





**2<sup>nd</sup> Dissemination Workshop Thursday - 5 November 2020** 

# SURVEY ON EUROPEAN UAS OPERATIONS & OPERATION RISK ASSESSMENT METHODS

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### **Objective**

4 Languages: English, French German & Spanish

**Respondents: Only Drone Operators** 



UAS OPS Survey	Current Situation	Identify the market sectors in which drone flight operations are currently taking place in compliance with the currently applicable rules or regulations.	VLOS, EVLOS, BVLOS
		Identify the mission purposes of the flight operations currently taking place in compliance with the currently applicable rules or regulations.	Below 500 ft. (150 m) above ground level
	Near Future (1-2 years starting 210101)	Identify the market sectors in which drone flight operations that will take place starting 1st January 2021 in compliance with the new EU drone regulation.	Over densely or
		Identify the mission purposes of the flight operations that will take place starting 1st January 2021 in compliance with the new EU Drone regulation.	sparsely populated areas
	Obtain initial feedback on the use of SORA / Standard Scenarios / Predefined Risk Assessment & qualification of respondents to participate in the OPS RISK Survey		
OPS RISK Survey	Obtain mor	e detailed feedback on the use of SORA / Standard Scenarios / Predefine	ed Risk Assessment



### **Survey Methodology**



#### **UAS OPS Survey (1) – Respondent Declarations**

- Respondent is a **Drone Operator**
- Respondent conducts "Commercial" or "Non-Commercial" operations
- The applicable **Type of Operator** (10 options)

Survey software:

SoGoSurvey (GDPR compliant)

#### **UAS OPS Survey (2) – Current Situation**

The respondent selected:

- Up to 4 Market Sectors (25 options);
- Up to 5 Mission Purposes (33 options) (flown < 500 ft) in selected Market Sector, indicating if the flights are:
  - ♦ VLOS, EVLOS, or BVLOS
  - Over densely or sparsely populated areas

#### **UAS OPS Survey (4) – Initial Feedback on SORA Use**

Questions with 2 types of answers: Yes/No & multiple choice.

Objective: Identify the respondents with the experience to be invited to contribute to the "OPS RISK" survey.

#### **UAS OPS Survey (3) – Near-Future Situation**

The respondent selected:

- Up to 4 Market Sectors (25 options);
- Up to 5 Mission Purposes (33 options) to be flown (<500 ft) in each selected Market Sector, indicating if the flights are:
  - ♦ VLOS, EVLOS, or BVLOS
  - Over densely or sparsely populated areas

#### **OPS RISK Survey** – Detailed Feedback on SORA Use

Questions with 2 types of answers: Yes/No & multiple choice.
Objective: Obtain feedback on the use of SORA, Standard Scenarios, and Predefined Risk Assessment.







### **UAS OPS & OPS RISK Surveys - Conclusions**

### **Basic Numbers**



**UAS OPS Survey Respondents:** 247

**OPS RISK Survey Respondents:** 20

#### 22 Countries - In Alphabetical Order

Austria	2
Belgium	34
Bulgaria	1
Denmark	1
Estonia	1
Finland	3
France	64

Germany	34
Greece	1
Ireland	7
Italy	13
Lithuania	1
<b>Netherlands</b>	30
Poland	5
Portugal	1

Romania	1
Serbia	1
Slovakia	2
Spain	23
<b>Switzerland</b>	10
Ukraine	2
UK	10

#### 22 Countries – In Order of Respondents/Country

France	64
Belgium	34
Germany	34
<b>Netherlands</b>	30
Spain	23
Italy	13
Switzerland	10

UK	10
Ireland	7
Poland	5
Finland	3
Austria	2
Slovakia	2
Ukraine	2
Bulgaria	1

Denmark	1
Estonia	1
Greece	1
Lithuania	1
Portugal	1
Romania	1
Serbia	1

#### **Operator Categories**

Commercial Operators	188
Non Commercial Operators	<b>59</b>

#### **Operator Types**

Corporate Entity (5 categories)	216
Governmental Entity	12
Research Organisation (non-commercial)	5
Association, Federation, Union, TechCluster	6
Academia / University	8

#### **SORA – Comprehension & Use**

Understand SORA methodology	155
Use SORA	86
Have submitted SORA to their NAA	47







#### **Current Situation**



1	<b>Drone operations in all</b>	proposed Market Sectors (	excl. "Policy Compliance & Legal Proof")
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2	10 out of 25 Market Sectors with the highest drone activity	86% of total
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3 10 out of 25 Market Sectors with the lowest drone activity 6% of total

