

Large-format Mapping and Modelling Solution for Manned Aircraft



WaldoAir, TN, USA, has announced the launch of an integrated, large-format, low-cost camera system for use on single-engine aircraft bundled with a new edition of Pix4D's image processing software that treats multi-camera systems. This complete system offers the manned aircraft industry the same image capture capabilities that until now could only be realised by legacy, large-format sensors and dedicated aircraft platforms. Meanwhile, investment and operational costs are now much lower.

Choosing between traditional photogrammetry and using UAVs for creating aerial maps and 3D models must trade off sensor capabilities with client needs for area coverage, resolution and budget. While UAVs are becoming more and more popular, their flying range limits coverage to sites of up to a few square kilometres and aviation regulations

may restrict their operations in some areas. Manned aircraft on the contrary have the reach to cover large dispersed areas, have a long-standing history of creating high-resolution, georeferenced maps, and are more acceptable for flight operations in some scenarios. The drawback of using manned aircraft for a wide variety of mapping and modelling projects has previously been the initial investment and recurring operations cost of the equipment together with the complexity of the post-processing pipeline. Traditional aerial photogrammetry involves bulky sensors integrated to dedicated aircraft, high-precision IMU's and processing software that requires both extensive manual intervention and highly specific skills.

Camera system

WaldoAir's XCAM-B is a new solution that fills a gap between UAVs and traditional photogrammetry to cover very scattered or large areas thanks to a camera system that is easily mountable on any single engine aircraft without modifications to the aircraft. Bundled with Pix4D's automatic image processing software that combines the latest innovations from Computer Vision and Photogrammetry, the solution is perfectly adapted to cover today's market needs requiring more cost- and time-effective mapping solutions that cannot be offered by traditional photogrammetry.

The XCAM-B is an airborne camera system using commercial off-the-shelf components. Manufactured in the United States, the system includes dual 18.0MP DSLR cameras and an optional thermal camera, with an impressive cross-range of 10,200 pixels, GPS, IMU, flight planning and flight management software, a small dash-mount tablet PC computer, all necessary mounting hardware, accessories and cables as well as a license of Pix4Dmapper software. The 2.75 kg pod common to all XCAM-B variants attaches externally to an aircraft step-mount or the wing strut of a high-wing aircraft such as Cessna 152, 172, 182, 206 etc. Already compatible with over 30 aircraft models worldwide, the XCAM-B can be installed and removed in only 30 minutes. XCAM-B is available in RGB, Multi-Spectral and Thermal variants.

Processing software

To offer users a full, integrated solution, the XCAM-B system is bundled with a license of the new edition of Pix4Dmapper software that includes multi-camera features for streamlined processing of the XCAM-B system. The new Pix4Dmapper capabilities allow processing images from the dual-oblique RGB variant to achieve wide cross-range coverage. The same software enables band-alignment for multiple cameras to achieve both four-band multispectral coverage as well as alignment of data from an additional thermal image. Pix4Dmapper post-processing converts the collected navigation and imagery data into georeferenced and survey-grade orthomosaics, DSMs, DTMs, point clouds, index maps and 3D meshes. This new Pix4Dmapper edition also offers GPU powered processing. Viewing, assessing and improving the quality of results is made easy with the integrated editing tools and generated results can be seamlessly imported into any GIS, CAD or industry-specific software package.

The cost and ease of use of the XCAM-B system will provide existing professional photogrammetrists with a reduced cost alternative for large and/or dispersed areas and will allow extending photogrammetric capabilities to a new spectrum of aircraft operators. The XCAM-B and Pix4Dmapper can provide a seamless manned and unmanned operational capability using a common post-processing pipeline enabling aerial photography professionals to acquire imagery resulting in survey-grade, georeferenced cartography and 3D models.

The XCAM-B system will be presented for the first time at Intergeo 2014, to be held in Berlin, Germany from 7-9 October. Find WaldoAir's booth in booth E2.058. WaldoAir will also have an XCAM-B on display in Pix4D's booth, C2.031. Find out more on Pix4D at [Geo-matching](#).

