

Product legislation for UA operating in the Open category *The manufacturer's point of view*



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Requirements on UA

Manufacturer
responsible for
compliance with
technical
requirements

Similar approaches: Analysis of operational risk
↗ Requirements on Operator & UA



Operator
responsible for
compliance with
technical
requirements

Comply with
one of the **5**
Classes
defined in
the
**Commission
Regulation**

OPEN

Low risk

Regulation of the European Union
Ministry of Aviation



SPECIFIC

Increased risk

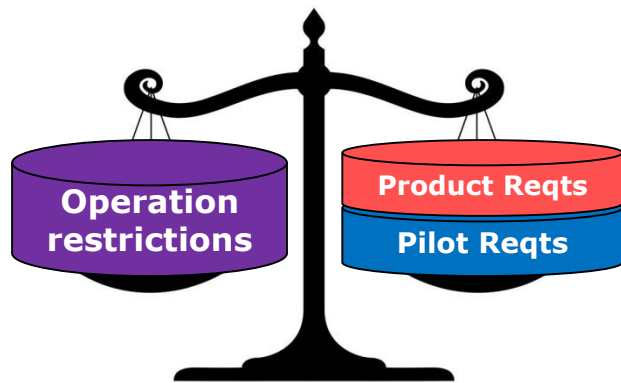
Approval by NAA based on
Risk assessment



**APPROVED
by NAA**

Comply with
requirements
contained in
operator's
authorisation
(or Standard
scenario)

Technical requirements introduced in the proposal for open category



Impact Assessment work has been key contributor to this final outcome. Data have been collected to understand cost impact on manufacturers for several technical requirements (e.g. via survey)

Sub-categories of operations

Category A1



Fly over people

Category A2



Fly close to people

Category A3



Fly far from people

MTOW < 0,9 kg
Or impact < 80J

MTOW < 4 kg

MTOW < 25 kg

Product requirements (UA art 21)

Requirements to reduce the risk linked to **injuries in case of impact on people**, for instance no sharp edges and kinetic energy

Requirements to reduce the risk linked to **loss of control of UA**, for instance lost-link management and mechanical integrity

Less technical requirements considering stringent **operational limitations**

Most requirements are state of the art

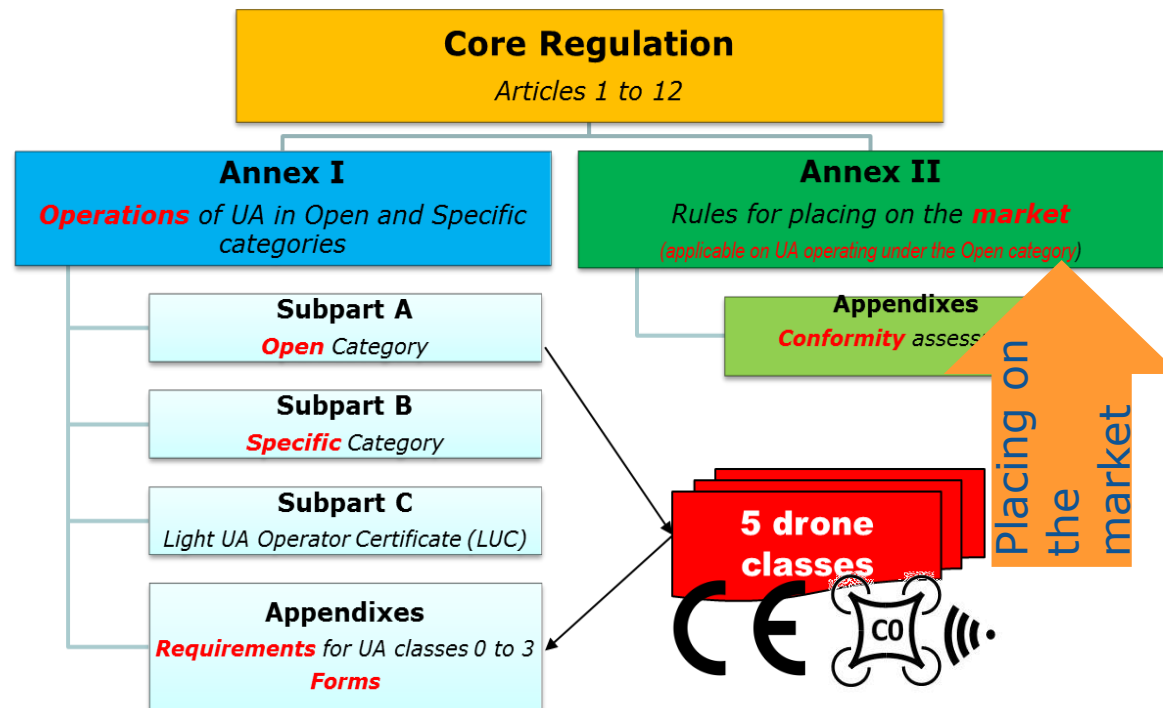
A new harmonisation legislation for drones