4 All proposed Flight Missions are taking place

5 10 out of 33 Flight Missions (most frequently conducted) 71% of total

6 Operators conducting:

- VLOS & EVLOS flight mission 59%

- BVLOS flight missions (besides VLOS & EVLOS) 41%

- Flight missions only over densely populated areas 9%

- Flight missions only over sparsely populated areas 45%

- Flight missions over densely & sparsely populated areas 46%

Wide spread recognition of benefits of drone use (commercial & non-commercial)

A budding market – Principally VLOS & EVLOS

Drone-related job creation is starting to taking place in all Market Sectors







### **Near-Future (1-2 years)**



- 1 Drone operations will take place in all proposed Market Sectors (all proposed Missions)
- 2 10 principal Market Sectors 83% of total
- 3 Top 10 Flight Mission purposes remain the same
- 4 Evolution of quantity of operators conducting flight missions in comparison to today:

 Only VLOS:
 - 44%
 Only EVLOS:
 - 12%
 Only BVLOS:
 + 16%

 VLOS + EVLOS:
 + 17%
 VLOS + BVLOS:
 + 50%
 EVLOS + BVLOS:
 + 15%

VLOS + EVLOS + BVLOS: + 66%

- 5 Flight missions over densely populated areas will not grow significantly
- 6 Operators conducting flights over densely & sparsely populated areas will increase by 27%

VLOS & EVLOS will remain of interest to 39% of the operators Evolution from VLOS & EVLOS to BVLOS flights 61% of the operators

Result: The use of safety risk analysis methods will become increasingly important

There will be an increase in demand for services from flight training schools







# **10 Principal Market Sectors**



	Current	Near-Future	Growth	Other Growth Sec	ctors	
1 Construction & Real Estate	13,31%	9,77%	-27%	Heritage Site & Historical		
2 Maintenance (all sectors)	11,94%	11,92%	stable	Monument Mgt	+63%	
3 Aerial Photography, Audio-Visual				Insurance	+17%	
Production, Advertising	11,63%	12,09%	+4%	Miscellaneous		
4 Security & Law Enforcement	8,11%	8,10%	stable	- Air Show	+9%	
5 Research & Science	7,39%	8,02%	+9%	Policy Compliance &		
6 Agriculture, Fishery, Forestry	6,85%	8,61%	+25%	Obtain. Legal Proof	+100%	
7 Public Services & Safety	6,56%	6,29%	-4%	Remote Ops		
8 Environmental Protection &				- Non-Sensing	+23	
Wildlife Conservation	6,15%	5,10%	-17%	Remote Ops		
9 Flight Training / Instruction	5,43%	6,06%	+12%	- Sensing	+20%	
10 Cinema & TV Industry	4,27%	3,23%	-24%	Transport	+53%	
Mining & Exploration	3,84%	3,37%	-12%	Utility Companies	+16%	
Total	85,48%	82,56%				



### **10 Principal Flight Missions**



	Current	Near-Future	Growth	Other Growth Sectors
1 Aerial Photography & Film / Video Footage	14,48%	12,49%	-14%	Deterring + 85%
2 Inspection	11,16%	10,59%	- 5%	Dispensing + 19%
3 Surveying	7,12%	<b>7,10%</b>	Stable	Identification + 19%
4 Monitoring	6,75%	7,53%	+12%	Search & Rescue + 33%
5 Observation	5,60%	5,48%	- 2%	Sky Painting +123%
6 Localisation	5,51%	5,79%	+ 5%	Sky Writing + 61%
7 Measuring	5,26%	5,62%	+ 7%	Special Purpose + 8%
8 Testing	5,21%	4,73%	- 9%	Spraying +294%
9 Broadcasting	3,73%	2,73%	-27%	Transport - Goods +39%
10 Validation	3,31%	4,35%	+31%	Transport - Pers. +38%
Mapping	2,91%	3,47%	+19%	Water Bombing +100%
Total	71,04%	69,88%		



