GEOSPATIAL WORLD FORUM
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How much of a historic town can be mapped by a high end terrestrial laser scanner within a working day?

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www.riegl.com

Contents

- Why terrestrial laser scanning?
- Example project: downtown Vienna
  - Laser scanner
  - Data acquisition
  - Data processing
- How can I use the acquired information?

Why Terrestrial Laser Scanning?

GEOSPATIAL WORLD FORUM

Terrestrial scanning

+ high point density
+ straightforward operation
+ high accuracy
- moderate speed

Airborne laser scanning

+ wide area coverage
+ information on rooftops
+ acquisition speed
- low point density
- poor information on facades

Mobile laser scanning

+ high acquisition speed
+ high point density
- accessibility
- traffic

Terrestrial vs Mobile Laser Scanning

- two scanner positions provide best possible coverage

Laser Scanner used: *RIEGL* VZ-400i

Principle of Operation: One Touch

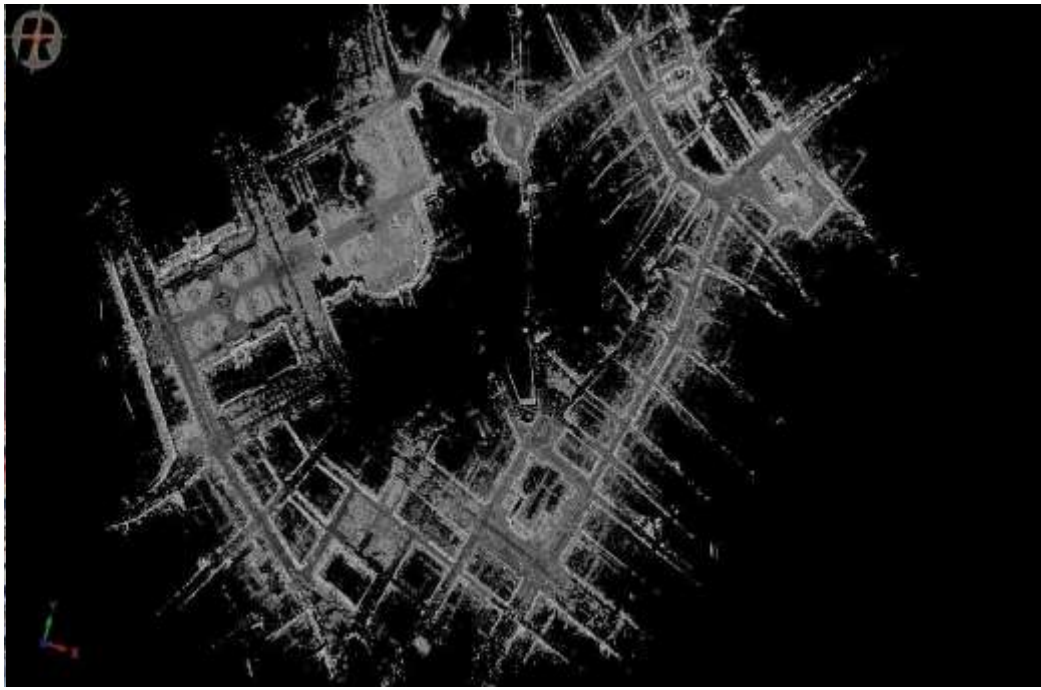
Laser pulse repetition rate	100 kHz	300 kHz	600 kHz	1200 kHz
Maximum range	800 m	480 m	350 m	250 m
Max number of targets per pulse	15	15	8	4
Accuracy / precision	5mm / 3mm			
Number of scan positions in 8 hours	> 500 (50mdeg resolution, no photographs)			
Laser product classification	Class 1 (eye safe)			
Laser beam divergence	0.35mrad (approx. 0.35m in 1000m)			
	Vert. line scan		Horiz. frame scan	
Scan angle	max.100° (+60°/-40°)		max. 360°	
Scan speed	3-240 lines / sec		0-150° / sec	
Angular step width	0.0007°-0.6°		0.0015°-0.62°	
Angle measurement resolution	0.0007°(2.5 arcsec)		0.0005°(1.8 arcsec)	
Weight	approx. 9.7kg			
Protection class	IP64, dust and splash-proof			

