



Surveying & Mapping

Sofia, CLGE 22nd March 2019
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Agenda

1. Vision
2. Workflow
3. Real cases

1. Vision



170+ global employees

23 nationalities

60% R&D talent



SAN FRANCISCO
U.S.A.



LAUSANNE
SWITZERLAND



BERLIN
GERMANY



SHANGHAI
CHINA



MADRID
SPAIN

An aerial photograph of a city skyline, heavily tinted with a green color. The image shows a dense cluster of buildings, including several prominent skyscrapers. The word "Why?" is written in a large, white, sans-serif font in the center of the image. The background is a dark, solid green, suggesting a night sky or a digital overlay.

Why?

Why?

Reliable information
for faster and better decisions

An aerial photograph of a city skyline, heavily tinted with a green color. The image shows a dense cluster of buildings, including several prominent skyscrapers. The text "Why Surveyors?" is overlaid in the center in a white, bold, sans-serif font.

Why Surveyors?

Why Surveyors?



You are **pushing the limits** of the latest technology to fit your **exacting standards** across any industry and application.

That's why you **challenge** us to continue **innovating**.

How?



How?



From images and/or videos

What is photogrammetry ?



Photogrammetry allows to digitize the world, purely from images

Industry mindset

Surveyor [noun]

A person whose job is to measure and record the details of areas of land.*

*<https://dictionary.cambridge.org/dictionary/english/surveyor>

Industry mindset



Industry mindset change

Digital Surveyor [noun]

A person whose job is to measure and record the details of areas of land **with cutting-edge digital technology**.*

*[Pix4D](#)

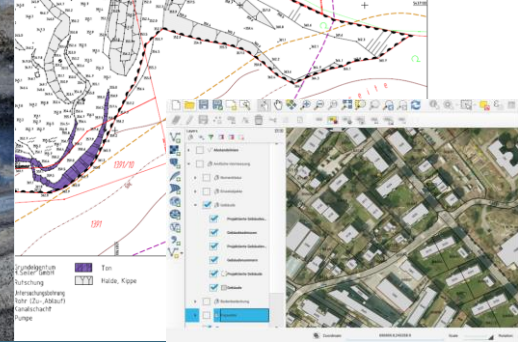
Industry mindset change



Capture (inputs)



Process (outputs)



CAD/GIS



Now I have the terrain in my office.



I am working in CAD/GIS software.



Pix4D unique software ecosystem



2. Workflow



1. Capture
2. Digitize
3. Check,
Measure & Inspect
4. Share

Inputs



RGB images



Drone images



Multispectral images



Thermal images



Fisheye images



360° camera images



Camera rig images



Videos

Inputs



Inputs



Pix4D software : surveying & mapping



Pix4D**capture**

Free mobile flight planning app



Pix4D**mapper**

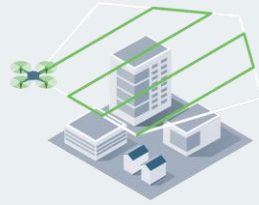
Desktop and Cloud software

1. Capture

- Plan and control drone flights for professional mapping and data capture
- iOS & Android
- DJI, Parrot, and Yuneec drones