### **Safety Risk Analysis Methods**



1	Respondents having read SORA	53%	Respondents using SORA	35%
	Respondents having submitted a SO	<b>RA 23%</b>		
2	Safety risk assessment methods use	d:		
	Process approved by NAA 56%		National standard scenario	12%
	Predefined risk assessment 7%		"Another method"	23%
3	Quantity of operators using an indep	endent 3 <sup>rd</sup>	party for risk assessment	14%
	NAA-approved organization 31%		Qualified Entity	26%
	Notified Body 3%		Org. not approved by NAA	31%
4	Respondents desiring an online tool	for establis	shment of a SORA	92%

SORA is currently only used by a relatively small number of operators
Only 14% of the respondents were qualified to participate in the OPS RISK survey
Only 9% of the respondents actually completed the OPS RISK survey
SORA has not been translated into national languages by any NAA in the EU
Availability of SORA in the national EU languages would make it more accessible
SORA (only in English) Unequal opportunities for operators in EU Member States







### **Results**



Total Respo					20 (only 8% of total respondents) 75% Non-Commercial Operators					25%		
Operators Corporate - Operator					35% Corporate - Manufacturer + Operator							
Corporate - Flight School Government - Operator			15% Corporate - Research 10%					15%				
Countries	<b>Belgium</b>	3	italy	3	Netherlands 3	3 Bulgaria	2	Poland 2	Fran	nce 1		
	Germany	1	Ireland	1	Spain '	1 Sweden	1	Switzerland 1	UK	1		
Have drawn	-	PS a	nd/or used			-	or o	conducted a SOR	Α	91% 65% 85%		
	•			mis		•	_	ation strategies		76%		
	RC mitigation						_	ed Risk Assessm	nent	25%		
Have used a	an EU Standa	rd S	Scenario		10% Repo	ort drone inci	den	ts		<b>80%</b>		
Cannot dete	ect aircraft in	unc	ontrolled	airs	ace 80% Use	"third parties	" W	hen required by C	OSOs	80%		



### **Results**

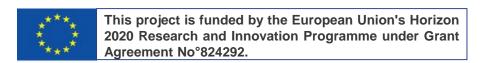


#### **STANDARDS USED**

EUROCAE	25%
ICAO	20%
EUROCONTROL	20%
ASD-STAN	15%
CEN	10%
ISO	10%
ANSI	5%
ETSI	5%
RTCA	5%
Other	40%

#### DIFFICULTIES ENCOUNTERED

Has encountered difficulties to show compliance with safety objectives due to lack of standards:	
Has encountered difficulties relative to: - Operational Safety Objectives (OSO) - Strategic mitigations - Technical drone information from producer	100% 88% 88%
Do not know up to what SAIL level their ops are associated Do not know up to what SAIL level they can demonstrate compliance	<b>50%</b>





### **Conclusions**



#### **ACCESSING SORA**

- 1 Only available in English
- 2 Not translated in any EU Member State
- 3 Could create inequality of operator access to higher end of "Specific" operational category

#### **ACCESSING STANDARDS**

- 1 Only available in English
- 2 Not translated in any EU Member State
- 3 Could create inequality of operator access to higher end of "Specific" operational category
- 4 Currently actual use of standards is minimal

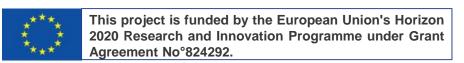
#### **ACCESSING ONLINE STANDARD REPOSITORY**

- 1 Only available in English
- 2 Could create inequality of operator access to higher end of "Specific" operational category

#### **RESULT**

- 1 Use of independent third parties to conduct SORAs and to apply GRC & ARC mitigation strategies is anticipated to grow.
- 2 There is keen interest in an online tool in the EU languages to facilitate the safety risk analysis process







### **Concluding Remarks**



Flight missions to increase in all market sectors.

Principally for BVLOS missions in the specific category.

To make this possible & increase the employment potential the following will have to be improved:

- Grasp and comprehension of the applicable operational risk analysis methods;
- ♦ Availability & acceptance of: Independent third parties; and/or
  - Online tools to facilitate the safety risk analysis procedures;
- Availability & comprehension of the required standards;
- Availability of the required technical information from the relevant drone manufacturers/distributors;
- Detection of other aircraft in uncontrolled airspace.

The AW Drones "Drone Standards Info Portal" will facilitate the identification of applicable standards, and especially for:

- which is going to be useful to: English speaking drone operators
  - "Independent third parties" (Qualified Entities / Conformity Assessment Bodies / Notified Bodies), which will be grow in importance.