Principle of operation: One Touch

Summmary: Acquisition downtown Vienna

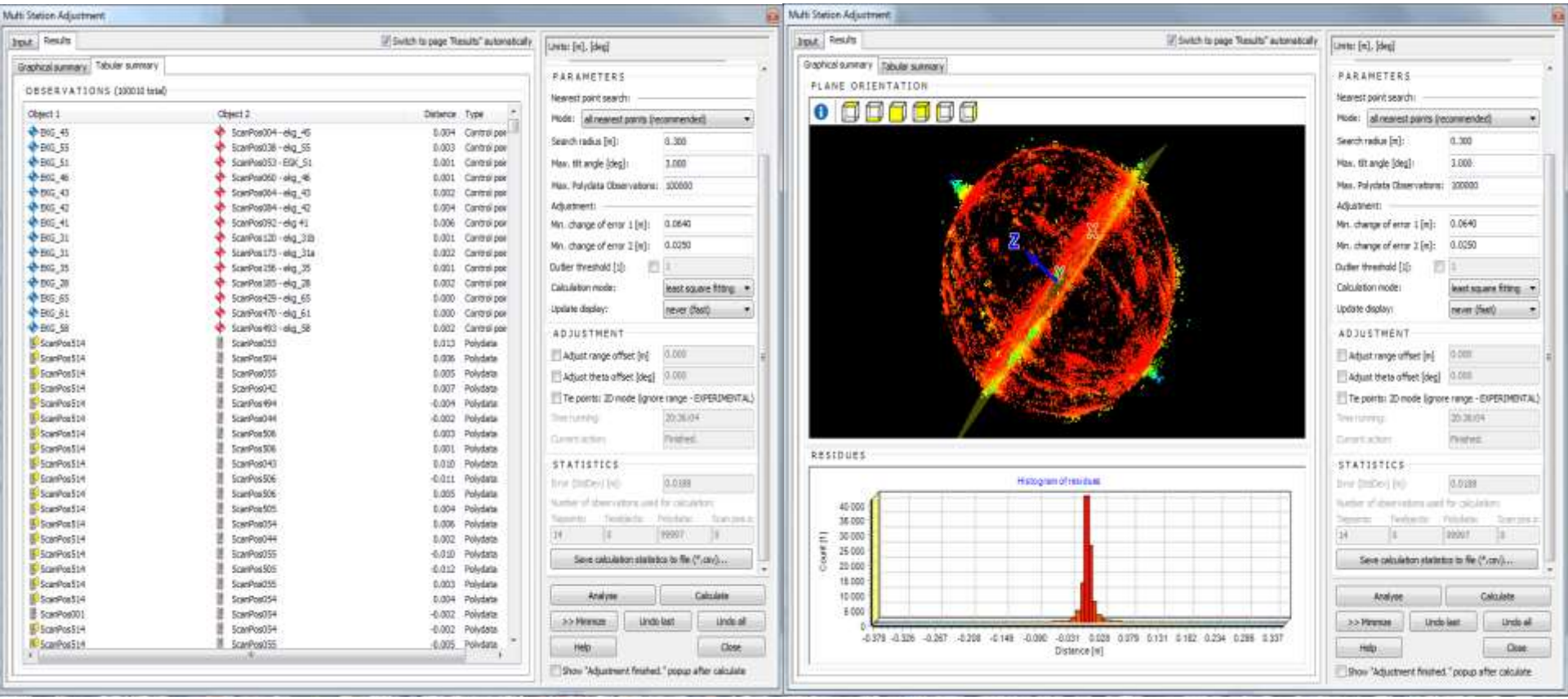
- 1 operator
- 8 h scan time
- 0.05 deg resolution
  ~12 mio pts. per scan
- 10 m between positions

- 514 scan positions
- <1minute per position
- 4.5 km covered



Data processing

- absolute adjustment via „Multi Station Adjustment“ with **control points** provided by EKG Baukultur GmbH



Further improving efficiency

used for acquisition:

external GNSS receiver with RTK option

integrated L1 GNSS Receiver

accuracy up to 1 cm

accuracy up to 1 m

How can I use scan data?