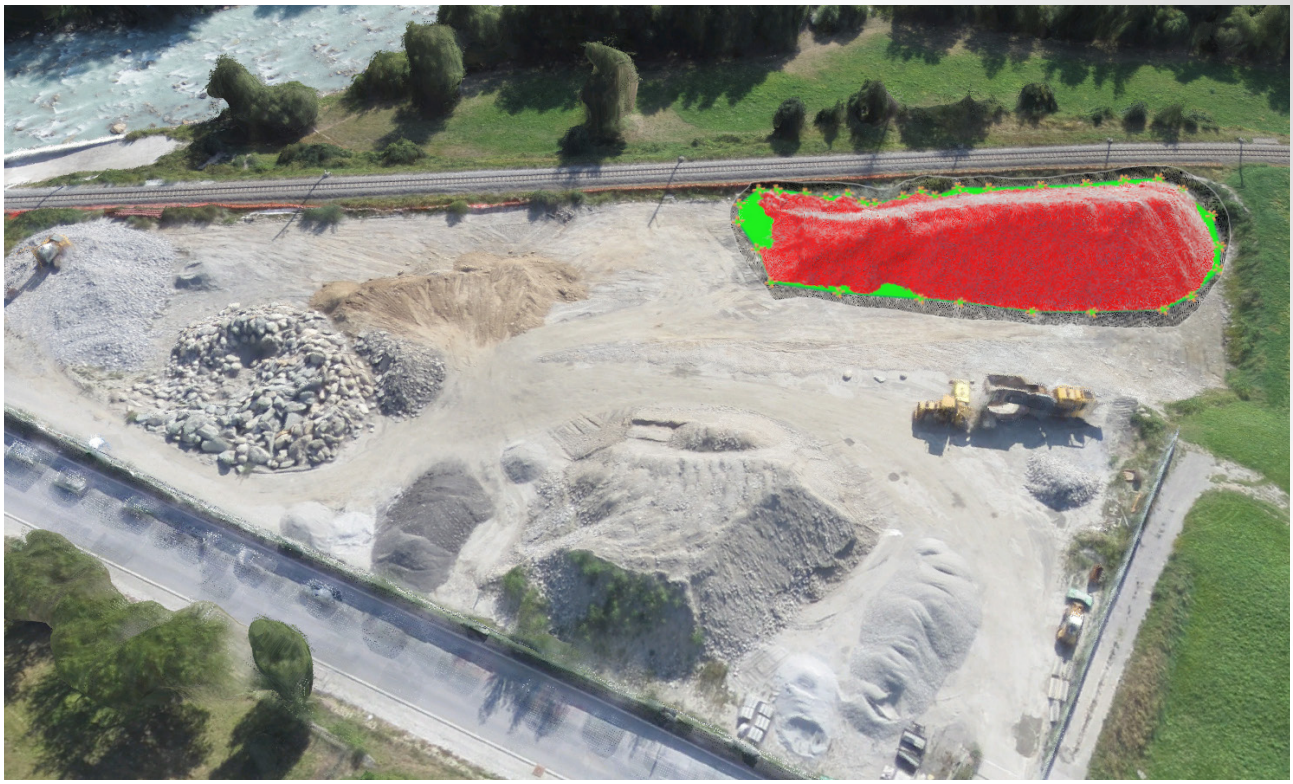
PIX4D pro mapper

Showcase | Accurate Volume Estimation of Stockpiles

Mines and Quarries

PROJECT	Comparison between drone-based photogrammetry and terrestrial laser scanning (TLS) for stockpile volume measurement
KEY BENEFITS	• Fast acquisition of occlusion-free data • Automatic data processing • Highly accurate measurements • Low cost, easy and efficient solution



