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Some aspects of the use of unmanned aerial vehicles in agriculture

Agricultural entrepreneurs have always needed accurate and up-to-date information on the degree and status of resources that they control and depend on. Today, agricultural planes have been used since the 1920s. Unmanned aerial vehicles (UAVs) have become one of the most popular technologies used by people from a wide range of occupations in recent years.

The UAV is different from aircraft in many ways, but in most countries they are considered to be high-grade aircraft. This is probably the main challenge that affects their management. Few people realized how the industry of evangelical technology could transform itself so dramatically and become so far reaching in every enterprise and work area. The number of unmanned aerial vehicles that are now flying is foolish, and this will undoubtedly increase exponentially. According to Vogt (2017), annual sales of small blacksmith machines reached 400,000 units in the Federal Republic of Germany in 2016 and are likely to reach 1 million by 2020. In the United States, according to a global information provider (The NPD Group, 2017)), sales of drones in US dollars more than doubled, over the 12 months that ended in February 2017, with an annual increase of 117%.

Many urban areas, including airports and helicopter stays, as well as the associated passage / departure routes, should be safe from interference with flying objects. Aviation is not at risk, and the reputation of unmanned airplane technology will be severely affected after the effects of an air collision with passengers. More and more unmanned weapons are being maintained, equipped with geophysical software that prevents them from flying within the restricted zones or warns the pilot if they import sensitive areas without take-off. Automatic updates with temporary flight restrictions around natural fires help protect authorized firefighting aircraft and ensure that fire crews can operate without violations. Software such as Geospatial Environment Online includes continuous flight restrictions around prisons, nuclear power plants and other sensitive sites, as well as time constraints for large stadium meetings and national security events. It also provides flexibility for flying pilots, enabling them to unlock some limited areas where they have permission to operate (DJI, 2016). Nonetheless, unscrupulous users may disable this control or use Blades that do not have similar security features. A.J. Emmerson, a former and most important member of the Australian Civil Aviation Authority (CAA), states that there is no space for cost-benefit analysis in the aviation safety rules and that "the goal of ensuring flight safety can not be left to initiative, but not regulated operators, or to the theory of survival of the most suitable (Emmerson, date, p. 6) ".

Nevertheless, there is a necessary balance between social security and reliable trade, a trade-off between excessive regulation and the promotion of private

enterprise. There are parts of the airspace where UAVs can carry out unlimited low-risk operations and there are areas where access to our technical know-how is never appropriate.

Various nomenclatures are used in relation to unmanned aerial vehicles. The public and the media often use "no-leave". The term unmanned aerial vehicle (UAV) refers to an unmanned aerial vehicle. The term "unmanned aerial system" (UAS) means a larger system of airborne drones, a pilot located elsewhere, controlling an aircraft through a ground control station through wireless communications (control and command links) plus a sensor (s) mounted on an UAV and software that can be used to analyze the data collected by the sensor (sensors). UAVs can work manually or programmed to work automatically or completely autonomous.

UAVs are often different from conventional aircraft and can be obtained in a range of shapes, sizes and configurations. The UAV landing mass has historically been used to classify devices. Frequently used classifications occur at a mass of 2 kg, 25 kg and 150 kg. The category intended for the UAV will affect the minimum pilot age, the expected competence of the remote pilot, regardless of whether or not to register the device in the CAA, whether the need for electronic identification and the software for geographic protection installed. UAVs exceeding 150 kg are, as a rule, considered equivalent to conventional aircraft that are required to comply with similar airworthiness and certification standards.

The world is dealing with the emergence of new technologies that can collect data at an impressive level of detail. In this regard, governments are busy with legislation on personal data and privacy issues. Civilian UAV technology for professional and recreational use adds some degree of complexity, since its deployment allows you to view previously unavailable views and affect the airspace traditionally used by manned airplanes. UAS offers a wide range of service facilities. According to PwC, the UAS for the first time will turn agriculture into the high tech industry, with the solution based on real data collection and processing and the likely increase in productivity and profitability (Drone Powered Solutions 2016). Being a new technology and developing faster than regulatory acts intended to regulate its use, it is difficult to assess how they influenced PSP operations in agriculture. In addition, a number of stakeholders generally promote the development of such rules.

When forming their management, it is necessary to find a balance between the management of land and air risks of PSP operations, the need for security and confidentiality, and the benefits of agriculture and wider management of natural resources. So, the most important thing is that the CAA closely interacts with the stakeholders in the agricultural sector.

Networking and sharing are key components that can lead to the identification of best practices. There is a clear transition from the classification of various operations based on the UAV's weight and the risk of exploitation. Light, low-speed VLOS operations should not interfere with regulatory accountability or require regulatory accountability. Governments can then devote their energy to assessing risky operations and awareness campaigns so that operators and the public understand the rules they have set. They can also focus on resolving gaps in the legal framework (such as confidentiality and data) and exploring the connection between

new technologies and automation and ATM systems (Stöcker, Bennett, Nex, Gerke and Zevenbergen, 2017). EASA support of the three categories is the best international practice, and its worldwide dissemination should be supported by national and international harmony and common standards. Steps should be taken to simplify the regulatory process.

The common thread in regulatory requirements around the world is that UAVs should be registered and insured, and their operators should be licensed, with the exception of non-harmful flights, that is, very small, platforms from people.

There is a need to continue to advocate standardizing the rules for a risk-based approach, especially as it will obviously be beneficial to agriculture. Particular attention needs to be paid to resolving data collection and privacy issues as they are the basis for improving agriculture.

In conclusion: UAS services are a new milestone in technology development. Youth attracts technology, its development and use. UAS for agriculture can be a magnet for educated young people in developing countries to develop services for enterprises based on or at least working in rural areas, thus creating employment opportunities and improving farm production and farmer returns through investment. As industries grow rapidly in countries where regulations allow and are stopped or stopped where they are too strict, expensive to comply with or disconnected, regulators must fully realize that the impact of their solutions is much greater than security and confidentiality and can determine, Whether agriculture becomes a managed data and a lucrative business or not.

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