



# “NOVEL INTEGRATED SOLUTION OF OPERATING A FLEET OF DRONES WITH MULTIPLE SYNCHRONIZED MISSIONS FOR DISASTER RESPONSES”

**ResponDrone**

## Initial Deliverable 12.4: Public behaviour studies and strategy report

Project Deliverable Report

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Glossary of terms and abbreviations used	
Abbreviation / Term	Description
GDPR	General Data Protection Regulation
MES	Ministry of Emergency Situations of Armenia
SMS	Short messaging service



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## 1. Executive Summary

Drones still appear to be new and somewhat unknown to the vast majority of the public. The focus group discussions revealed that most of the participants were not familiar with the concept of using drones in first response operations. Participants associated drones with either amateur photo- and videography, with toys for kids, or military operations, or did not know anything particular about drones. People living in urban areas were more likely to have encountered drones.

Comments on the acceptance of drone operation were split between the negative feedback, received mainly due to privacy and noise, and the understanding of the potential improvements the novel technologies could offer for emergency response, to a lesser extent. All of the participants indicated that they would be willing to tolerate some disturbance if it were for the purpose of saving lives or mitigating disasters. It is highly desirable that the emergency drones carry/give special identification (colour, logo, sound, lights), and that the residents are informed about the flights/drills beforehand. Benefits and disadvantages of using drones were discussed, and measures to increase the public awareness and acceptance were suggested.



## 2. Introduction

As part of the “Task 12.3: Behaviour studies to increase public acceptance”, this activity has studied the public acceptance of novel drone technologies by conducting focus group discussions across six countries (France, Netherlands, Greece, Bulgaria, Latvia and Armenia). Two focus groups have been conducted by the ResponDrone partners in each country. The countries were carefully chosen to represent different cultural settings within Europe as well beyond. The objective of the focus groups has been to identify benefits and barriers that may impact public acceptance of drone technologies. Ultimately, this task aims to develop recommendations on how to communicate and position the societal benefits of using drones for emergency response in order to increase public acceptance of using drone technology.

The existing surveys and focus groups conducted in other similar studies of the industry have also been considered with the purpose of learning the best practices and formulating targeted questions for the focus groups<sup>1</sup>. It appears that some of the studied reports have broader coverage and look beyond only emergency situations, into using drones for police intelligence, orders delivery, agriculture, as well as the frameworks regulating the industry. These aspects fall out of the scope of the current activity, and therefore only the techniques of collecting public feedback through focus groups have been used to design a questionnaire for the current activity. The questionnaire is available in the Methods and Results section of this report. The questionnaire has been distributed to partners in all six countries to assist them in conducting the focus groups. Each focus group meeting included 8 to 10 participants.

## 3. Method and Results

### 3.1 Method

A total of 8 questions were included in the distributed questionnaire. They have been used by the ResponDrone partners to conduct focus groups.

1. *What is your experience with drones?*
2. *How often do you see drones flying over your residential area or your working space (if outdoors)?*

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<sup>1</sup> The most relevant such report, “Public Perception: Drones. Survey Results 2019” by the Institution of Mechanical Engineers, is referenced at the end of the document.



3. *When you have noticed drones operating, what were the effects on you (positive, negative, neutral)?*

*Note for moderator. Example types of negative effects:*

- *Noise - they are too loud*
- *Altitude - they fly too low and can hit myself, others or important objects*
- *Privacy - I do not know what they are flying for, whether they are spying/collecting private information/taking photographs/videos of places they shouldn't*
- *Safety - it can be a terrorist drone that is carrying explosives or a criminal trying to cause harm*

4. *What reactions have you had to drones (positive, negative, neutral)?*
5. *Can you recognize from looking at the flying drone whether it is a civilian drone (such as for amateur photography) or an emergency service drone? What would help you recognise that it is an emergency service?*
6. *Drones are widely and increasingly used in modern rescue operations for First Response to disasters. What potential value (or advantages and disadvantages – from your perspective) do you see in using them in emergencies?*
7. *If you knew that the drone is on an emergency mission to save lives, would you be more likely to accept the effect that it may have on you?*
8. *What can be done to increase the acceptance of drones in your community?*

*Note for moderator. For example:*

- *Inform the residents about the flight beforehand*
- *Explain the purpose of the flight*
- *Avoid flying directly over the houses and recreation areas*

The questions have been designed to allow for an open discussion and to solicit feedback from the respondents in a maximally free manner, without imposing or hinting any answers. Some questions also had additional information for moderators to keep in mind (such as illustrative examples, specific options, etc.) which, however, were to be used by the moderators only to provide additional context and help participants in understanding the subject of the question. As a rule, the discussions were to be kept open and not directed by the moderator.

