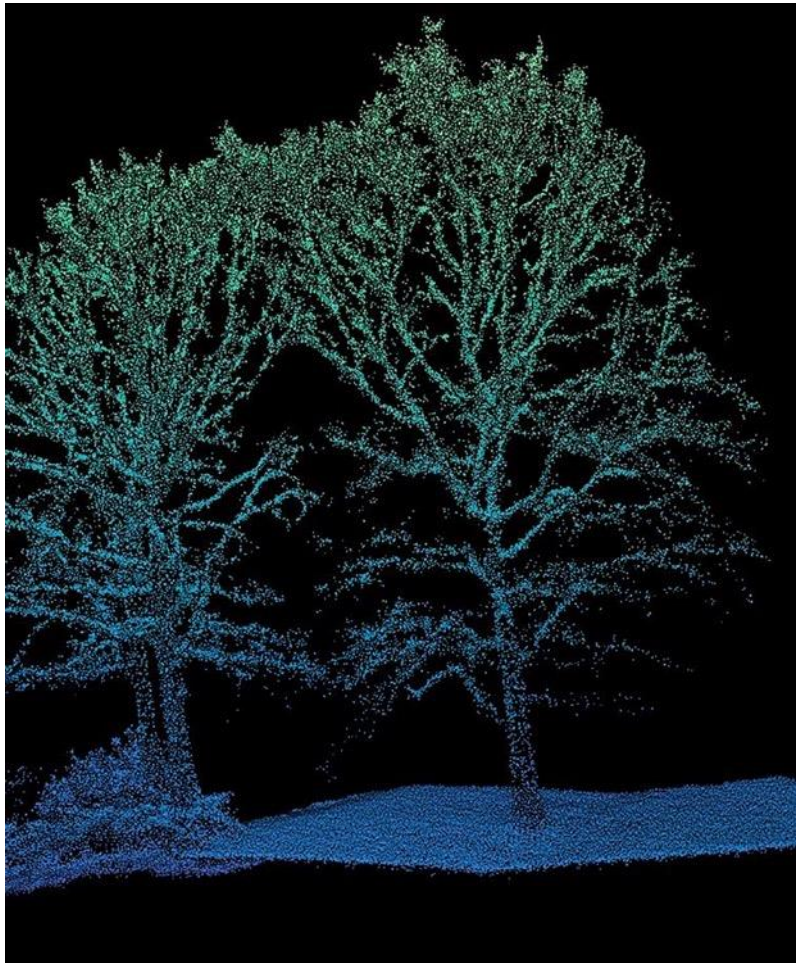
- 40m AGL
- 4 m/s
- 60% sidelap

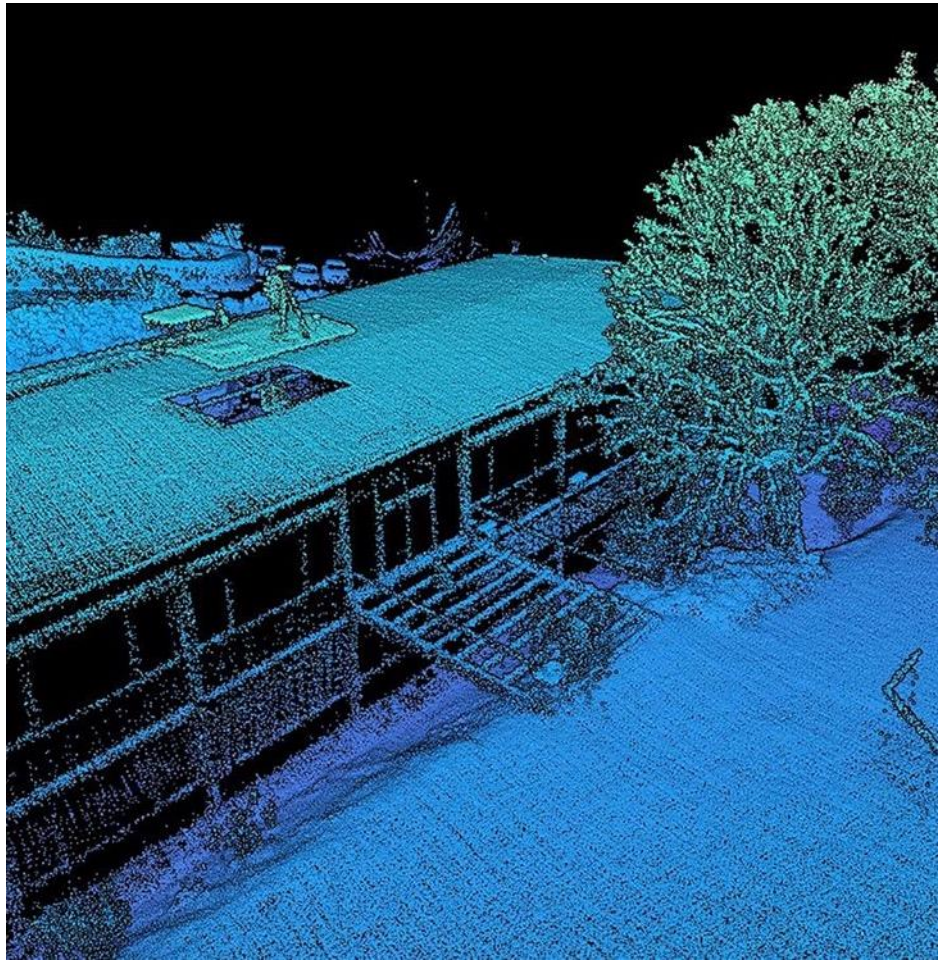
Single strip point density

- 330 pts/m²

Average point density

- 680 pts/m²





mdLiDAR 1000HR

WHAT CAN YOU DO WITH IT?

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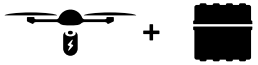
SURVEY EQUIPMENT

PLATFORM

md4-1000

md4-1000



Charger, Flight Battery & Rugged Carrying Case

Integrated Cooling Covers

Mag-less Navigation

LED Light Rings

COMMUNICATIONS

Encrypted Digital Data Link

mdRC

Extended Communication Range Operation

Multiple Tablet Control

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NDAA-Compliant Options

SURVEY EQUIPMENT

mdLiDAR 1000HR

PAYLOAD

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Applanix APX-15 UAV DG

SURVEY EQUIPMENT SOFTWARE

mdCockpit Tablet Software

Tap & Fly

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DATA PROCESSING MODULES

mdINFINITY IS A POWERFUL ECOSYSTEM THAT WILL ENABLE YOU TO QUICKLY AND EFFICIENTLY PROCESS GEOSPATIAL DATA, WITH CONVENIENT PAYMENT OPTIONS.

Available Data Processing Modules:

- Trajectory processing
- Georeferencing
- Boresight calibration
- Strip adjustment
- Precision enhancement
- Point Cloud Direct Colorization
- FORMap
- Ground Classification

mdInfinity is available in online and desktop versions.

TECHNICAL SPECS

SOLUTION COMPONENTS

Platform
md4-1000

Payload
- LiDAR Sensor: Velodyne PUCK VLP-16
- Camera Sensor: SONY IMX264
- Georeferencing: APX-15 UAV

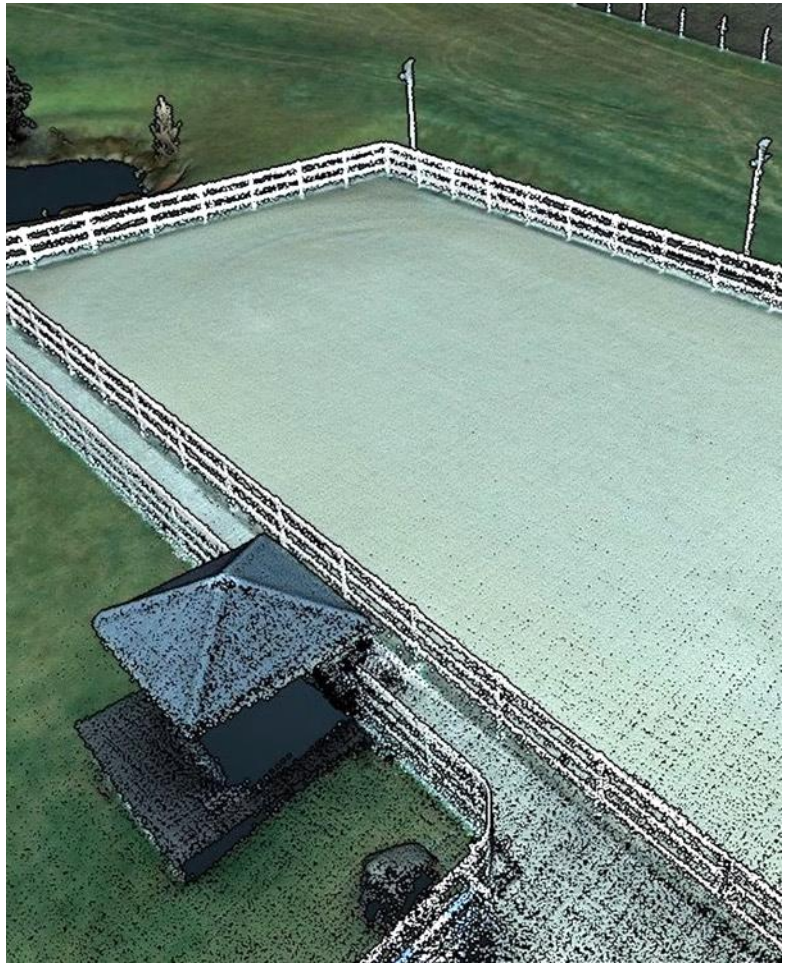
Software
- mdCockpit
- mdInfinity

TECHNICAL SPECIFICATIONS

Takeoff Weight (TOW)
6500 g

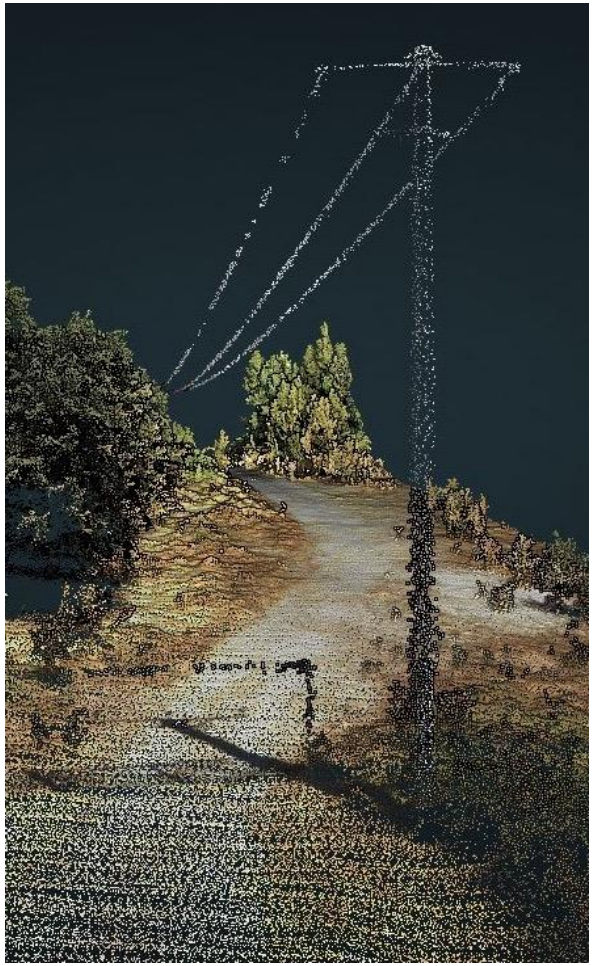
System Operational Temperature
-10 °C to 50 °C
14 °F to 122 °F

System Accuracy
- LiDAR Point Cloud:
    - 4 cm RMSE
- Photogrammetry:
    - Horizontal: 1-2 pixels
    - Vertical: 3-4 pixels



TECHNICAL SPECS

Flight Altitude AGL [1,2] (ft/m)	100/30	150/45	200/60
Speed (m/s)	**Covered square area at 30% sidelap (ac/ha)**		
4	37/15	62/25	84/34
6	62/25	84/34	123/50
8	84/34	123/50	153/62
Speed (m/s)	**Average Point Density in pts/m ^{2} [2,3] (square area/1 scan line)**		
4	428/312	282/208	212/156
6	287/208	189/138	141/104
8	216/156	144/104	107/78
Camera GSD (mm)	20.7	31.1	41.4
Swath width (ft/m)	200/60	300/90	400/120
Number of Laser Returns	2	2	2



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mdMAPPER
1000DG

GE industrial drone line

mdMAPPER1000DG: VERSATILE, AFFORDABLE DRONE PHOTOGRAMMETRY SURVEY EQUIPMENT

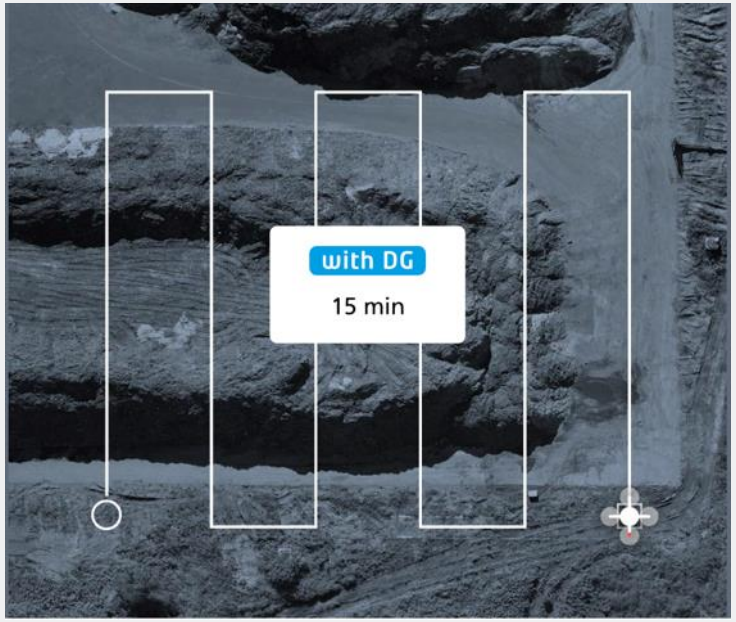
A complete UAV mapping solution that cuts cost, saves time, and pushes limits – according to the needs of your data deliverable project

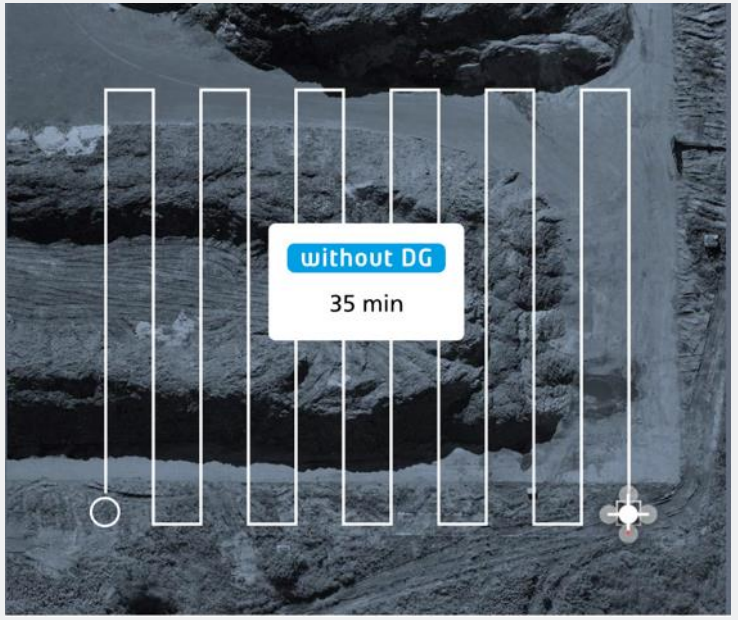
mdMAPPER
1000DG

DIRECT GEOREFERENCING WILL RISE TO THE OCCASION

With DG, you won't need to install *any* ground control points (unless you want to install 1 or 2 to check your work later for quality control). You'll collect your images and post-process in a fraction of the time. Your projects will require less people and equipment. You'll safely tackle mapping jobs in dangerous locations.

Most important, you'll deliver the best possible accuracy on projects where human safety and your reputation is on the line. Best of all, DG is selectable, AFTER data collection, as a post processing option... so you are only paying for it when your client or project needs it





mdMAPPER 1000DG

DON'T NEED DG? PROCESS WITH PPK; IT'S ALL SELECTABLE BY PROJECT NEED WITHIN mdINFINITY!

Microdrones customers asked for a workflow that could deliver excellent results with a handful of ground control points. We listened.

mdMapper1000DG fills an important niche for customers who may not be ready for DG, and are willing to set up 1 – 3 ground control points for their projects; simply post process data in PPK within the flexible mdInfinity cloud or desktop software.

And when your business, projects or services expand to require DG, you simply choose to process your data with DG in the mdInfinity suite.

WHY CHOOSE mdMAPPER1000DG?

mdMapper1000DG will help you to achieve high levels of data accuracy, cover more ground in one flight, use less people and equipment on jobs all without using ground control points.

ELIMINATES YOUR NEED TO INSTALL GCPS

while meeting the most precise data requirements.

ALLOWS YOU TO PERFORM CORRIDOR MAPPING

thanks to an on-board IMU that measures orientation angles. RTK, PPK, and conventional aerial surveying methods do not measure these angles so corridor mapping becomes a major operational and logistical challenge.

DRASTICALLY REDUCES TIME SPENT

on post-processing and data collection, thanks to an impressively decreased side lap and many other elements.

