

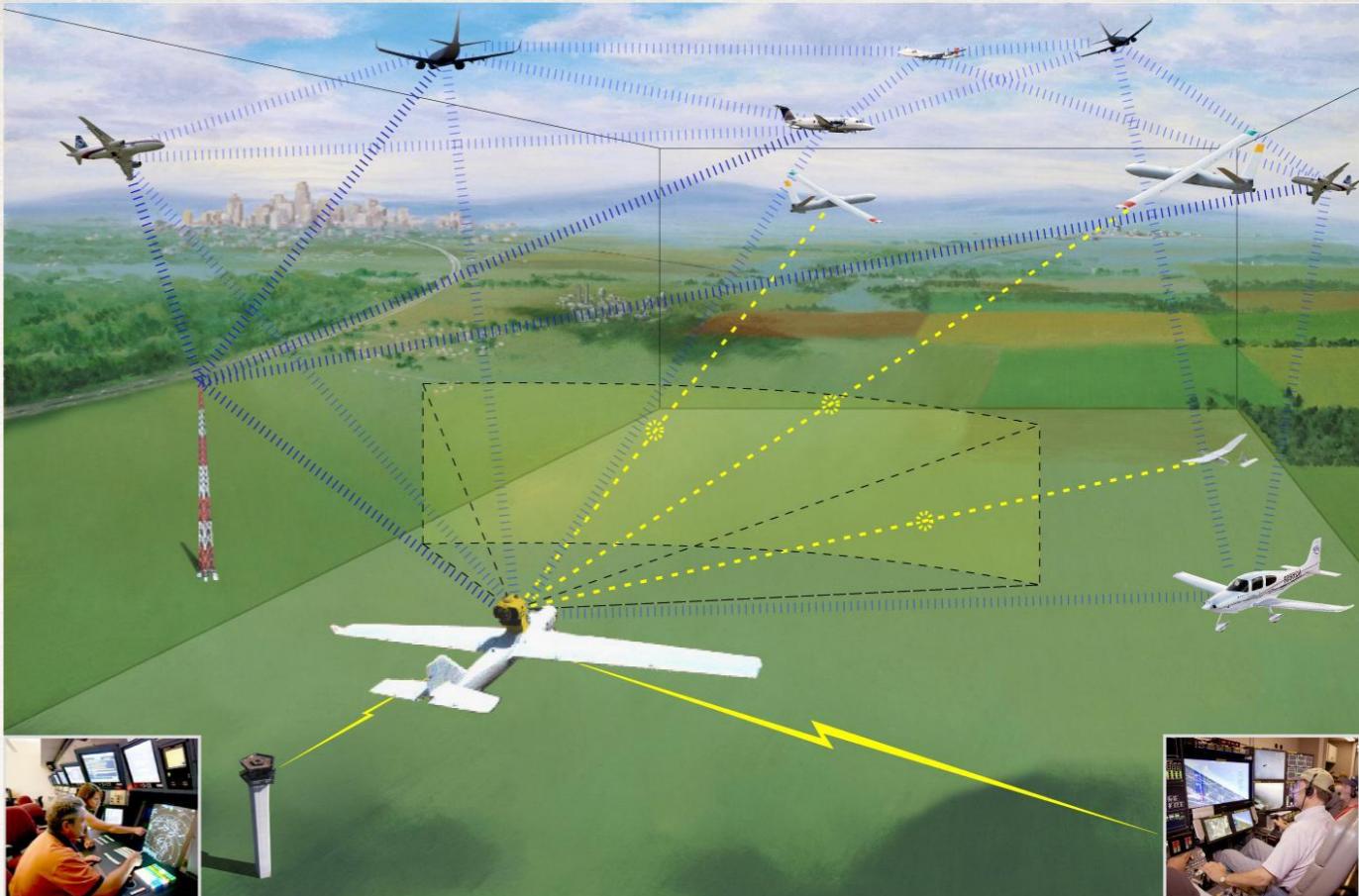


LESSONS FOR DOMESTIC LEGISLATORS FROM INTERNATIONAL REGULATIONS PROTECTING THE SAFE OPERATION OF DRONES AND VICE-VERSA

Aviation Safety: The challenge of clearing the skies

Program overview

- ❖ Drones are the newest trend in civil aviation.
- ❖ The role of the International Civil Aviation Organization (ICAO) to regulate the safe operation of drones (The Chicago Convention, SARPs and Guidance Material).
- ❖ Main challenges for the integration of civil drones into non-segregated airspace.
- ❖ Concluding remarks.