The following instructions were also shared with the moderators of the focus group discussions:

1. *Please ask participants to specify their profession.*
2. *Collect information on the number of male and female participants.*
3. *Check if the participants belong to the age group of 22-57.*



4. *No need to record names of the participants or any other identification information.*
5. *Please record feedback per each question. No need to protocol the entire focus group, provide per each question a brief summary of the opinions expressed during the discussions.*
6. *Try to be inclusive during the focus group and make sure each participant is given the opportunity to speak.*
7. *Provide any other information that you think will be useful for the ResponDrone team to analyse the results of the public acceptance focus group discussions.*

The partners were asked to submit the consolidated results of the focus group discussions to the task team. No detailed protocol of the discussion or individual responses have been solicited. The ResponDrone expert team also participated in both focus group meetings carried out by the MES in Armenia (both online).

The guidelines also prescribed the partners to conduct the focus groups considering the privacy rules and ensuring the anonymity of the participants and the collected data. The groups were to be formed from representatives of the general public with no particular selection criteria. The participants ideally would represent various regions, from urban and rural communities, and various specialisations and occupations. As reported by the partners, the conducted focus groups did have the variety of representatives from different groups.

## 3.2 Results

### 3.2.1 Participation

The total number of respondents in the focus group discussions exceeded 70 people, with the average of 8 participants in each focus group. Male and female groups were equally represented, and the participants age spanned from 22 to 57 years. It was reported that the participants have been quite enthusiastic about the discussions and welcomed the idea of collecting citizen feedback on the acceptance of novel technologies.

### 3.2.2 Findings

Drones still appear to be new and somewhat unknown to the vast majority of the public. The focus group discussions revealed that most of the participants were not familiar with the concept of using drones in first response operations. Participants associated drones with either amateur photo- and videography, with toys for kids, or military operations, or did not know anything particular about drones. People living in urban areas were more likely to have



encountered drones. Also, drones are usually spotted over touristic attractions, such as beaches or historic monuments.

The feedback on drone operation split among the respondents from countries where focus group discussions were held, with 2 countries (France and Greece) providing predominantly negative perception of drones by the civilians, and 4 others (Armenia, Bulgaria, Latvia and Netherlands) having mostly neutral stance, again with reservations over the potential usage for surveillance and security purposes. The main concerns voiced by the first group focused around the issues related to privacy and security. Normally, seeing a drone would raise questions about who and for what purpose operates it, and whether it was an authorised flight. People would especially feel uncomfortable about the drones flying outside their house without their consent, while others were afraid of drones potentially coming too close to injure them.

The noise created by the drones was another factor causing disturbance, especially to the elder groups. Interestingly, some participants indicated that the noise would at least allow them to know of the drone operating nearby. Another respondent said that seeing the drone operator would make them feel more comfortable while the drones operating with no pilot in sight normally would raise questions about it and ultimately cause anxiety.

Some participants mentioned they were glad to see drones develop, as they appreciate the usefulness of the drone technologies in various aspects of life, such as agriculture, emergency surveillance of possible hazardous events. Most of the respondents normally would not welcome operating drones directly over their residential or recreational areas. However, if it were for emergency missions, then it would certainly acceptable to tolerate such disturbance, if it could save lives in return. Everybody agreed that informing civilians in advance of any such drills or operations would make people more comfortable about the purpose of the flights and eliminate possible security and privacy concerns. Therefore, it is important to make the purpose of the flights clear and communicate them through announcements or targeted notifications beforehand. Mobile alerts (SMS/email) and public announcements were suggested as the means of notification.

The respondents mentioned that the civil drones are easily recognisable, as they are mostly simple and small models, however it is not easy to fully understand their mission if they are flying high enough. The drones at high altitudes cannot be recognised neither by model/type nor the mission. When asked what would help them recognise the drones on emergency missions, the participants suggested the following options:



- **Colour:** The respondents suggested having the emergency drones in special colours to be noticed from far distance. The mark-up could follow the same logic as for cars, for example police, ambulance, and fire brigades. Mainly orange, blue and red colours were named as options.
- **Flashing lights:** Some mentioned that even the colour would not be sufficient to distinguish the drones operating at high altitudes, therefore it was suggested that the emergency drones be also supplied with flashing lights, sending signals at a certain frequency.
- **Sound:** A participant suggested certain sound signals or sirens to be assigned for the emergency drones, as sometimes especially under the sunlight neither the colour nor the flash light could be noticed.
- **Logo:** A logo of the civil service would also be helpful, but it would have to be large and recognisable.

