



ERASMUS+ KA2 SAFED PROJECT

SAFETY: FIRE&DESIGN: SIMULATION FOR FIRE SAFETY TRAINING-SAFED

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Universidad Zaragoza



UNIVERSITY OF WESTERN MACEDONIA



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SAFED 2020 STATUS, MILESTONES AND COVID

Javier Boira (CPIFP Corona de Aragón)

The SAFED project started in October 2018 with great enthusiasm. It has been more than two years since the beginning and we are heading the last months and milestones. In February 2020 we developed the second training event (C2) in Zaragoza according to our previously approved Gantt-chart. Firefighters from Spain, Cyprus and volunteers from Pentelli working together during 5 days. We also had in February our 3rd international meeting. A couple of days after, on March 14, a "state of alarm" was declared in Spain, limiting travel and closing all non-essential services. In Greece and Cyprus, the lockdown took place on March 24th. From this date the agenda of governments and institutions changed, prioritizing life and health, over economy and work. International travel was restricted to the essentials.

Within this framework, the SAFED project agenda continued and we adapted our events and work to the circumstances. Communication between all partners has been fluently maintained transnationally through online meetings, being this a strong point. Later on, it was clear that among a project focused on security, it was not proper to move between countries. Therefore we continued working, we finished the teaching units with high quality and we integrated them into the platform in three languages, professionally reviewing the contents so that they were adapted to the facts of each partner country.



In June it was already obvious that we needed more time to be able to develop one of the intellectual results and develop the pilot training with guarantees and professionalism while finishing the final product properly. We requested and obtained a deadline extension for the project until March 2021. We successfully scheduled the third on-line training event from Cyprus, organized by the Cyprus firefighters which took place successfully last November. We went on with our dissemination efforts, involving professionals from other services and related bodies in the activities we organize. We have felt good approval among the professional security community.

So far, summarizing, we have developed the final e-platform with its modules in the three languages, we have developed the pedagogical frame and the documents for e-training exploitation and for carrying out all common pilot-training events planned in the project. Communication is fluid through frequent online meetings and product dissemination continues.

We have to thank all the professionals who work in our partner institutions for their enthusiasm, work, commitment, knowledge and know-how. The University of Zaragoza, the University of West Macedonia and the European University of Cyprus, have worked together with professionals from the firefighters of DPZ, the Cyprus Fire Service and volunteers from Pentelli, under the quality supervision of Crethidev and the coordination and participation of the CPIFP Corona de Aragón. We are going to finish a great job. Thank you all.

EVENT C3 (TRAIN THE TRAINERS E-TRAINING WORKSHOP)



CYPRUS, NOVEMBER 2020 AGENDA

C3 – ONLINE TRAINING EVENT

November 17, 2020, Tuesday:

- 9:00 am to 9:30 am Connection to the Online Platform / Resolution of Technical Issues.
- 9:30 am to 9:45 am Welcoming Speeches by Organizers.
- 9:45 am to 10:00 am Brief Overview of Project Status.
- 10:00 am to 10:30 am Introduction to Cyprus Fire Service: History & Operations.
- 10:30 am to 11:30 am Educational / Training Activities of the Cyprus Fire Service: Interactive Presentations using Multimedia and Questions / Answers Sessions (Part I)
- 11:30 am to 11:50 am Coffee Break
- 11:50 am to 1:30 pm Educational / Training Activities of the Cyprus Fire Service: Interactive Presentations using Multimedia and Questions / Answers Sessions (Part II)
- 1:30 pm to 2:00 pm Discussion / Conclusions

November 18, 2020, Wednesday:

- 9:00 am to 9:30 am Connection to the Online Platform / Resolution of Technical Issues.
- 9:30 am to 10:30 am SAFED Exploitation Activities: Exploitation Plan and Discussion.
- 10:30 am to 11:30 am SAFED Sustainability Activities: Sustainability Plan and Discussion.
- 11:30 am to 11:50 am Coffee Break
- 11:50 am to 1:00 pm SAFED Platform User Tutorial for Pilot Participants
- 1:00 pm to 1:30 pm Summary / Detailed Scheduling of future Activities

In November 2020, C3 Event was held in Cyprus. The main aim of this event was to discuss and decide on a cooperation plan for the sustainability and further exploitation of the project outcomes.