WHY CHOOSE mdMAPPER1000DG?

mdMapper1000DG will help you to achieve high levels of data accuracy, cover more ground in one flight, use less people and equipment on jobs all without using ground control points.

FURTHER IMPROVES YOUR EFFICIENCY

with industry-leading flight times and resilience against harsh environmental conditions.

REDUCES OVERLAP AND SIDELAP

with other methods, 80 x 80 is a must. With DG, you can achieve 80 x 40 overlap. Translation: it slashes the time you spend on projects.

ALLOWS YOU TO MEASURE

the 6 parameters necessary for image georeferencing, whereas conventional surveying methods (RTK and PPK) rely on *computing* all or some of these values. DG reduces time, effort, human error and cost, while improving accuracy.

WHY CHOOSE mdMAPPER1000DG?

mdMapper1000DG will help you to achieve high levels of data accuracy, cover more ground in one flight, use less people and equipment on jobs all without using ground control points.

ALLOWS YOU TO PERFORM CORRIDOR MAPPING

thanks to an on-board IMU that measures orientation angles. RTK, PPK, and conventional aerial surveying methods do not measure these angles so corridor mapping becomes a major operational and logistical challenge.

LETS YOU COMPLETE YOUR PROJECTS WITH LESS

people, time and equipment.

CAN COVER UP TO 200 AC

(80 ha) in one flight.

WHY CHOOSE mdMAPPER1000DG?

mdMapper1000DG will help you to achieve high levels of data accuracy, cover more ground in one flight, use less people and equipment on jobs all without using ground control points.

ALLOWS YOU TO CONFIDENTLY BID ON INTERNATIONAL PROJECTS.

With international projects, there are bound to be challenging unforeseen constraints that impact access. DG lets you rise above and protect your investment in the project.

LETS YOU CHECK YOUR WORK FOR QUALITY CONTROL PURPOSES,

Which isn't possible with RTK and conventional surveying methods.

mdMAPPER
1000DG

WHAT CAN YOU DO WITH IT?

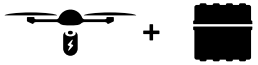
mdMapper1000DG is a versatile package that can be used for a wide range of applications. Some of the most common uses are:

SURVEY EQUIPMENT

mdMAPPER 1000DG

PLATFORM

md4-1000



Charger, Flight Battery & Rugged Carrying Case

Integrated Cooling Covers

Mag-less Navigation

LED Light Rings

COMMUNICATIONS

Encrypted Digital Data Link

mdRC

Extended Communication Range Operation

Multiple Tablet Control

Remote ID Enabled

NDAA-Compliant Options

SURVEY EQUIPMENT

mdMAPPER 1000DG

PAYLOAD

RX1R II & Nadir Mount

Applanix APX-15 External UAV DG

SURVEY EQUIPMENT SOFTWARE

mdCockpit Tablet Software

Tap & Fly

mdInfinity | mdaaS | DG ENABLED | PPK ENABLED

DATA PROCESSING MODULES

mdINFINITY IS A POWERFUL ECOSYSTEM THAT WILL ENABLE YOU TO QUICKLY AND EFFICIENTLY PROCESS GEOSPATIAL DATA, WITH CONVENIENT PAYMENT OPTIONS.

Available Data Processing Modules:

- Trajectory processing
- Georeferencing
- Boresight calibration
- Strip adjustment
- Precision enhancement
- Point Cloud Direct Colorization
- FORMap
- Ground Classification

mdInfinity is available in online and desktop versions.

TECHNICAL SPECS

mdMAPPER 1000DG

SOLUTION COMPONENTS

Platform
md4-1000

Payload
- Camera: RX1R II
- Georeferencing: APX-15 EI UAV DG

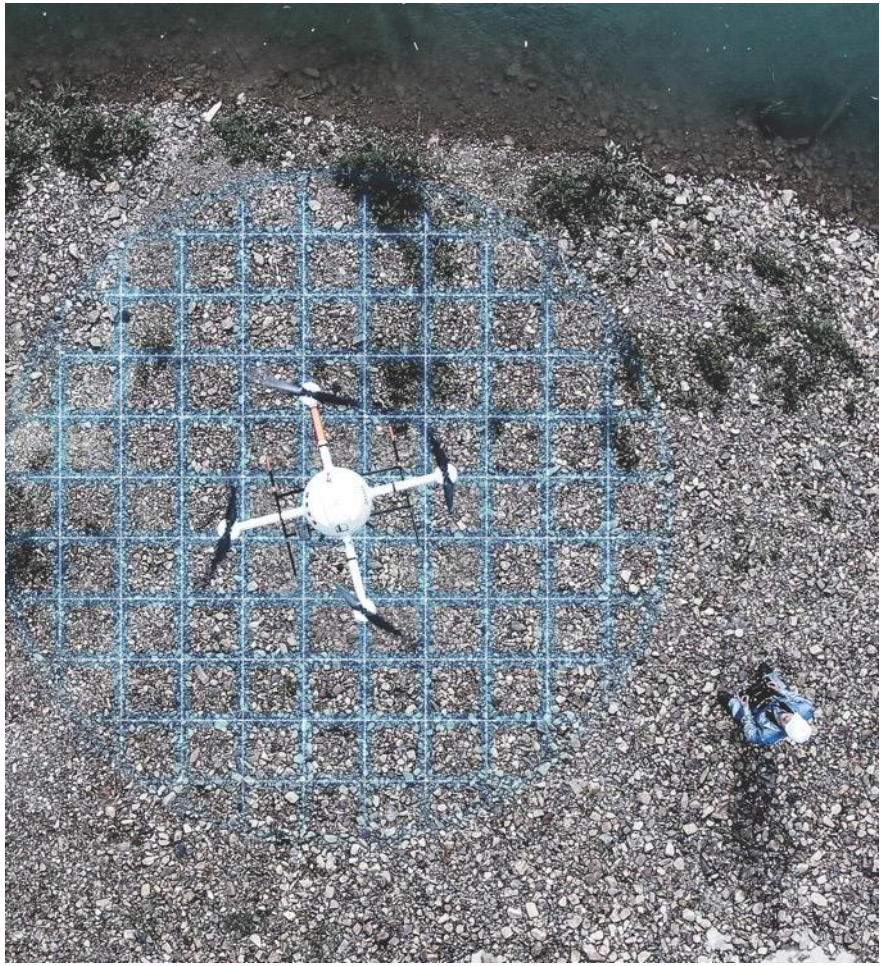
Software
- mdCockpit
- mdInfinity

TECHNICAL SPECIFICATIONS

Takeoff Weight (TOW)
5870 g

System Operational Temperature
-10 °C to 50 °C

System Accuracy
- Photogrammetry:
    - Horizontal: 2-3 pixels
    - Vertical: 3-5 pixels



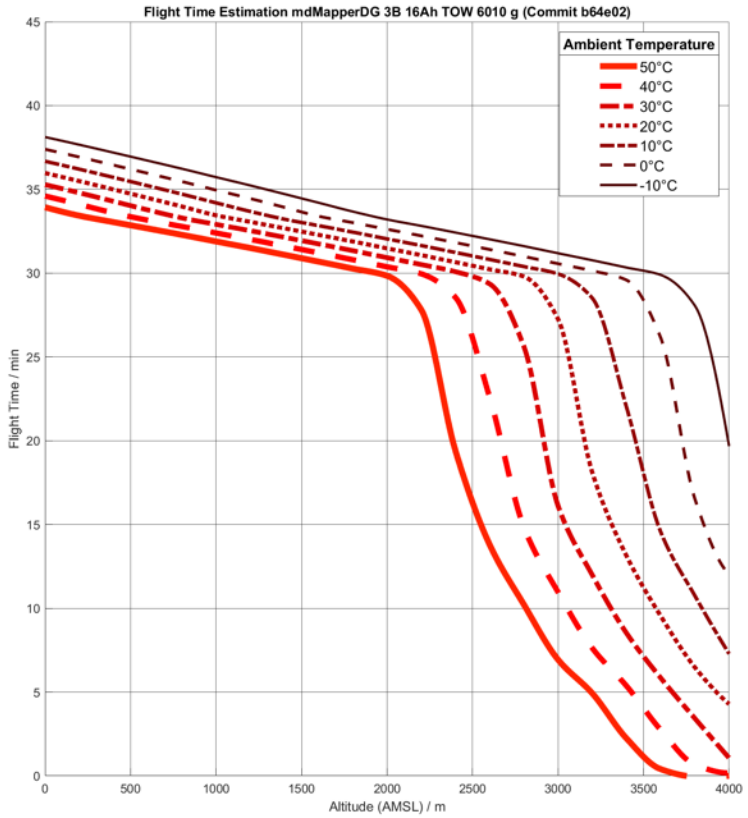
APPROXIMATE FLIGHT TIME

		mdMapper1000DG
Flight Parameters	**Area Covered (@120 m)[1]**	200 ac (80 ha)
	Camera Model[2]	Sony RX1R II
	Imagery Format	RAW + JPEG
	GSD cm/pixel (@120 m)	1.6 cm
	GCP	No
	Overlaps (front/side)	80% / 40%
Post-Processing	**Method**	Optimized aerial triangulation / GNSS-Inertial solution
	Orientation	High precision sensor (INS)
	Position	High precision sensor (GNSS)
	Accuracy	2-3 GSD (X,Y) and 3-5 GSD (Z)
Advantages		• No GCP needed • Efficient flight planning – cover greater areas • Efficient post-processing (EO apriori and less images) • Enables corridor mapping

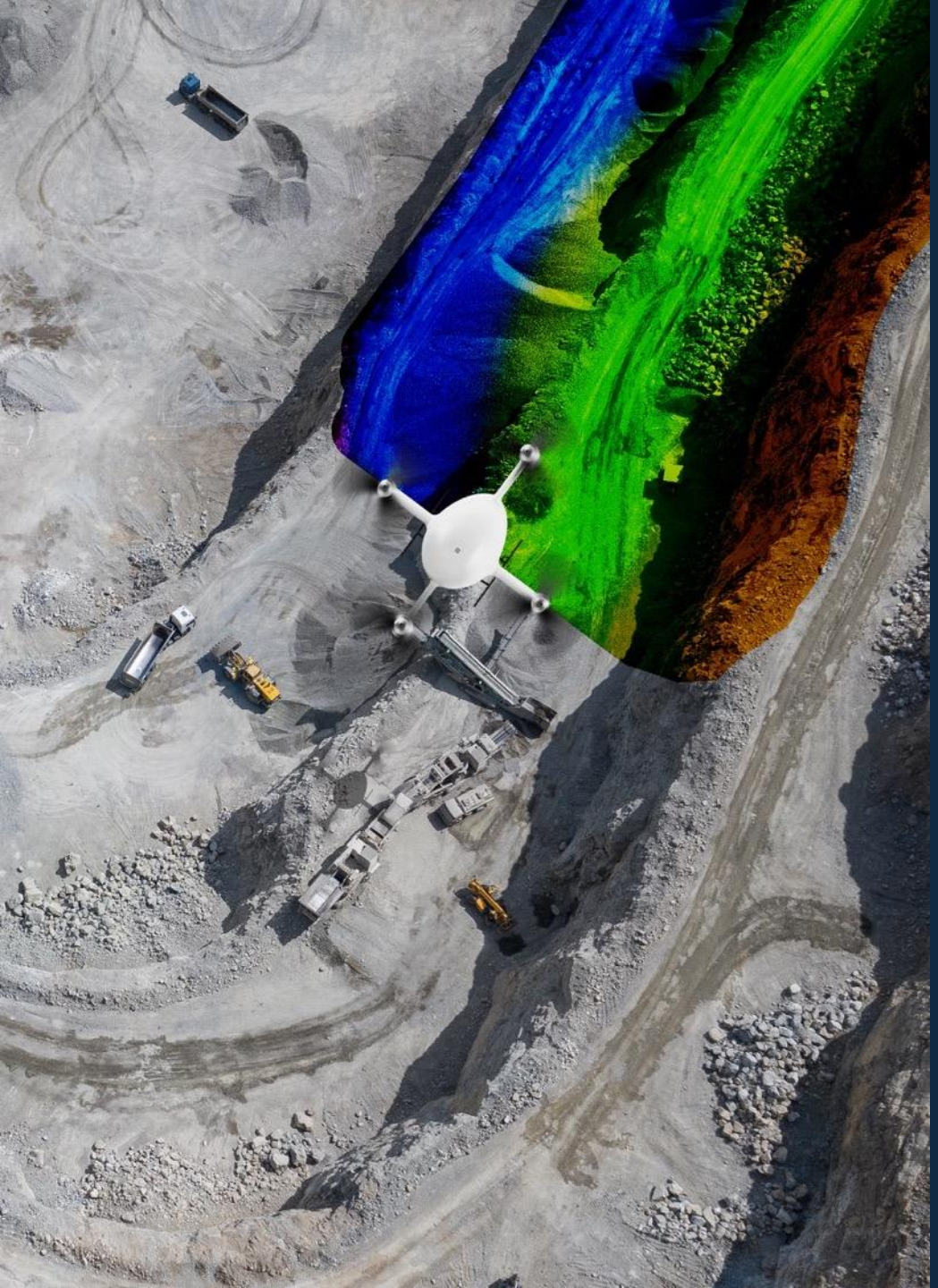
[1] Typical project benchmark comparisons based on missions completed in Canada in 2016

[2] The current camera models are listed. These may be replaced by equivalent or better cameras depending on availability from the manufacturer

APPROXIMATE FLIGHT TIME



Systems are delivered with a preflight planning tool that will provide the pilot with the low battery level recommended for safe landing.



MICRODRONES EXPERT DRONE LINE

GEOSPATIAL DATA COLLECTION AND PROCESSING: TAKEN TO NEW HEIGHTS

Extreme LiDAR and photogrammetry equipment for the most demanding applications

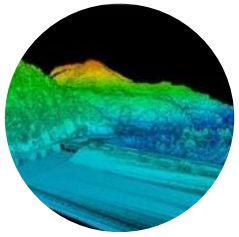
Experience the lifting power, resilience and efficiency of the md4-3000 aircraft platform, perfectly integrated with the world's most advanced LiDAR and photo sensors.

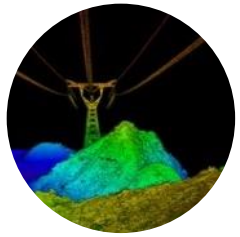
mdLiDAR
3000LR

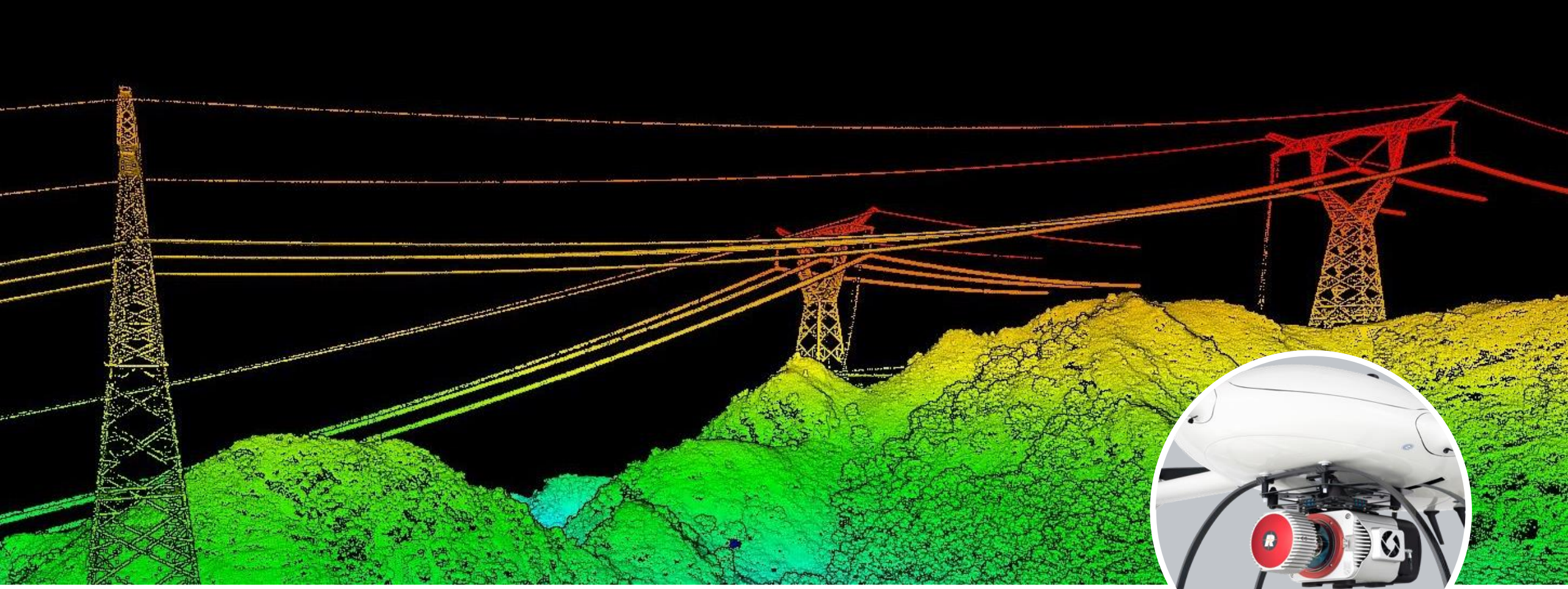
Microdrones expert drone line

THE MOST POWERFUL DRONE LiDAR SYSTEM EVER

Go extreme with the most powerful laser scanner… extend your data collection reach from high above or collect extreme point density when flying closer to the ground.