Flight missions



Polygon



Grid



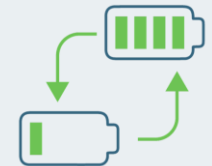
Double grid



Circular



Free flight



Multi-battery

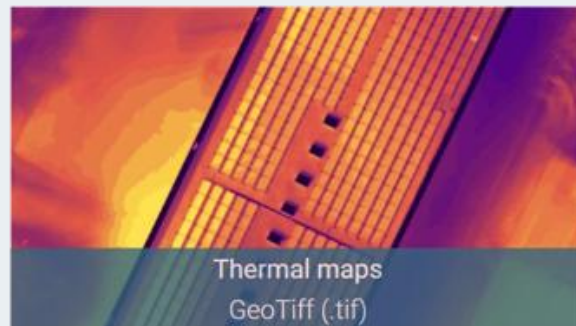
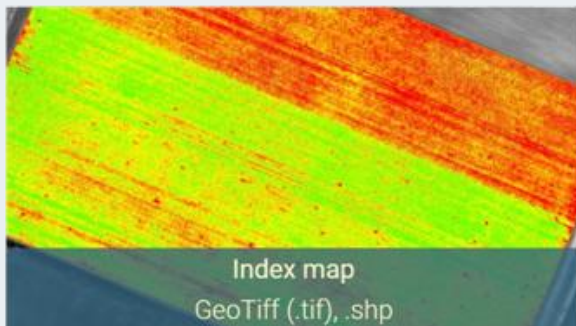
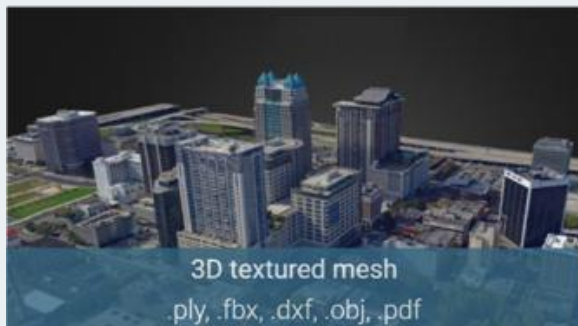
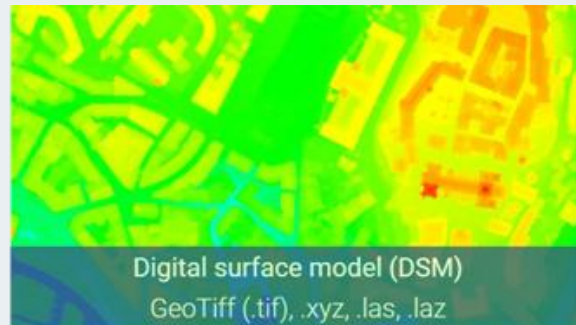
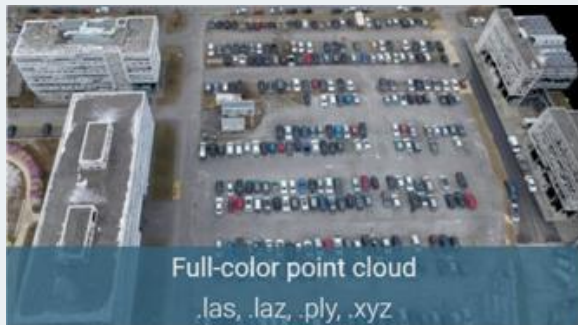
2. Digitize



- Transform your images into accurate digital outputs.
- Process your projects locally on Pix4Dmapper Desktop or online on Pix4Dmapper Cloud.



Outputs

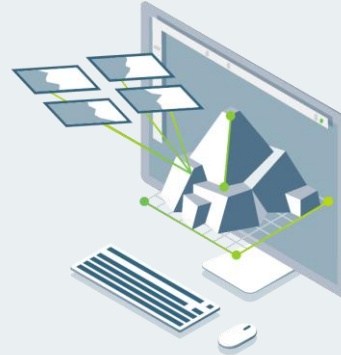


And more...

3. Check, Measure & Inspect

Desktop:

- Assess and improve the accuracy of your project with the Quality Report and the rayCloud™
- Perform measurements locally



Cloud:

- Measure distances, areas, and volumes
- Extract elevation profile data
- Perform virtual inspections

4. Collaborate & share



- Export individual files
- Perform extra analysis
- Work with third-party software
- Select and securely share data only with an URL link



4. Collaborate & share

FILES DOWNLOAD SHARE

Layers ADD ANNOTATION LAYER

Filter by name or tag...

- ✓ Trees CUT
 - ✓ Marker 9
 - ✓ Marker 8
 - ✓ Marker 7
 - ✓ Marker 6
 - ✓ Marker 5
 - ✓ Marker 4
 - ✓ Marker 3
 - ✓ Marker 2
 - ✓ Marker
 - ✓ Polygon 6
- ✓ Antenna 2
 - ✓ Line
 - ✓ Antenna 2
 - ✓ Antenna 2
- ✓ Antennas

All changes saved

2D 3D

36.65544° N 6.15469° W Elevation: -58.36 m

Share Golf

LINK EMBED

Anyone with the link can view and measure

<https://cloud.pix4d.com/pro/project/419185?shareToken=d4084d4f-6744-42a0-9cf2-2> PREVIEW COPY

Anyone with the link can edit and save

<https://cloud.pix4d.com/pro/project/419185?shareToken=b54fb696-e346-4052-ab57-4> PREVIEW COPY

CLOSE

Select an object to view its properties or modify it.

Why mapping with Pix4D?