Open category:

- Sub-categories of operations imposing specific requirements on UA
- **UA Classes 0 to 5**
- Compliance through **CE Marking**, not authorisation /certification

➡ **Draft regulation includes new harmonisation legislation for UA**

- Annexes I
- + Annex II



New harmonisation legislation applicable to UA operating in the Open category



Applicable legislations

Commission regulation for Open category		R&TTE directive	EMC directive	ROHS directive	Safety directive	Toys directive	...
OPERATIONS	PRODUCT REQUIREMENTS	PRODUCT REQUIREMENTS	PRODUCT REQUIREMENTS	PRODUCT REQUIREMENTS	PRODUCT REQUIREMENTS	PRODUCT REQUIREMENTS	PRODUCT REQUIREMENTS
C0							
C1							
C2							
...							



OPEN

Low risk

No involvement of Aviation Authority

- Operational Limitations
 - Visual line of sight
 - Maximum Altitude
 - Distance from airport and sensitive zones
 - Flights over crowds not permitted except for harmless subcategory

Product requirements



SPECIFIC

Increased risk

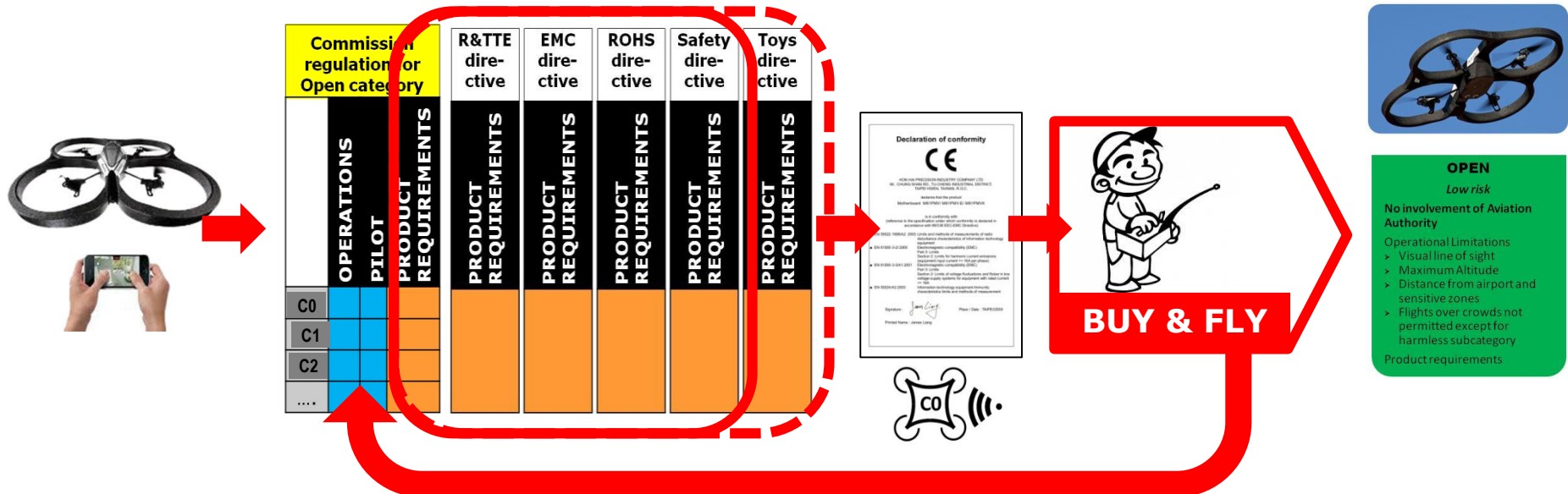
Approval by NAA based on Risk assessment (SORA)