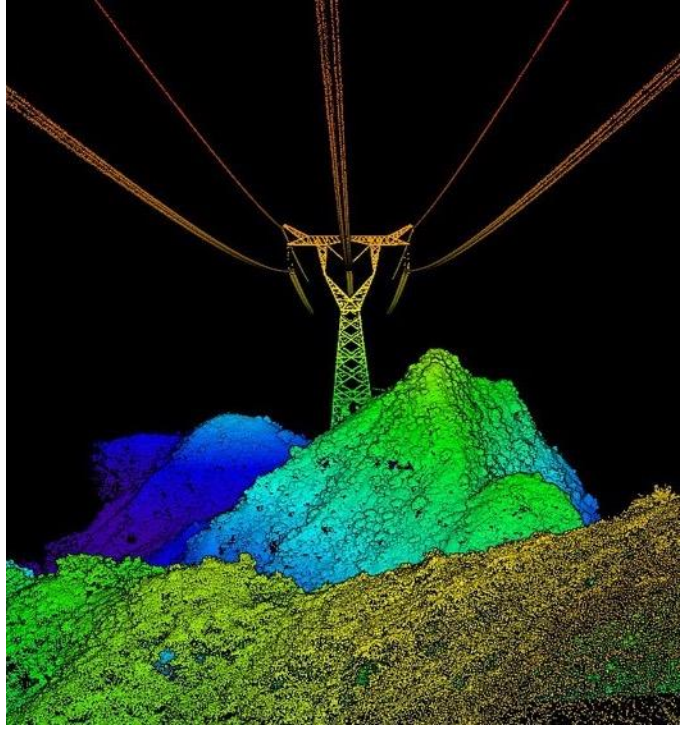
SURVEY GRADE DRONE LASER SCANNING

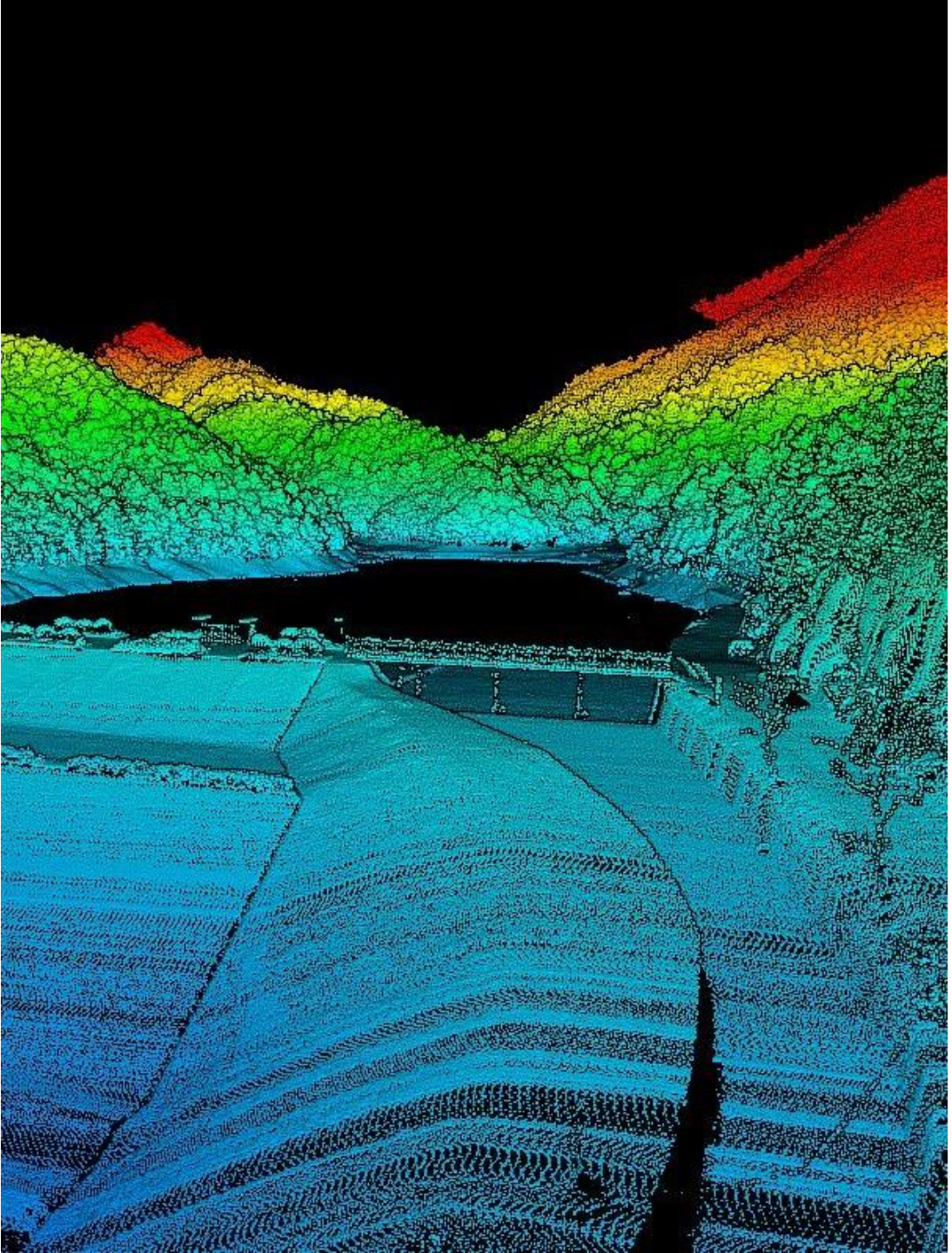
By combining our robust and field proven md4-3000 airframe, with a highly precise and accurate Riegl VUX-1UAV payload, you can capture ultra dense LiDAR data quickly and safely in the field, and then turn it into a 3D point cloud back at the office or on your laptop.

mdLiDAR
3000LR

SURVEY GRADE DRONE LASER SCANNING

By combining our robust and field proven md4-3000 airframe, with a highly precise and accurate Riegl VUX-1UAV payload, you can capture ultra dense lidar data quickly and safely in the field, and then turn it into a 3d point cloud back at the office or on your laptop.

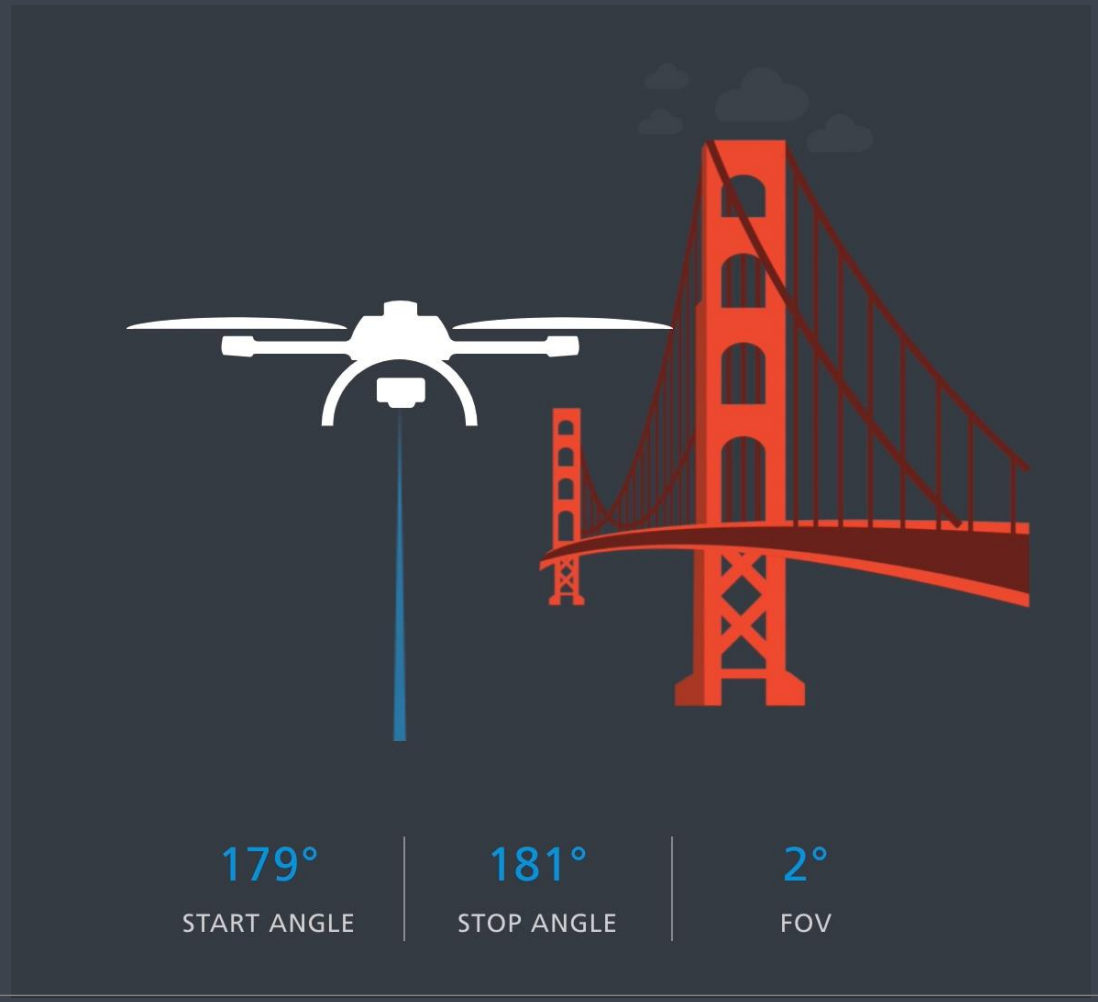




mdLiDAR 3000LR

WHY SHOULD YOU INVEST IN DRONE BASED LiDAR?

In areas of high vegetation do you spend hours cutting line to topo the site? This system can help streamline your current workflows to become more efficient, while helping you to complete more projects.



ROLL OVER IMAGE TO PLAY FOV DEMO

VERTICAL FEATURE CONFIGURATOR

By opening the scanners FOV you can now fully utilize the area between the skids for data collection and by using the configurable field of view option, you are no longer limited to flying above your area of interest.

EASY END-TO-END WORKFLOW:

- Simple mission planning using mdCockpit
- User selects flying height, drone speed and LiDAR strip overlap

- Fully automated mission planning, monitoring and control using mdCockpit

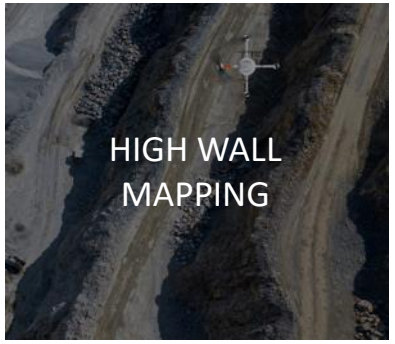
- Thorough georeferencing data processing the dual IMU Applanix APX-20 UAV DG and mdInfinity software
- Automated final point cloud processing using mdInfinity software

- Final point cloud in standard ASPRS LAS format usable in any GIS or CAD software environment.

mdLiDAR 3000LR

WHAT CAN YOU DO WITH IT?

mdLiDAR3000LR is a versatile package that can be used for a wide range of applications. Some of the most common uses are:

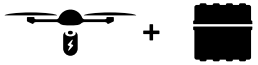


SURVEY EQUIPMENT

mdLiDAR 3000LR

PLATFORM

md4-3000



Charger, Flight Battery & Rugged Carrying Case

Tri Blade Quadcopter

Integrated Cooling Covers

Mag-less Navigation

COMMUNICATIONS

Encrypted Digital Data Link

mdRC

Extended Communication Range Operation

Multiple Tablet Control

NDAA-Compliant Options

SURVEY EQUIPMENT

mdLiDAR 3000LR

PAYLOAD

Fully Integrated Long Range LiDAR

RIEGL

Applanix APX-20 External IMU

Trimble POWERED

SURVEY EQUIPMENT SOFTWARE

mdCockpit Tablet Software

Tap & Fly

FOV Side Scan

mdInfinity | mdaaS | DG ENABLED

DATA PROCESSING MODULES

mdINFINITY IS A POWERFUL ECOSYSTEM THAT WILL ENABLE YOU TO QUICKLY AND EFFICIENTLY PROCESS GEOSPATIAL DATA, WITH CONVENIENT PAYMENT OPTIONS.

Available Data Processing Modules:

- Trajectory processing
- Georeferencing
- Boresight calibration
- Strip adjustment
- Precision enhancement
- Point Cloud Direct Colorization
- FORMap
- Ground Classification

mdInfinity is available in online and desktop versions.

TECHNICAL SPECS

SOLUTION COMPONENTS

Platform
md4-3000

Payload
- LiDAR Sensor: VUX-1UAV
- Georeferencing: Trimble APX-20 UAV DG

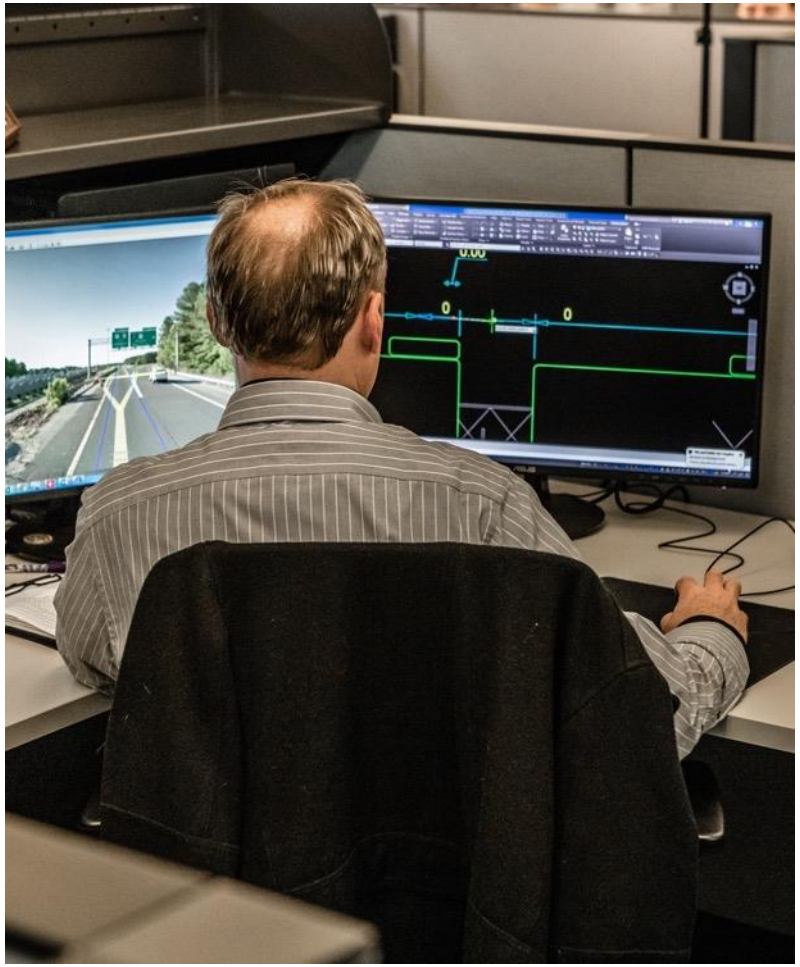
Software
- mdCockpit
- mdInfinity
- Vertical Feature Configurator

TECHNICAL SPECIFICATIONS

Takeoff Weight (TOW)
15713 g

System Operational Temperature
-10 °C up to 50 °C

System Accuracy
- LiDAR Pointcloud:
  - Horizontal: 1-2 cm
  - Vertical: 1-2 cm



TECHNICAL SPECS

mdLiDAR 3000LR

Flight altitude AGL (ft/m)[1]	130/40	195/60	260/80
Speed (m/s)	**Average Point Density in pts/m² [2]**		
3	459	306	230
4	345	230	172
5	276	184	138
6	230	153	115
Swath Width (ft/m) at 116° FOV	420/128	630/192	840/256
Number of Laser Returns	15	15	15
Area Coverage at 20% Overlap (ac/ha)[3]	131/53	195/79	262/106
Area Coverage at 50% Overlap (ac/ha)[3]	101/41	151/61	203/82

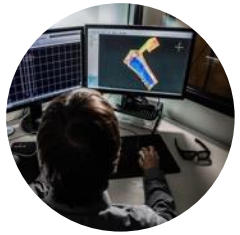
[1]Flight Altitude Above Ground Level (AGL)
[2]Average Point density. Note that calculation does not factor target remission (reflectivity %)
[3]Area coverage is computed for an example of a 20-minute survey (3 minutes for take-off and landing) at a drone speed of 5 m/s

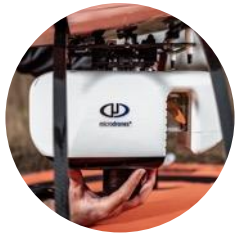
mdLiDAR 3000

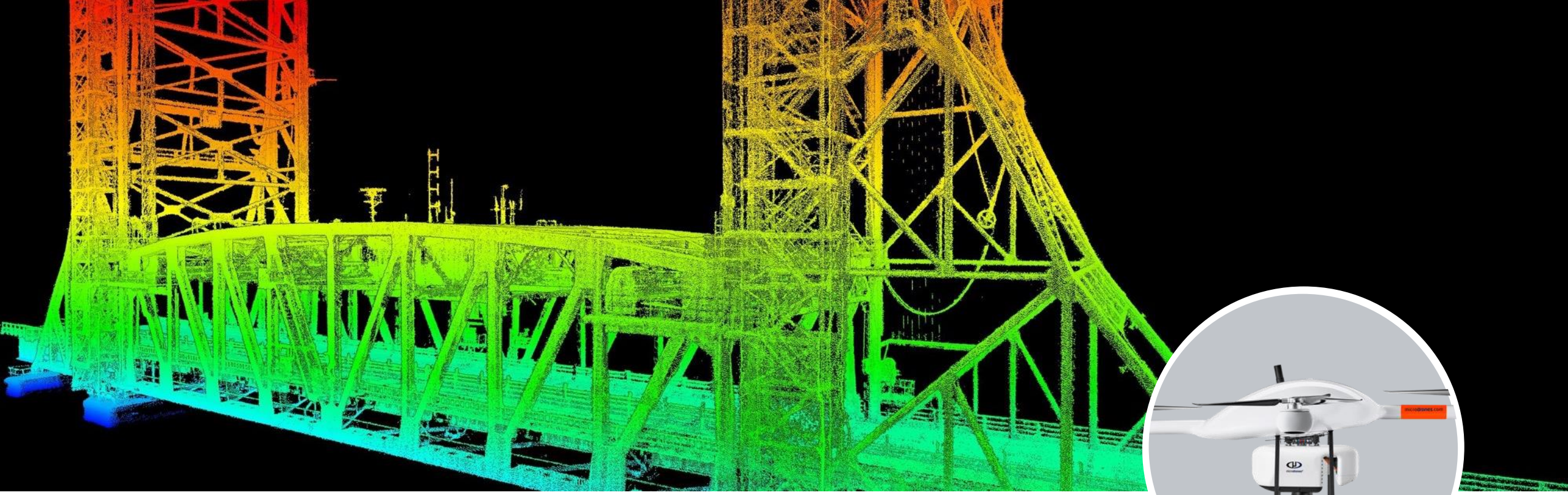
Microdrones expert drone line

EXTREME LiDAR DATA COLLECTION, WITH THE CAPABILITY TO COLLECT VERTICAL FEATURES VIA A WIDER FIELD OF VIEW

mdLiDAR3000 is an end-to-end LiDAR solution combining a drone, a LiDAR payload, and a fully integrated software workflow with convenient payment plans and data processing options.