Increased productivity

Reduce field time and surveying time

Reduce operational risks



Accurate results

Assess and improve your data accuracy

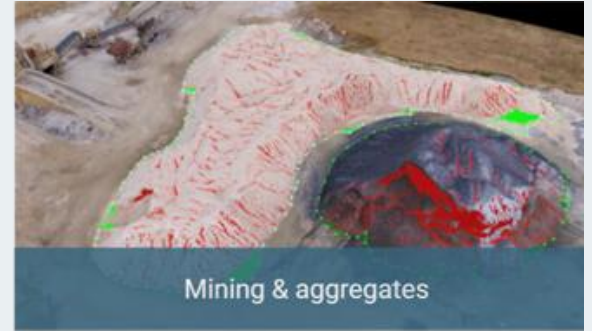
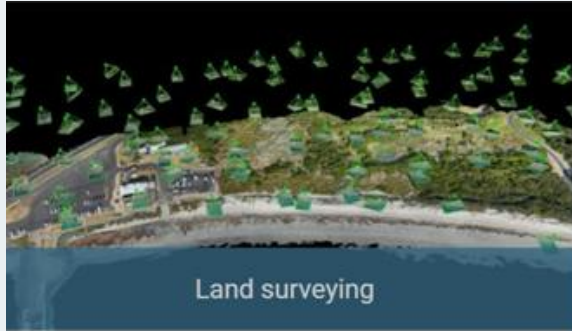


Updated maps

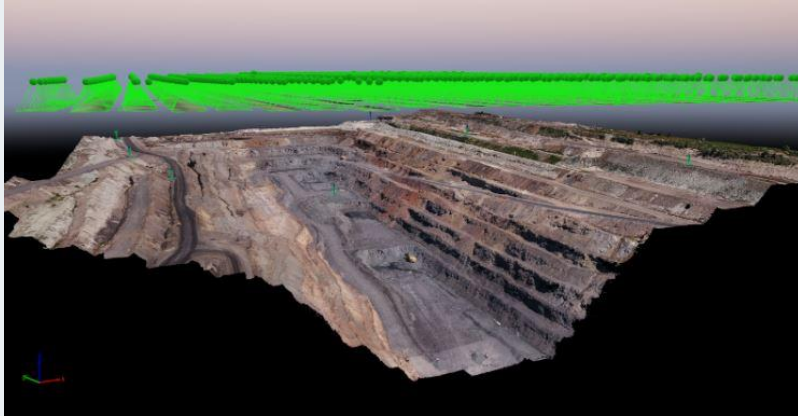
Simple workflow

Easily repeatable data capture

3. Real cases



Drone photogrammetry



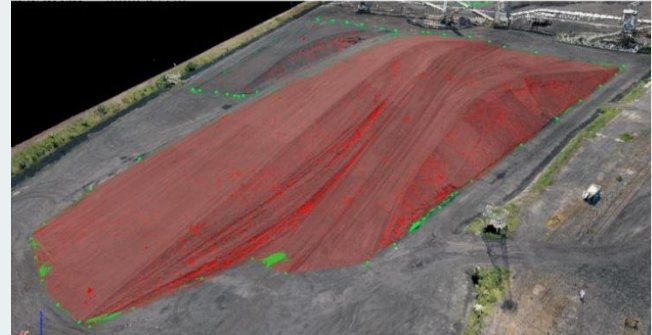
- DJI Matrice 210 RTK
- 82 hectares, 1 h flight, 12 h processing
- GSD 3.7 cm
- Ferrexpo, Yeristovo, Ukraine
- Project [here](#)

Drone photogrammetry



PwC's first drone stock audit completed 85% faster

- QuestUAV PPK
- 200 hectares, United Kingdom
- Project [here](#)

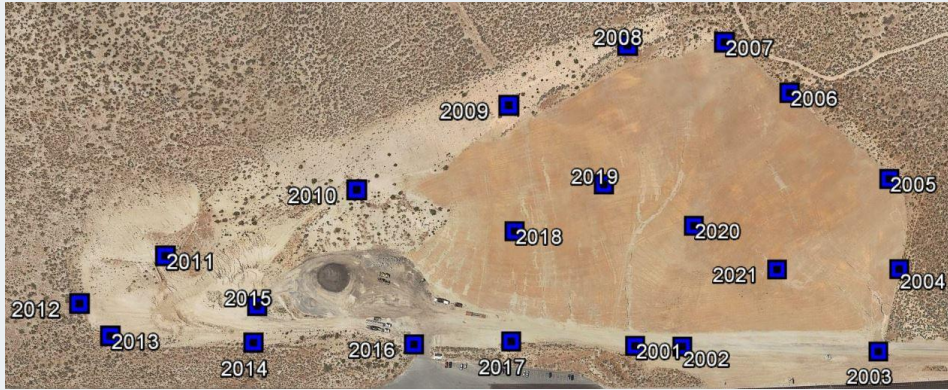


Drone photogrammetry



- eBee, SODA camera
- 115 km, Switzerland
- GSD 3 cm
- Project [here](#)