NAA's possibly supported by accredited QE unless approved operator with privilege

Manual of Operations mandatory to obtain approval
Pilot qualification



CE marking for the Open category



CE marking: not a new procedure

➔ *The following directives apply:*

- R&TTE directive 1999/5/EC (replaced by RED 2014/53/EU)
- EMC directive 2004/180/CE
- Low Voltage directive 2014/35/EU
- ROHS directive 2011/65/CE
- Machinery directive 2009/127/EC
- General product safety directive 2001/95/CE
- Toys directive 2009/48/EC



DECLARATION OF “CE” CONFORMITY “PARROT BEBOP DRONE”

We, Parrot SA 174 quai de Jemmapes 75010 Paris France, declare under our sole responsibility that our product **Parrot BEBOP DRONE (model: BEBOP DRONE)** is in conformity with:

- Radio and Telecommunication equipment directive 1999/5/EC R&TTE
- EMC directive 2004/108/CE
- Safety directive 2001/95/CE
- ROHS directive 2011/65/CE

➔ *Community harmonization legislations are based on "templates" provided by the New Legislative Framework*

- Regulation (EC) 765/2008 (accreditation, market surveillance and CE marking)
- Decision 768/2008 (conformity assessment procedures, etc)

CE marking: how does it work ?

- Regulation setting
 - ✓ essential requirements
 - ✓ and **conformity assessment procedure**
- Conformity assessment
 - ✓ by the manufacturer or **importer**
 - ✓ according to procedure (**Module**) defined in the legislation
 - ✓ with a **notified body** when requested
 - ✓ facilitated through the use of **harmonised standards** (presumption of conformity)

**Declaration of
conformity**

CE marking

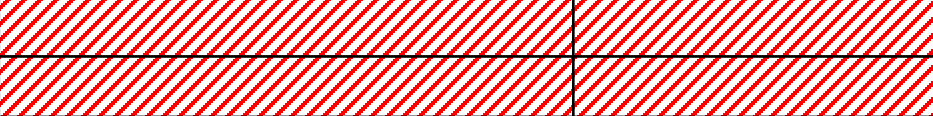


Simplified overview of conformity assessment Modules

- ➔ *A conformity assessment procedure covers both design and production phases*
- ➔ *Modules (A, B, C, ...) are provided by Decision 768/2008/EC, 16 variants exist*

Design	Production
A : Conformity to requirements assessed by Manufacturer	
B : Type examination certificate issued by a Notified Body	C : Conformity to type assessed by Manufacturer
	D : C + manufacturer operating a certified QA system for production (by Notified Body or ISO 9001)
	E : C + manufacturer operating a certified QA system for final inspection (by Notified Body or ISO 9001)
	F : Conformity to type assessed by Notified Body
G : Conformity to requirements assessed by Notified Body	
H : A + Manufacturer operating a full QA system (approved by a Notified Body)	

Module requirements for UA Classes

Article II.12	Requirements	MODULE A INTERNAL PRODUCTION CONTROL	MODULES B AND C EU TYPE EXAMINATION AND CONFORMITY TO TYPE BASED ON INTERNAL PRODUCTION CONTROL	MODULE H CONFORMITY BASED ON FULL QUALITY ASSURANCE
C0 – TSD	Simple	✓		
C4				
C0 – not TSD	More complex	If harmonized standards published in JO are applied	When: <ul style="list-style-type: none"> ➤ no harmonized standards exists ➤ harmonized standards are not used 	
C1				
C2				
C3				
e-identification				
geofencing				



Use of standards in conformity assessment

- ➔ ***The use of standards is voluntary, it facilitates the demonstration of conformity***
 - Application of the specifications included in a "harmonized standard" confers a "**presumption of conformity**" with the essential requirements it cover
 - Any manufacturer choosing not to apply a harmonised standard needs to demonstrate how the compliance is reached.
- ➔ ***To provide a 'presumption of conformity', a standard***
 - must be a **harmonized standard**
 - the references of which has been **published** in the Official Journal of the European Union.
- ➔ ***A harmonised standard***
 - is a European standard developed by a recognised European Standards Organisation: **CEN, CENELEC, or ETSI**.
 - is created following a request from the European Commission to one of these organisations (**adoption of a mandate by the EC**)