Due to the pandemic situation it was not possible to perform a face-to-face meeting. Therefore, the event organizers (The Cyprus Fire Service and the European University Cyprus) prepared an online workshop using the ZOOM platform and the attendees participated on the event virtually.



As in past events, the C3 Event brought together participants of the different partners of the SAFED project from three countries.



The schedule of the C3 Event is shown on the left. During the days 17th and 18th November different issues were addressed.

The event was introduced by the Director of the Cyprus Fire Service, Mr. Polys Hadjivasileiou, and was hosted and coordinated by the co-Director of CERIDES, and researcher of the SAFED project, Dr. Christos Dimopoulos.



After a welcoming speech and a review of the Project status, there was an interesting presentation about the Cyprus Fire Service, focusing on its History and its current capabilities and activities.

Regarding the history of the Cyprus Fire Service, the first form of organized fire brigade was formed in the 1920s by volunteers of Nicosia and Limassol.



After the break, the workshop focused on the Educational and Training Activities of the Cyprus Fire Service. This information allowed firefighters from Diputacion Provincial de Zaragoza, Spain, and volunteers from the Society of Volunteers of Civil Protection in Penteli, Greece to appreciate the operational capacity of the Cyprus Fire Service and engage

in a structured discussion regarding the adoption of state-of-the-art fire training practices.



The next day, the 18th of November, other remarkable papers were presented about the Exploitation and Sustainability of the SAFED Project and the e-learning platform for pilot participants. In this respect, Mr. Javier Boira, manager of the SAFED project from the coordinating Organisation CPIFP Corona de Aragón, Spain, introduced the main aspects of consideration regarding the long-term sustainability and the future exploitation of the SAFED products. The partners discussed these considerations and agreed on a preliminary sustainability and exploitation plan, which will be finalised and ratified during the subsequent project meetings.

In addition, Ms Ilona-Elefteryja Lasica, CERIDES Associate Researcher, presented the operation of the SAFED e-learning platform to the participants.

Finally, the workshop ended showing a detailed Scheduling of the future activities.

ACTIVITIES PERFORMED DURING THE PANDEMIC

Despite the countless difficulties caused by the coronavirus to meet the deadlines and develop the project in a normal way, continued efforts have led to significant progress in the SAFED Project. During the toughest confinement period, from April to June, several Learning Units were developed and posted on the SAFED website.