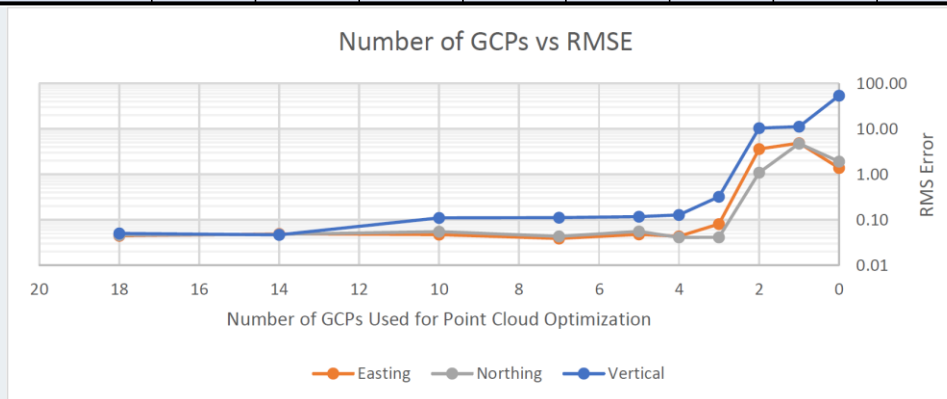
Drone photogrammetry



- DJI P4P
- 34 acres, 318 images
- GSD 1.9 cm
- 21 GCPs, Trimble R10 RTK
- Nevada, USA
- Project [here](#)

Drone photogrammetry

		Number of GCPs	18	14	10	7	5	4	3	2	1	0
		Number of Check Shots	3	7	11	14	16	17	18	19	20	21
Check Point RMSE	Easting		0.045	0.049	0.047	0.039	0.048	0.043	0.081	3.594	4.880	1.388
	Northing		0.046	0.048	0.055	0.044	0.056	0.041	0.041	1.087	4.776	1.912
	Vertical		0.051	0.047	0.111	0.112	0.117	0.128	0.320	10.469	11.157	53.873
RMSE Divided by GSD	Easting		0.715	0.784	0.756	0.622	0.767	0.693	1.292	57.507	78.076	22.208
	Northing		0.740	0.769	0.883	0.698	0.893	0.657	0.658	17.386	76.412	30.597
	Vertical		0.810	0.749	1.771	1.792	1.874	2.043	5.127	167.504	178.508	861.974



Terrestrial and drone photogrammetry



- DJI P4 Pro + Canon EOS 6D
- 755 aerial, 646 terrestrial, Finland
- GSD 0.5 cm/pixel
- Project [here](#)

Terrestrial “Mobile-grammetry”



