COMPARISON AND ANALYSIS OF DRONE REGULATIONS WORLDWIDE

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Introduction

The drone market has changed dramatically over the past decades. The technology, used first for military purposes, started to serve a new market of hobbyists with the commercialisation of small RPAS accessible to everyone. In the recent years, companies from various industries have seen a tremendous potential in the use of RPAS for civil applications, creating the concept of Drones as a Service (DaaS), where RPAS started providing services as tools. The pressure of a regulatory hurdle and public growing concern about those aircrafts flying above the population have recently become significant. The current technology allows for the development of a totally new industry but depends on the flexibility of the regulatory framework that should ensure both safety and room for innovation.

Aim & Objectives

This paper aims at providing an insight of the current state of the drone industry to determine the best regulatory environment in order to integrate UAVs safely in the civil airspace and exploit the potential market.

The first objective is to show the existence and significance of the civil drone market through a review of the literature. The second is to find the relevant criteria to dress a table of national regulations comparison, the countries being meticulously chosen worldwide, find and analyse the existing gaps. Thirdly, this paper develops a methodology to evaluate those regulations and find the best possible approach ensuring both operational flexibility and enhanced safety.
Results

Market Outlook
Amongst commercial applications, the most promising market sectors are:
- Construction & Real Estate (inspection and monitoring, mapping, calculations)
- Energy (oil and gas inspections)
- Agriculture (spraying and monitoring)
- Transport, Delivery, Search & Rescue, Law Enforcement, Aerial Photography, Media & Entertainment, etc.

National Regulations Comparison
There are gaps in every part of the regulations. The operational limitations vary from very flexible in Australia and France to restrictive in South Africa. The administrative procedures are all different and can sometimes hamper an operator to develop its business activities worldwide. However, the technical requirements present a lot of resemblance. Most countries require DAA function to operate BVLOS. The differences concern the need for e-ID and automatic geofencing, which is addressed only by France, EASA and China.

Regulations Appraisal
France appears to have the most balanced rules (1.43/2). They ensure operational flexibility while keeping an acceptable level of safety and privacy. The operations are eased by the existence of operational scenarios as well as the administrative procedures while the safety is mostly ensured by the electronic identification and geofencing.

Conclusion
The drone market is subject to three main concerns: technical challenges, regulatory hurdles and public perception. The technical issues consist of DAA technologies in order to operate BVLOS and the development of UTM systems. From the drone community point of view, there is an urgent need for open standards and EASA’s regulations must be articulated with the U-Space design. Moreover, the industry should not be considered as derivative of the aviation nor space industry. RPAS are not ordinary aircrafts, they are tools for businesses. Finally, social acceptance is the last barrier to the full integration of drones in the airspace. This public perception rests on education and awareness of drone pilots and operators. Thus, it is necessary to develop strong but flexible regulatory basis. This will help create a drone culture, fundamental to develop the drone market.