Drones are the newest trend in civil aviation

Would you really trust your lives to an
autonomous flying vehicle?



Drone technology has penetrated the public mind with feelings of admiration, but at the same time, accompanied by fears regarding its associated dangers, just as it happened in the inception of aviation



Drone commercial applications



Insurance Claim Validation



Wind Turbine Inspection



First Aid



Agriculture



Security



Gas Flare Inspection



Flash Flood Warning



Organ Transplant Delivery



Wildlife Conservation



Railway Safety



Shipping Emission Monitoring



Cargo Delivery

20 Commercial Drone Use Cases



Oil Spill Monitoring



Preventing Shark Attacks



Pipeline Leak Detection



Reforestation



Search and Rescue



Cinematography



Journalism

Harmonization or Fragmentation?

- ✿ **In the United States:** Commercial operations are authorized through "exceptions" until the drone rules are issued.
- ✿ **In Europe:** Basic national safety rules apply, but the rules differ across the EU and a number of key safeguards are not addressed in a coherent way. Efforts are being made to harmonize the regulations though.

FAA AEROSPACE FORECAST

Sales Forecast Summary Million Drones Units

	2016	2017	2018	2019	2020
Hobbyist (model aircraft)	1.9	2.3	2.9	3.5	4.3
Commercial (non-model aircraft)	0.6	4.8	5.5	6.1	7.0
	2.5	4.8	5.5	6.1	7.0

The role of ICAO to regulate the safe operation of drones; (Chicago Convention, SARPs and Guidance Material)

Block Upgrades are organized in six-year increments through 2030:

- ✿ By 2018: Implementation of basic procedures for operating drones in non-segregated airspace;
- ✿ By 2024: refined operational procedures that cover lost C2 link and detect and avoid technologies;
- ✿ By 2030: Drones should be able to operate on the aerodrome surface and in non-segregated airspace just like any other aircraft;

Amendments adopted in the Annexes to the Chicago Convention pertaining to drones. -

Definition of drones:

On March 2012, the Sixth amendment to Annex 7 was adopted. This revision included the term 'RPA' defined **as an unmanned aircraft, which is piloted from a remote pilot station.**

Rules of the air:

On 7 March 2012 amendment 43 to Annex 2 Rules of the Air to the Chicago Convention was adopted. Annex 2 stipulates that a remotely piloted aircraft shall be operated in such a manner as to minimize hazards to persons, property or other aircraft. In this context, Appendix 4 incorporates specific rules to drones in the following categories:

- ❖ general operating rules;
- ❖ certificates and licensing; and
- ❖ request for authorization.

Main challenges for the integration of civil drones into non-segregated airspace

The pilotless clause

Art. 8 of the Chicago Convention stipulates:

*No aircraft capable of **being flown without a pilot** shall be **flew without a pilot** over the territory of a contracting State without special authorization by that State and in accordance with the terms of such authorization...*

Remotely piloted aircraft (RPA). An unmanned aircraft which is piloted from a remote pilot station.

Main challenges for the integration of civil drones into non-segregated airspace

Documents carried in Aircraft

Art. 29 of the Chicago Convention:

Every aircraft of a contracting State, engaged in international navigation, shall carry the following documents in conformity with the conditions prescribed in this Convention:

- (a) Its certificate of registration;*
- (b) Its certificate of airworthiness;*
- (c) The appropriate licenses for each member of the crew;*
- (d) Its journey log book;*
- (e) If it is equipped with radio apparatus, the aircraft radio station license;*
- (f) If it carries passengers, a list of their names and places of embarkation and destination;*
- (g) If it carries cargo, a manifest and detailed declarations of the cargo.*

Main challenges for the integration of civil drones into non-segregated airspace

Certificate of Airworthiness

Article 31 prescribes:

Every aircraft engaged in international navigation shall be provided with a certificate of airworthiness issued or rendered valid by the State in which it is registered.

Licensing Personnel

Article 32(a) of the Chicago Convention also states:

The pilot of every aircraft and the other members of the operating crew of every aircraft engaged in international navigation shall be provided with certificates of competency and licenses issued or rendered valid by the State in which the aircraft is registered.

Concluding remarks

- ❖ The emergence of drones as cutting-edge technology, has outpaced the law.
- ❖ There is a need of rules harmonization.
- ❖ Right now a drone operator based in one State might find it difficult to get approval to operate in another State;
- ❖ The integration of drones into the aviation system requires contributions from States, aviation specialized agencies, academia representatives and industry stakeholders.

“Thank you.”