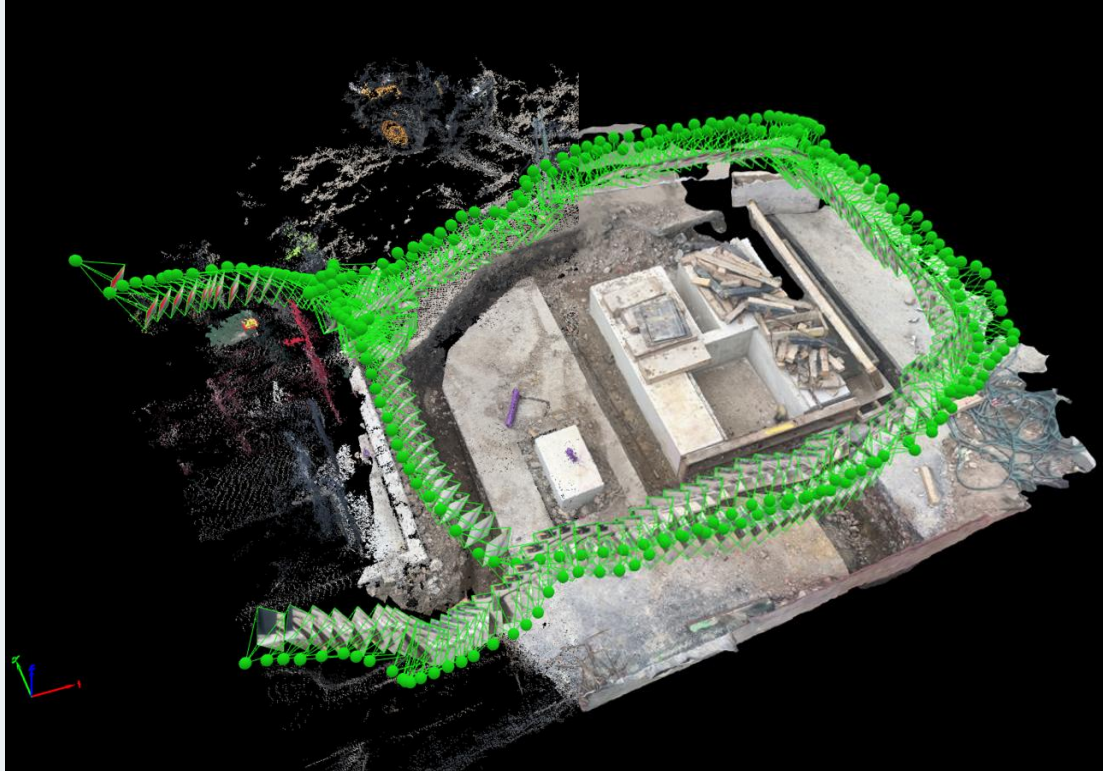
- Project [here](#)



Terrestrial “Mobile-grammetry”



Terrestrial Mobile-grammetry

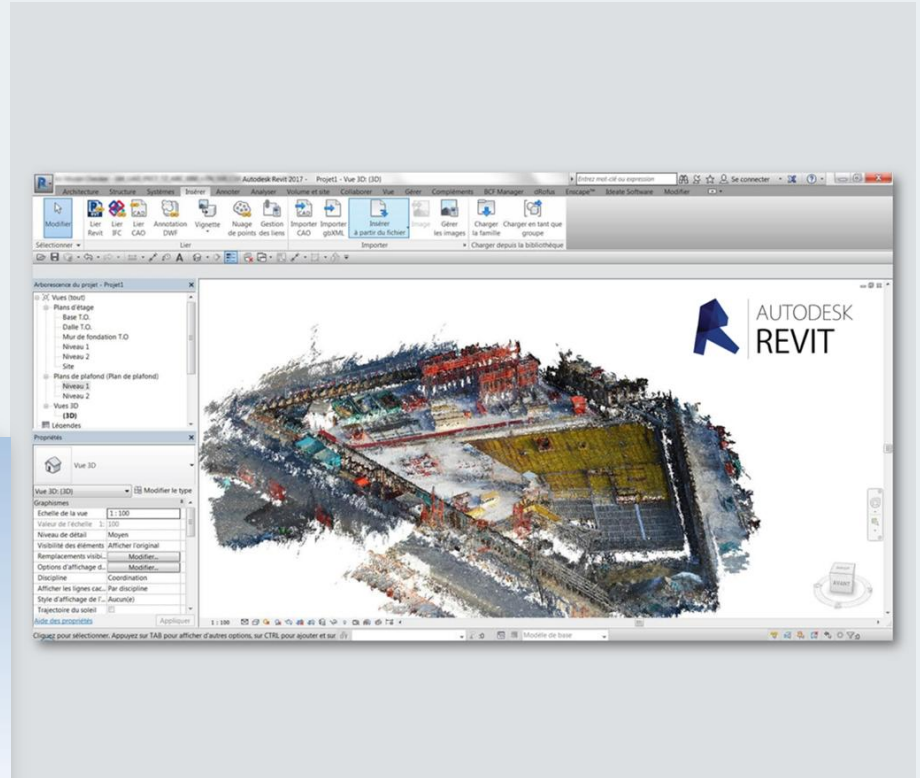


Terrestrial “Mobile-grammetry”



What else? BIM Integration

As-built data integrated with your
3D design and collaboration
software





Q&A
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An aerial photograph of a quarry or construction site, heavily tinted with a green color. The image shows multiple levels of excavation, dirt roads, and several pieces of heavy machinery, including excavators and trucks, scattered across the site. The terrain is rugged and uneven, with large mounds of earth and rock.

Thank you

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