

STENCIL



CASE STUDIES

SUMMARY

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INTERIOR SURVEY

TERNI, SAN FRANCESCO CHURCH

DATE: 09/02/2017

LOCATION: Terni, San Francesco Church

INSTRUMENTS USED:
Scanner mobile Kaarta Stencil

SURVEY TYPE:
Interior survey with wall thickness

TIME SPENT FOR THE SURVEY:
5 min

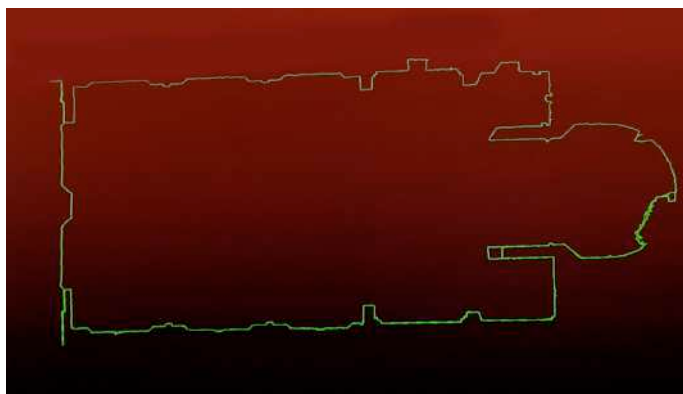
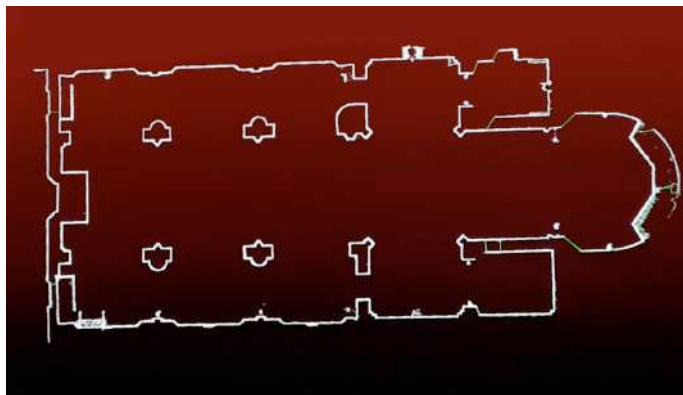
TIME SPENT TO OBTAIN REGISTERED POINT CLOUD:
5 min

OUTPUT:
3D Point Cloud of the church, wall thickness, sections exported in Cad software

DESCRIPTION:
We wanted to test this technique in one of the most difficult situations for a survey: the registration between exterior and interior through a small door without using topography.
Despite that the results were very good. Furthermore the time acquisition of the survey has been very quick along with the generation of sections.
Although it can not be compared to a static laser scanner, the precisions (3-5 cm) of the sections and the accuracy of the Point Cloud have largely satisfied the requests of the client



With the survey of the exterior of the church it has been possible to extract the wall thickness



Horizontal section of the church

EXTERIOR SURVEY

UFFIZI & PIAZZA DUOMO

DATE: 10/02/2017

LOCATION: Firenze – Uffizi & Piazza Duomo

INSTRUMENTS USED:
Scanner mobile Kaarta Stencil

SURVEY TYPE:
Architectural survey of exterior without topography

TIME SPENT:
10 min for the survey and 5 min to obtain the registered point cloud

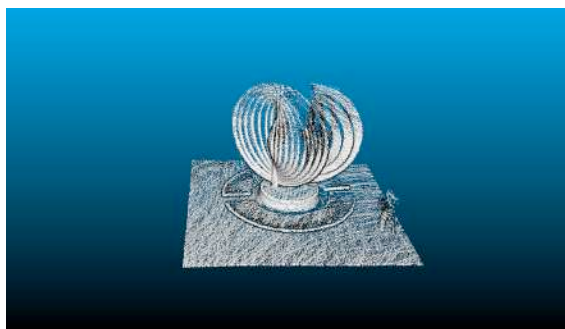
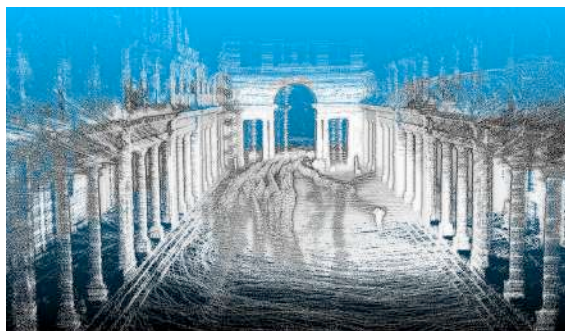
OUTPUT:
3D Point Cloud of Piazza Duomo and of the entire Uffizi Gallery