All of the respondents confirmed the absolute necessity for the emergency drones to be distinguishable by either characteristic, in order to avoid misinterpretation or confusion.

Absolutely all focus groups agreed that the acceptance of drones would be positive if people knew they were on an emergency mission, even if flown at a low altitude. For many, drones in such cases are comparable to emergency vehicles and people are educated to give priority to fire, police or health services on the road. A few emphasised distinguishing between the rescue operations and surveillance missions; use of drones in the latter case would not be acceptable for them.

Among the advantages of using drones in emergency situations, participants saw the following capabilities of drones:

- area reconnaissance, panoramic overview and monitoring of the situation (in case of hazards, bombings or terrorist attacks);
- capacity of search and rescue operations in deserted areas (mountains, forests, other zones far from habitats), or collapsed buildings during the earthquakes;
- marine search and rescue (carrying a thermal reconnaissance camera and a life buoy);
- patrolling areas at risk of fire;



- delivering supplies of urgent importance, such as water, food, first aid kits;
- drones with the capacity of carrying weight up to 120 kg could be used to evacuate a person from inaccessible places;
- broadcasting messages from authorities from the air;
- rapid on the scene, faster than a police or a fire car;
- safe for emergency services;
- quickly obtaining and transmitting of data for supporting decision-making.

Understanding that drones are usually expensive equipment, some respondents spoke about the cost of operation, maintenance and replacement of drones in case of accidents. It was mentioned that there is a need for legislation, regulating the usage of drones in emergency situations. Finally, drones should be seen as supplementary technology and not as a replacement for the regular emergency services.

Overall, drones seek interest from the public as a new technology, and people want to learn more about their types, capabilities, and application. However, little is yet known to the public about their usage in emergency situations. Some respondents also expressed understanding that it will be challenging to integrate drones into everyday operations of responders' work. Therefore, it was suggested that the following measures be taken to raise awareness about using drones in first response operations and contribute to their acceptance:

- the general agreement is that education is the key; many people still do not know about the usage of drones in civil protection which shows the lack of communication and presentation of new technologies by the authorities;
- organise workshops, such as these focus group discussions, and other activities to communicate information to the public (through radio, TV and Internet);
- prepare short informative videos on application of the drones in emergency situations;
- hold live demonstrations of drone operation;
- include information on emergency drones in educational programs for schools;
- inform citizens on positive and negative aspects of drones; this opinion was emphasising the urge for fair representation of both sides in order to gain high confidence among the population;
- organise drills and simulations for civil population using drones;
- always inform the population about drone flights in advance;
- clearly communicate the purpose of flights to eliminate doubts of about surveillance;
- involve drones in daily activities as much as possible, such as food delivery and other logistics, to accustom people to the technology;
- in preparation of awareness-raising materials, use simple and easy-to-understand terms instead of complex professional terminology;





- where possible, limit the number of drones and flights over residential areas, allowing only emergency flights;
- establish well-formulated legislative framework, particularly protecting privacy of the personal data (such as GDPR);
- mark up the zones where drone flights are allowed.

#### 4. Next Steps

Task 12.3.1 is the first of two sub-tasks of the Task 12.3 “Behaviour studies to increase public acceptance” and will be followed by Task 12.3.2 “Strategy design to improve public acceptance”. Based on the results of Task 12.3.1 and the potential positive environmental, economic and social impacts that applying a fleet of drones may provide, a strategy to increase public acceptance of applying drones in emergency response will be determined. Guidelines will be produced for input to Task 12.6.

The Task 12.3 in whole will develop recommendations on how to communicate and position the societal benefits of using drones for emergency response in order to increase public acceptance of using drone technology.





## 5. References

1. “Public Perception: Drones. Survey Results 2019”, Institution of Mechanical Engineers.  
<https://www.imeche.org/docs/default-source/1-oscar/reports-policy-statements-and-documents/imeche-drones-report-final.pdf>

