Specific Category Training Modules
An Automizable Training Approach To Standardization

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The use of Unmanned Aircraft Systems (UAS), commonly known as drones, is increasing rapidly as one of the most attractive and innovative technologies, thanks to its potential to be incorporated in multiple industry sectors. Consequently, there is the need of capable centres to test and validate this technology and to properly train the professionals for the new UAS job opportunities to come.

BCN Drone Center is a UAS Test Site for civil unmanned robotic systems. Inaugurated in 2014, it has had users from more than 100 different countries, an international benchmark in the UAS sector. BCN Drone Center is managed by CATUAV, a pioneer company in the European civil UAS sector, founded in 2000, running testing, evaluation, and certifications processes. The company shares its wide experience in the sector by giving consultancy services to all test site users when needed.

The centre has a segregated airspace of 5.000 hectares with a flying altitude of up to 4.500 feet AMSL, enabling the performance of experimental flights Beyond Visual Line of Sight (BVLOS) or at higher altitudes, facilitating flight approvals for any type of UAS, even those above 25 kg or with a wingspan of more than 3 meters. Inside the airspace, there are both unpopulated and populated areas, allowing to apply CONOPS at different GRC levels.

The test site, completely powered by renewable energy, has the necessary infrastructure to carry out any R&D testing programme; it includes a hangar, an office, a workshop, meeting rooms, test equipment, ground controls station, etc.

This makes BCN Drone Center the perfect place to perform any R&D project and to test, evaluate and certificate UAS technology, as well as to train the professionals to boost the UAS industry. As part of its activity, BCN Drone Center conducts workshops, where participants receive instruction on different UAS-related topics, aimed at both new users, as well as established professionals in the sector.

Regarding the current UAS regulatory framework, the present training scheme for UAS remote pilots follows a staggered approach, beginning with almost no training requirements for the lowest risk operations and increasing these training requirements as the operation and the UAS become more complex. EASA classifies the risk depending on how the surroundings and the persons not involved in the operation are impacted, considering both air and ground risks. Consequently, a small and light UAS may require a high-risk training to operate, if it is going to be operated in a high-risk area.

In the "Open" Category, the remote pilot needs to undergo a standardised theoretical training for operating under A1/A3 Subcategories. And, if the remote pilot wants to operate under the A2 Subcategory, he needs to submit a self-practice declaration to the competent authority and pass an additional theoretical training exam, as this category allows the remote pilot to be up to 30 meters from people not involved with the operation.

For the "Specific" Category, the training requirements become tougher. For a declarative national STS, it is

required to pass a theoretical exam with the Authority and to obtain a practical training certificate from a recognised training facility. The STS Scenarios allow the remote pilot to use UAS with a maximum take-off mass of up to 25 kilograms and operate it in controlled land areas in urban environments, which are considered high risk areas.

Up to this point, the remote pilot training requirements are well-defined by both EASA and the National Aviation Authorities (NAA), but this standardisation disappears when it comes to remote pilot training on operational authorizations (also in the Specific Category), since the training requirements must be proposed by the operator, based on the CONOPS, and accepted by the NAA on a case by case basis. For this purpose, EASA has issued Acceptable Means of Compliance (AMC) establishing guidelines for the theoretical and practical training of those remote pilots and identifying specific endorsement modules with the aim of granting more interchangeability in the training modules between different CONOPS.

As a training facility recognised by the Spanish Aviation Authority, BCN Drone Center offers the above-mentioned theoretical and practical courses for remote pilots desiring to obtain the national STS pilot certificate, including the radio communication rating and personalised assessment for conducting the first steps as a UAS operator. Furthermore, this year, BCN Drone Center has begun offering courses for endorsement modules in the specific category (for operational authorisations), such as for fuel powered drones, BVLOS operations, delivery, and flight operations at altitudes above 120 m.

The "Specific" category training modules are divided in two parts:
- A first theoretical part, in which the particularities of each CONOPS are properly explained. There is a special focus on the contingency and emergency common procedures in each case, which are key for the remote pilots to safely deploy later their own applications.
- The second part of the module is based on flight practice. Again, with a focus on the simulation of contingency and emergency procedures, so training participants can see real flight examples of how to proceed in each case and get a hands-on experience with this type of operation.

Being the first time this type of training was performed, a participant survey was conducted. They found the training well balanced between theory and practical seasons, which allowed them to learn and apply the modules they had been taught. This methodology also proved a good way to give the flexibility to each participant to adapt the training to its needs, which is a key factor, as BCN Drone Center receives clients from different fields who want to apply the UAS training into their specific sector, while following the training course together during the same week.

This module configuration also has the potential to become easily standardised for the "Specific" Category. As each of them can have the same syllabus in any EASA member state, it is possible to move from the current case-by-case training authorisation to a common framework.
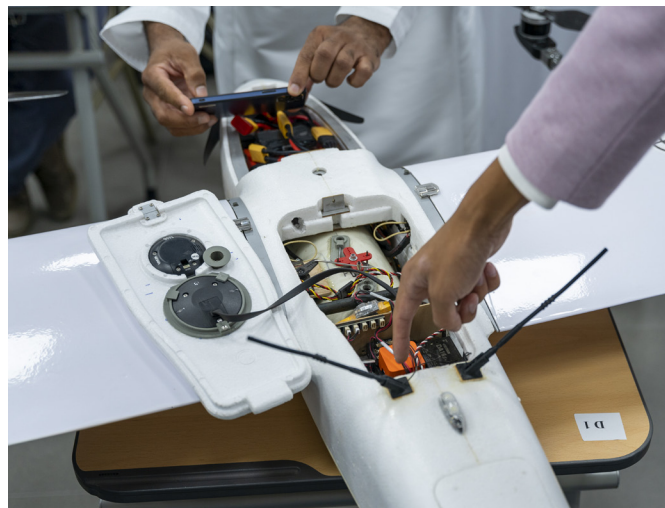
The combination of them can be a flexible solution and become a more personalized training, allowing the course followers to use the modules to create the required CONOPS, focusing on the topics of interest. The training system tested at BCN Drone Center may allow companies and organisations to have pre-trained remote pilots with a common and well-known training syllabus, without depending solely on each remote pilot-specific training. It is expected to be able to add further required modules in the future, as this approach is easily scalable.

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