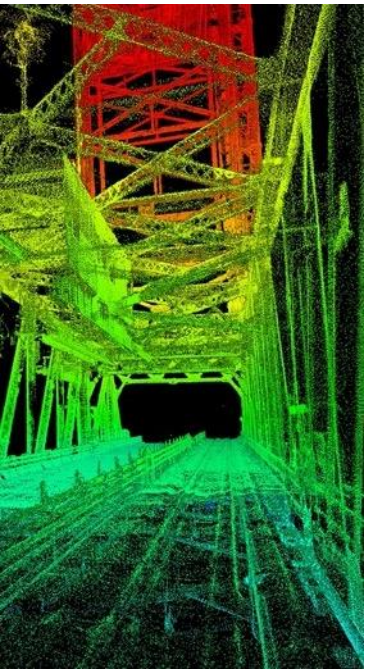






THE COMPLETE PACKAGE TO ADD UNMANNED AERIAL LiDAR TO YOUR GEOMATICS SERVICES

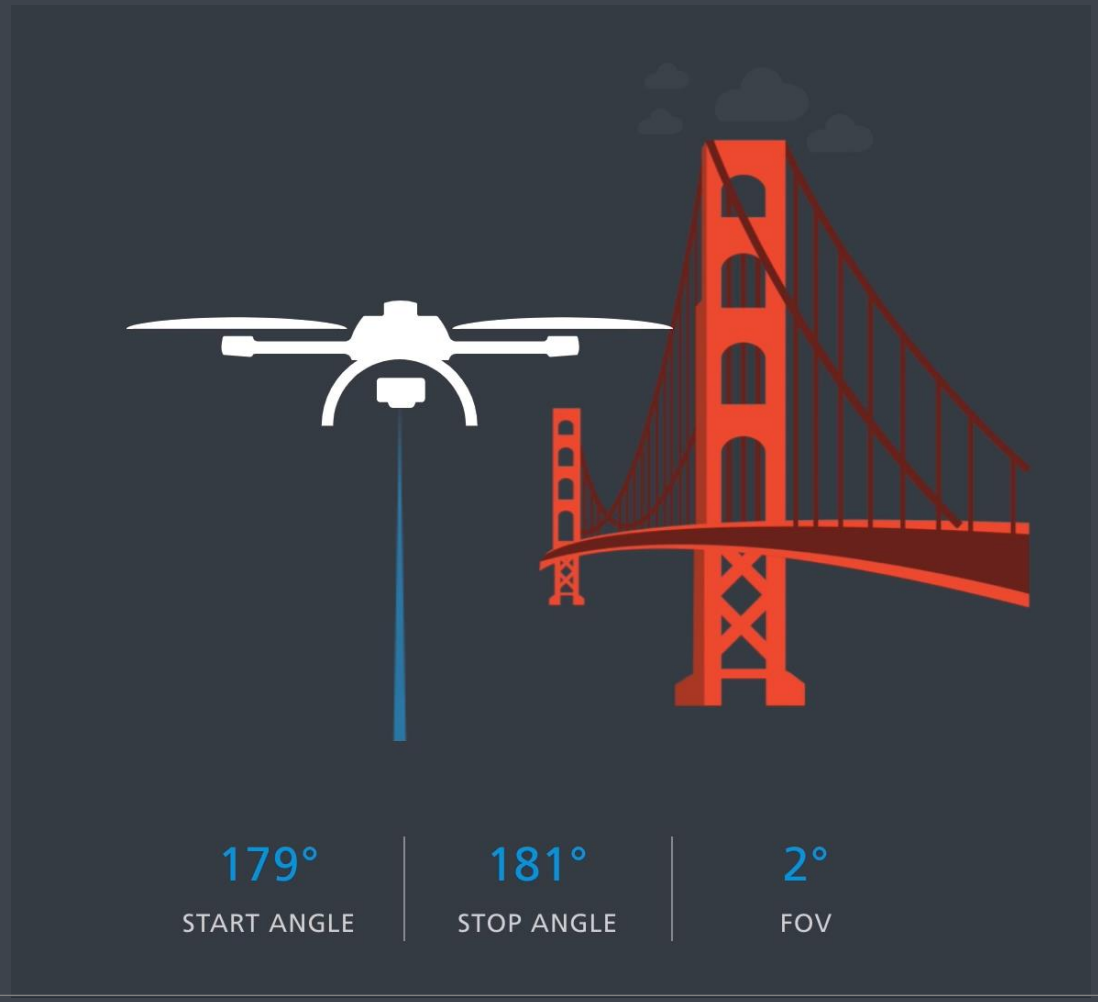
The mdLiDAR3000 uses the lifting power, resilience and efficiency of the Microdrones aircraft platform to carry a perfectly integrated Riegl miniVUX-3UAV and a Sony RX1R II camera. The result? You can quickly acquire high density and accurate LiDAR data in the field and efficiently turn it into a 3D colorized pointcloud back at the office or on your laptop.



mdLiDAR 3000

WHY SHOULD YOU INVEST IN DRONE BASED LiDAR?

In areas of high vegetation do you spend hours cutting line to topo the site? This system can help streamline your current workflows to become more efficient, while helping you to complete more projects.



ROLL OVER IMAGE TO PLAY FOV DEMO

VERTICAL FEATURE CONFIGURATOR

By opening the scanners FOV you can now fully utilize the area between the skids for data collection and by using the configurable field of view option, you are no longer limited to flying above your area of interest.

EASY END-TO-END WORKFLOW:

- Simple mission planning and control using mdCockpit
- User selects flying height, drone speed and LiDAR strip overlap

- Fully automated mission execution and realtime mission monitoring using mdCockpit

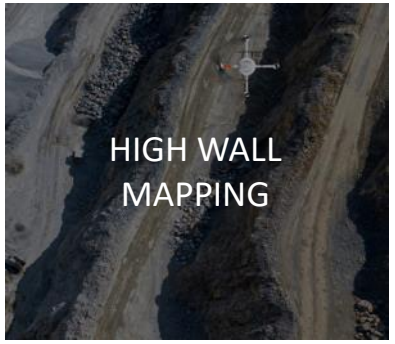
- Thorough georeferencing data processing using the dual-IMU Applanix APX-20 UAV DG and mdInfinity software
- Automated final point cloud processing using mdLiDAR processing software

- Final point cloud in standard ASPRS LAS format usable in any GIS or CAD software environment
- Quick and Accurate point cloud colorization using accurate system-produced orthomosaics and a user-friendly, seamless workflow

mdLiDAR 3000

WHAT CAN YOU DO WITH IT?

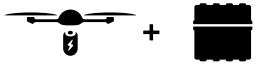
mdLiDAR3000 is a versatile package that can be used for a wide range of applications. Some of the most common uses are:



SURVEY EQUIPMENT

PLATFORM

md4-3000



Charger, Flight Battery & Rugged Carrying Case

Tri Blade Quadcopter

Integrated Cooling Covers

Mag-less Navigation

COMMUNICATIONS

Encrypted Digital Data Link

mdRC

Extended Communication Range Operation

Multiple Tablet Control

NDAA-Compliant Options

SURVEY EQUIPMENT

mdLiDAR 3000

PAYLOAD

Fully Integrated LiDAR Paired with a Sony RX1R II Camera & Quick Connect Mount

RIEGL

Applanix APX-20 External IMU

Trimble POWERED

SURVEY EQUIPMENT SOFTWARE

mdCockpit Tablet Software

Tap & Fly

FOV Side Scan

mdInfinity | mdaaS | DG ENABLED

DATA PROCESSING MODULES

mdINFINITY IS A POWERFUL ECOSYSTEM THAT WILL ENABLE YOU TO QUICKLY AND EFFICIENTLY PROCESS GEOSPATIAL DATA, WITH CONVENIENT PAYMENT OPTIONS.

Available Data Processing Modules:

- Trajectory processing
- Georeferencing
- Boresight calibration
- Strip adjustment
- Precision enhancement
- Point Cloud Direct Colorization
- FORMap
- Ground Classification

mdInfinity is available in online and desktop versions.

TECHNICAL SPECS

SOLUTION COMPONENTS

Platform
md4-3000

Payload
- LiDAR Sensor: Riegl miniVUX-3UAV
- Camera: RX1R II
- Georeferencing:
  Trimble APX-20 UAV DG

Software
- mdCockpit
- mdInfinity
- Vertical Feature Configurator

TECHNICAL SPECIFICATIONS

Takeoff Weight (TOW)
14823 g

System Operational Temperature
-10 °C to 50 °C

System Accuracy
LiDAR Point Cloud:
- Horizontal: 1-3 cm
- Vertical: 1-3 cm

- Photogrammetry:
  - Horizontal: 1-2 pixels
  - Vertical: 3-4 pixels

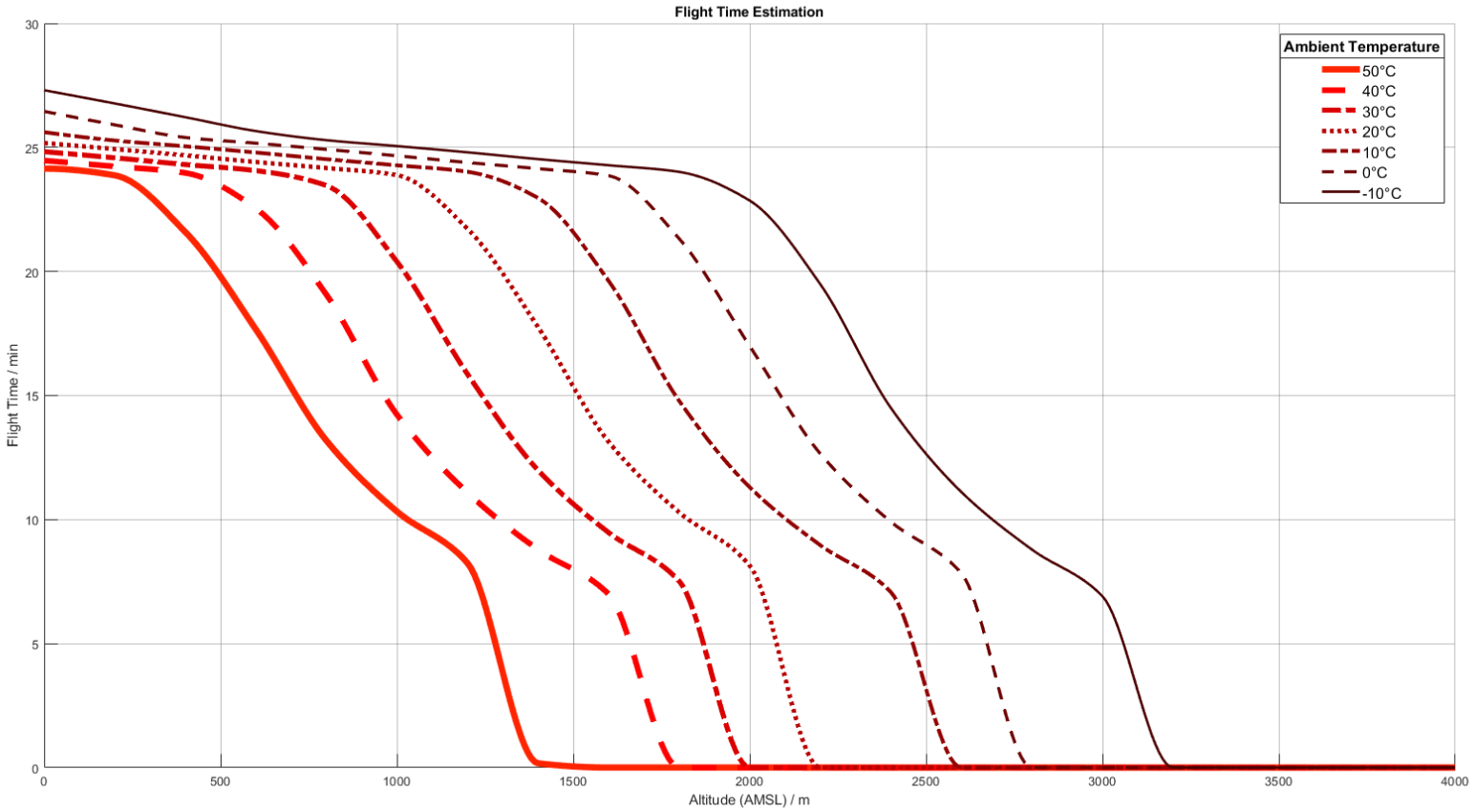
TECHNICAL SPECS

mdLiDAR 3000

Flight altitude AGL (ft/m)[1]	130/40	195/60	260/80
Speed (m/s)	Point Density (pts/m²)[2]		
3	313	209	156
4	235	156	117
5	188	125	94
6	156	104	78
GSD (mm)	5.3	8	10.6
Swath Width (ft/m) at 56° FOV	138/42	207/63	279/85
Swath Width (ft/m) at 90° FOV	262/80	394/120	525/160
Swath width (ft/m) at 110° FOV	374/114	561/171	751/229
Number of Laser Returns	5	5	5
Area Coverage at 20% Overlap (ac/ha)[4]	44.5/18	64/26	84/34
Area Coverage at 50% Overlap (ac/ha)[4]	27/11	42/17	52/21

[1]Flight Altitude Above Ground Level (AGL)
[2]Average Point density with a 30% overlap
[3]Area coverage is computed for an example of a 20-minute survey (3 minutes for take-off and landing) at a drone speed of 5 m/s at 56° Field of View (FOV)

TECHNICAL SPECS



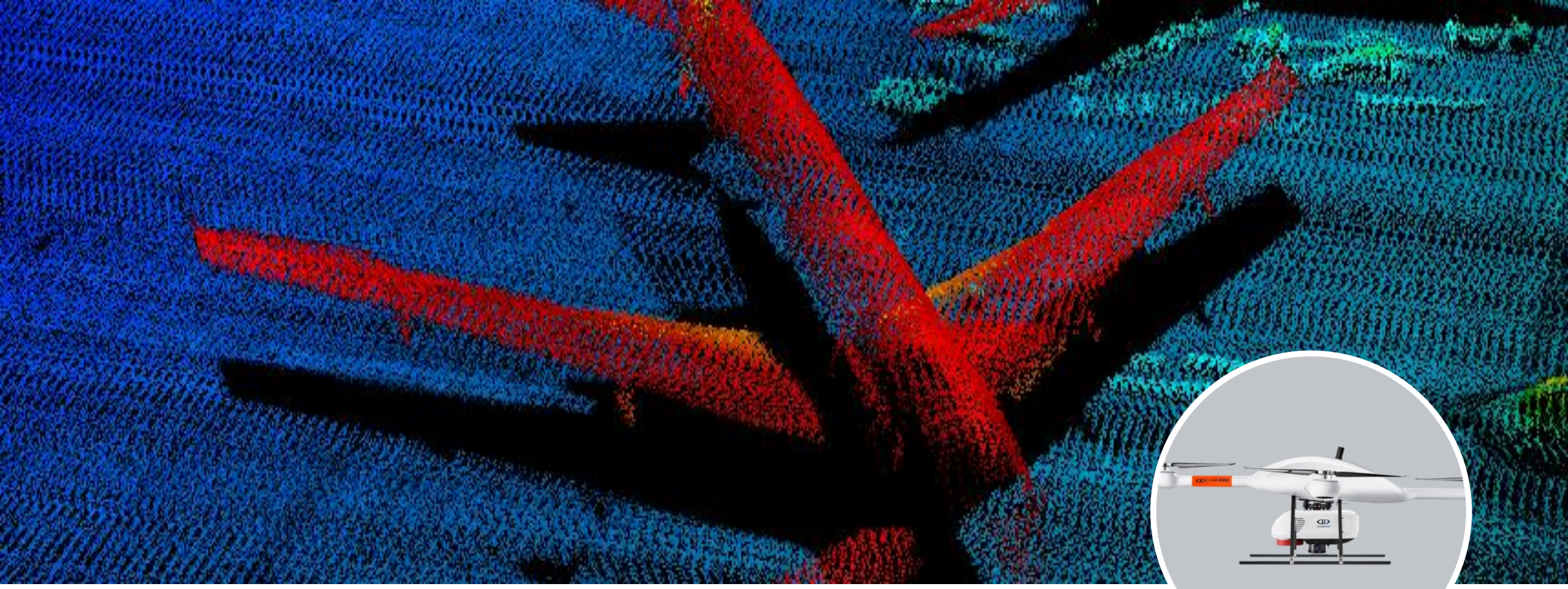
Systems are delivered with a preflight planning tool that will provide the pilot with the low battery level recommended for safe landing.

mdLiDAR
3000DL

Microdrones expert drone line

HEAVY DATA COLLECTION PROJECTS?

