

PHASE**ONE**

IMAGING BEYOND IMAGINATION



PHASEONE

Zvyšte svoji produktivitu a bezpečnost

se středoformátovými kamerami
Phase One
s ultra-vysokým rozlišením

Vít Rambousek vra@phaseone.com

What we do in Phase **One**



We are a **WORLD LEADING PROVIDER**

of medium and large format digital imaging systems
and solutions for aerial applications

Since 1993

Worldwide

We supply **IMAGING BREAKTHROUGHS**

from ultra-high-resolution camera systems to
advanced software solutions for better & more
productive imaging workflows

PHASEONE

IMAGING BEYOND IMAGINATION



Geospatial



Digitization



Professional
Photography



CAPTURE ONE



INDUSTRIAL HERITAGE



PHASEONE

IMAGING BEYOND IMAGINATION



WE SERVE THE WORLD'S LEADING BRANDS WITH
TOP IMAGE QUALITY & PRODUCTIVITY



- 3D cities
- Airborne mapping
- Engineering
- Asset management
- Forestry, agriculture, research
- Infrastructure planning
- Power line monitoring
- Open pit mining

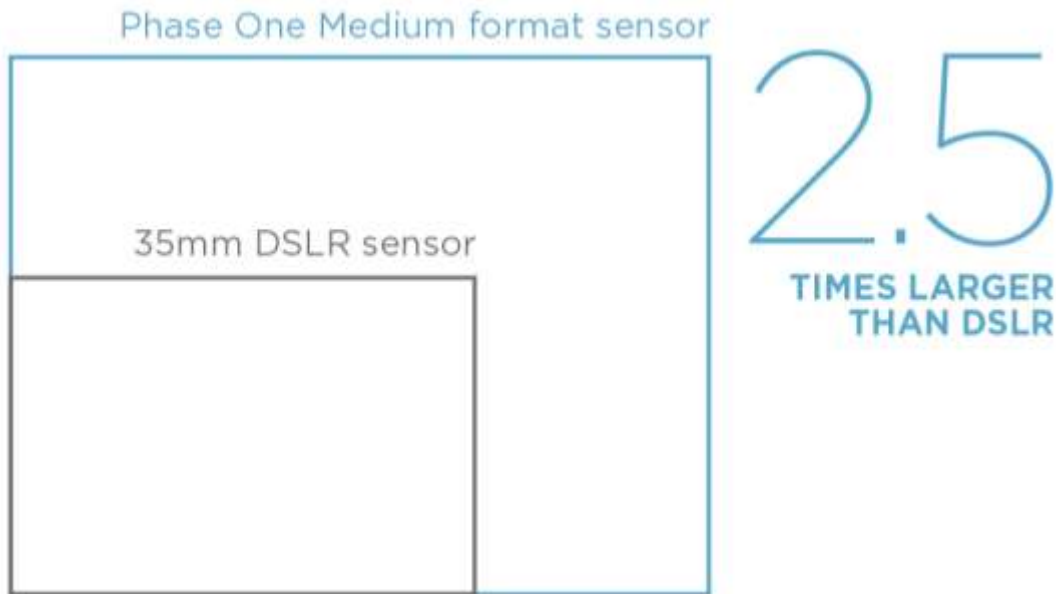
Inspections of critical infrastructure



- Roads & Bridges
- Railway tracks
- Dams & water suppl.
- Pipelines

- Power lines
- Win turbine blades
- Telecom /towers/
- Property - Asset manag.

