

Mobile Mapping System used in Cadastral Surveying

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SUMMARY

Cadastral surveying is quite an important task for all the countries and the government. The cadastre record the detail location, coordinates, ownership, and a lot a valuable information, which means the location should be very precise. Based on the surveying technology, we are able to acquire the high-precision coordinates in a very reliable and efficient way. Laser scanner is one of the latest surveying technology to measure the object by millions of point per second with centimeter accuracy. Compared with a traditional method, Laser scanner can improve the efficiency by around 4 times. This paper introduces the application of Mobile mapping system which been used in cadastral surveying, as well as the benefit and detail procedures.

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1. BACK GROUND:

Cadastral surveying is quite a complicated task, by using the total station and GPS receiver, there would be a lot of difficulties. First of all, the efficiency is low, the object is measured one by one point, and it takes lots of time for generate the result. Secondly, the working environment is very complicated, with very short distance between one object to another and many area not easy to reach. Thirdly, a lot of labor cost, many surveyor should joint the project. And the last point, the location result, which is related to measurement accuracy, is not easy to be guaranteed.

2. COMPARISON OF TRADITIONAL SURVEYING METHOD AND MOBILE MAPPING SYSTEM

There is a village, the area is around 1 square kilometers, we use GPS RTK receiver and Mobile mapping system to finish the project, then get a comparison result

a) By GPS RTK Receiver

It takes 20 days to finish the surveying works in the field, and more than 10 days for drawing and generate the result, totally is 30 days.

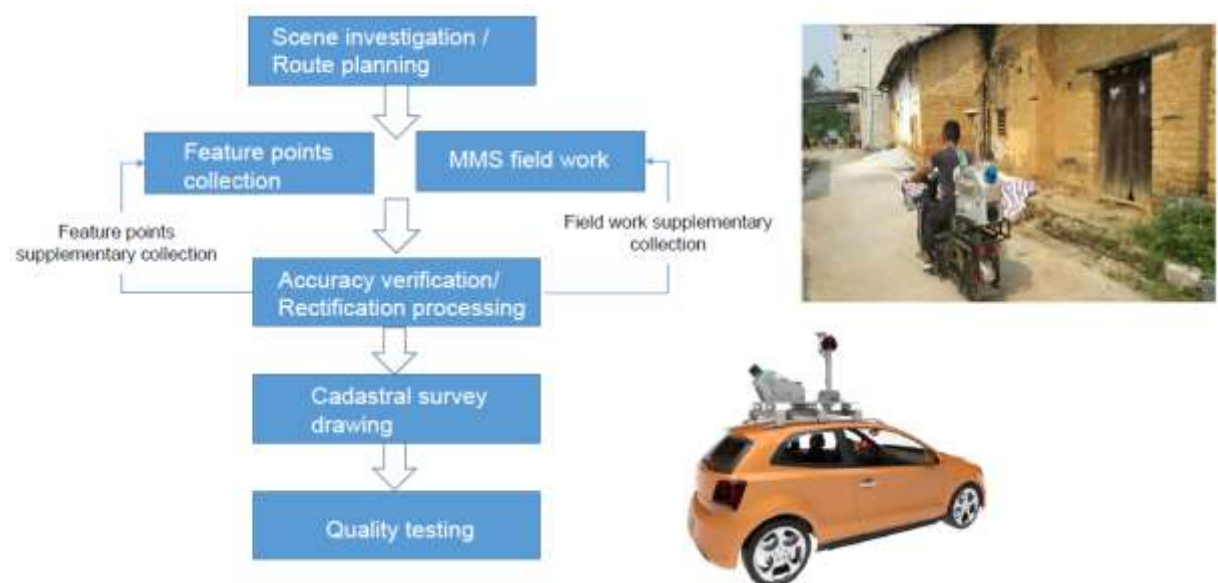
b) By Mobile mapping system,

Mobile Mapping system is much more faster than RTK receivers to capture the data in the field, it only takes 1 ~2 days to finish the field work, and 5 more days to processing the point cloud data and generate the result.



3. CADASTRAL SURVEYING WITH MOBILE MAPPING SYSTEM (MMS)

Here introduces the detail procedure of MMS.



a) Route Planning

The mobile mapping system is carried on the small vehicle, it can continuously scan the field and collect the point cloud data all the time automatically. In order to improve the efficiency, normally we plan the surveying route, to make sure all the area be covered.

