

Operative UAV rapid mapping applications

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Image data acquisition with UAS platform is one of the most popular research and development trends both in academic world and geoindustry. The advantages from the customers' point of view are obvious ; the UA systems are flexible to operate, cost effective and provide high quality data for on-demand needs. The operational flexibility means customers can solve problems which have been remained unsolved so far. An UA system can be normally operated with one person in the field and the demanding image acquisition environment can be managed with the most advanced systems in a way the end products compete with air borne LIDARs. To crown all the traditional imaging industry is not able and willing to compete with the new players in the market leaving a lot to gain to the early birds.

Sounds too good to be true? Almost, because an operative end-to-end solution for UAV mapping has been hard to find. What makes a UAS operative? It must fulfill the regulations, it must be easy to operate, it must tolerate various weather conditions, it must have reasonable endurance, it must have rigid and flexible structure yet to be lightly constructed, it should carry various sensors, it should take off and land automatically, it must fly blocks with fixed overlaps and log GPS & IMU data precisely, it must be affordable and there must be 24/7 service support available. An end-to-end solutions means the image processing challenge must be solved too in order to ensure a UAS operator can make a living with a system.

There is a handful of UAS systems for civil markets which fulfill the preconditions listed above. PIEnengineering Ltd is a pioneer in field of UAV rapid mapping, specialized in photogrammetric image processing service on the web providing orthophotos and DSMs automatically. The service is being used by the customers of two UA system producers, a third system being currently under the certification process.

A number of UAS customer projects and applications will be covered in the presentation with analysis of achieved customer benefits. The most profound conclusion of the experiences so far is that an operative, fully automated UAV based rapid mapping systems can challenge the traditional value chain of aerial mapping service provision. Operators with no photogrammetric or aviation background can expand their current business and offer imaging services to their customers. The real driver is the automatic image processing which makes possible for the UAS operators to avoid investments to software and above all to the specially trained personnel.