

Phase One Geospatial

OPEN DAY PHOTOGRAMMETRY 2021, Magdeburg, Germany

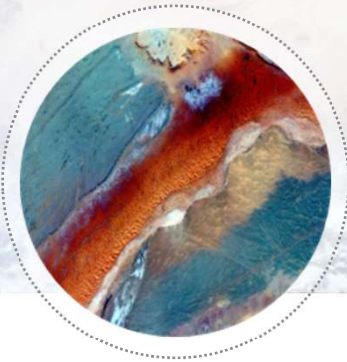


geospatial.phaseone.com



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THE NEED FOR MOST ACTUAL GEOSPATIAL DATA IS INCREASING
PHASE ONE PROVIDES TOP IMAGE QUALITY & PRODUCTIVITY



- 3D cities
- Orthophoto mapping
- Engineering
- Asset management
- Forestry, agriculture, research
- Infrastructure planning
- Power line monitoring
- Autonomous driving

Phase One

Company



Trusted brand with more than 100.000 satisfied customers
Founded 1993 in Copenhagen, Denmark.
Phase One Core Team of 320+ employees across 11 countries.



The **market leader** in Medium Format Imaging



Worldwide **distribution network** in **50+ countries**
across all 7 continents



24/7 global **customer support**



Customer centric & innovative team with + 25 nationalities

PHASEONE
IMAGING BEYOND IMAGINATION



Phase One HQ Denmark

An aerial photograph of a coastal area. On the left is a sandy beach meeting greenish water. To the right of the beach is a row of modern, light-colored buildings. Further right is a multi-lane road with cars and a railway track. On the far right is a residential neighborhood with houses and trees.

Phase One PAS Aerial Solutions

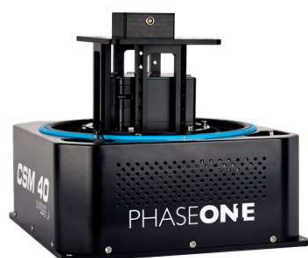
Revolutionary Aerial Imaging Systems

Phase One Aerial System (PAS)

System Overview

Medium Format

PAS 100 / PAS 150
4band*



Large Format

PAS 280
4band*



Large Format and Oblique

PAS880**



Resolution

100MP

150MP

280MP

880MP
280MP nadir, 4x 150MP oblique

*4band = RGB + NIR

*4band = RGB + NIR

**4band (RGB+NIR) available Q4/2021

Phase One Aerial System (PAS)

System Overview



RGB



NIR, CIR*, NDVI



*Example shows CIR image

Phase One Aerial System (PAS)

System Overview



Phase One PAS Aerial Systems

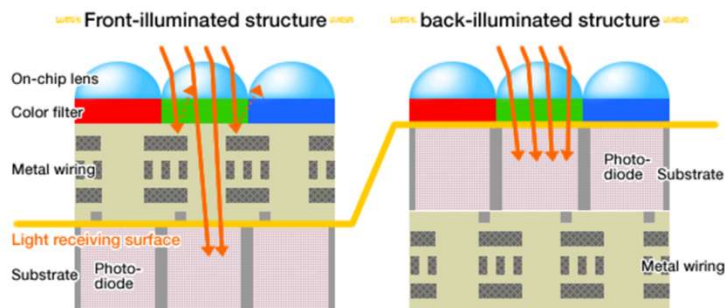
Small light weight systems with low power consumption for nearly any aircraft type



PAS100 / PAS 150	Weight (kg)	Max. Power
	< 19kg	250 W
PAS 280 / 4band	Weight (kg)	Max. Power
	<32kg	300 W
PAS880	Weight (kg)	Max. Power
	<78kg	450W

Phase One PAS Aerial Systems

Latest CMOS technology



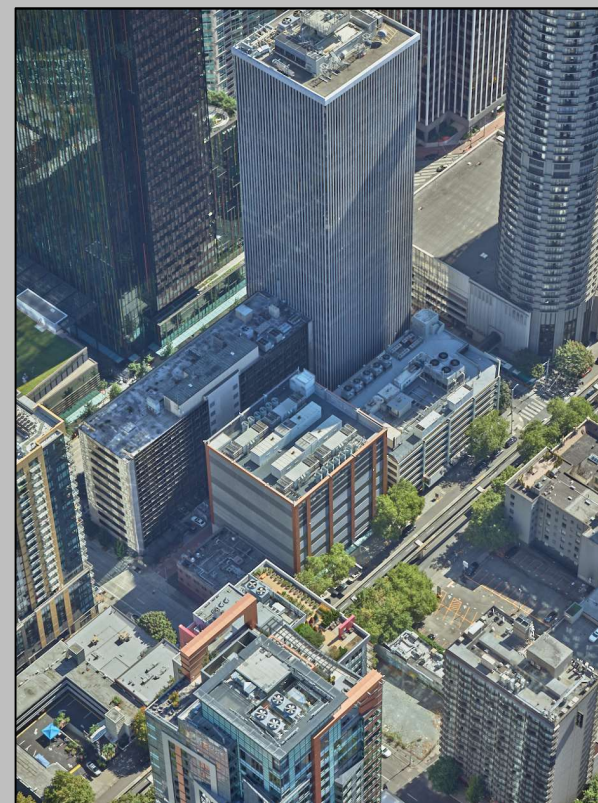
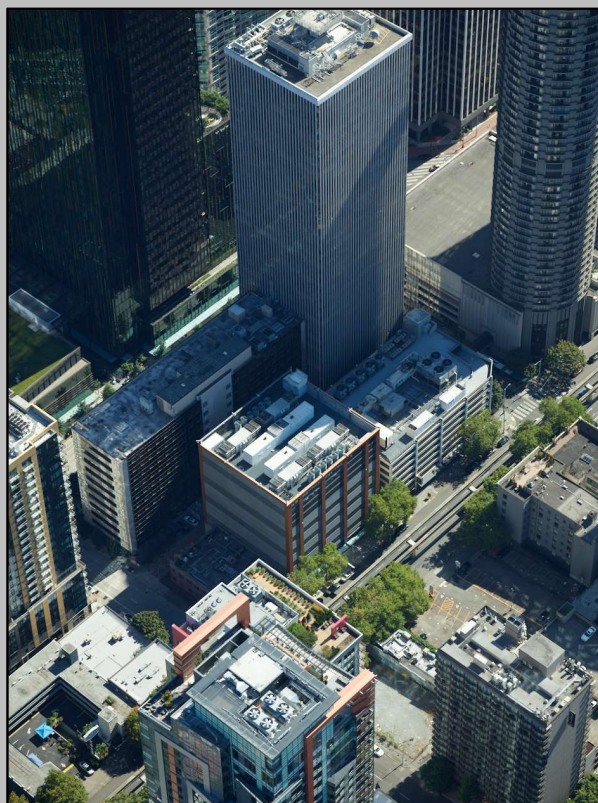
- Backside illuminated (BSI) CMOS sensor
- Wide dynamic range
- Improved light sensitivity
- More flying hours per day and more flights achievable per year
- Maintains object resolution in low light conditions