Phase **One** metric medium-format cameras means



Medium format sensors

- Backside Illumination (BSI) CMOS sensor
- bigger = better
-

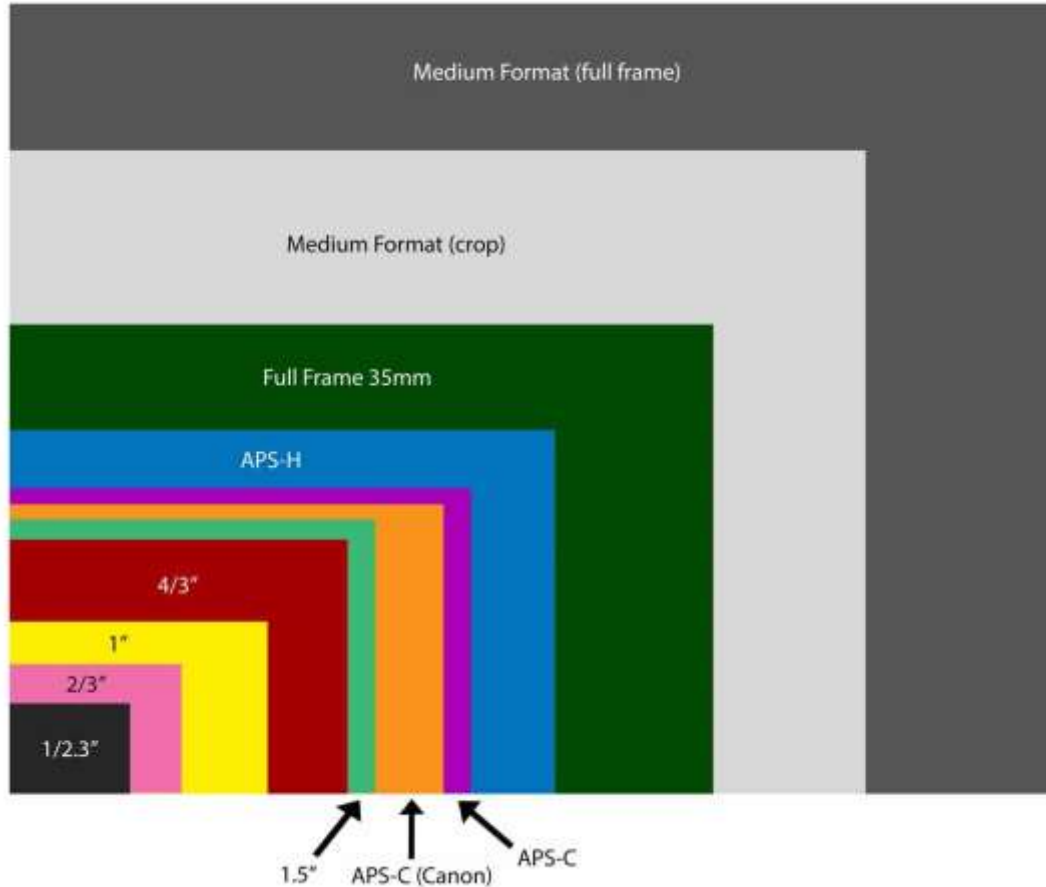
Technology provides

- high dyn. range even w/ reduced pixel sizes
- low noise
- camera calibration for ZERO distortion

Giving you more...

- more information = more details visible
- more color information
- less images = smoother workflow

Phase **One** metric medium-format cameras means



Medium format sensors

- Backside Illumination (BSI) CMOS sensor
- bigger = better
-

Technology provides

- high dyn. range even w/ reduced pixel sizes
- low noise
- camera calibration for ZERO distortion

Giving you more...

- more information = more details visible
- more color information
- less images = smoother workflow

Phase **One** Innovative Reliance Shutter - RS



New construction and materials

- innovative direct drive concept
- carbon fiber blades from aerospace material
- real-time controlled blades