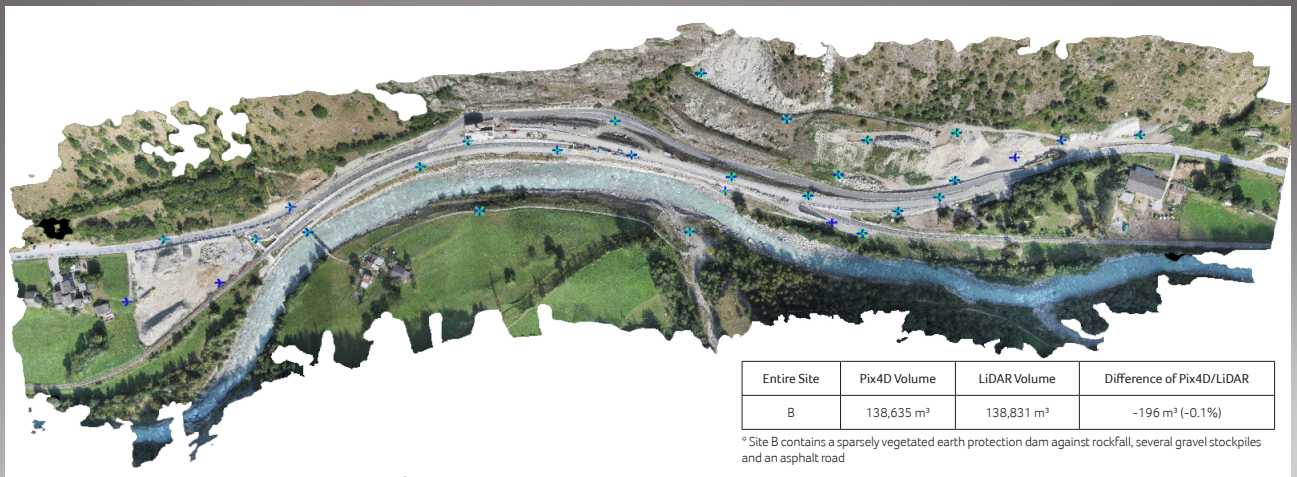
Volume measurements of a stockpile site

Data Acquisition

HARDWARE & FLIGHTPLAN	senseFly fixed-wing drone with 16 MP Canon Ixus 220HS camera Two grid flights
FLIGHT TIME	40 minutes
DATASET	212 images at 5 cm GSD 26 Ground Control Points used

Project Outcome

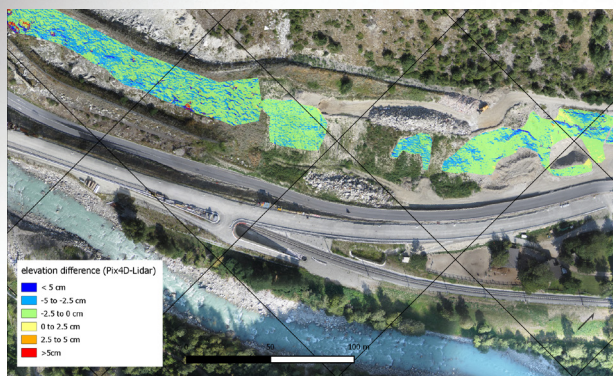
DELIVERABLES	• 3D point cloud for accurate volume measurement • Digital surface model for elevation identification • Error statistics
PROCESSING TIME	80 minutes
ANALYSIS	• The mean standard deviation of elevation difference is 2.8 cm, subtracting the 2.7 million photogrammetric points surface from the LiDAR-based surface • Volume measurement of a designated stockpile from the Pix4Dmapper DSM was compared with the LiDAR-based DSM, volume difference was 0.1% • Analysis also showed that the precision of volume measurement depends on not only the surface accuracy but also the thickness of the stockpile where the higher stockpile is less sensitive to the surface errors and thus has fewer percentage of difference



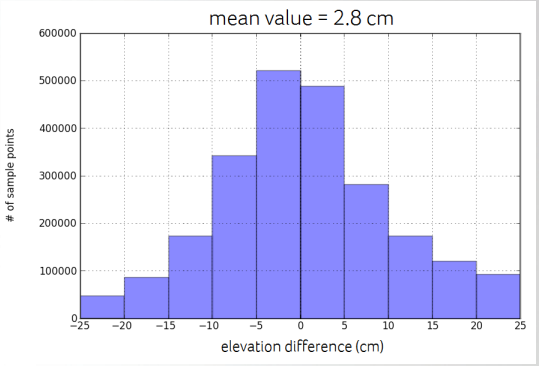
Entire Site	Pix4D Volume	LiDAR Volume	Difference of Pix4D/LiDAR
B	138,635 m³	138,831 m³	-196 m³ (-0.1%)

* Site B contains a sparsely vegetated earth protection dam against rockfall, several gravel stockpiles and an asphalt road

Photogrammetric point cloud and GCPs of Site B



Elevation difference map (Pix4D vs LiDAR)



Elevation difference statistics (Pix4D vs LiDAR)

Client Reference

SHOWCASE COURTESY OF: in-Terra - Aerial Imaging + Digital Modeling

Discover *Pix4Dmapper* for free on **www.pix4d.com**

Pix4D SA
EPFL Innovation Park
Building D
1015 Lausanne
Switzerland

General inquiries: info@pix4d.com
Sales inquiries: sales@pix4d.com
Support inquiries: support@pix4d.com
Phone: +41 21 552 05 90
www.pix4d.com

Follow us on