- **PAS systems** and **iXM-Series cameras**, equipped with new Sony Backside illuminated sensors
- With BSI technology the metal wiring and Photo-Diode substrate placing the wiring below the light collecting Photo-Diode
- BSI technology allows high dynamic range and low noise even with reduced pixel sizes

Phase One PAS Aerial Systems

Phase One... experts in image processing!

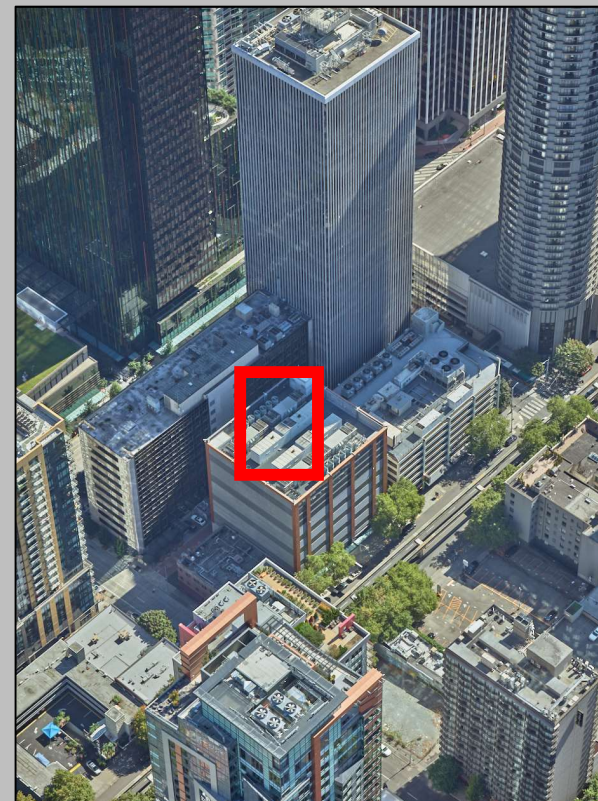
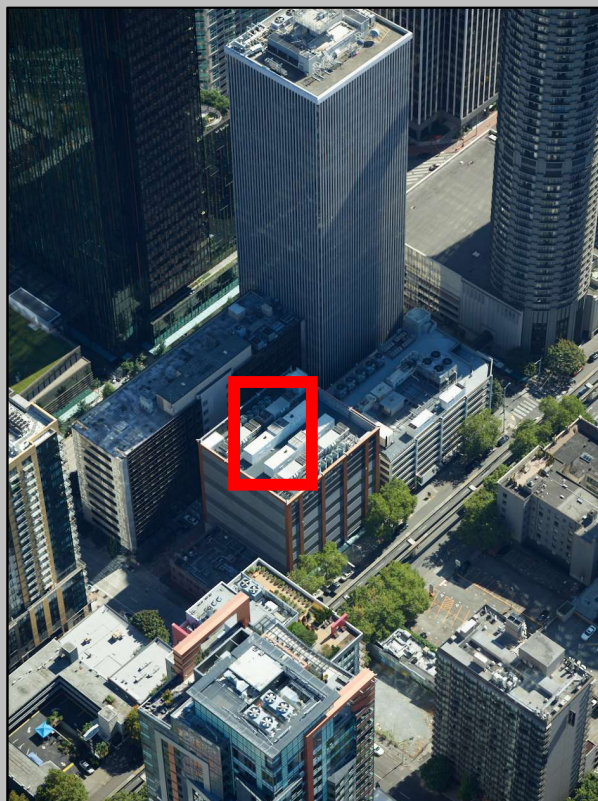
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Phase One PAS Aerial Systems

Phase One... experts in image processing!