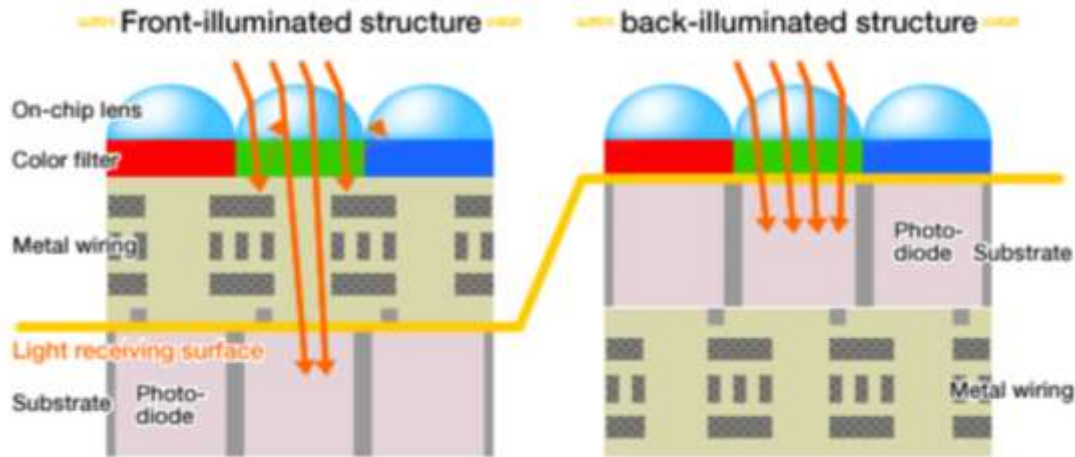
Working horse with GUARANTEE

- Half a million activations
- exposure speed up to 1/2500s

Build to last

- Designed for tough demands of aerial map.
- Constant capture rate 2 FPS
- Resilience brings reliability and op. efficiency

Phase **One** latest sensor technology BIS CMOS



New construction

- Backside Illumination (BSI) CMOS sensor
- maintains object resolution in low-light cond.

Technology allows

- high dynamic range even w/ reduced pixel sizes
- low noise

Giving you more...

- Light sensitivity
- More flight days & longer hours to work
- Higher operational efficiency

FMC by BCT

Forward Motion Compensation Blur Control Technique (BCT)



The BCT eliminates the motion blur by short exposure time, which is enabled by using high-speed shutters (up to 1/2000s) and the higher sensitivity (83dB) of the new generation of CMOS sensors.



iXM cameras for UAVs & drones



Weather protected IP53 incl. lenses

- highly resistant to vibrations as well as dust & water
- specially developed lenses for sensor size

Light & Compact – Robust Industrial

- **630g** /body/, **1,17kg** /incl. 35mm lens/
- 90mm x 90mm x 68mm /body/
- FCC Class A for industrial environment

Sub-mm resolution & high capture rate

- 100MP & 50MP models + 100MP ACHRO
- Constant capture rate up to 3 FPS
- Multiple connectivity - SuperFast

Phase One range of RSM Aerial Lenses



RSM lenses for iXM by Phase One

- mapping & inspection, AF lenses
- weather proof – UAV design



RSM 35mm f/5.6 ➤



RSM 80mm f/5.6 ➤



RSM 80mm AF f/5.6 ➤



RSM 150mm AF f/5.6 ➤



RSM 300mm AF f/8 ➤

HDMI overlay – real-time feedback



HDMI overlay – real-time feedback



PhaseOne P3

Three Versions Available



Phase One P3

Payload Highlights



Phase One P3

Productivity Driver: Integrated Workflow



DJI M300

Existing Platforms – Instant Payback

P3 DJI – Ready for flight

The P3 payload for the DJI M300 is a ready-for-flight, plug and play solution that gets you started with the tools you already have from day one and delivers higher value to your customers.

P3 DJI provides:

- Turnkey integration with the DJI Pilot App eliminating the need to retrain of your pilots
- Increased productivity through an extended lens offering
- Maximum utilization and uptime of your existing M300 fleet by enabling new applications