DESCRIZIONE:
In this case, our aim was to test the system in a set of complex architectures. It's obvious that it's impossible to define in detail the complex Architectural items, although they are clearly recognizable in the scans.

The speed and the simplicity of the system, in order to create the 3D point cloud of the buildings, allows to obtain an accurate position of each single monument. The accuracy is around 5 cm (obtained along a 200m session).



Uffizi Gallery



High definition details



TUNNEL SURVEY

TERNI

DATE:09/02/2017

LOCATION: Terni

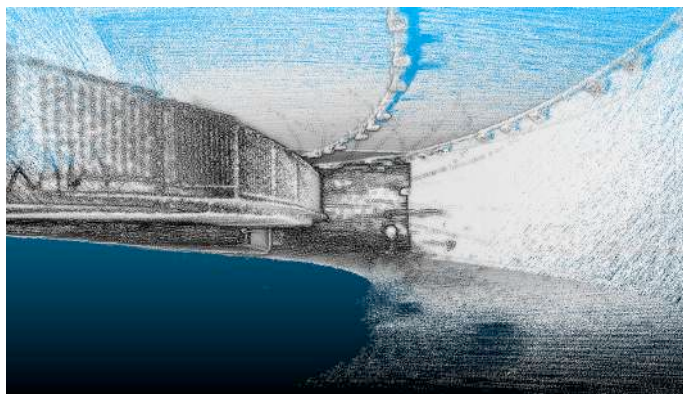
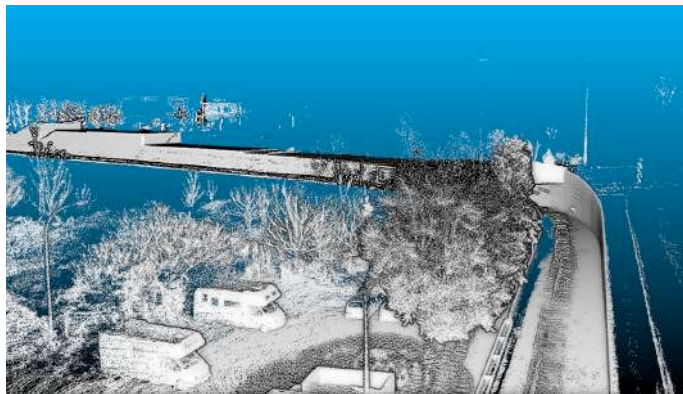
INSTRUMENTS USED:
Scanner mobile Kaarta Stencil

SURVEY TYPE:
Tunnel survey

TIME SPENT:
10 min for the survey and 10 min to obtain the registered point cloud

OUTPUT:
3D Point Cloud of the tunnel with multiple sections exported in Cad software

DESCRIZIONE:
One of the critical areas for traditional surveys are galleries. There is no GPS signal and the three-dimensional geometry is not always managed by the traditional topographic software. With Stencil, on the contrary, the solution is simple: it was enough to study an appropriate method to move along the tunnel to ensure the recognition of the geometry and obtain the registration without any drift problems (0.2% of the traveled distance). Then, in real time, we have been able to visualize the results and optimize the survey method. From the 3D point cloud of the entire tunnel has been extracted several sections automatically.