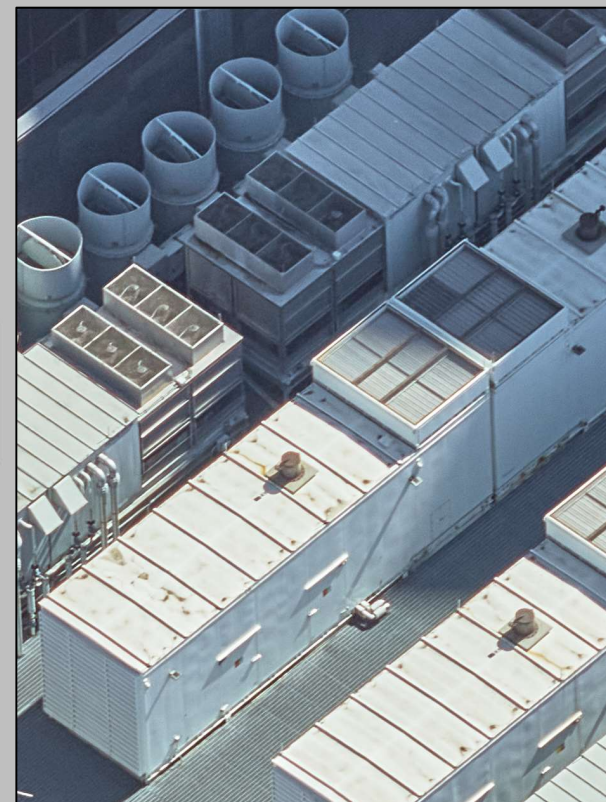
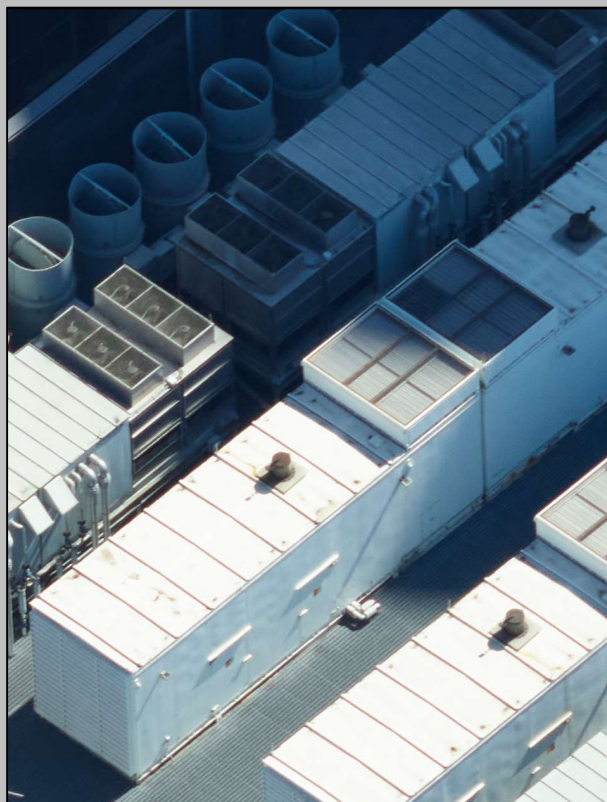
.IIQ



Phase One PAS Aerial Systems

Phase One... experts in image processing!

.IIQ



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.

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Calibration

Full calibration of system



- All systems are delivered with a full calibration of the system
- The calibration ensures an accuracy of 0.3 – 1.0 pixel for photogram-metric products
- The calibration consist of a laboratory test and a test flight over our test filed
- All systems are delivered with calibration certificate
- We recommend a on factory calibration each second year

Calibration Reports

Available



**Camera Calibration
Certificate**

iXM-RS280F

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PhaseOne iXM-RS150F
RGB and Achromatic cameras

Radiometric Calibration Report



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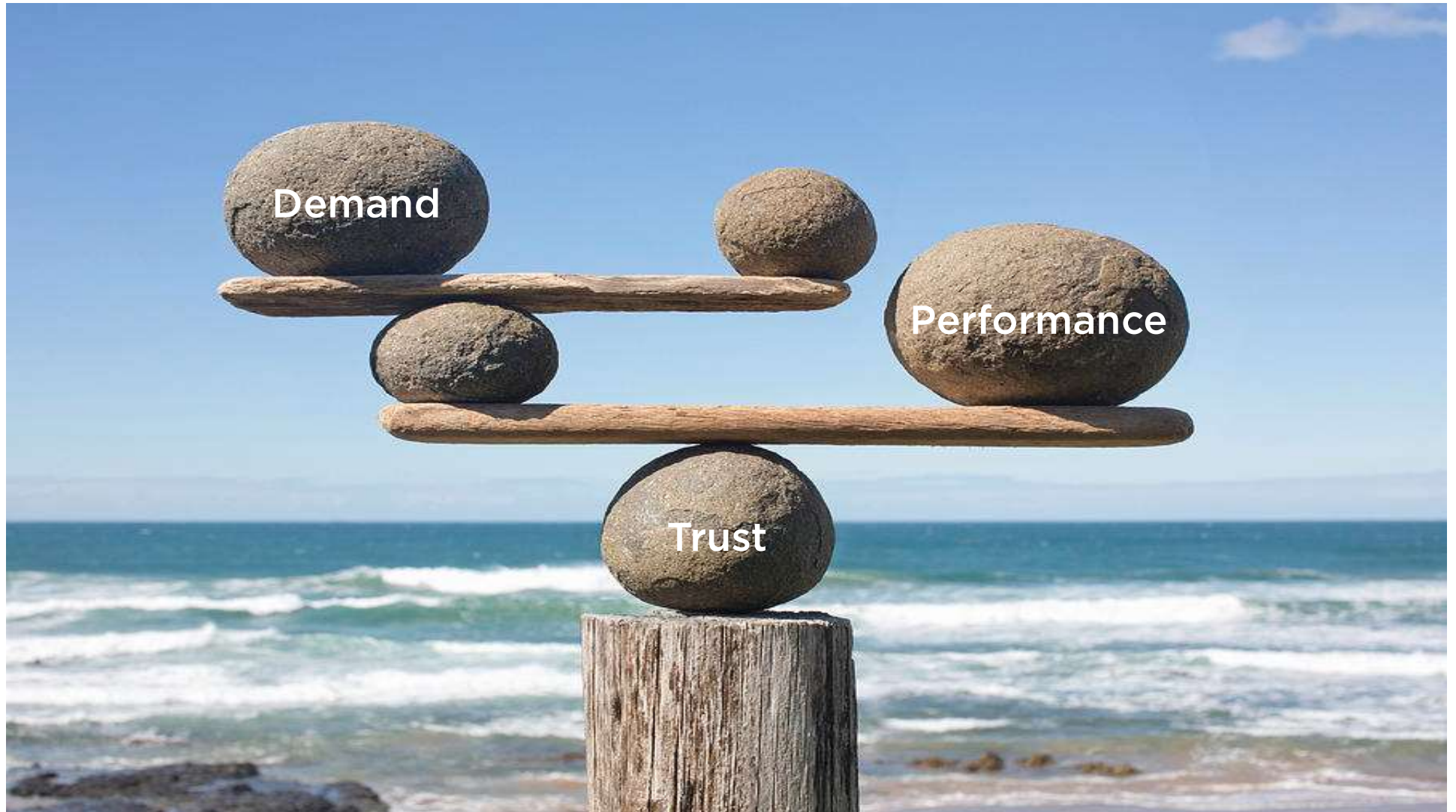
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- Camera Calibration Certificate
- Radiometric Calibration Report