Phase One P3

Specifications

	P3 DJI	P3 Mavlink
Weight w. 80mm AF Lens	2,6kg	
Sensor	iXM 50 & 100MP	
Stabalization	3 Axis	
Mechanical/Electronic Interface	DJI M300 Damping Plate Skyport V2	P3 Damping Mount P3 Quick Release System P3 MAVLink Interface Cable
Laser Range Finder	Up to 180m	
Supported Lense Range	35, 80 or 150mm	
Camera Control	Manual Capture, Auto capture, Live Video, ISO, Shutter Speed, Exposure, AE, Focus Distance, AF	
Live view	HDMI	
Smart Focusing	Automatically set the focus distance based on the integrated Laser Range Finder	
User Interface	DJI Pilot Phase One iX Capture Mobile	MAVLink Compatible Phase One iX Capture
Software Interface	DJI Payload SDK	MavLink Payload SDK
Hardware Interface	DJI	Tested on PixHawk 4.0
Supported Platforms	DJI M300	Mavlink Based Platforms

Bridge Inspection – Flight Distance 30ft / 9.1m

DJI Zensmuse X5 (16MP)

Focal length 15mm, (equivalent to Full Frame 35mm = 30mm)
Sensor Size 17,3mm x 13mm, Pixel Size 3,77µm
4600 x 3448 px



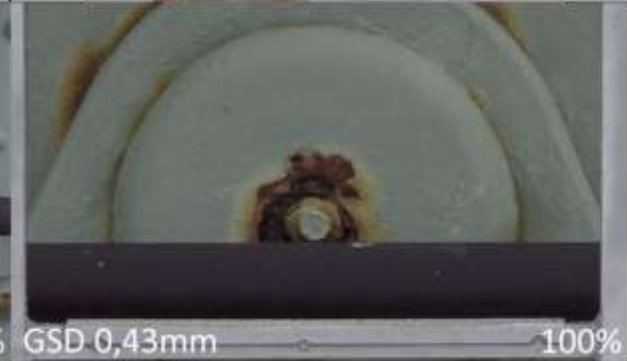
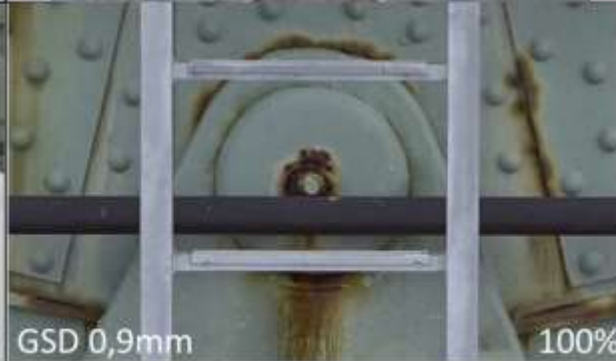
Sony A7R (36MP)

Focal length 50mm,
Sensor Size 35,9mm x 24mm, Pixel Size 4,88µm
7360 x 4912 px






Phase One iXM-100 (100MP)

Focal length 80mm, (equivalent to Full Frame 35mm = 63mm)
Sensor Size 43,9mm x 32,9mm, Pixel Size 3,76µm
11664 x 8750 px



Bridge Inspection – Flight Distance 30ft / 9.1m

<p>DJI Zensmuse X5 (16MP) Focal length 15mm, (equivalent to Full Frame 35mm = 30mm) Sensor Size 17,3mmx 13mm, Pixel Size 3,77µm 4600 x 3448 px</p>	<p>Sony A7R (36MP) Focal length 50mm, Sensor Size 35,9mmx 24mm, Pixel Size 4,88µm 7360 x 4912 px</p>	<p>Phase One iXM-100 (100MP) Focal length 80mm, (equivalent to Full Frame 35mm = 63mm) Sensor Size 43,9mmx 32,9mm, Pixel Size 3,76µm 11664 x 8750 px</p>
 <p>GSD 2,3mm 100%</p>	 <p>GSD 0,9mm 100%</p>	 <p>GSD 0,43mm 100%</p>