3D point cloud inside the tunnel



Vertical section of the tunnel

FOREST SURVEY

MARMORE WATERFALL (TERNI)

DATE:09/02/2017

LOCATION: Marmore Waterfall

INSTRUMENTS USED:

Scanner mobile Kaarta Stencil

SURVEY TYPE:

Forest Survey

TIME SPENT:

10 min for the survey and 5 min to obtain the registered point cloud

OUTPUT:

3D Point Cloud of the park, DTM, trees diameter and biomass calculation

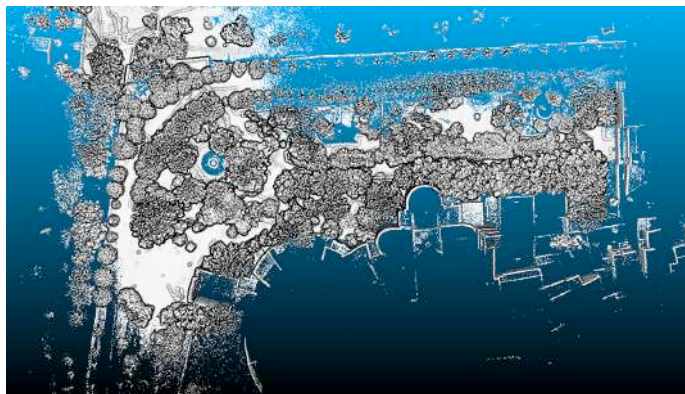
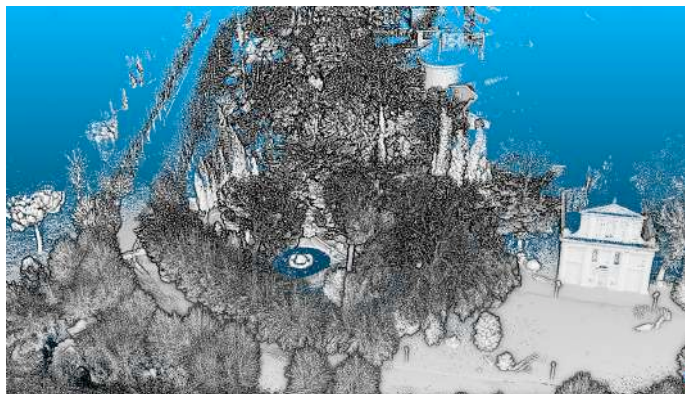
DESCRIPTION:

One of the most typical applications regarding LiDAR drones is to measure DTM in wooded areas.

With Stencil we can get, even, a better result in terms of points, due to the possibility to operate without GPS: We just need to cover the areas with a defined displacement method to obtain surprising results.

The results can be visualized in real time, so it's easy to correct any major problems directly in the field.

From the 3d point cloud can be extracted the digital terrain model (DTM), and the dimensions (diameter and height) of trees.



ROAD SURVEY

FERRARA

DATE: 08/02/2017

LOCATION: Ferrara

INSTRUMENTS USED:

Scanner mobile Kaarta Stencil

SURVEY TYPE:

5 Km road + canal survey

TIME SPENT:

20 min for the survey and 15 min to obtain the registered point cloud

OUTPUT:

3D point cloud of the road and the canal.
Extraction of sections to control the course of the canal.

DESCRIPTION:

The customer's requirement was to monitor the variation of the geometry of the canal very often.

The fastest way is to use Stencil on a vehicle moving at a speed of 30 Km/h.

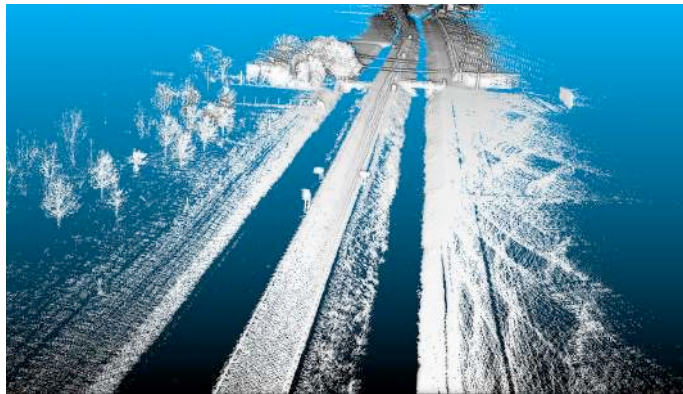
Three topographic points have been measured every 500 meters with GPS, in order to reduce the drift error.

Since September, the new firmware From the 3D model we can visualize the geometry of the road and we can extract sections of the canal.

Finally, in the software 3DF Zephyr Aerial, it's possible to calculate the volume variations using different reference planes.



The survey has been realized traveling at about 30 km/h



Vertical section of the canal