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Ethics and Civil Drones

European Policies and Proposals
for the Industry

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Foreword

Aviation has come a long way since the Montgolfier brothers carried out the first free flight of a hot air balloon across Paris in 1783. It took a further 120 years before the Wright brothers achieved sustained controlled powered flight in 1903. Not too long after that, the first scheduled commercial air passenger flight took off in 1914 across Tampa Bay, Florida. The aviation sector has seen tremendous advances both in relation to the technology and volume of air traffic since that first commercial flight. Whilst the civil aviation section generally has relied on human piloted aircrafts, unmanned ‘pilotless’ drones have also been developing alongside, albeit at a much smaller scale. Until the not too distant past, the uses of drones have been mainly confined to military and surveillance purposes. The significance of drones has, however, increased substantially in the recent years in the light of its use in various other sectors including agriculture, inspection, media and entertainment, as well as by hobbyists. It will only be a matter of time before remotely piloted aircrafts enter the realm of commercial flights.

Drones come in a variety of sizes, weight and designs. The regulation of drones is also equally diverse. Internationally, whilst the traditional aviation industry has been subject to the framework of an international convention, it is fair to state that no such cohesive international standard or guidelines exist for civil drones. In the European Union, the regulation of unmanned aircraft systems with a maximum take-off mass of less than 150 kg is a matter for individual member states. This has resulted in a lack of consistent and higher standard of regulation across the EU, which has obvious implications for safety and privacy. This is, however, expected to change in the light of the current initiatives for a new regulation that aims to bring all drones, regardless of weight, within the purview of the European Union legal framework.

Law has a difficult job to do in terms of adapting and rising up to ever-changing technologies, without posing a hindrance to innovation and growth. It is imperative that there is a forward-looking, harmonized and appropriate legal framework in place across the European Union in order to support and create a safe, secure and privacy-protected environment for drones to operate. A hallmark of ‘good law making’ in this respect should be that regulation should not hinder growth and

development of the sector by putting European companies at a disadvantage over their (mostly Chinese and US) competitors, but at the same time, it should ensure that the safety and privacy of the operators and the public are protected. It is in this context that this book is highly relevant—not just for policy makers, but also for the producers, operators and users (commercial, civil and casual) of drones regardless of size, weight and configuration.

I have a keen interest in the interaction between law and technology and in particular the challenges the latter raises for the law. I am delighted to have the opportunity to write a Foreword for this book, which considers an area that is very topical but at the same time is in need of more research. In that sense, this book makes a very useful contribution to this field of study. The focus of this book is on professional drones (for, e.g., those used for aerial photography) and commercial drones (for, e.g., those used in precision agriculture, infrastructure inspection and other industrial use), but it also considers casual private use (hobby) to a certain extent. This book starts with an overview of the European Union level policies and regulation that govern civil drones, and the authors argue that the current regulatory framework acts as an impediment for the growth of the drone industry. The authors undertake a useful comparative analysis of the current regulatory framework in Belgium, Spain and the UK, which reveals the adverse impact the lack of harmonization of laws has on the European drone sector as a whole. In the final chapter, the authors endeavour to explore the legal and ethical considerations behind regulation and examine the various regulatory models including self-regulation and co-regulation from a cross-jurisdictional perspective. In particular, they argue that manufacturers of drones should work closely with operators and advocate industry codes of conduct and best practices to ensure the safety, security and privacy of all stakeholders.

As the drone industry takes off further to dizzying heights, it will transform the skies as we see it today. The current legislative initiative at European level to strengthen the regulation of drones will result in one of the significant watershed moments for aviation laws. This book could not be timelier in the light of the ongoing developments in the European Union and beyond.

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Abbreviations

AEDRON	Spanish Association of Drones and Similar
AESA	Spanish Safety Aviation Agency
AIP	Aeronautical Information Package
AiRT	Technology Transfer of RPAs for the Creative Industry
ANS	Air Navigation Service
ARPAS-UK	Association of RPAs
ATM	Air Traffic Management
ATO	Approved Training Organization
BCAA	Belgium Civil Aviation Authority
BeUAS	La Fédération Belge de l'Aviation Télépilote
BRLOS	Beyond Direct Radio Line of Sight
BVLOS	Beyond Visual Line of Sight
CAA	Civil Aviation Authority (UK)
CEO	Chief Executive Officer
CI	Creative Industries
COM SP	Communication Service Provider
CONOPS	Concepts of Operations
CTR	Controlled Traffic Region
D&A	Detect and Avoid System
DGTA	Générale Transport Aérien (Belgium)
DOA	Approved Design Organization
EASA	European Aviation Safety Agency
ENAC	Italian Civil Aviation Authority
ESRG	European RPAS Steering Group
EU	European Union
EVLOS	Extended Visual Line of Sight
FIZ	Flight Information Zone
GCS	Ground Control Station
IAA	Ireland Aviation Authority
ICAO	International Civil Aviation Organization

ICT	Information and Communication Technologies
IFR	Instrument Flight Rule
IPS	Indoor Positioning System
JARUS	Joint Authorities for Regulation of Unmanned Systems
LAPL	Light Aircraft Pilot Licence
MTOW	Maximum Take-Off Weight
NAAs	National Aviation Authorities
NATO	North Atlantic Treaty Organization
NOTAM	Notice to Airmen
OACI	International Civil Aviation Organization
QE	Qualified Entity
RLOS	Direct Radio Line of Sight
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft System
SARPs	Standards and Recommended Practices
SERA	Standard European Rules of the Air
SMEs	Small- and Medium-Sized Enterprises
SORA	Specific Operational Risk Assessment Specifications
TBD	To Be Determined
TLS	Tolerable Level of Safety
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
UCAV	Unmanned Combat Aerial Vehicle
UK	United Kingdom
UPV	Universitat Politècnica de València
USA	The United States of America
VLOS	Visual Line of Sight