Our drone LiDAR survey equipment makes light work of them all: mdLiDAR3000DL.



THE NEWEST LiDAR SYSTEM FROM MICRODRONES IS REVOLUTIONARY

We perfectly integrated our heavy lifting md4-3000 drone with a Riegl miniVUX-1DL and a SONY RX1R II camera for rapidly producing colorized pointclouds.

mdLiDAR
3000DL

THE ULTIMATE UNMANNED AERIAL LiDAR SOLUTION FROM MICRODRONES

By combining our robust and field proven md4-3000 airframe, with a highly precise an accurate Riegl miniVUX-1DL payload, you can capture ultra dense LiDAR data quickly and safely in the field, and then turn it into a 3D colorized point cloud back at the office or on your laptop.

mdLiDAR 3000DL

WHY SHOULD YOU INVEST IN DRONE BASED LiDAR?

In areas of high vegetation do you spend hours cutting line to topo the site? This system can help streamline your current workflows to become more efficient, while helping you to complete more projects.

EASY END-TO-END WORKFLOW:

- Simple mission planning using mdCockpit
- User selects flying height, drone speed and LiDAR strip overlap

- Fully automated mission execution and realtime mission monitoring using mdCockpit

- Thorough georeferencing data processing using the dual-IMU Applanix APX-20 UAV DG and mdInfinity software
- Automated final point cloud processing using mdLiDAR processing software

- Final point cloud in standard ASPRS LAS format usable in any GIS or CAD software environment
- Quick and accurate point cloud colorization using accurate system-produced orthomosaics and a user-friendly, seamless workflow

mdLiDAR 3000DL

WHAT CAN YOU DO WITH IT?

mdLiDAR3000DL is a versatile package that can be used for a wide range of applications. Some of the most common uses are:

SURVEY EQUIPMENT

PLATFORM

md4-3000

md4-3000

Charger, Flight Battery & Rugged Carrying Case

Tri Blade Quadcopter

Integrated Cooling Covers

Mag-less Navigation

COMMUNICATIONS

Encrypted Digital Data Link

mdRC

Extended Communication Range Operation

Multiple Tablet Control

NDAA-Compliant Options

SURVEY EQUIPMENT

mdLiDAR 3000DL

PAYLOAD

Fully Integrated LiDAR Paired with a Sony RX1R II Camera & Quick Connect Mount

RIEGL

Applanix APX-20 External IMU

Trimble POWERED

SURVEY EQUIPMENT SOFTWARE

mdCockpit Tablet Software

Tap & Fly

mdInfinity | mdaaS | DG ENABLED

DATA PROCESSING MODULES

mdINFINITY IS A POWERFUL ECOSYSTEM THAT WILL ENABLE YOU TO QUICKLY AND EFFICIENTLY PROCESS GEOSPATIAL DATA, WITH CONVENIENT PAYMENT OPTIONS.

Available Data Processing Modules:

- Trajectory processing
- Georeferencing
- Boresight calibration
- Strip adjustment
- Precision enhancement
- Point Cloud Direct Colorization
- FORMap
- Ground Classification

mdInfinity is available in online and desktop versions.

TECHNICAL SPECS

SOLUTION COMPONENTS

Platform
md4-3000

Payload
- LiDAR Sensor: miniVUX-1DL
- Camera: RX1R II
- Georeferencing: Trimble APX-20 UAV DG

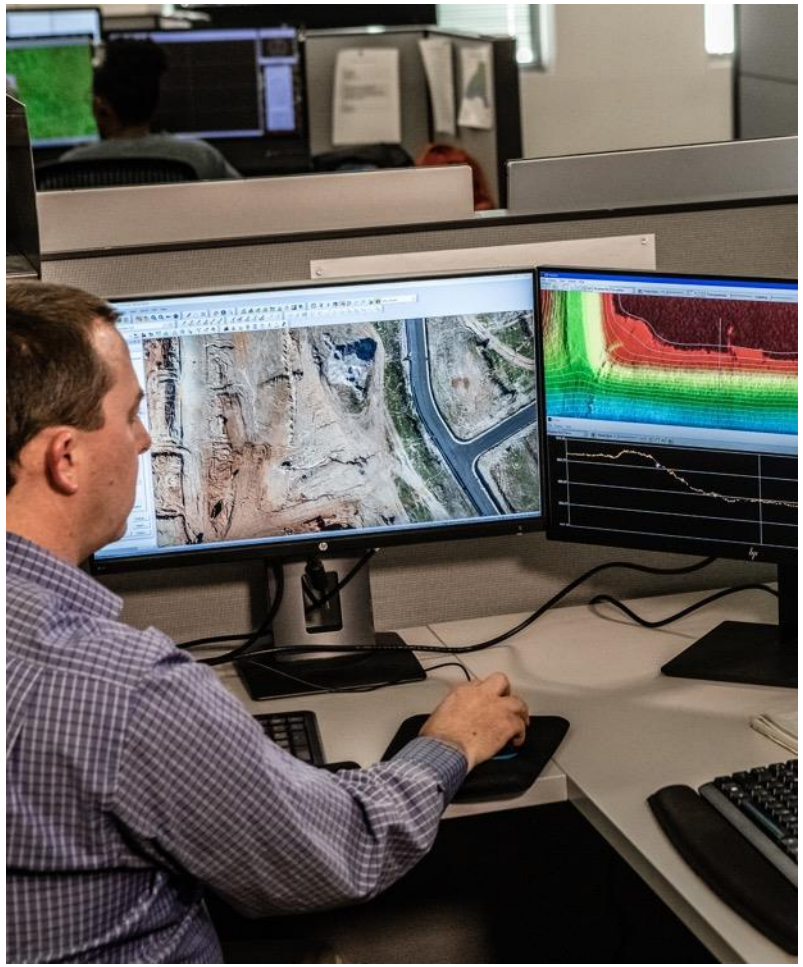
Software
- mdCockpit
- mdInfinity

TECHNICAL SPECIFICATIONS

Takeoff Weight (TOW)
15713 g

System Operational Temperature
-10 °C to 50 °C

System Accuracy
- LiDAR Point Cloud:
    - Horizontal: 1-3 cm
    - Vertical: 2-4 cm
- Photogrammetry:
    - Horizontal: 1-2 pixels
    - Vertical: 3-4 pixels



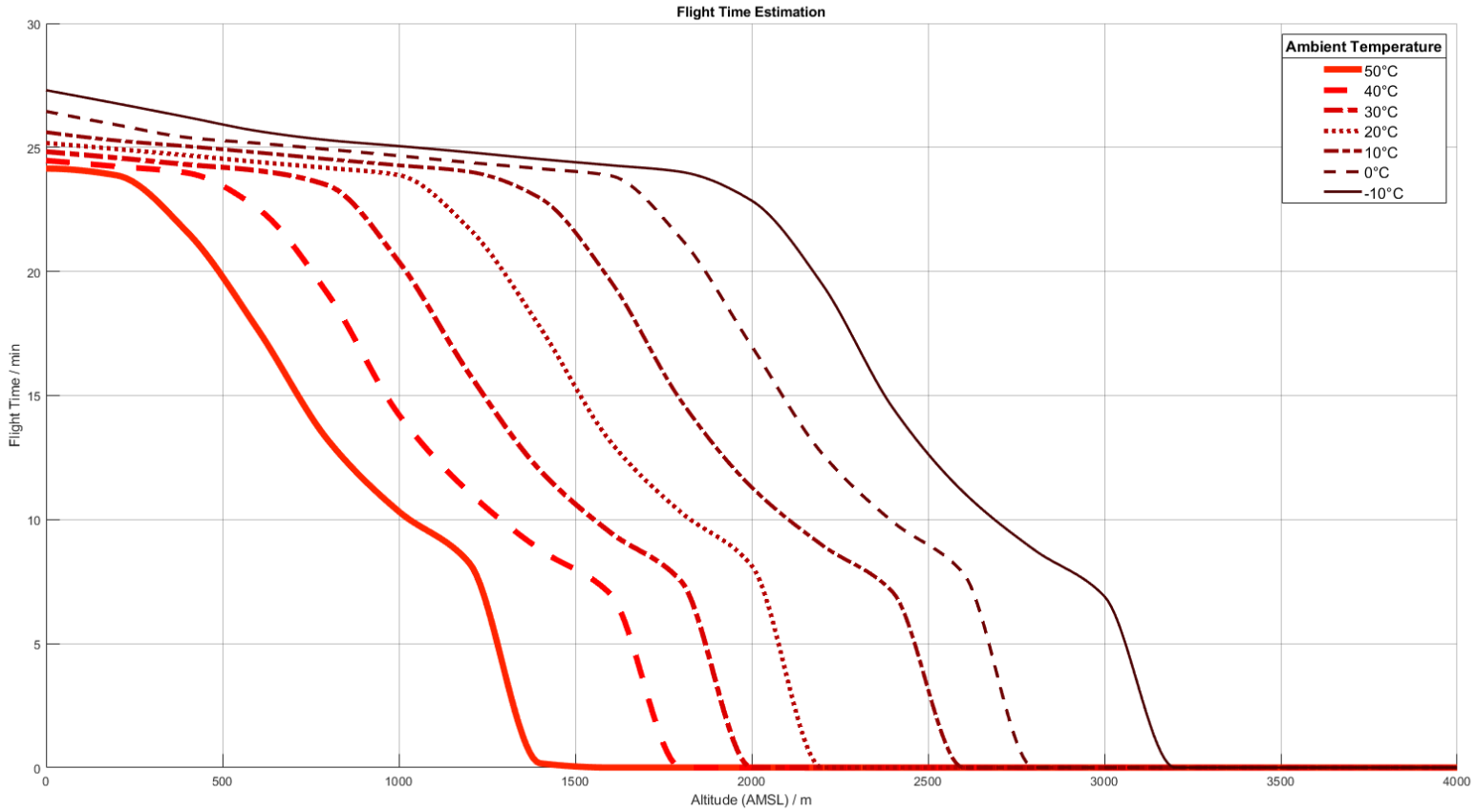
TECHNICAL SPECS

mdLiDAR 3000DL

Flight altitude AGL (ft/m)[1]	130/40	195/60	260/80
Speed (m/s)	**Average Point Density[2] in pts/m²**		
3	1291	861	645
4	968	645	484
5	774	516	387
6	645	430	322
GSD (mm)	5.3	8	10.6
Swath Width (ft/m) at 46° FOV	112/34	164/50	223/68
Number of Laser Returns	5	5	5
Area Coverage at 20% (overlap ac/ha)[3]	33/13.5	49/20	68/27.5
Area Coverage at 50% (overlap ac/ha)[3]	21/8.5	32/13	42/17

[1]Flight Altitude Above Ground Level (AGL)
[2]Average density calculated with 30% overlap on 5 lines
[3]Area coverage is computed for an example of a 20-minute survey (3 minutes for take-off and landing) at a drone speed of 5 m/s at 56° Field of View (FOV)

TECHNICAL SPECS



Systems are delivered with a preflight planning tool that will provide the pilot with the low battery level recommended for safe landing.

INTRODUCING mdaaS

DRONE SURVEYING OPTIONS FOR EVERYONE

Everything you need to do drone LiDAR and surveying the right way, with convenient packages and payment options.

LET'S GET STARTED

GEOSPATIAL PRODUCTIVITY MADE SIMPLE & AFFORDABLE.

Microdrones is making it easy for professionals to get started with everything needed to use drones for complex surveying work.

What is mdaaS*?

Microdrones as a Service.

mdaaS empowers customers to deploy the full hardware and software solution as a service (HaaS and SaaS).

Microdrones delivers access to its unique data processing software solution, mdInfinity, packaged with either the purchase or rental of survey equipment.

*Note: mdaaS “Rent It” options are available in The United States, Canada, The European Economic Area, Switzerland, The United Kingdom and Australia.

FIRST LET'S ESTABLISH SOME TERMS.

INTEGRATED SYSTEMS

Complete mapping solution offered by Microdrones composed of Survey Equipment and Data Processing modules fully adapted to that Survey Equipment.

HARDWARE

SURVEY EQUIPMENT

The necessary equipment to gather Data using a UAV. It includes the drone, the payload and Microdrones proprietary mdCockpit mission planning and control software. Data collected with the survey equipment can be processed exclusively within mdInfinity.

TRADITIONAL PURCHASE

Unlimited access to basic software (trajectory processing and geocoding). Owner pays annual software and firmware maintenance fee. Ask for details.

BUY IT!

Microdrones delivers access to our software solution with the purchase of Survey Equipment included in the fee. Clients retain full maintenance and upgrade responsibility.

MAINTAIN IT!

Yearly UAV & Payload maintenance for your drone survey equipment.

SOFTWARE

mdINFINITY DATA PROCESSING MODULES

Any available Software module which can process and facilitate the analysis of data through mdInfinity Software platform.

SUBSCRIBE

Subscription processing capabilities, available in 12 month unlimited or 12 month explorer options.

mdINFINITY CUSTOM SERVICES

For customers that need highly specialized data processing that is not covered by our existing modules, the mdInfinity team will work with you on special projects.

SELECTION PROCESS

1

Choose your integrated system.

EXAMPLE SYSTEM

i.e. mdLiDAR1000LR

2

Choose how you prefer to pay for your Survey Equipment

BUY IT!
(You retain full maintenance and upgrade responsibility)

OR

TRADITIONAL PURCHASE
Unlimited access to basic software (trajectory processing and geocoding) Owner pays annual software and firmware maintenance fee. Ask for details

3

Choose your plans for each data processing module

EXPLORER OR **UNLIMITED**

PLANS THAT WORK

PLAN YOUR WORK.
WORK YOUR PLAN.

Drone surveying equipment:
On your terms, at your budget.

BUY IT!

When you buy your survey equipment from Microdrones, you have access to our modular data processing software solution as well. You own the hardware, and agree to a required annual maintenance program.

If warranty-covered repairs are needed during the 1 year warranty period, those costs are covered by Microdrones.

SURVEY EQUIPMENT

OWNERSHIP: Customer

PAYMENT: Upfront

DRONE & PAYLOAD SYSTEM: Included

TRAINING, SHIPPING & BATTERIES : Not included in price

WARRANTY: 1 Year

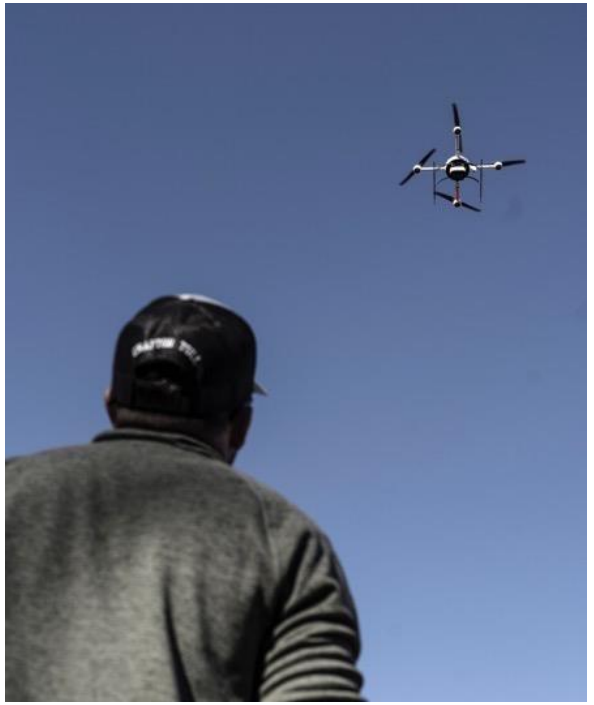
MAINTENANCE: See Salesperson for details and pricing

SURVEY EQUIPMENT SOFTWARE

MISSION PLANNING & CONTROL INCLUDED: mdCockpit – version available at the time of purchase, includes bug fixes.

SAFETY UPDATES / BUG FIX: Included for 3 years

ACCESS TO DATA PROCESSING SOFTWARE: mdInfinity (Pay Per Use or Unlimited for each module)



TRADITIONAL PURCHASE

With the traditional purchase of survey equipment from Microdrones, you have access to our modular data processing software solution as well.

You own the hardware and software, and agree to a required annual maintenance program for the hardware and software.

SURVEY EQUIPMENT

OWNERSHIP: Customer

INCLUDES: Drone, Payload System, & 1 Battery

TRAINING & SHIPPING: Not included in price

MAINTENANCE: Not Included

SURVEY EQUIPMENT SOFTWARE

MISSION PLANNING & CONTROL INCLUDED: mdCockpit included

UPDATES: Survey equipment is managed by customer.