An aerial photograph showing a coastal area. On the left is a sandy beach meeting greenish water. To the right of the beach is a row of modern, light-colored buildings. Further right is a multi-lane road with cars and a railway track. To the right of the road is a residential neighborhood with houses and trees. A blue banner is overlaid on the image, containing the text 'Phase One PAS 880' and 'Accurate and Affordable Oblique & Nadir Aerial System'.

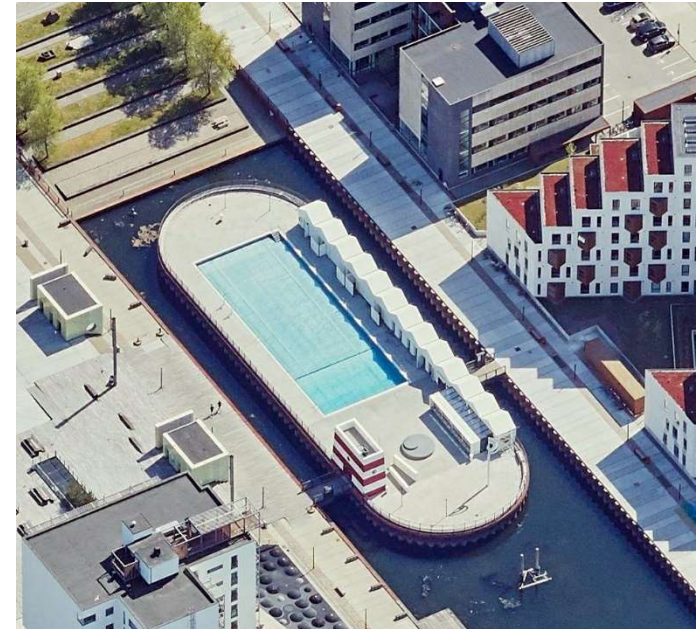
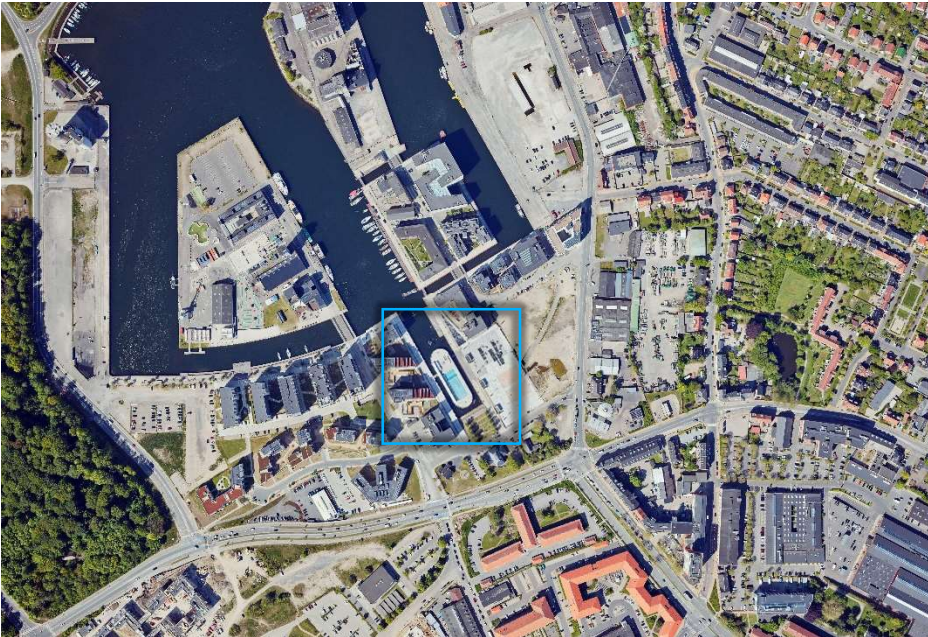
Phase One PAS 880

Accurate and Affordable Oblique & Nadir Aerial System



Countrywide combined Nadir and Oblique

Nadir and oblique image at same GSD



- Nadir coverage for regional or countrywide projects
- Oblique coverage at the same GSD

3D City Modelling and Smart City

High resolution city models



- City models need details for management
- PAS 880 can fly 5 cm GSD from comfortable 1,200 m altitude
- Any survey aircraft can be used