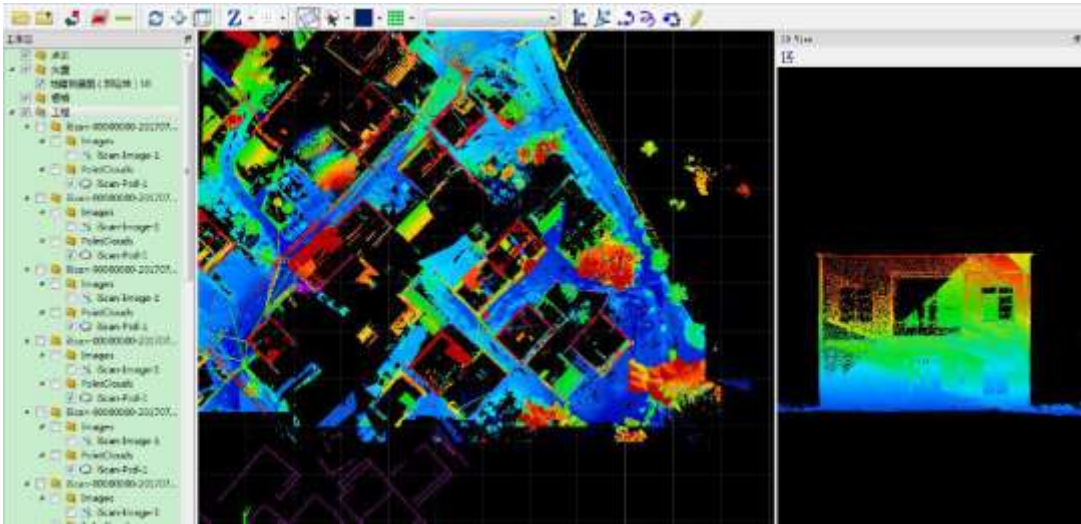
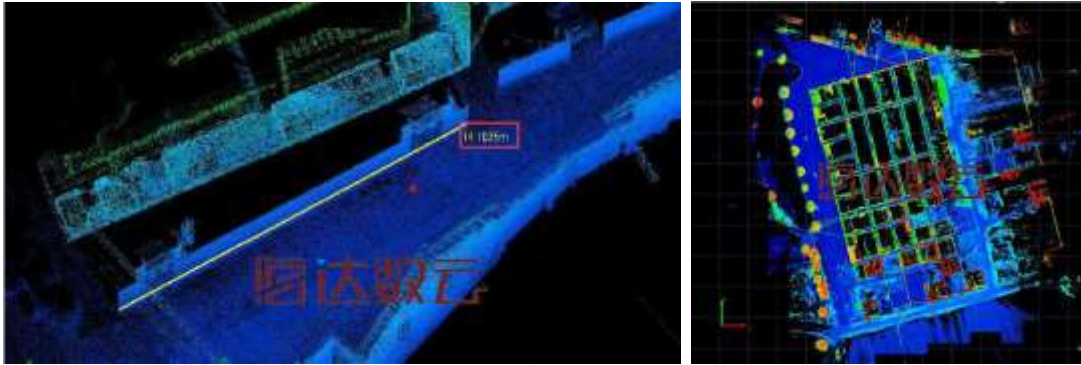
b) Field work

The MMS can be installed on the car, as well as the small vehicles. Only 1 surveyor is required to drive the vehicle to follow the planning route. After the whole field work finished, the system can analyze the data, as well as to qualify the data. Easy to tell where to scan again.

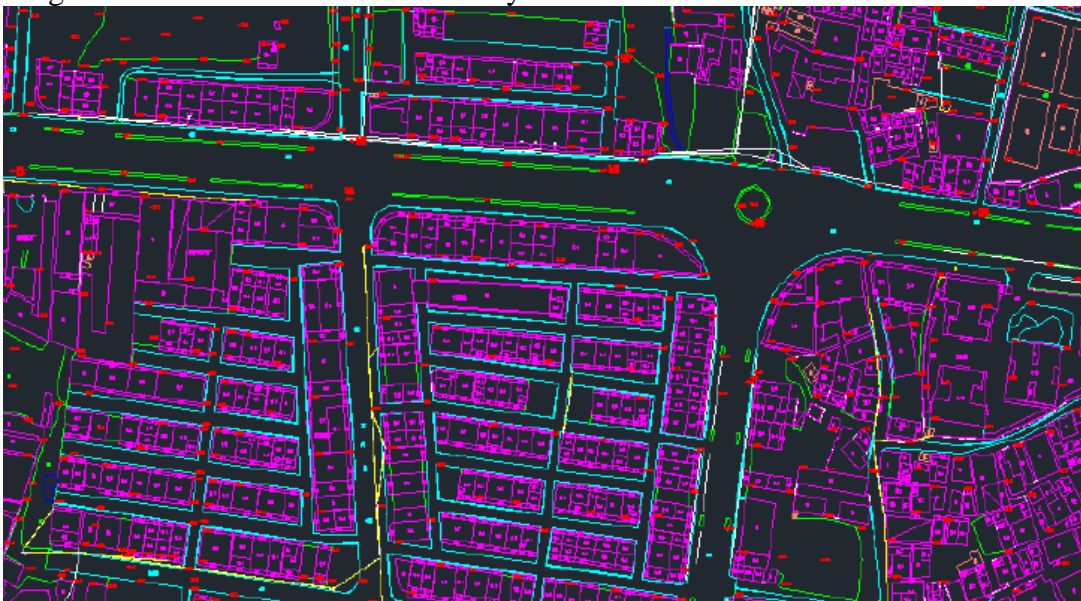


c) Cadastral drawing

The high precision point cloud data is stored in the MMS, software can generate the point for drawing.



We design a specific software for cadastral drawing, the point cloud data can be used for generate cadastral data automatically.



4. CONCLUSION

- a) Cadastral surveying requires centi-meter accuracy and MMS perfectly meet the needs.
- b) The efficiency of MMS is around 4 times than RTK receivers.

BIOGRAPHICAL NOTES

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