Examples

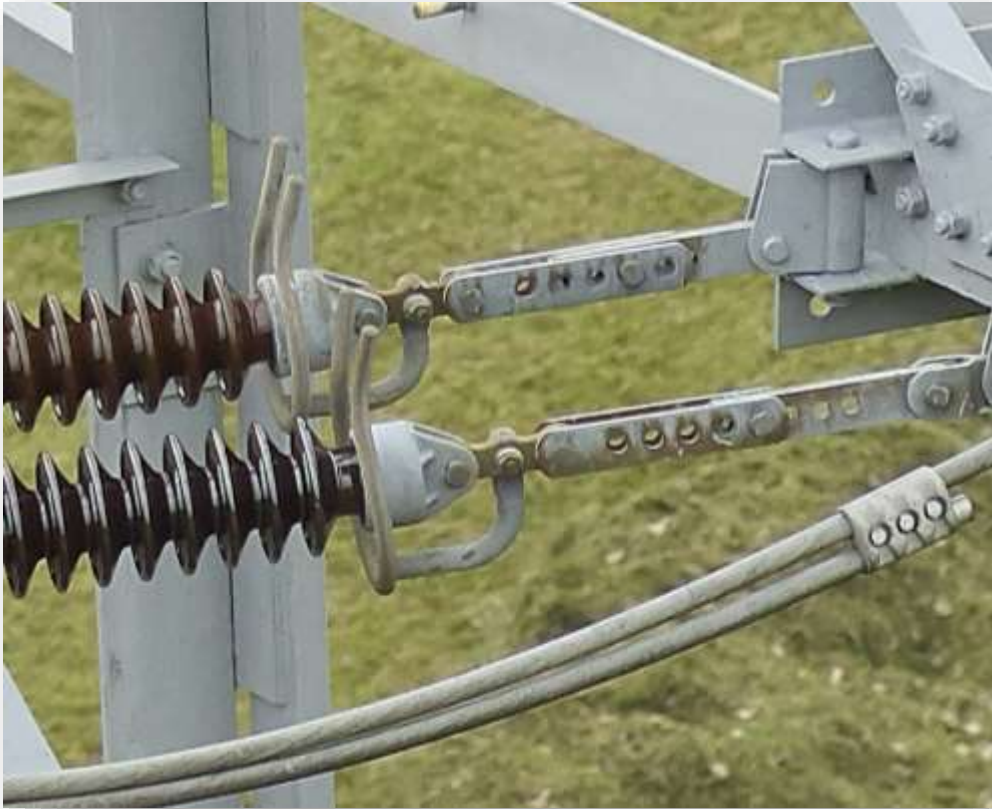
iXM in UAV applications – Powerline Inspection



