



**2nd 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 Below 500 ft. (150 m) above ground level Over densely or sparsely populated areas
		Identify the mission purposes of the flight operations currently taking place in compliance with the currently applicable rules or regulations .	
	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 .	
		Identify the mission purposes of the flight operations that will take place starting 1st January 2021 in compliance with the new EU Drone regulation .	
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 more detailed feedback on the use of SORA / Standard Scenarios / Predefined 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 (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

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.

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
Netherlands	30
Poland	5
Portugal	1

Romania	1
Serbia	1
Slovakia	2
Spain	23
Switzerland	10
Ukraine	2
UK	10

22 Countries – In Order of Respondents/Country

France	64
Belgium	34
Germany	34
Netherlands	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	59

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 | Drone operations in all proposed Market Sectors (<i>excl. "Policy Compliance & Legal Proof"</i>) | |
| 2 | 10 out of 25 Market Sectors with the highest drone activity | 86% of total |
| 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 (<i>besides VLOS & EVLOS</i>) | 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**

UAS OPS Survey - Conclusions

10 Principal Market Sectors

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



UAS OPS Survey - Conclusions



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%	7,10%	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 SORA	23%		
2	Safety risk assessment methods used:			
	Process approved by NAA	56%	National standard scenario	12%
	Predefined risk assessment	7%	“Another method”	23%
3	Quantity of operators using an independent 3rd 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 establishment 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



OPS RISK Survey



Results

Total Respondents	20 (only 8% of total respondents)											
Commercial Operators	75%					Non-Commercial Operators	25%					
Operators	Corporate - Operator			35%			Corporate - Manufacturer + Operator			25%		
	Corporate - Flight School			15%			Corporate - Research			15%		
	Government - Operator			10%								
Countries	Belgium	3	Italy	3	Netherlands	3	Bulgaria	2	Poland	2	France	1
	Germany	1	Ireland	1	Spain	1	Sweden	1	Switzerland	1	UK	1
Aware of security, data protection & privacy, environmental requirements in their country	91%											
Have drawn up a CONOPS and/or used national standard scenarios and/or conducted a SORA	65%											
Interested in obtaining a LUC	100%					Conversant in English	85%					
Can conduct a SORA for each of their missions	70%					Can apply GRC mitigation strategies	76%					
Can apply ARC mitigation strategies	78%					Have used a Predefined Risk Assessment	25%					
Have used an EU Standard Scenario	10%					Report drone incidents	80%					
Cannot detect aircraft in uncontrolled airspace	80%					Use “third parties” when required by OSOs	80%					





OPS RISK Survey 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:	40%
Has encountered difficulties relative to:	
- Operational Safety Objectives (OSO)	100%
- Strategic mitigations	88%
- Technical drone information from producer	88%
Do not know up to what SAIL level their ops are associated	50%
Do not know up to what SAIL level they can demonstrate compliance	50%

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 ONLINE STANDARD REPOSITORY

- 1 Only available in English
- 2 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

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

OPS RISK Survey

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, 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.

and especially for: