QA4UAV - Quality Assurance of UAV Imagery and Photogrammetric Point Clouds

QA4LAB makes another easy-to-use, automated QA tool to ensure fit-for-purpose data

Problem

The low cost of UAV platforms and data acquisition has given rise to a large numbers of suppliers. Many of these are small operations with little knowledge or understanding of spatial data products. For organisations procuring UAV acquired data there is a high risk that the supplied data is not fit-for-purpose. Currently, there is no standard workflow to mitigate this risk which can check the quality of the supplied UAV products to ensure the products meet user requirements.

Solution

QA4UAV will be an automated software tool to manage the workflow for acquisition of UAV products from the procurement end. The software will quality assure a range of UAV imagery and photogrammetric products, including point clouds and digital surface models (DSMs). It will leverage components of the existing QA4LiDAR and QA4MOBiLE tools, to build another tool in the "QA4" suite.

As UAV datasets are smaller in comparison to airborne and mobile LiDAR datasets, the software will be cloud-based. The user interface will be tailored to suppliers and end users who have less technical expertise and will guide them through the process based on application and desired features as opposed to technical specifications. It will also validate their project plan including flight plan sensor and control.

The project will develop a standard specification for the acquisition of UAV imagery and photogrammetric products. It will include intuitive questions which can be answered to automatically generate specifications. The modules of the tool will reflect the design of the previous QA4 software packages, including the form editor, the quality assurance software, visual review platform, and supporting documentation. Checks are likely to include:

Project Plan Checks:

- Flight plan
- Sensor settings
- Ground control plan

Standard Checks:

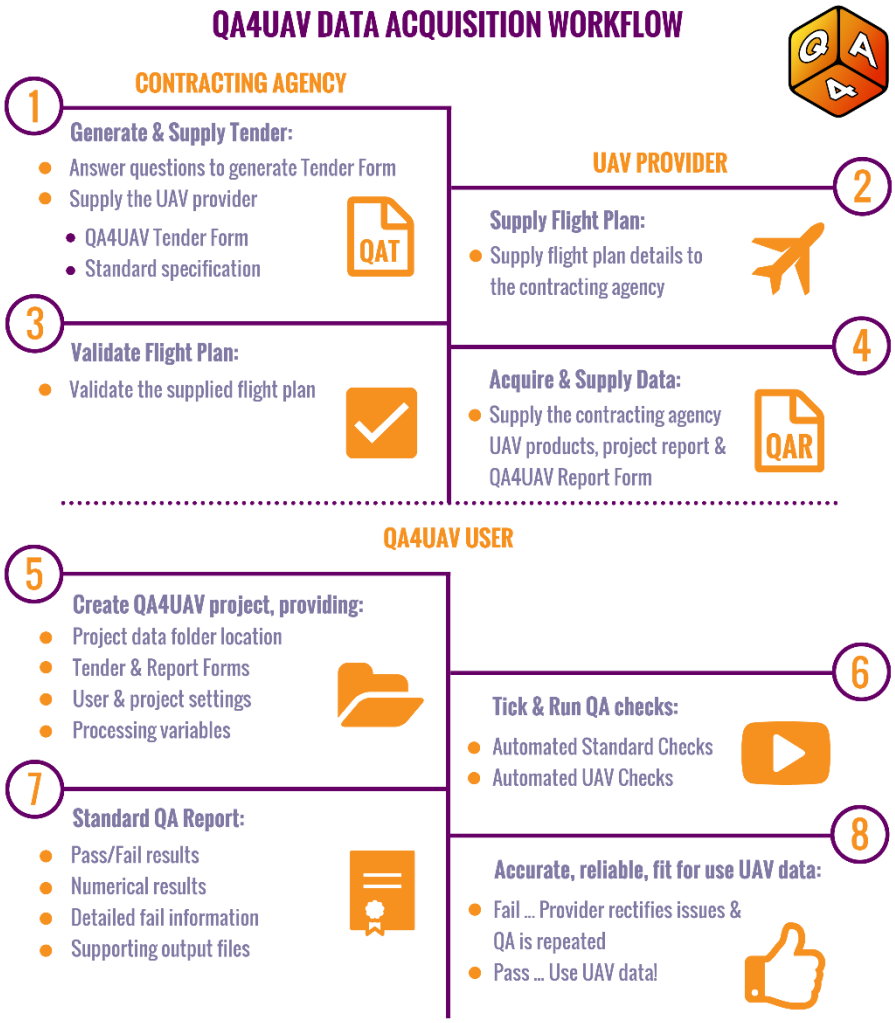
- Delivery completeness and file corruption
- File naming, attributes and coordinate system
- Form comparison
- Classification statistics
- Accuracy of control network

UAV Specific Checks:

- Imagery resolution and overlap
- Image quality
- Imagery-survey control alignment
- Point cloud quality assessment and vertical accuracy
- DSM quality assessment and accuracy

Process

The workflow for acquiring accurate UAV data with QA4UAV is shown in the infographic below.



Impact

The outcomes will streamline and standardise the acquisition and quality assurance process for suppliers and end users of UAV data, to ensure that products meet a minimum quality standard. The tool will be simple and easy to use, the checks will be consistent and automated. The software will provide a standard compliance and quality assurance report to ensure data is accurate, reliable and fit for use.

Demonstrator

A demonstrator site has been developed and is available at http://uav.qa4lab.com/. Users can see an example of the Tender Form, Project Plan, and the QA Check process, and even generate a dummy QA report by running any check. The QA4LAB website https://qa4lab.com/ is the hub for the CRCSIs point cloud quality assurance tools and has a page on QA4UAV with a link to the demonstrator site.

Contact

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