Corridor Mapping

Corridor mapping with high accuracy



- High resolution and high accuracy for corridor projects, eg. 2.5cm GSD
- Control points can be placed outside of corridor
- Can be flown by aircraft

Environmental Mapping

The need for fast overview



- Natural disasters like hurricanes, flooding or forest fires have a need for a fast overview
- Environmental monitoring like bird counting can be done without distortion of the environment

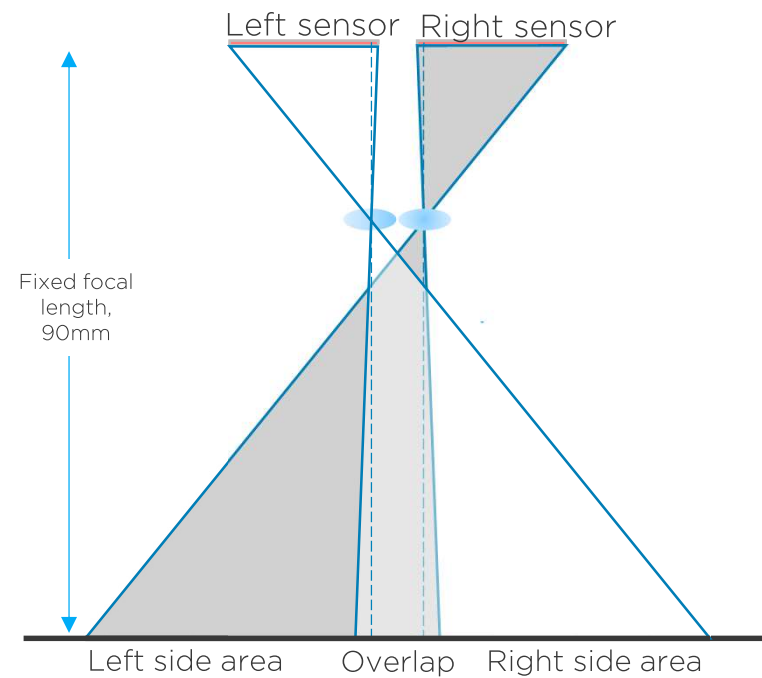
PAS 880 Nadir Camera

System and key sensor specifications



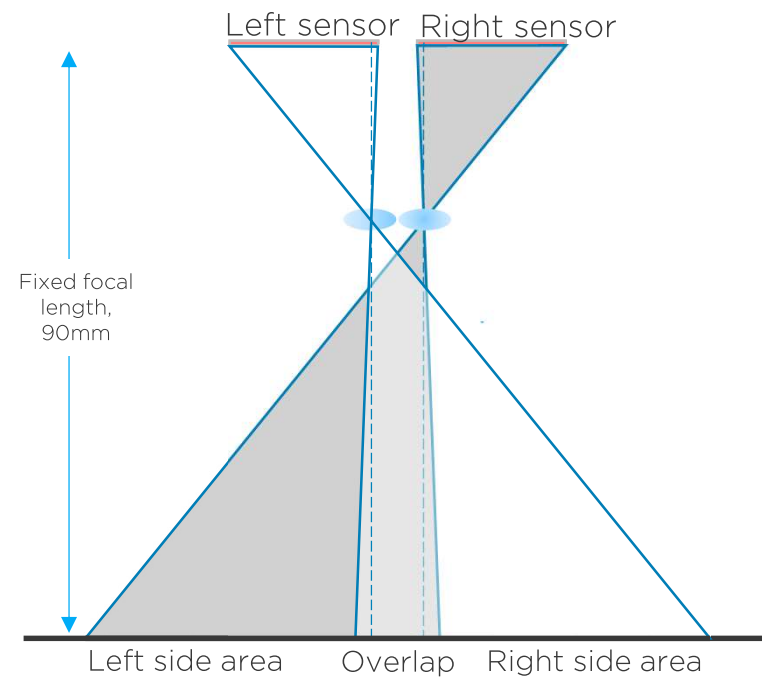
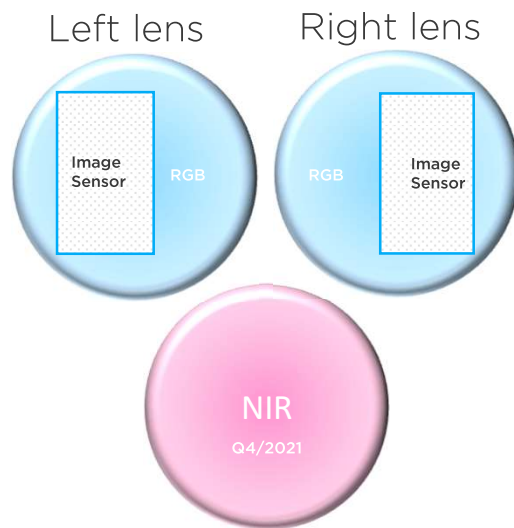
PAS 880 Nadir Camera

System and key sensor specifications



PAS 880 Nadir Camera

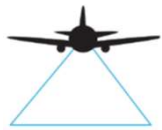
System and key sensor specifications



PAS 880

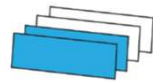
System and key sensor specifications

Coverage



+20,000
pixels accross

Capture Rate



2
Frames per second

Shutter Speed



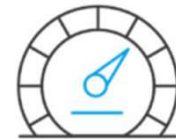
Up to 1/2000
second

Overlap



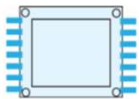
Over 80%
forward overlap
at high speed

Speed



390kts maximal ground speed
at 10cm GSD with
motion blur under 1 pixel

CMOS



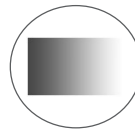
BSI CMOS sensor
with 3.76µm pixel size

FMC



Motion Blur
Control for FMC

Dynamic Range



83dB
Wide Dynamic Range
ISO 50 - 6400

Sensitivity



Improved light sensitivity
for low light condition flights

More



More flying hours per day
and more flights achievable
per year

PAS 880

Basic concept

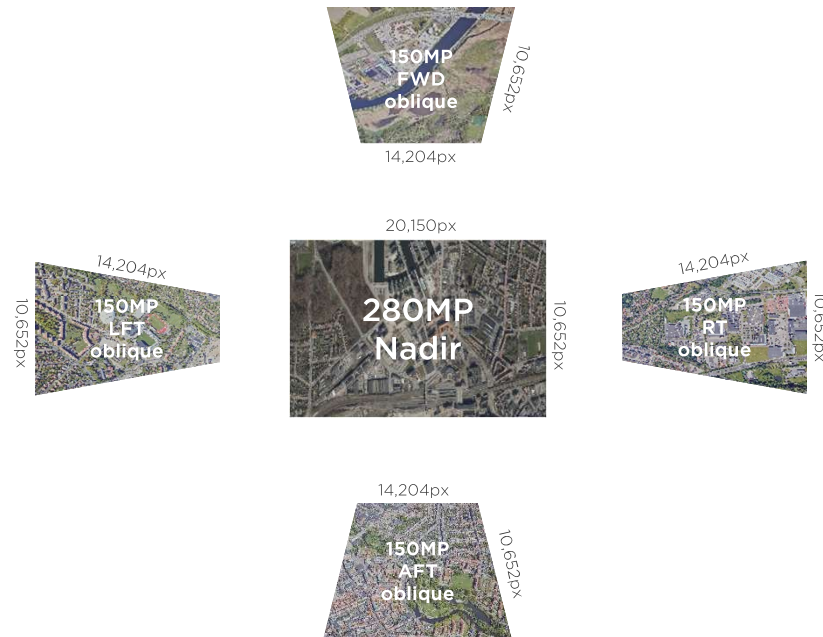


Nadir

PAS 280, NIR as option
90 mm lenses

Oblique

PAS 150, 150 mm lenses



Orientation

Nadir: Landscape

Right/left: Landscape

Forward/backward: Portrait



Nadir

0°

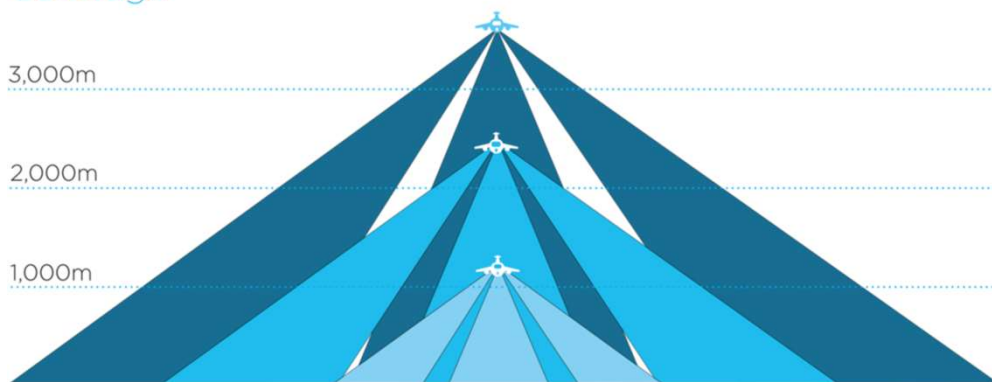
Oblique

42°

Combining Nadir and Oblique

2 in 1 Solution for Nadir and Oblique Imagery Capture

Coverage



GSD nadir (cm)	GSD oblique (cm)	Swath nadir (m)	Swath oblique (m)	Altitude (m)
5	4.2	1,008	880	1,197
10	8.4	2,016	1,760	2,394
15	12.6	3,024	2,640	3,591



Balance in GSD is the key point!

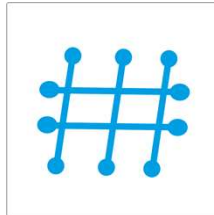
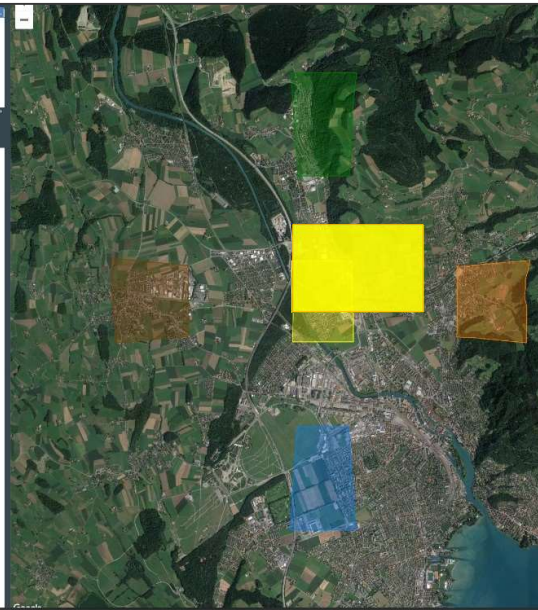
- Our focus is a system perfectly synchronized in GSD for Nadir and oblique
- The Nadir is designed as a large format camera system
- The Oblique cameras are covering all application such as oblique image capture and advanced 3D city modelling
- The system is fully calibrated to provide best photogrammetric accuracy