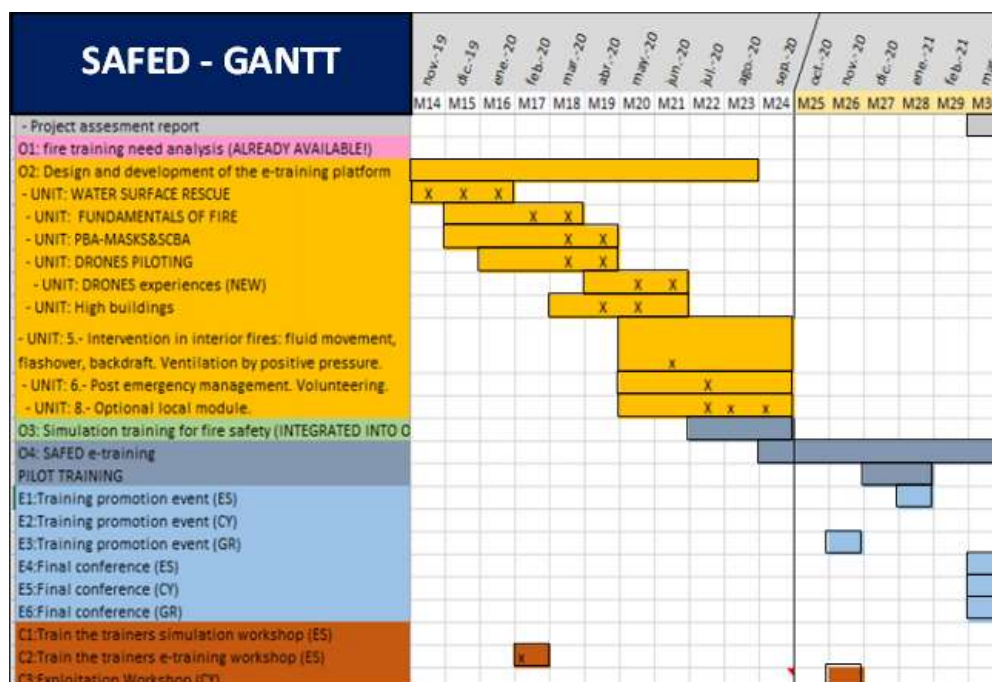


the particularities and idiosyncrasies of the Fire Services of Cyprus and Greek.

Owing to the pandemic, face to face meetings could not be held, thus online meetings were organised. Prominent among these, three international meetings that took place on the following dates: May 26, July 29 and September 18, with the aim of rescheduling the dates of the project activities.

As a consequence, it was requested a six months extension of the project implementation period, to fulfil and develop properly all the Intellectual Outputs.

The following Gantt chart shows the project status and timelines and deadlines of all tasks. According to the Gantt chart the deadline for the whole project is scheduled for March 2021



Likewise, from July to September, it was completed the implementation of the modules available in English language and Spanish. Besides, the learning materials were adapted to

LEARNING MODULES

One of the most important challenges of the SAFED Project has been the development of the e-Platform and the Learning Modules. The platform has been created and developed jointly by two partners of the SAFED project, the Technological Research Centre of West Macedonia and the European University Cyprus, whereas the Learning Modules have been developed by the University of Zaragoza and CIPFP Corona de Aragón.

As it has been mentioned before, these Learning Modules are available in three languages: English, Greek and Spanish.



These modules posted on the platform, allow the students to make progress at their own pace.

In the previous Newsletter, were introduced the first four Learning Modules posted on the platform.

The Pilot unit, or Module 1, is focused on Water Surface Rescue.

The Module 2, about Fundamentals of Fire which address theoretical knowledge concerning fire and several experiments.

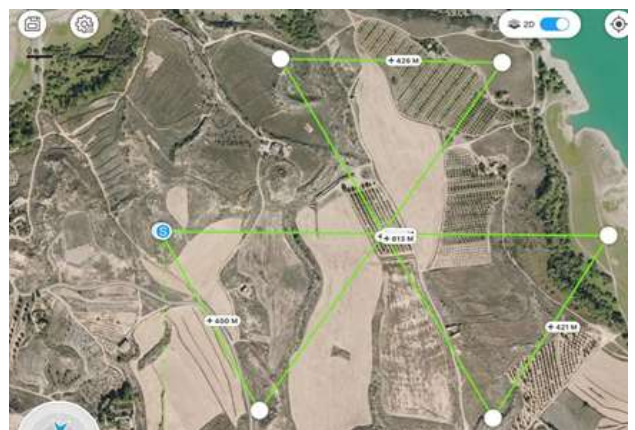
Module 3, about Respiratory Protective Equipment, which deals with its assembly, handling and maintenance, and the Standard that applies to these equipment.

The Module 4: Drones RPAS-UAS for emergencies was developed by the CIPFP Corona in collaboration with the Fire Service of the DPZ. This module is intended to provide specialized knowledge on the use of UAV's for Search and Rescue Operations.