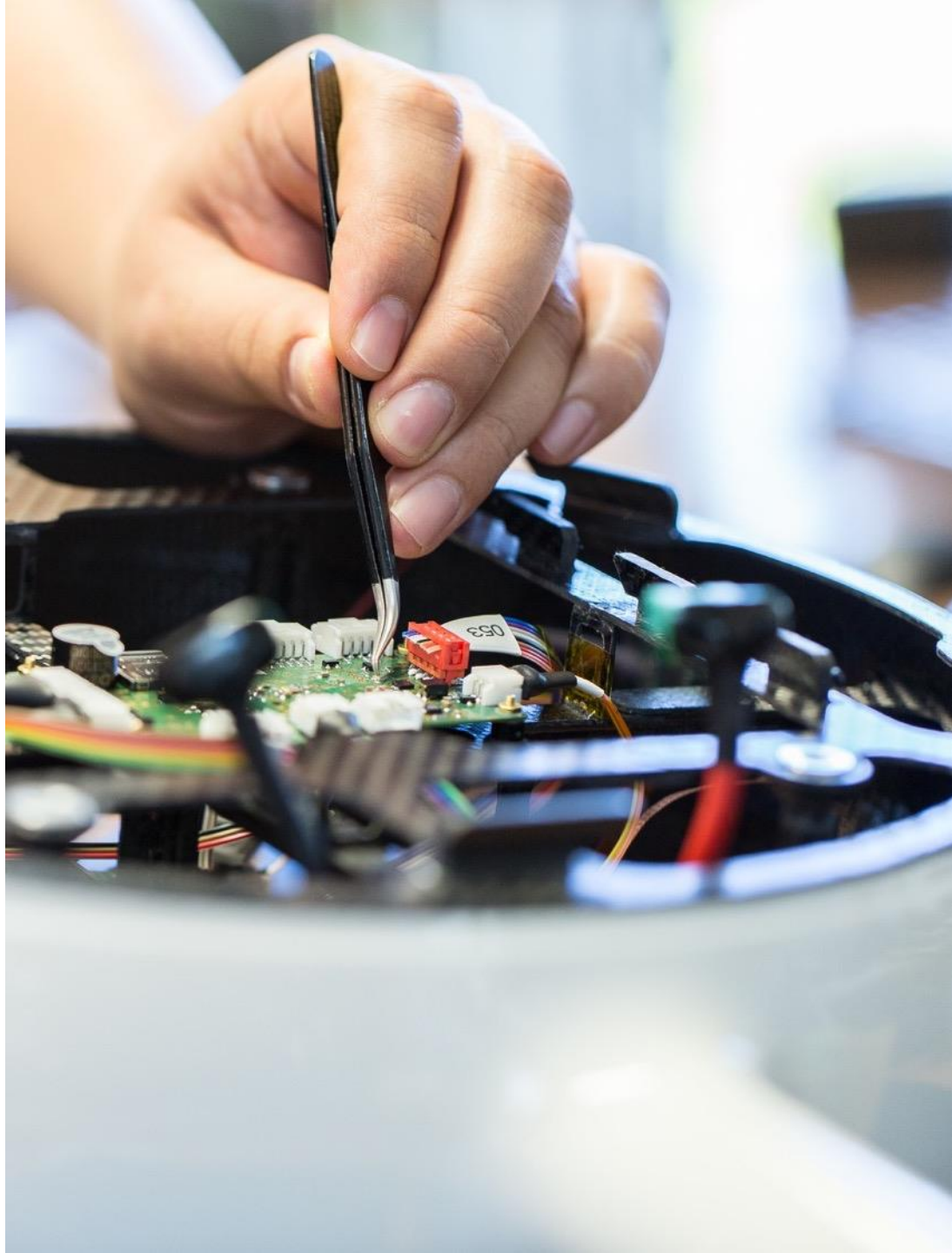
ACCESS TO DATA PROCESSING SOFTWARE: mdInfinity Desktop

MAINTAIN IT!

Proper maintenance is required for safe, effective deployment of any aircraft. Drones are no exception. The backbone of your Microdrones survey equipment is the aircraft.

The Maintenance Program is, overall, a rigorous inspection and maintenance routine designed specifically for your aircraft.

A professionally trained and certified technician will inspect and test the condition of your aircraft as it relates to the airframe, propulsion, electrical systems, sub systems, payload connections and flight.



MAINTAIN IT!

THE MICRODRONES SURVEY EQUIPMENT MAINTENANCE PROGRAM

MAINTAIN IT! | The Microdrones Survey Equipment Maintenance Program

Proper maintenance is required for safe, effective deployment of any aircraft.

Drones are no exception. The backbone of your Microdrones survey equipment is the aircraft.

MAINTAIN IT! | The Microdrones Survey Equipment Maintenance Program

Why is Microdrones launching a maintenance program?

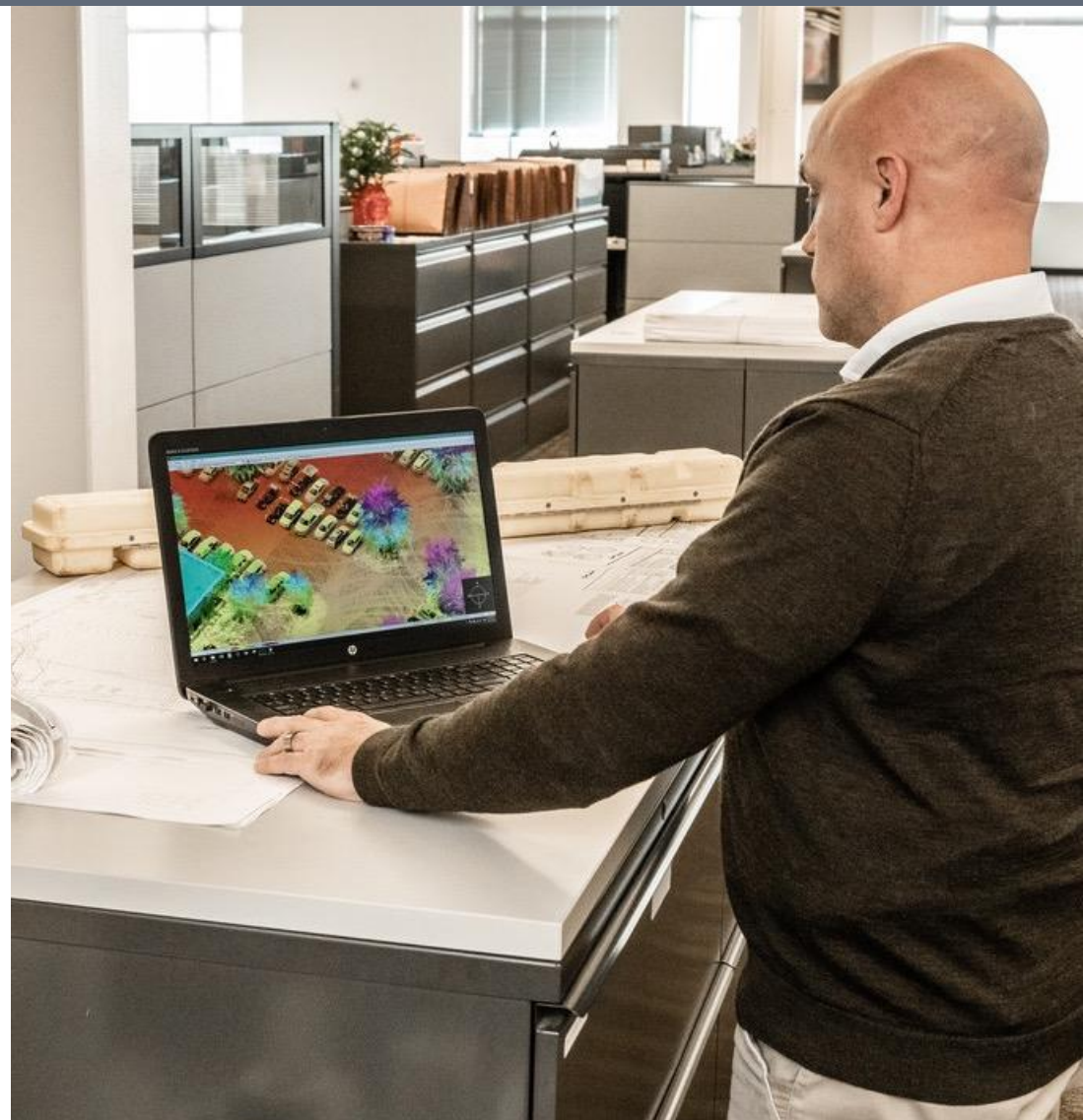
- Flight operation inherently presents potential safety risks. Survey Equipment needs to be properly inspected and serviced to reduce risk.

- Inspection, maintenance & service programs are familiar for all surveyors or companies using survey equipment. These programs are increasingly required by companies and stakeholders as part of their quality management process.

MAINTAIN IT! | The Microdrones Survey Equipment Maintenance Program

Who is this program for?

- All Microdrones customers must participate in this program.
- The customer is responsible for complying with all inspection and service intervals.
- Failure to complete the maintenance program means that survey equipment may not be airworthy.



MAINTAIN IT! | The Microdrones Survey Equipment Maintenance Program

The Microdrones Maintenance program consists of three parts:

- Support Fee
- Inspection
- Service

SUPPORT FEE

- The support fee covers customer support costs.
- This is a yearly fee
- It includes unlimited access to support lines (phone & e-mail)
- Support is available in 5 languages
- Diagnostic and feedback is provided within 2 business days
- Fixed cost defined per model (see slides on pricing)

MAINTAIN IT! | The Microdrones Survey Equipment Maintenance Program

INSPECTION

- Inspection of survey equipment has to be done each year or after 150 hours
- Inspection will be done by a certified inspector called L2 inspector*
- Inspection can be done (and invoiced) by dealer if they have a certified inspector*
- Inspector will follow a rigorous check list and will inspect each components
- Cost is fixed per model (see slide on pricing)
- If any replacement or repair is necessary, a quote will be sent to the customer

*The L2 Inspector License is granted to an individual, not to a company. Trained pilot (L1) can obtain the certification after following a one day training (cost of 1500USD). Technicians not familiar with Microdrones products may participate In a 3 day training program.

MAINTAIN IT! | The Microdrones Survey Equipment Maintenance Program

SERVICE

- When the survey equipment meets a certain number of flight hours, it will be necessary to send it to Microdrones for service
- Flight intervals for service are 300 hours & 900 hours
- The components that are at their maximum recommended life time will be replaced
- Service pricing is fixed per model

Summary of complete maintenance program:

Business Model	Support Fee	Inspection Fee	Service Fee	Firmware & Software Maintenance Fee
‘Classic’ Sales	Yes	Yes	Yes	Yes
mdaaS ‘Buy it’	Yes	Yes	Yes	No

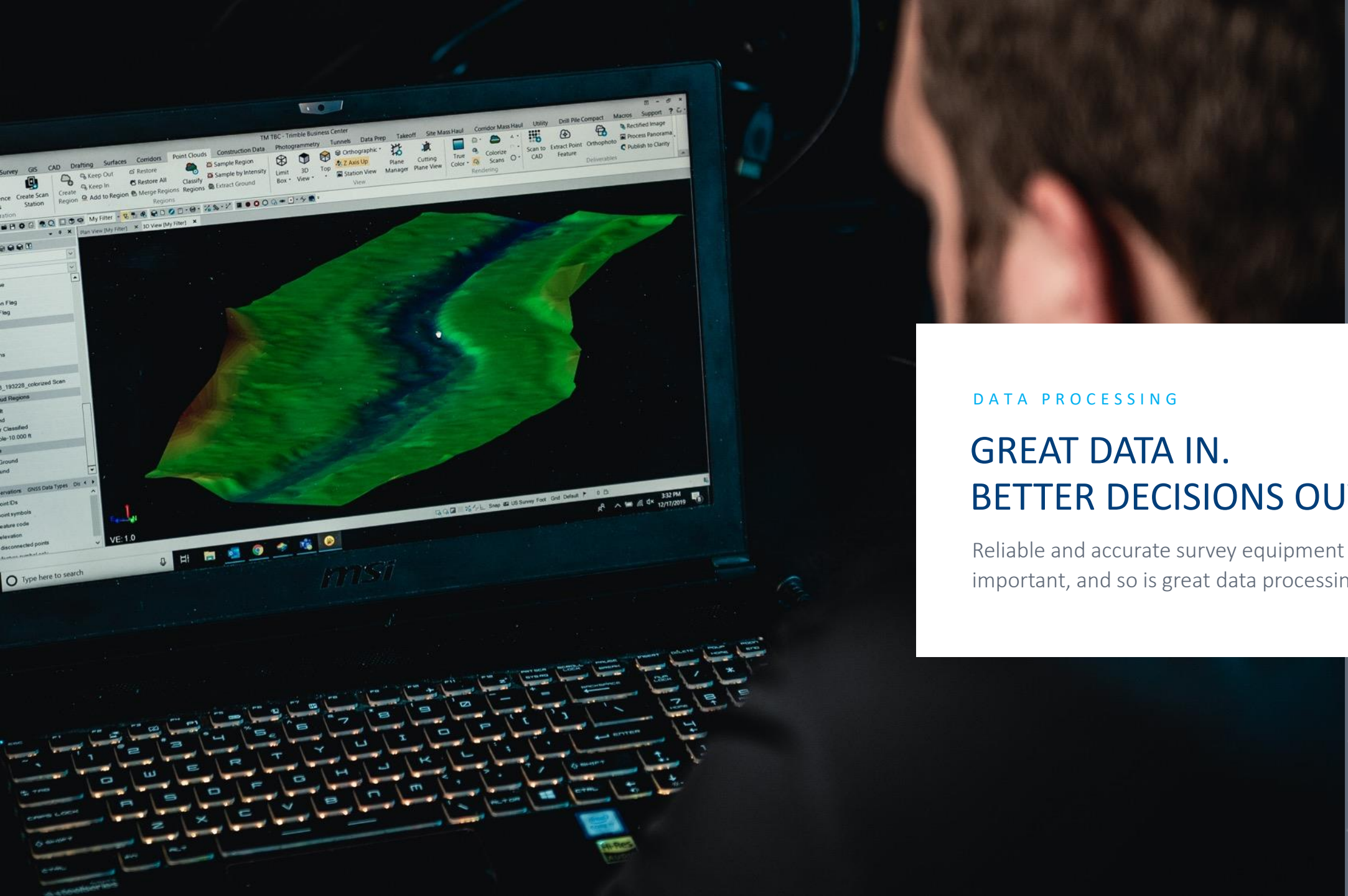
All prices are available in the Price List valid from May 1st 2021

UPGRADE IT!

Microdrones is committed to constant, customer focused improvement. As such we are developing cutting edge, integrated technology that evolves rapidly.

For those of you with an older system, we are always eager to help you upgrade your previous Microdrones system to the latest standards so you can take advantage of new features and functionality.

Simply schedule a meeting with a member of our sales team, and they will assist you in collecting your current system information so they can prepare a price estimate to upgrade.



DATA PROCESSING

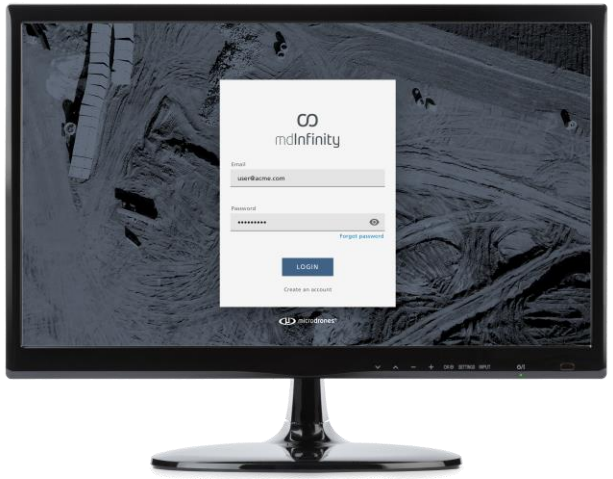
GREAT DATA IN. BETTER DECISIONS OUT.

Reliable and accurate survey equipment is important, and so is great data processing software.

mdInfinity

mdInfinity is a powerful ecosystem that will enable you to quickly and efficiently process geospatial data, including Trajectory Processing, Georeferencing and Boresight Calibration with convenient payment options.

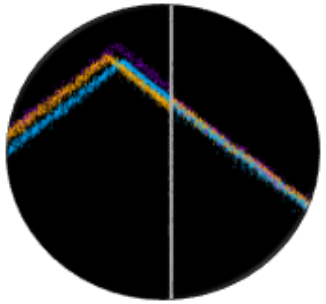
In addition mdInfinity Custom Services offers Strip Adjustment, Precision Enhancement, Point Colorization and FORMap services on demand.