PAS880

iX-Suite, Acquisition and post processing workflow

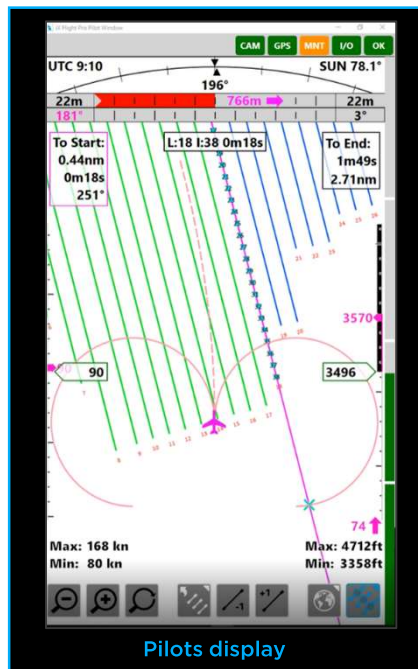


iX-Plan

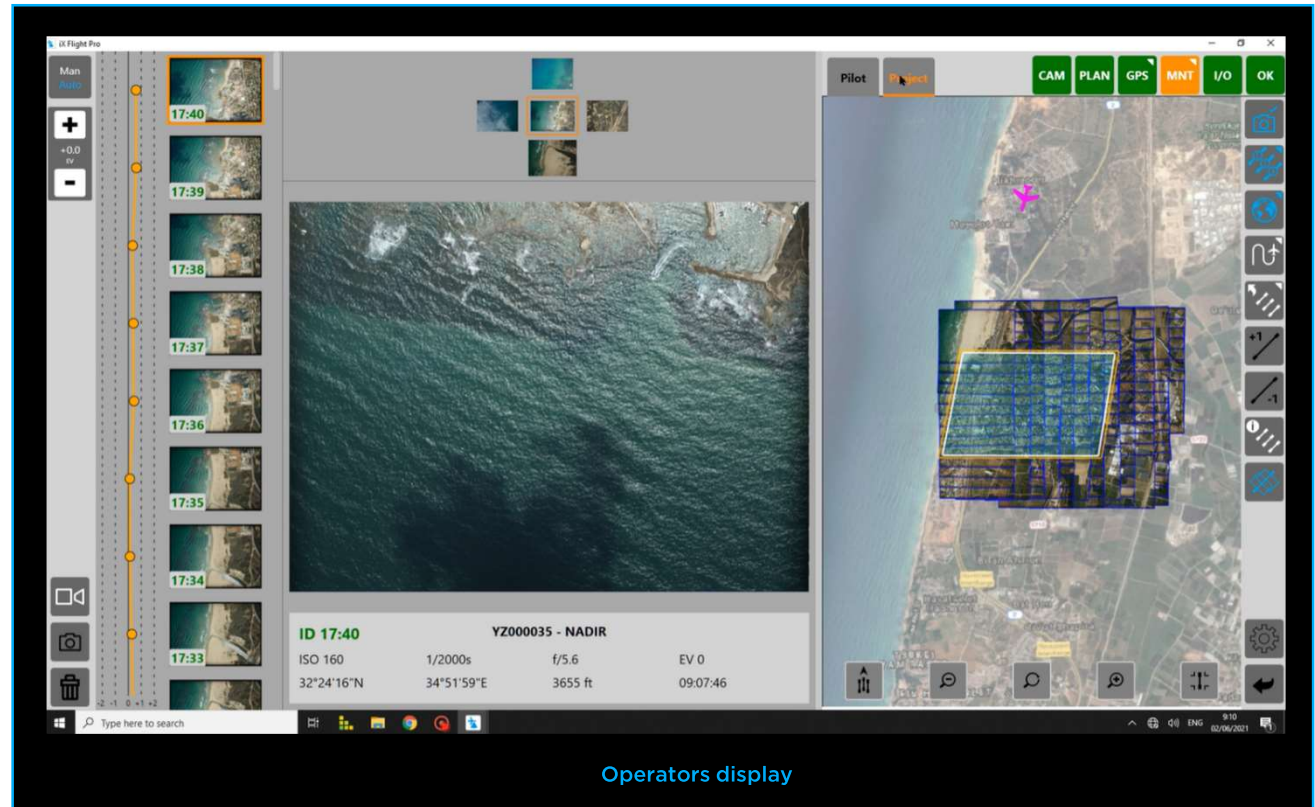
[illegible]

- Easy and reliable planning due to balance between nadir and oblique
- The 3D background ensure a full review of specifications
- Planning can be reviewed in detail
- Flying in 3D can be planned
- Restrictions from Airport is a function of the planning
- Full QA reporting