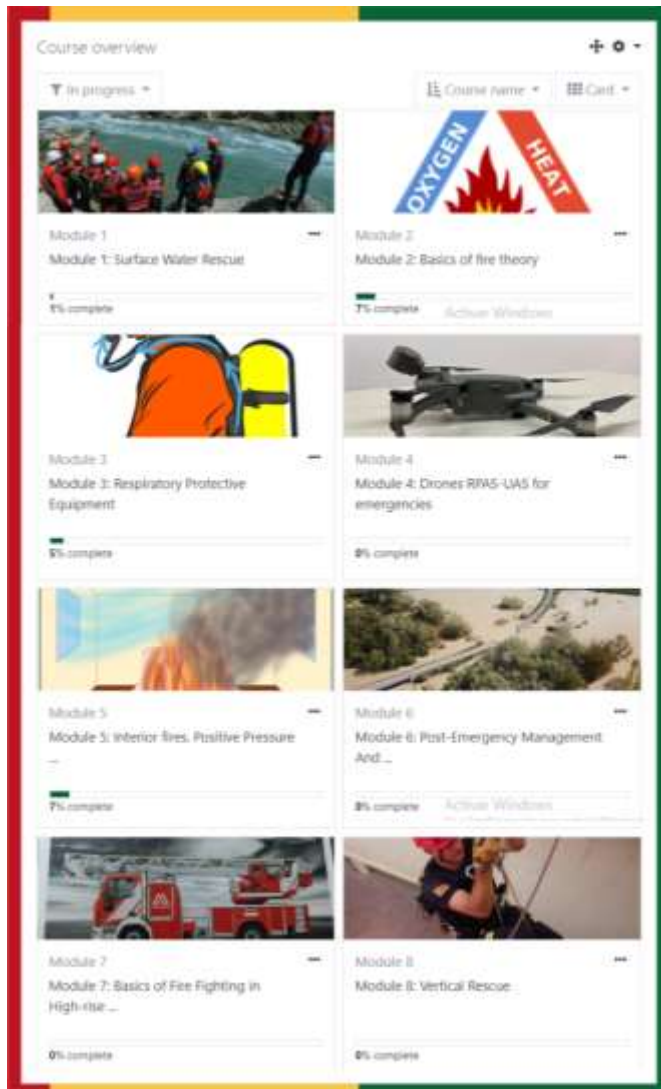
The use of unmanned aerial vehicles (UAVs) by Emergency Services is increasing due to the following advantages, among others:

- Drones can provide real-time visual information
- UAV's improve damage assessment of an area after disaster.
- Drones allow carrying out quick mapping of large areas in emergency scenarios.



Aspects such as operation licenses, atmospheric conditions, the equipment required, quick search techniques, communication with the rescue Team and support and coordination with other search agents are deeply studied in this Learning Module.

To date, eight Learning Modules have been released, as can be seen in the picture below.



Now, we are going to have a glance at the new Learning Modules released on the platform.

The Module 5: Interior fires. Positive Pressure Attack (PPA) and softening, provide trainees with appropriate skills, and information of the techniques to control indoor fires.

The module also addresses basic aspects of indoor and confined fires and the different types of ventilation, such as natural ventilation, defensive pressure ventilation, or offensive positive pressure ventilation as ventilation is a

critical factor that all firefighters must understand.



Finally it is described the softening technique consisting of attacking the fire from outside the burning building, with the aim of reducing the fire load.

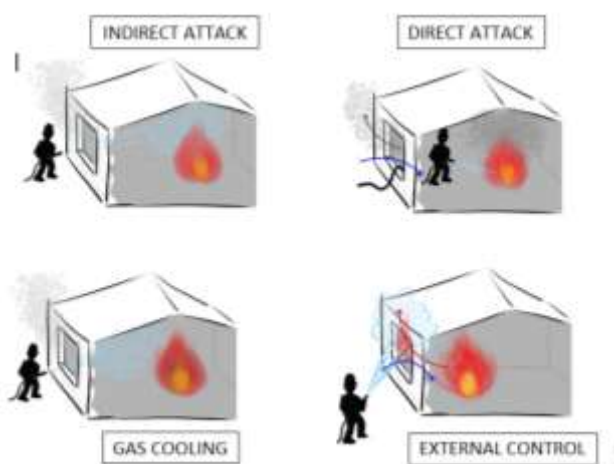


The next module, Module 6: Post-Emergency Management And Volunteering offers information on management of disasters and catastrophes. Even though, most emergency situations arise from unforeseen events that can be solved quickly, when we are facing with a disaster, or a catastrophe, the approach in terms of management once the catastrophe has happened is crucial.