iXM-100 + RSM80mm AF
Distance to object= 25m
GSD = 1.2mm

Examples

iXM in UAV applications – Powerline Inspection



iXU-RS1000 + RS-150mm Lens
Distance to object= 58m
GSD = 1.5mm

Phase One Metric Aerial Cameras

Delivers the crucial details



Phase One Metric Aerial Cameras

Delivers the crucial details



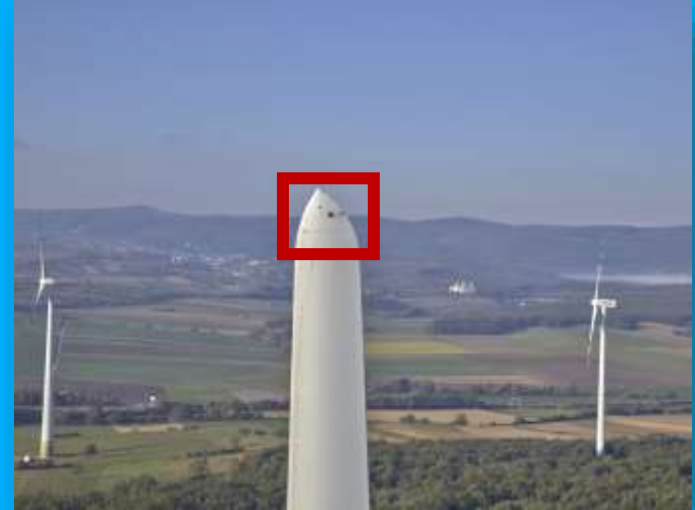
Phase One Metric Aerial Cameras

Delivers the crucial details



Examples

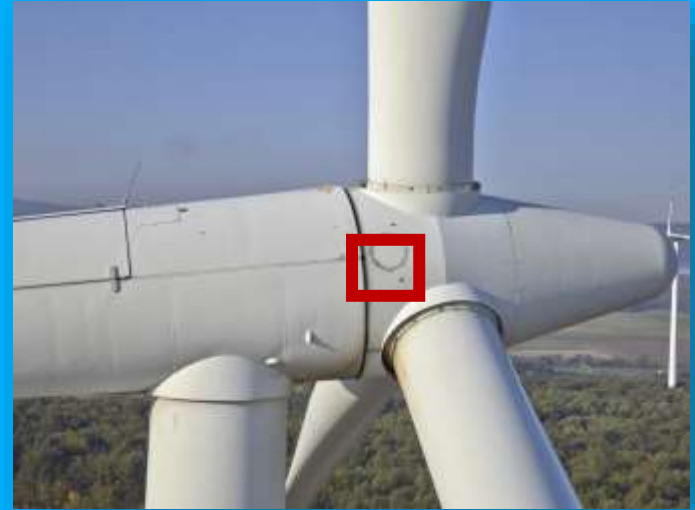
iXM in UAV applications – Windturbine Inspection



iXM-100 + RSM80mm AF
Distance to object= 15m
GSD = 0.7mm

Examples

iXM in UAV applications – Windturbine Inspection



iXM-100 + RSM80mm AF
Distance to object= 15m
GSD = 0.7mm

Examples

iXM in UAV applications – Bridge Inspection



iXM-100 + RSM80mm AF
Distance to object= 9.1m
GSD = 0.43mm

Phase One Metric Aerial Cameras

Delivers the crucial details



Phase One Metric Aerial Cameras

Delivers the crucial details



Phase One Metric Aerial Cameras

Delivers the crucial details



Examples

iXM in UAV applications – Railtrack Inspection



iXU-1000 + SK80mm
AGL – Flight Altitude= 23m
GSD = 1mm

Examples

iXM in UAV applications – Railtrack Inspection



iXU-1000 + SK80mm

Result of point cloud from images like shown at
slide 21

Examples

iXM in UAV applications – High Accuracy Mapping



iXM-100 + RSM35mm
AGL – Flight altitude= 37m
GSD = 4mm

Data Collection Methodology

Tupholme Abbey, Lincolnshire, United Kingdom.



History

- Built between 1155 and 1165
- Destroyed in 1536 during the Dissolution of Monasteries
- Later turned into a grand Tudor house by Sir Thomas Heneage
- Around 1700 the Tudor Mansion was demolished and Tupholme Hall was built retaining one of the original Monastery walls.
- By 1976 Tupholme hall was demolished.
- 1970s the site was used for the Bardney festival, with musicians such as Rod Stewart, the Beastie boys, and Status Quo entertaining crowds on the site of the old Abbey