iX-Suite iX-Flight Pro



Pilots display

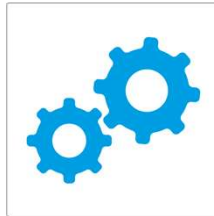


Operators display

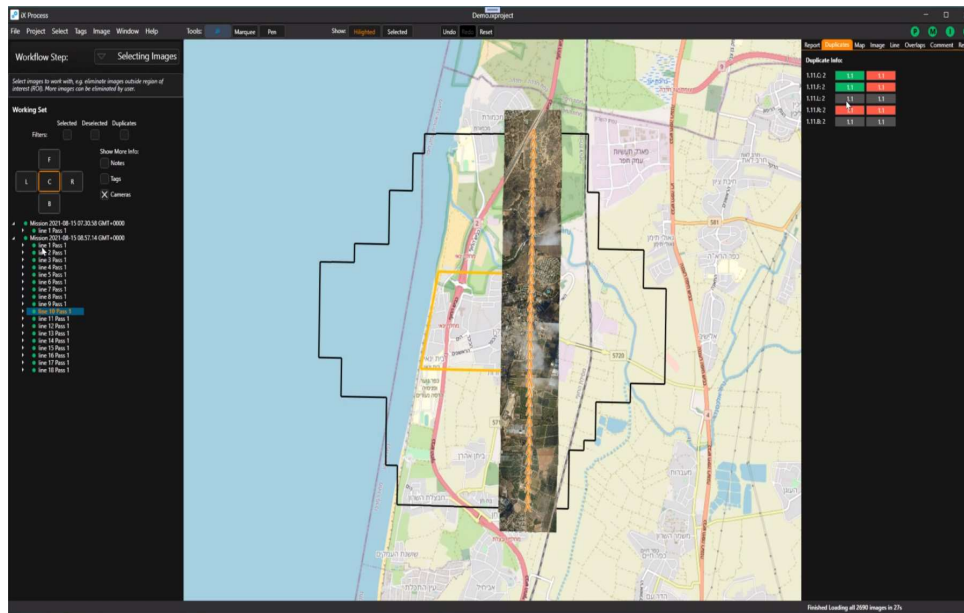
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Beside the advanced functions for the Pilot, the Operator can control images quality , reject or accept images or lines, decide re-flying, set parameters of cameras both for session of specific

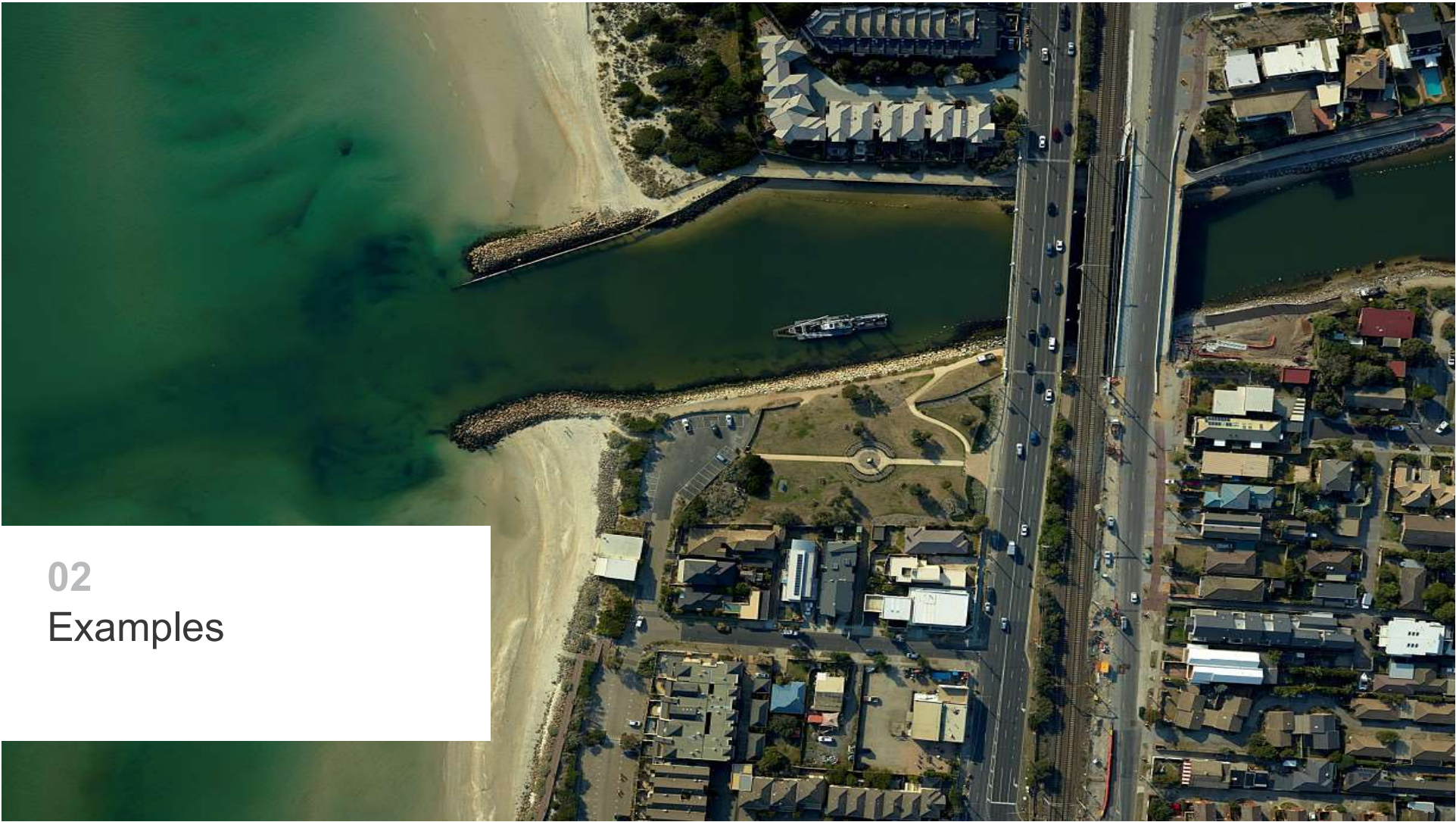
iX-Suite iX-Process



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- Fast processing of images is a key element
- One day of flying can be fully processed in one day
- A dedicated review station for field use available
- Advanced image adjustment settings
- Delivery in industry standard formats
- Full QA reporting available as printable reports for end user's validation



02
Examples

Danke für Ihre Aufmerksamkeit!



geospatial.phaseone.com

Phase One

@ OPEN DAY PHOTOGRAMMETRY 2021



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7. September 2021



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