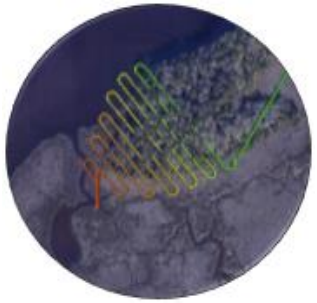
- Improving the workflow -> easy, repeatable results
- Adapted to the survey equipment
- Your access point to the data processing modules
- Available online and desktop
- Custom Services available on demand

mdInfinity

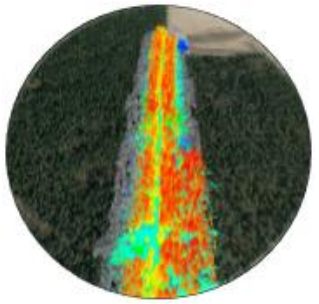
DATA PROCESSING MODULES



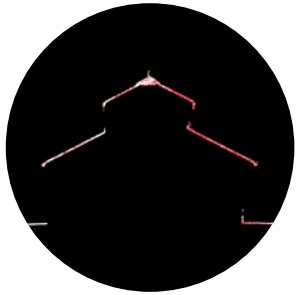
BORESIGHT CALIBRATION



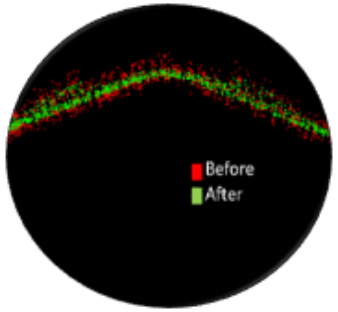
TRAJECTORY PROCESSING



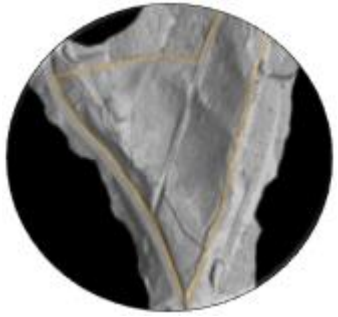
GEOREFERENCING



STRIP ADJUSTMENT



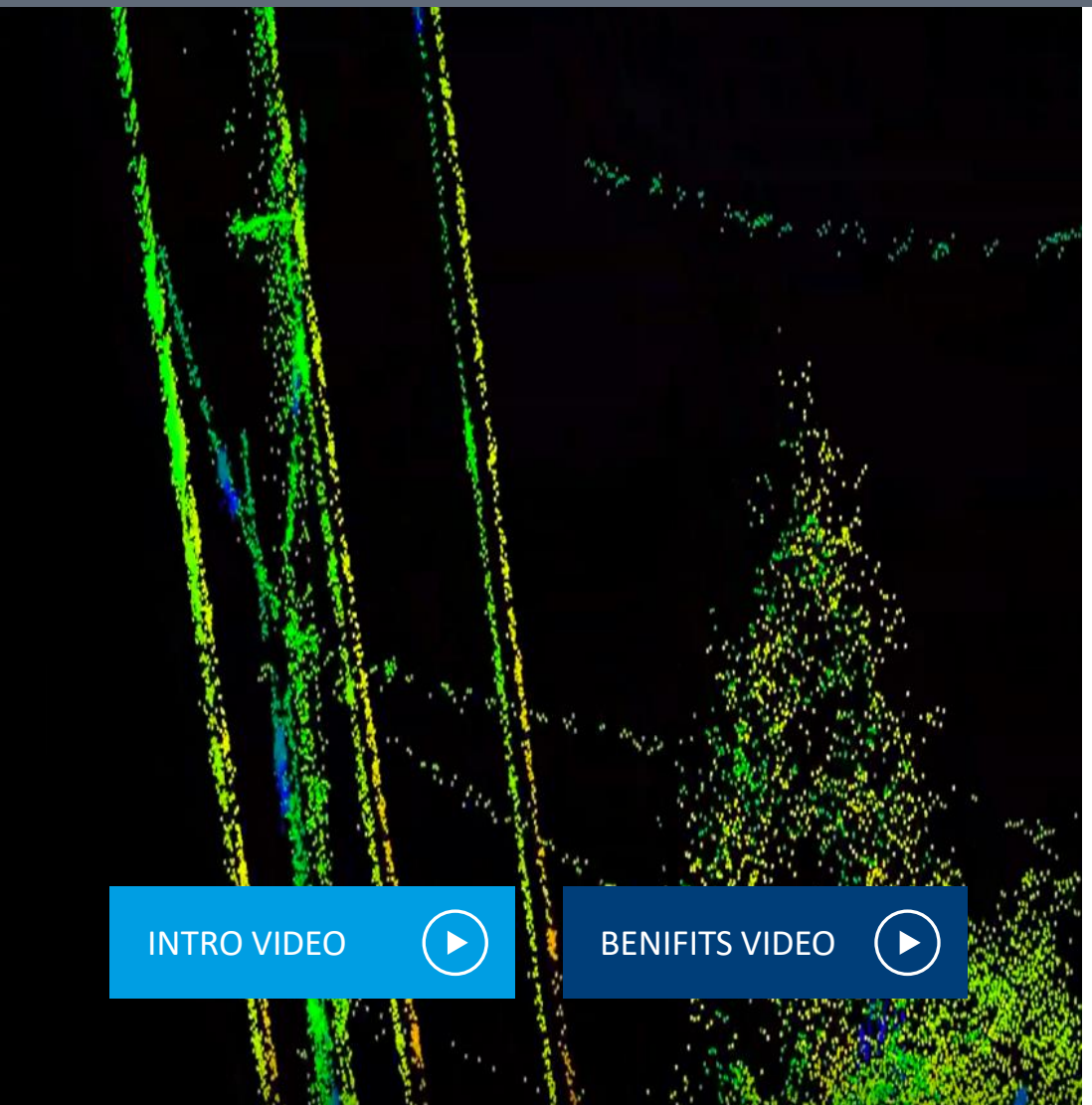
PRECISION ENHANCEMENT



GROUND CLASSIFICATION

POINT CLOUD COLORIZATION

FORMap



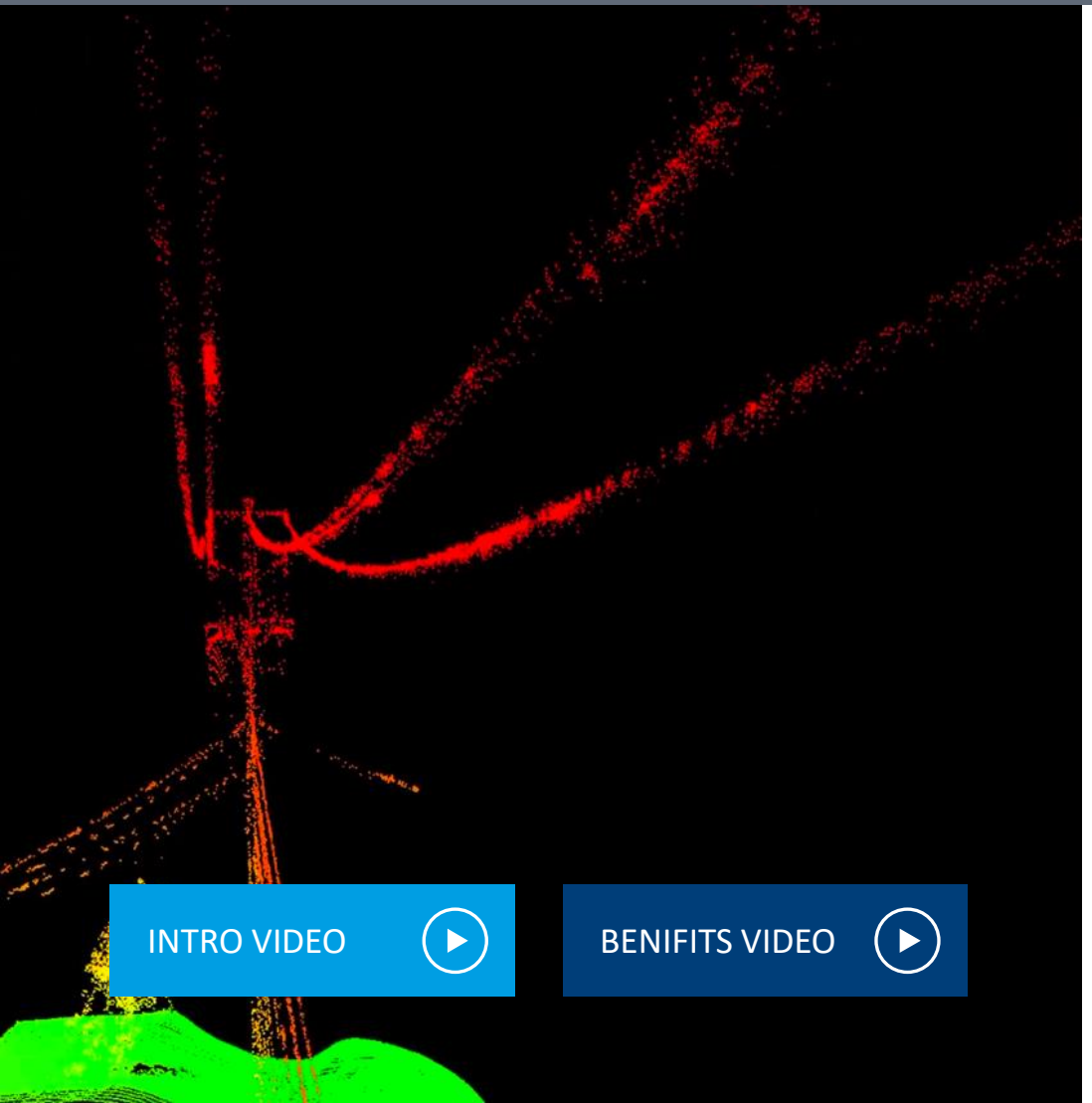
BORESIGHT CALIBRATION

Correct boresight misalignment of your specific product.

Calibration tackles the issue of the alignment of the LiDAR and the IMU body frames.

While a data set may seem clear at high-scale, LiDAR to IMU boresight angles may produce some inconsistency in the data set.

With the Microdrones LIBAC (LiDAR -IMU Boresight Automatic Calibration) tool, the misalignment is computed automatically and boresight angles can be applied to georeference the data set without any boresight bias.



TRAJECTORY PROCESSING

Improve the accuracy of the position and attitude of sensor collected during the flight.

The Trajectory Processing module is a user friendly workflow for users to process raw GNSS data (with or without base station), hybridize IMU and GNSS data to produce a smooth trajectory file and export it as a EO/sbet files in the desired coordinate system.

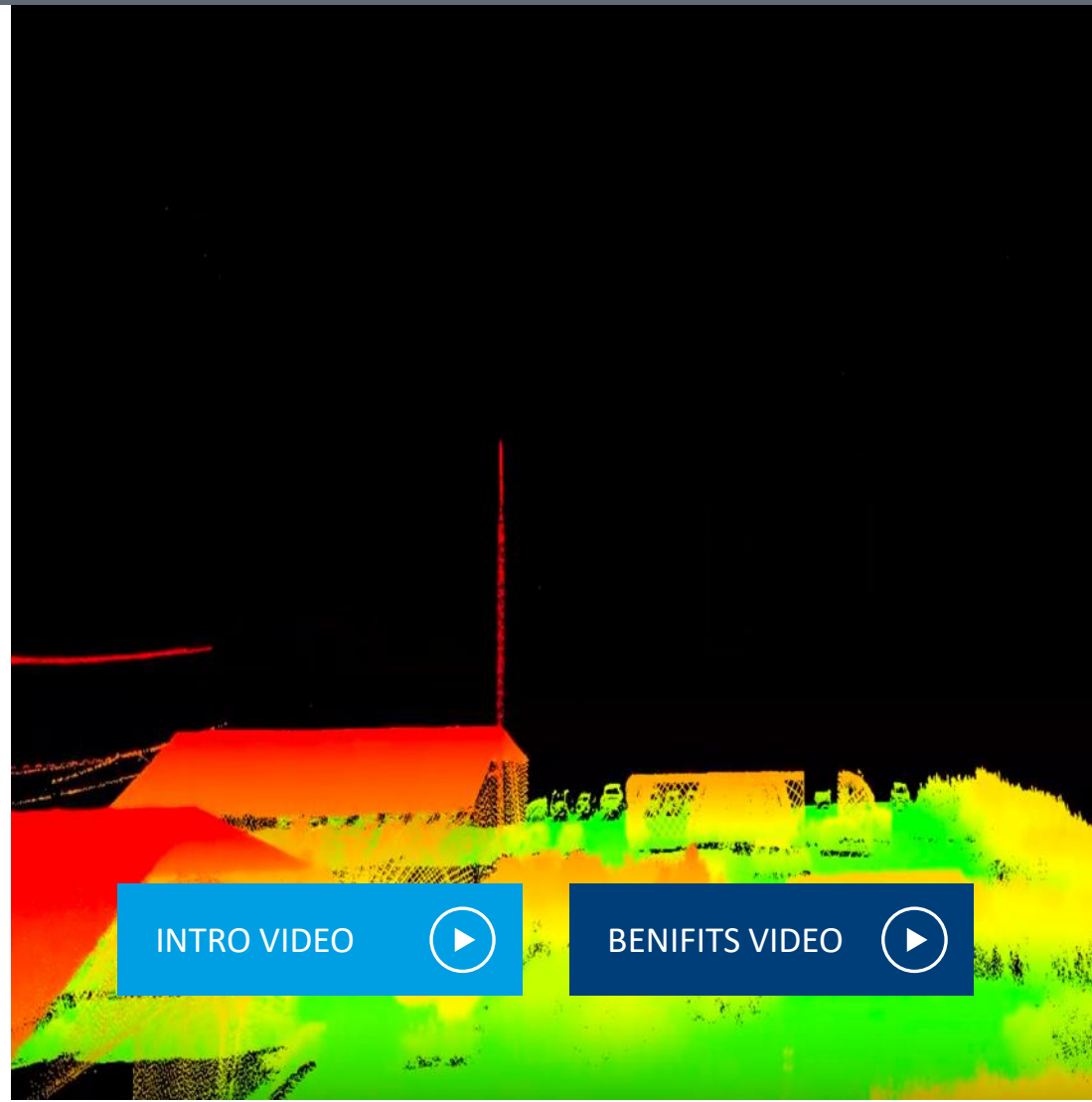
Users can validate the trajectory parameters before processing and obtain different types of EO files depending on the software they will use afterwards.

GEOREFERENCING

Anchor geographic coordinates to every point of your pointcloud.

Georeferencing transforms the raw data from the LiDAR (range and bearing angles), the GNSS and IMU (orientation and positioning) to 3D point cloud and associated data.

With the specifications of the raw data, Microdrones produces a georeferenced point cloud in geographic coordinates without any geodetic distortion, or in a local mapping frame specified by the user.