Development of harmonized standards

➡ **Harmonized standards needed:**

- First candidates: e-identification and geo-fencing
 - ✓ Refine the definition of the function taking into account all dimensions (safety and privacy law enforcement, security, etc)
- Classes C0 to C3
 - ✓ Requires further evaluation

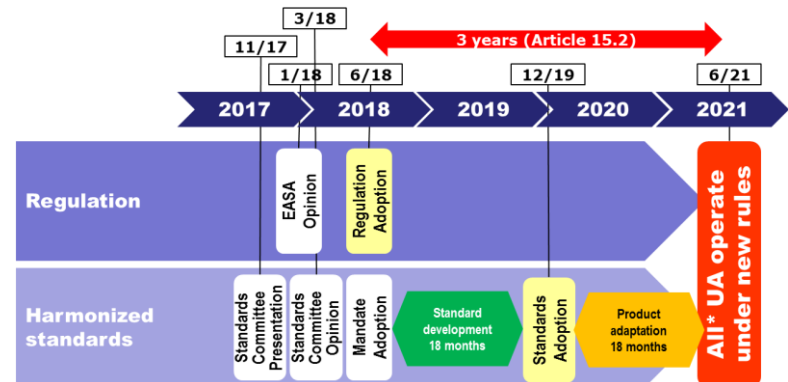
➡ **Prepare mandates to ESOs (ETSI, CEN/CENELEC)**

- Target date for adoption: mid-2018

➡ **Standard development should be fast**

- 18 months
- Need to join efforts from different initiatives (EUROCAE, ETSI, etc)

		Class C0 - TSD	C0 - notTSD	C1	C2	C3	C4
1	GEN	be safely controllable by a remote pilot following the manufacturer's instructions					
2		have an MTOM, including payload, of X kg					
3		be made of materials and have performance and physical characteristics such as to ensure that in the event of an impact with a human body, the energy transmitted to the human body is less than 80 J					
4		or, as an alternative, have an MTOM, including payload, of less than 900 g and a maximum cruising speed of 18 m/s;					
5	LIMITS	have a sound power level not exceeding 80 dB (measured at 3 m distance from the UA);					
6		be designed to be operated below 50 m or have an active system limiting the attainable height of the UA to a maximum of 50 m above take-off level;					
7		have a maximum altitude performance limited to 120 m or be equipped with a system limiting the height above the ground or above the take-off point to a value selectable by the remote pilot; in the latter case, clear information about the UA height from the ground during flight shall be provided to the remote pilot;					
8	FUNCTIONS	provide to the remote pilot clear information about the battery status of the UA and its control station;					
9		be equipped with lights, as required for its controllability;					
10		be equipped with an advisory geofencing system as per Appendix 1.6.a to this Annex;					
11		be equipped with an electronic identification system as per Appendix 1.6.b to this Annex					
12		be designed and manufactured to fly safely;					
13	DESIGN CRITERIA	be designed without sharp edges that may constitute a danger to people on the ground;					
14		if equipped with propellers, be designed in a way to limit any injury that may be inflicted by blades;					
15		have the requisite mechanical strength and, where appropriate, stability to withstand any stress to which it is subjected during use without breakage or deformation, which may interfere with its safe flight;					
16		be powered by electricity of a nominal voltage not exceeding XV direct current (DC) or the equivalent alternating current (AC) voltage; its accessible parts shall not exceed XV DC or the equivalent AC generated does not lead to any risk or harmful electric shock even when the UAS is damaged; voltage; internal voltages shall not exceed XV DC or the equivalent AC voltage unless it is ensured that the voltage and current combination					
17		in case of loss of data link, have a reliable and predictable method for the UA to recover or terminate the flight in a way that reduces the effect on third parties in the air or on the ground					
18	FMM	if equipped with a follow-me mode, when this function is on, keep a distance not exceeding 50 m from the remote pilot, and allow the remote pilot to regain control of the UA or to activate an emergency procedure that terminates the flight;					
19	INFO	be placed on the market with clear operational instructions and warnings highlighting the risks related to UAS operations, which shall be adapted to the age of the user;					
20		include an awareness leaflet with all the information required to use the UAS in accordance with the applicable regulations on aviation safety, security, privacy and data protection, liability and insurance;					
21		bear the following label on the UA in a visible manner:					





THANK YOU!