Data Collection Methodology

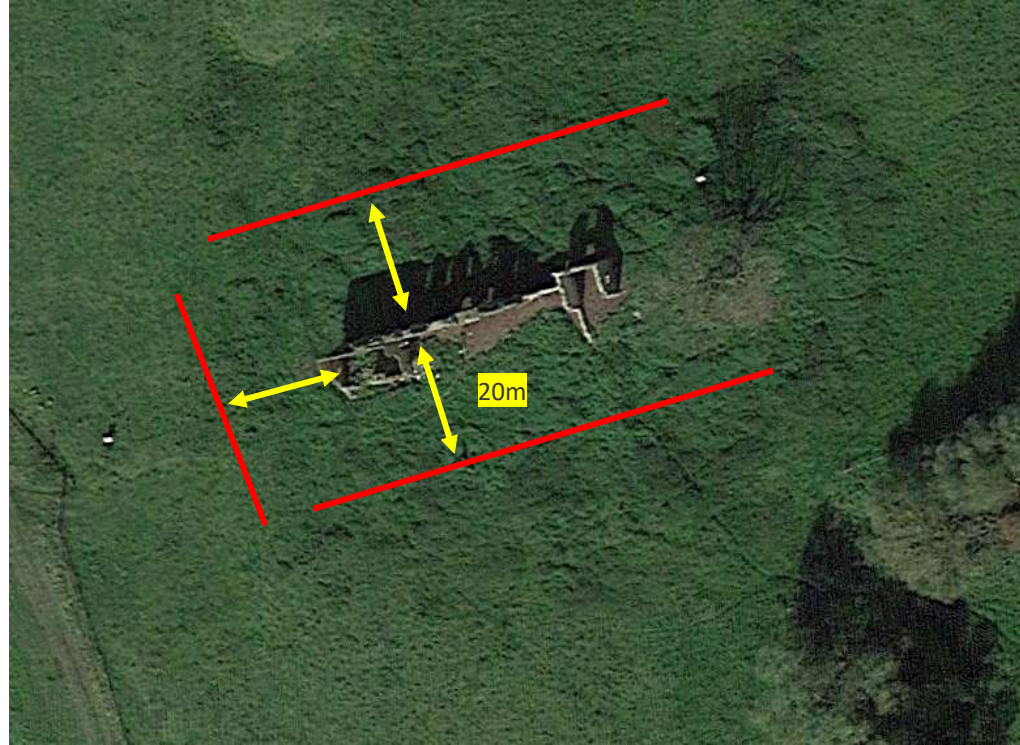
Tupholme Abbey, Lincolnshire, United Kingdom.

Collection and camera Specifications

- iXM-100 RSM80mm AF
- Subject/Focus distance = 20m
- Pixel Resolution = 1mm
- Depth of field at f/8 = 3.81m
- Time based triggering 1fps.
- Overlaps ~ 80%

Weather conditions

- CAVOK
- Strong winds 9m/s on the ground.



Data Collection Methodology

Tupholme Abbey, Lincolnshire, United Kingdom.

Collection and camera Specifications

- 15 runs in total
- 568 images
- Flying time 15 minutes

Limitation.

- Contrast in light conditions between the North and South Facing walls.



Results

Tupholme Abbey, Lincolnshire, United Kingdom.

Asset Tupholme Abbey

Date 20 August 2020



RAILWAY INSPECTIONS

Full Condition Surveys (mm)



Plowman Craven

Plowman Craven

United Kingdom

AERIALTRONICS
COMMERCIAL UNMANNED AIRCRAFT SYSTEMS

KEY SUCCESS

Massively reduce risk, cost and timeframes compared to traditional surveying methods, and the data accuracy is superior to traditional laser-scanning systems

RESULTS



Capture track condition and measurement data from a position of safety even during traffic hours.



Shortening of program times and significant cost savings.