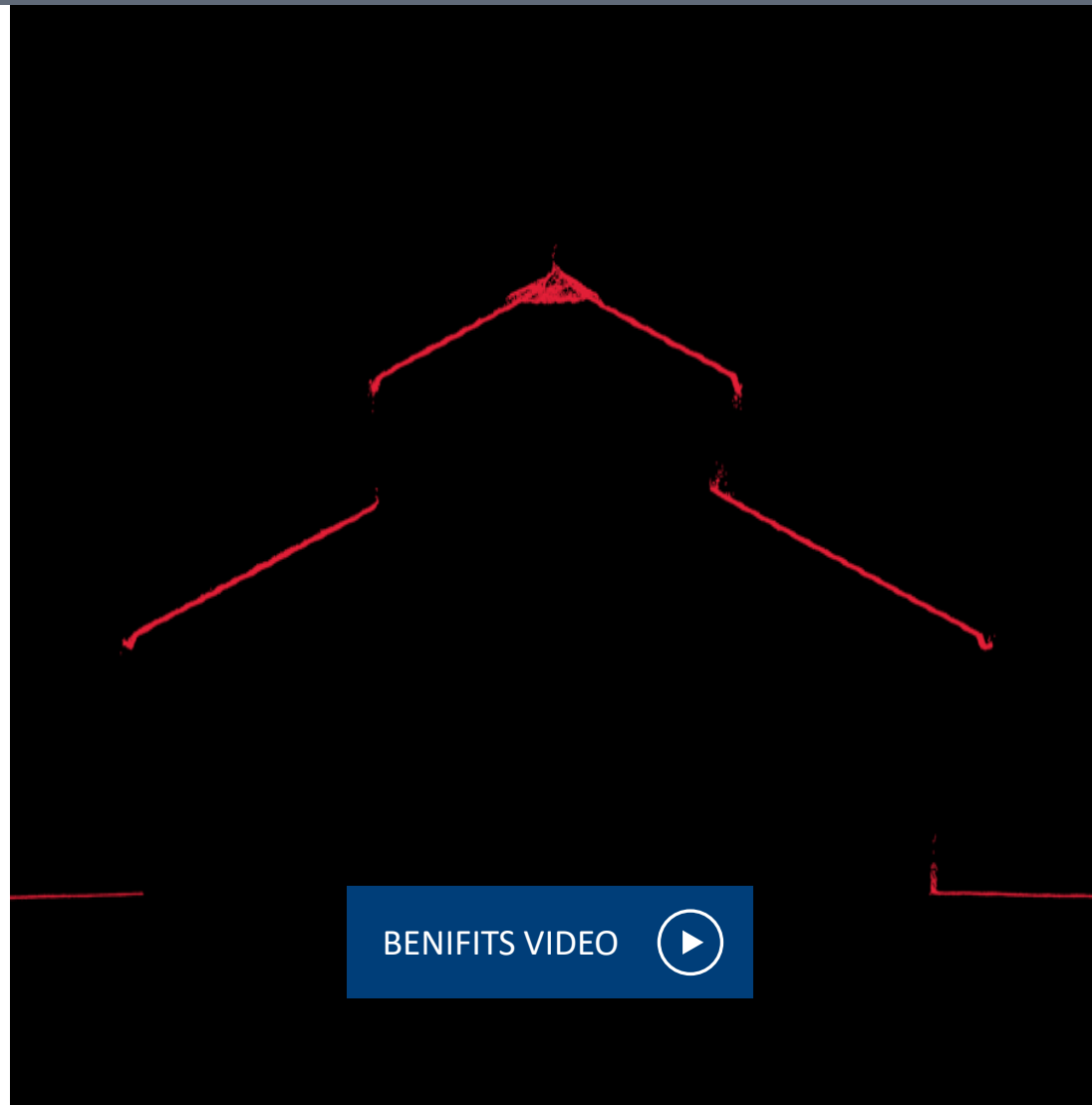


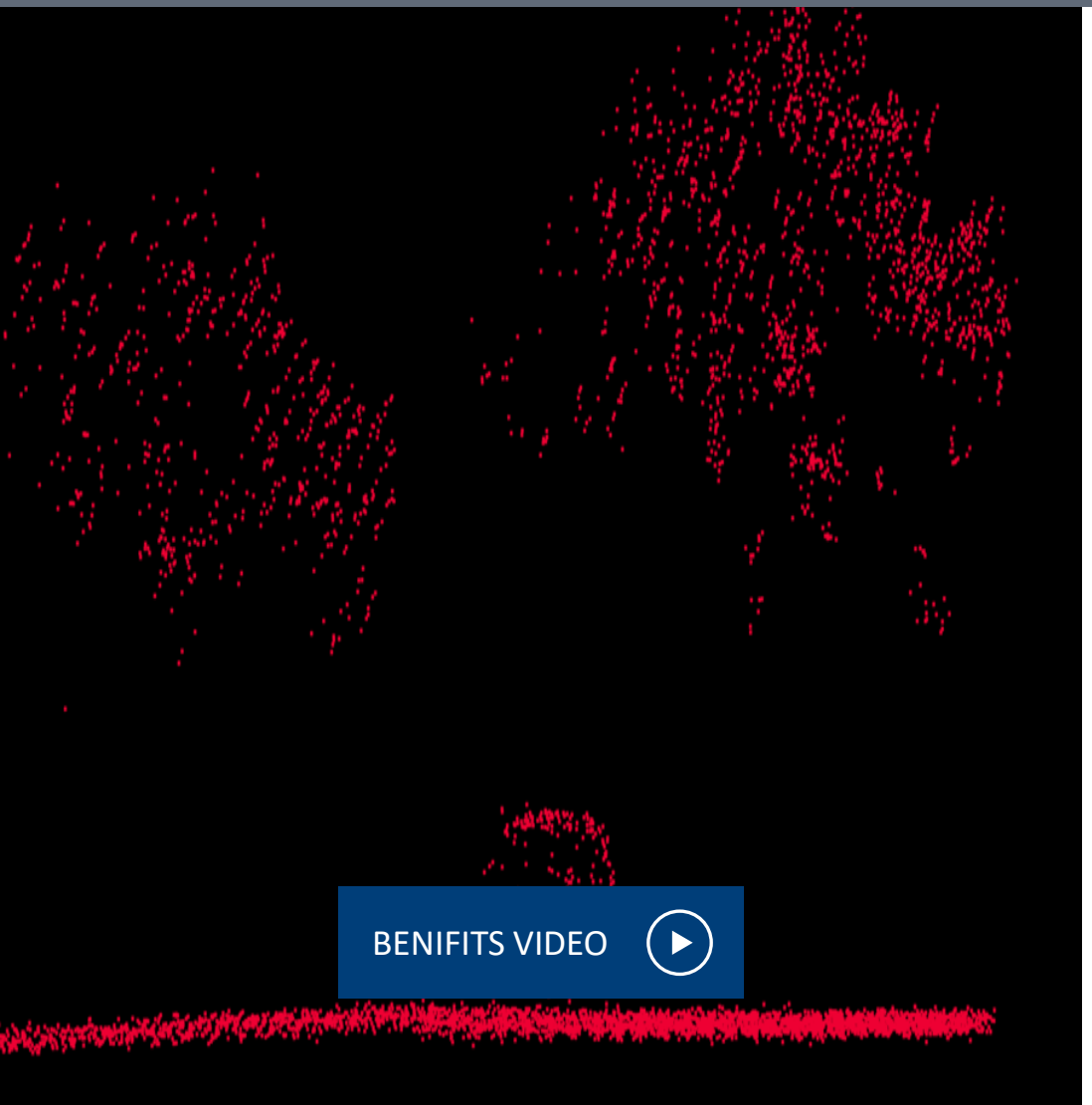
STRIP ADJUSTMENT

Reinforce the consistency between LiDAR survey strips.

The Microdrones strip adjustment method offers numerous options to improve the consistency between lines. Using an advanced optimization engine and a smart tie point selector, position and angles of the drone are adjusted through time in order to get a perfect matching of the data.

A separate module enables the user to achieve the absolute point cloud registration to GCP, as defined by the user.





PRECISION ENHANCEMENT

Remove outliers and reduce the noise level of your point clouds.

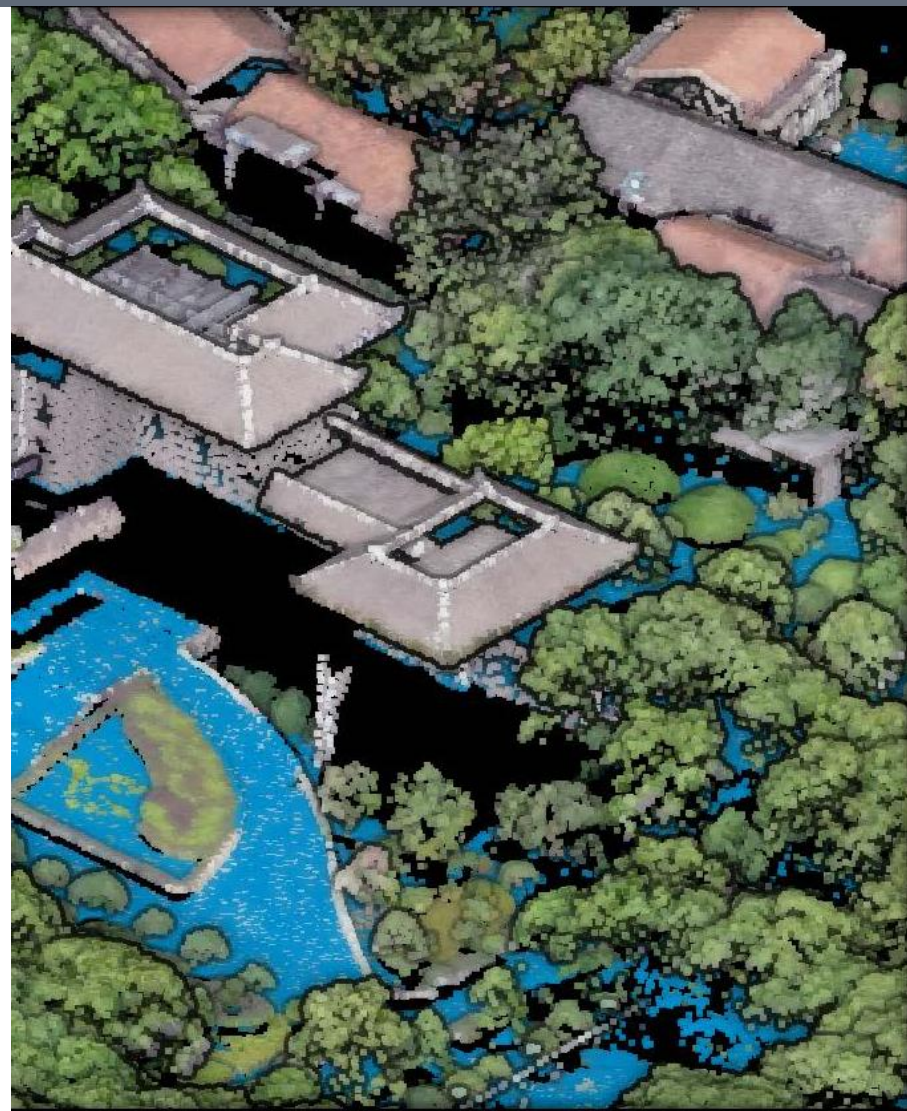
Precision enhancement solves the problem of outlier rejection and denoising in a unified environment.

Microdrones outlier rejection is based on density and morphology which enable the user to isolate points belonging to relevant structures. (e.g. poles, cables) The Microdrones denoising module reduces the noise level while preserving edges and irregular features in the point cloud.

GROUND CLASSIFICATION

mdInfinity ground classification is a powerful way to segment bare- Earth points from objects and vegetation in 3D point clouds collected by LiDAR or photogrammetry.

The mdInfinity Ground classification tool is based on a combination of several algorithms, including like frontier point analysis, segmentation, TIN densification. As such, it takes benefits of each of these methods and is able to classify ground points in very challenging environments.In particular, steep slopes cliffs are correctly classified which enhance the resolution of ground Digital Terrain Models in proving more true positive ground points than other approaches. It can be customized for different data acquisition systems while proving optimum results in terms of classification rate.

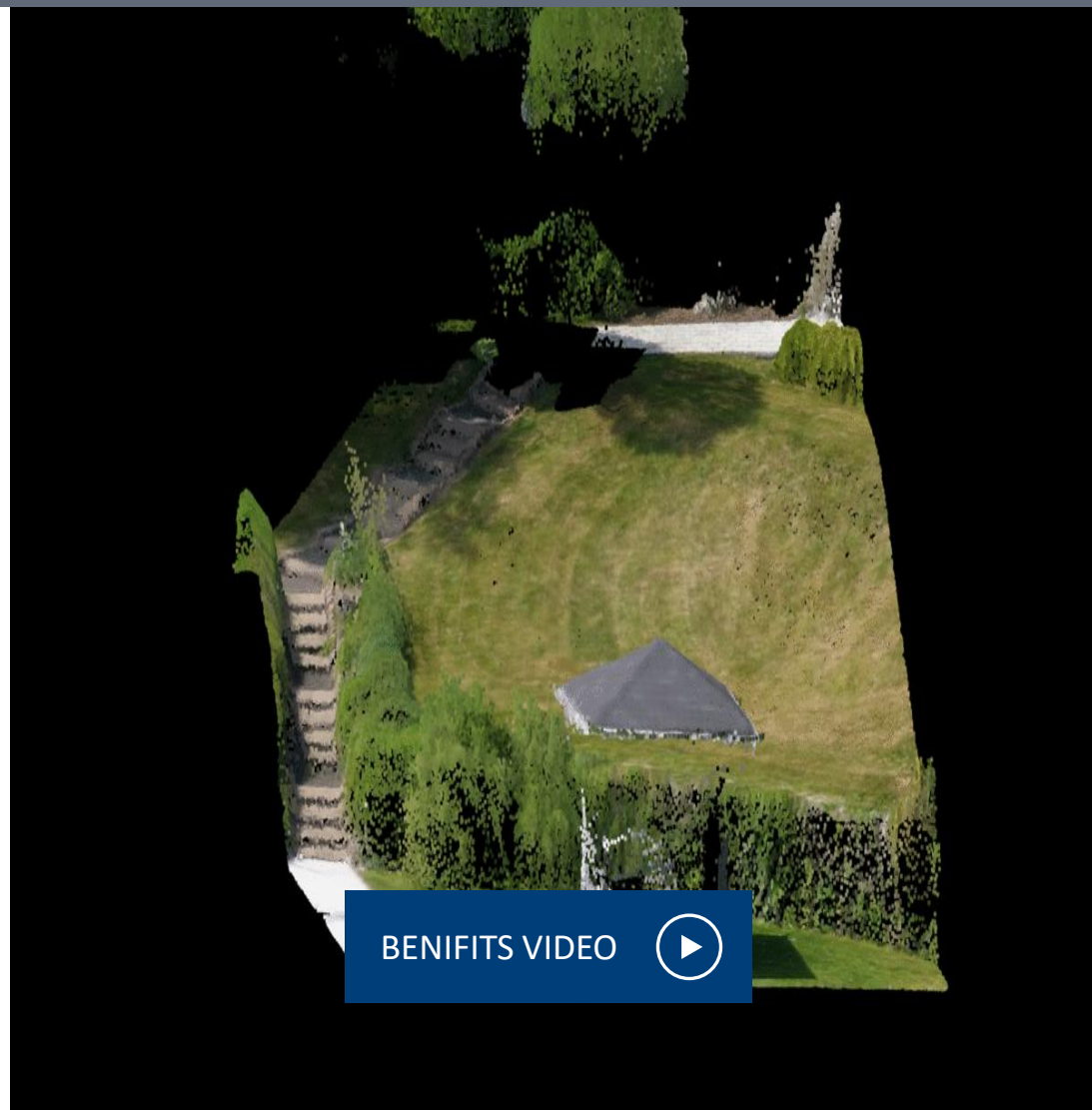


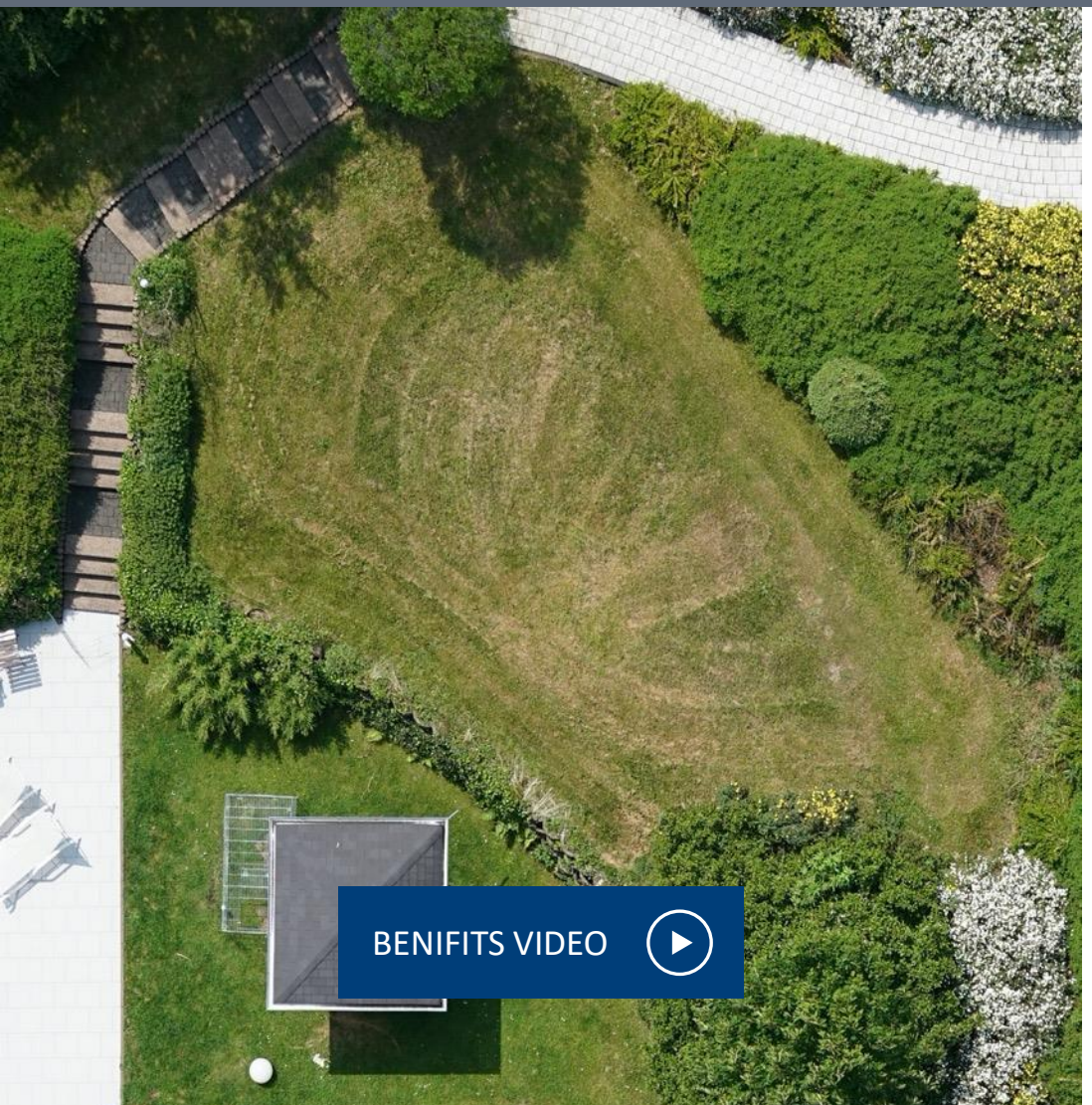
POINT CLOUD DIRECT COLORIZATION

Colorize a point cloud without referring to a full photogrammetric process by managing occlusions.

Microdrones point cloud colorization is done after the LiDAR point cloud generation, without the need of a full prior photogrammetric process.

Occlusions in the point cloud are colorized by considering only the relevant part of the point cloud.





FORMap

Generate an orthomosaic and dense point cloud from photogrammetric survey data.

FORMap implements a rapid and comprehensive photogrammetric workflow to transform images and navigation data in an orthomosaic and a dense point cloud. The main feature of FORMap is a fast response time (2-4 sec/image) to produce results in a few minutes after drone landing.

Orthomosaic produced by FORMap are geometrically consistent and without distortion.

Only available through mdInfinity Custom Services

FOR OUR VALUED DISTRIBUTION PARTNERS

The mdaaS and mdInfinity ecosystem provides an unprecedented opportunity.

EASIER TO SELL

- *S*mall monthly payments instead of one large payment
- Maximizes end user cashflow- no large capital expense required
- Worry free technology: you always have access to the latest, greatest technology as it rapidly advances, and you are never left with something obsolete.
- The cost of ownership is built into your price upfront. It’s predictable, planned, and provided by Microdrones.
- Versatility of system and pay per project processing; end user pays for features when they need them, and they have access to best, better, good processing solutions, as the end user’s client or project demands.
- Increase addressable market for Distributor; you lower the obstacles and increase the volume of sales.

FOR OUR VALUED DISTRIBUTION PARTNERS

Offer your customers complete drone surveying systems, with options that make their decision easy.

EASIER TO GROW

- Build long-term repeat business. With mdaaS you replace a one-time sale in the short term with making more money over the long term, per unit.
- Sell in volume: mdaaS cutting edge technology is within the price range of standard surveying equipment for the end user and distributor.
- Easy upgrade process enables painless compatibility and selling more processing services and additional features to the same customer.
- Enjoy Add On Distributor Sales: End users can affordably try new features; when they like them, they are hooked, generating recurring revenue.

NEXT STEPS