Below it is shown a methodology to facilitate triage, studied in this module, when there have been a large number of victims.



The Module 7, titled Basics of Fire Fighting in High-rise Buildings address different issues such as risks in rescue and fire fighting in buildings, physical principles, the different techniques at the time of extinguishing a fire or considerations related to high-rise buildings



To conclude we are focusing now on the last module released, the module 8 regarding Vertical Rescue. This module was developed by the University of Zaragoza with the cooperation

of Mr. Daniel Pérez Rodríguez, Coordinator of the Vertical Rescue Specialty from the School of Firefighters of the Fire, Rescue and Civil Protection Service of the Zaragoza City Council. The module includes a wide variety of videos of skills about knots, the security anchorage system, rappelling, or systems for lifting loads.

Shown below are two videos included in this unit.



https://www.youtube.com/watch?v=-TAw1OHJbo&feature=emb_logo



https://www.youtube.com/watch?v=fodhN8tKvbU&feature=emb_logo

MULTIPLIER EVENT



LA ALMUNIA, DECEMBER 2020 AGENDA MULTIPLIER EVENT

December 18, 2020, Friday:

- 09h.00 Attendees Reception at the Training Centre of the Fire Service of DPZ located in La Almunia, Zaragoza-
- 09h.15 Welcome and Briefing (Raúl Aguilar - DPZ)
- 09h.30 Presentation of the SAFED project and the platform (Javier Boira – CPIFP)
- 10h.00 Talk with the Royal Aero Club of Zaragoza (Francisco Javier Hernandez – RAC-Zaragoza)
 - Future of the European Drone Regulation and practical applications to Emergency Scenarios.
- 10h.20 Tools: UAVs Use for Emergency Situations (José Luis Calvete – DPZ)
 - Case studies: UAVs in missing person searches and natural disasters.
- 11h.00 DPZS training facilities tour
- 11h.15 Coffee Break
- 11h.30 Training exercises for extinguishing hydrocarbon fires, filming the event with drones.
 - Theoretical explanation. Safety Measures, Personal Protection Equipment (PPE) and Special Safety Measures due to coronavirus pandemic.
 - Live fire Training Exercises.
- 13h.00 Discussion Session on the Training Exercises. Playing back the recorded images of the Training exercises. Closing Remarks.

On December 18th, another remarkable event was held at the facilities of the DPZ located in

La Almunia, Zaragoza, with regard to the use of drones for firefighting within the framework of Safed project

This event brought together staff belonging to:

- The Fire Service of the DPZ
- Civil Protection Department
- Zaragoza Fire Department
- Fire Service of Huesca City Council
- Fire Service of the Foral Deputation of Alava

Besides, students of the CPIFP Corona de Aragon and students of the vocational education training cycle of Emergencies and Civil Protection of the IES Zaurin of Ateca, also attended to the workshop.

The event began with an explanation of the Safed project by Javier Boira, from the coordinating Organisation CPIFP Corona de Aragón, and continued with a talk by the Royal Aero Club of Zaragoza on the future of European Drone Regulations and practical applications in emergency scenarios.

Afterwards, Jose Luis Calvete, officer of the Fire Service of the DPZ gave a presentation on the use of drones in emergency situations such as the search for missing persons and natural disasters.



After that, the firefighters carried out four fire drills with live fire at the fire training ground of the facilities of DPZ in La Almunia. The fire drills simulated four different emergency situations such as fire in a pond, a gas leak, a spill



of hydrocarbons or fire in a truck in order to improve their response time and protocols.



In addition, the firefighters practiced what security measures they must carry out in real situations like these, emphasizing the special protocol for covid that it is needed to perform as a consequence of the pandemic situation. In the meanwhile, all these training exercises were

filmed by an unmanned aerial vehicle.



To conclude the workshop, there was a discussion session and analysis of the images recorded during the flights executed by the drone.



TEN QUESTIONS INTERVIEW WITH A DPZ-FIREFIGHTER

We talk to Jose Luis Calvete, Fire Officer of the Fire Service of the Diputacion Provincial de Zaragoza



First of all, thank you very much for your time. How are you doing Jose Luis?

You're welcome, it's my pleasure. We have started the year well; working and healthy, there is nothing more I could ask for. But it is painful to see everything that is happening and everything that the pandemic is causing, above all for the thousands of people who have perished.

Taking into account the dangers and emergency situations that a firefighter has to face in their work, in your case, what led you to become a firefighter?

I couldn't tell you exactly why; it's been twenty years since that happened. But I can tell you something. Back then, I belonged to the group of volunteer firefighters of my village, and as such, every now and then I could share that profession with professional firefighters despite I did it from the rear. I think that these experiences were decisive in making the decision to start my preparedness for the public examination.

Apart from that, it is a job that is valued positively by society and when you have interventions that are solved successfully, the fulfilment that you feel at a personal level, I think it is unparalleled, and outstanding.

We would like you to show you a photograph taken after a traffic accident in Caspe, Zaragoza in 2017.



The image, which appeared in the newspapers, became viral in June 2017. What memories come to your mind?

It's a photo that Cesar, a photographer and friend from Caspe printed and gave it to me and I see it every day when I enter into my little office. It was a bad day, it is a picture of an accident, in which three cars were involved, and therefore several people. The driver of one of the vehicles died and the parents of the baby in the photo were seriously injured. Nevertheless, it could have been worse but, fortunately the baby was traveling properly, on a rear facing CRS (Child Restrained System) and that was a key factor in avoiding serious injuries. Besides, the driver of a third vehicle suffered minor injuries. Currently, that bad memory is softened because we know that the family is recovered and they were able to continue with their lives, but it reminds me of the bitter side of traffic accidents.

During these tough times of the pandemic, has coronavirus resulted in changes to emergency protocols or in the type of emergency actions?

Yes, safety and hygiene measures have been implemented at work. When it comes to acting in emergencies, we must be aware of the pandemic situation and keep in mind that urgency can't prevent us from taking adequate protection measures.

In relation to SAFED, how do you feel about the experience of working with experts from other countries or cooperating with educational institutions such as CERIDES, the CPIFP Corona de Aragon or the University of Zaragoza?

It is a great learning, the trip to Greece in 2019 was a sample of what we were able to experience. But it is a pity that the pandemic has not allowed more interactions of this type since If I may use the expression the project could has been more effectively exploited.



Besides, I would like to highlight something, in addition to what we have learned from colleagues of other countries, we have interacted a lot with professionals from the academic and university world of all partner countries. And if you are attentive and transfer the learning that you do from their way of working, it allows you to enrich your expertise.

How can Project SAFED contribute to the training and development of the future firefighters?

It is no novelty, in these times of pandemic, that online tools have become relevant in order to ensure the learning and training of people. If to this we add the possibilities offered by virtual contacts with people from anywhere in the

world, the SAFED project has a lot to say in this regard.

The learning modules available on the platform address the use of some industry 4.0 technologies. At this time, what of these technologies are you implementing?

Since 2017 we were immersed in the implementation of UAS, better known as drones, within our service. The incorporation to the SAFED Project was definitive because the CPIFP Corona de Aragón, coordinating Organisation of the SAFED project, had a drone operator established. This meant a before and an after. We have not stopped growing, discreetly but efficiently, something that has enabled us to take into account a series of decisive factors to lay the foundations for a powerful drone unit in the Fire Service, above all the regulatory changes that require significant adaptation.

It seems that we are heading in the right direction when DJI, the leading company in the manufacturing of drones for civil use, focussed its attention on the Fire Department of the DPZ to establish a joint collaboration framework, for which they gave us a UAS system with great capacities.