Creation of 1.0 mm point cloud



ZOOM 25%



ZOOM 100%



ZOOM 200%



ZOOM 25%



ZOOM 50%



ZOOM 100%



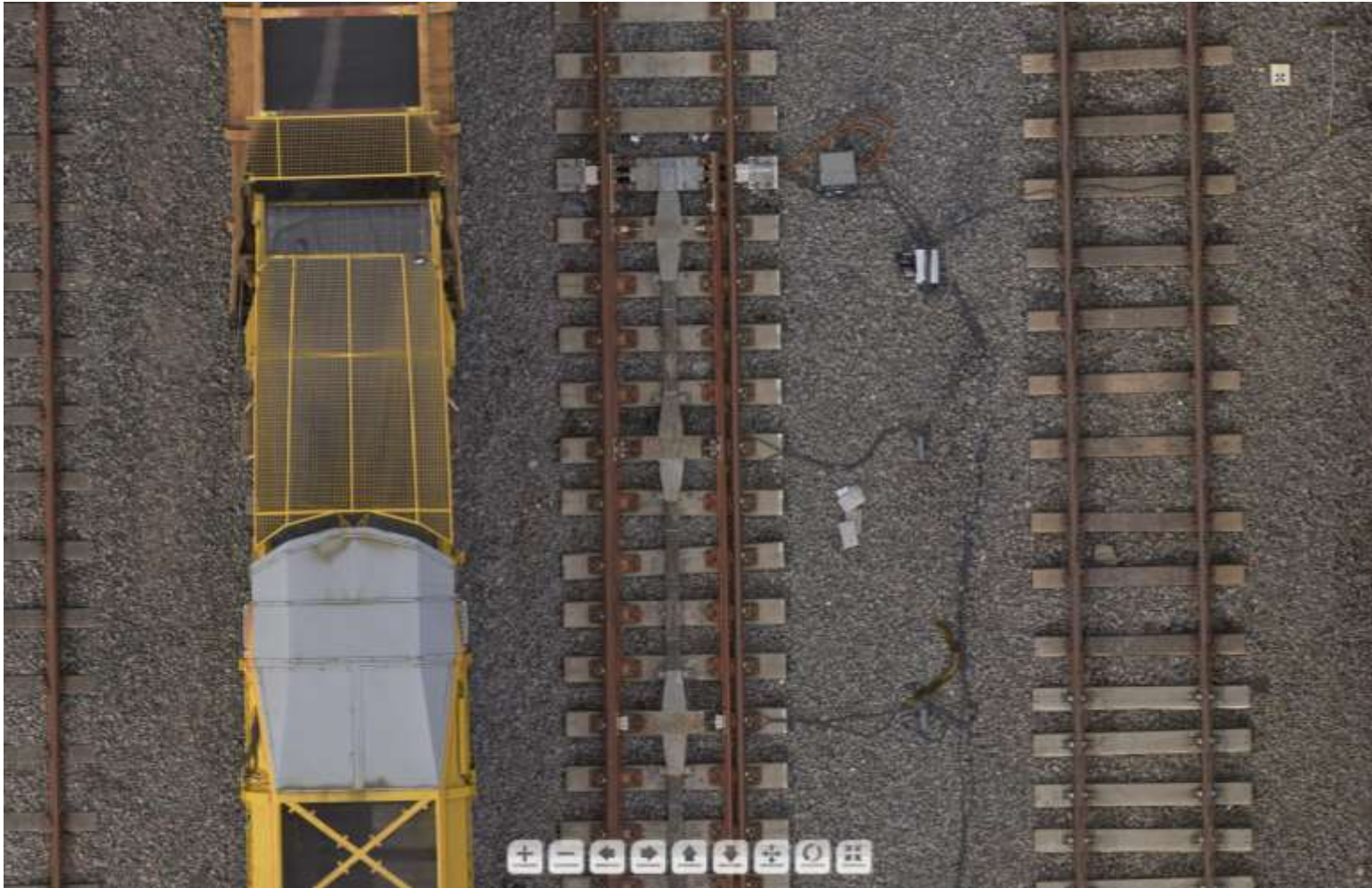
ZOOM 200%



3-D VISUALISATION



3-D VISUALISATION



3-D VISUALISATION



iXM cameras BENEFITS

- What you GAIN



- ✓ Higher Resolution possible (<1mm)
- ✓ More Safety Distance
- ✓ Larger Coverage
- ✓ Less Images
- ✓ Shorter Flight Time

= Higher Efficiency + More Safety

Phase **One** believes? in **PARTNERSHIP**



We provide

- **Image Accuracy & Reliability**
- technological edge – latest sensors tech.
- industrial build – working horses

We keep

- **Long term supply agreement**
- min. 7 years of Service & Support
- regular SW & FW updates

We guarantee

- 0.5 millions of shutter activations
- **Warranty & Premium Warranty package**

Connect and talk about your projects and Phase **One**



CONNECT



Connect on Social medias and Follow us!

- [LinkedIn](#)
- [Facebook](#)
- [YouTube](#)

Write, Contact us

- vra@phaseone.com
- industrial.phaseone.com/Contact.aspx

Call

- **+420 602 863 436** (WhatsApp)
- Skype - vitrambo

Subscribe to

- [Newsletter](#)
- [YouTube channel](#)