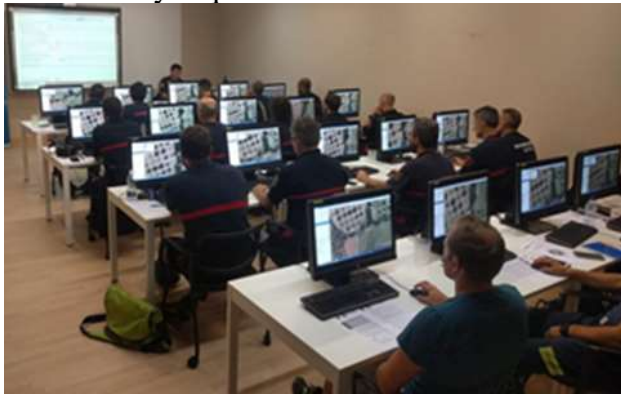
Concerning unmanned aerial vehicles, commonly called drones, used in search and rescue, can you briefly describe what a Virtual Cloud SAR is?

A Virtual Cloud SAR is a search procedure for missing persons, based on the analysis of the images that an unmanned aerial vehicle can capture. It is a virtual procedure and an almost autonomous system, which allows the drone to



continue flying, while the firefighters of other Fire Stations can analyse the images previously captured by the UAS, searching for signs that lead to the missing person. It has the following advantages:

- It allows the use of resources that are in stand-by while they are in the fire stations waiting for an emergency call. This enhances efficiency of public resources.



- It allows you to continue searching very efficiently even when it gets dark or the weather conditions get worse. This enhances the chances of success of locating a missing person.
- The images are analyzed on the high-resolution screen of a computer or a smart TV, so the risk of an accident is reduced. This entails a considerable improvement in safety.
- If any sign is detected in an image, as all the images are georeferenced, it will allow to establish a safe and pre-planned access and evacuation route. This will allow the rescuers and health services to stabilize a wounded person and a precise and safe evacuation.

Do you think that drone flying regulations in Spain are conditioning their applications?

Yes, of course. Technology always moves faster than legislation and the drone industry has been developing at a dizzying rate for several years. The authorities could not allow uncontrolled use of drones that would jeopardize air safety. This is the reason why regulations have been restrictive to a certain extent. But it makes sense, because safety is a fundamental element in air operations. And even though a UAV or drone is not an Airbus A380, it is legally

considered an aircraft, and must respect the regulations in terms of airspace usage requirements like an A380.

On December 31, the new European Drone regulation published by EASA came into force, and the approach has changed to make the regulations more flexible and adjust them to the risk of the operations that drones intend to carry out. It is true that this regulation does not affect search and rescue operations since it will be a Royal Decree of Spain, the standard that legislates on this type of activities instead of EASA. The draft of this Royal Decree is in parliamentary procedure and its publication is expected within the first half of 2021. In the meanwhile, with regard to the use of UAS in emergencies, we will be in transition phase regulated by Royal Decree 1036/2017.

At a professional level, what plans do you have for the future?

Looking ahead I want to continue with the implementation of our drone unit where the incorporation of more resources is contemplated. There are several colleagues interested in participating and the truth is that we need it because we have a small staff.

Finally, now as Christmas is approaching, what advice would you give to your community in order to prevent accidents and dangerous situations?

Of course, people should always follow the recommendations of the authorities.



MEDIA MENTIONS



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https://www.elperiodicodearagon.com/noticias/publirreportajes/cpifp-corona-aragon-apuesta-proyectos-europeos_1435102.html

Published September 11, 2020 by El Periodico de Aragón (Spanish version)



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<https://www.heraldo.es/multimedia/videos/aragon/nuevo-sistema-de-busquedas-virtuales-con-drones/>

Published April 6, 2020 by Heraldo de Aragón (Spanish version)

<http://www.dpz.es/noticias/los-bomberos-de-la-dpz-participan-en-una-formacion-dentro-del-proyecto-europeo-safed-sobre-el-uso-de-drones-en-incendios>

Published December 18, 2020 by DPZ (Spanish version)

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