

From annoying and invasive buzzer to a useful tool – Drones to assist people

Another drone in the sky! Is it filming me? Where do my pictures go? Will it suddenly drop on my head and kill me? These may be thoughts that pop into mind when one sees a drone in the sky. Drones are often seen as toys that may be purchased from supermarkets or annoying nuisances flying above. They are actually much more than that: The majority of applications of drones are serious and, without a doubt, useful. When operating drones, safety is essential. To maximise safety and prevent misuse, any operations of drones, including the consumer ones, are strongly regulated on the EU level. In the hands of experienced and educated operators, drones are valuable tools.

Drones for public safety

There are already some excellent cases in which the drone has been vital. Lately, on the wildfires of Kalajoki, drones were used for locating the points where actions were needed. When the fire had been stabilised, the drones were used for scouting the possible changes of its state.

Finnish police are the world's most active users of drones. They use drones as tools to support the actions and make the workplace safer. There are around 500 trained pilots on the Finnish police force who operate with over 220 drones. In recent years, police drones have been used thousands of times for operative activities.

Other uses for drones have been identified from health care, where the drones can be used for delivering goods or medication. Drones with thermal cameras can be used for locating lost persons in such terrains as boglands or forests or areas of natural disasters.

The drones can also be used on accident scenes for evaluating the status on-site, even before the first rescue units have arrived. This information may be invaluable for better planning the mission and targeting the right resources to the accident site.

From challenges to solutions: Universities' joint contribution to the future

The professional applications of drones often imply their missions in a challenging environment and under critical circumstances. Due to the geographical location of Finland, many professional drone operations take place in severe weather conditions. Those affect the operating range and the aerial properties of drones significantly. Due to the highest demand for safety, all those challenges bring food to research activities around the world. Finnish universities contribute actively to drone innovations.

The European drone regulations came into force on January 1st, 2021, and now all operations with drones are submissive to the strict rules. Therefore, all the drones with cameras must be registered in national registers and no operator is allowed to fly a drone without passing the

education and completing a test, unless the drone is a real toy without any camera and weighing under 250 grams. Using drones beyond the line of sight is even more heavily regulated. Using drones in an urban environment is additionally regulated by the recently published U-space regulatory framework. The jungle of drone rules is thick, but it can be tackled with proper communication and education.

How do we make the best out of the drones? There is a significant number of research projects in Finland and around the world that continue to prove and contribute to the usefulness of these devices. These projects respond to the needs of the business world, as well as private persons. They share information with the target groups of business and grow knowledge for the drone operators.

The majority of drone applications are driven by high demand from the business world. The drone application areas widen and getting more sophisticated and unique along with the development of technologies. That exposes an increased need for professionals that have the required skill set. Currently, the demand for skilful professionals in the drone field is much higher than the labour market offer. Nevertheless, the general public and particularly the young generation, are not always aware of how drones are changing our lives, how people can be involved, and what they can do with drones. Drone-related education is already offered: the challenge for high education organisations is not only to provide up-to-date education but also to raise awareness about the opportunities.

The UAS (Drone) University Collaboration Network (UCNDrone) takes those challenges into account and contributes to the field of drone demand and supply. UCNDrone is a national project to create a network of Finnish high educational institutions focusing on the education and RDI activities related to drone technologies and applications. The members of the network have their strengths, based on which they will identify national and international development targets to develop education and research. In terms of education, this means identifying the competencies needed by businesses and developing education according to the needs. In research, strengthening the collaboration with networks and stakeholders will create the conditions for joint projects and more effective research in Finland and the European Union.

Info box 1:

An unmanned aircraft system, or UAS, is an unmanned aircraft, which also includes the equipment to control it remotely. Such sets are often referred as UAV, and commonly known as drones.

Nevertheless, the network of academic partners is to be expanded by inviting all the other Finnish high education institutions to join. The plan is to develop collaborative processes and activities through which Finnish academic partners will together contribute to the UAS domain development in Finland for at least five years after the project time. In Finland, several networks contribute to the development of the drone field, which just proves how complicated the field is.

The ideas of UCNDrone appeared as the result of activities of [Rethinking Autonomy and Safety innovation ecosystem and service platform for autonomous systems R&D \(RAAS\)](#), led by VTT Technical Research Centre of Finland. Many UCNDrone partners are active members of that ecosystem. All the UCNDrone members have joined [Finnish UAV Ecosystem \(FUAVE\)](#) as [Academic Members](#).

UCNDrone is to unite all the higher education organisations in Finland to consolidate the academic effort to educate professionals that will take the applications of drones further. Among the UCNDrone network, action plans are organising national surveys on UAS education and research needs and establishing the Finnish UAS Portal for the benefits of Finnish and international UAS stakeholders.

Ideas of sci-fi movies are becoming a reality soon, and in the future, there will be more and more flying devices in the air. In the hands of skilful and educated operators, drones are safe tools, and they provide new ways to create added value in different areas of life.

Drones are not to harm – they are to help!

Info box 2:

About UCNDrone

- *A project by the Ministry of Education, Science and Culture of Finland*
- *Total budget: 823 116 EUR*
- *Duration: two years, 2021-2023*
- *Partners: A national collaboration of three universities, Oulu, Helsinki, Turku, and seven Universities of Applied Sciences, Centria, Metropolia, Savonia, XAMK, Tampere, Turku and Oulu*
- *<http://www.uas-finland.eu/>*
- *For more information about joining the network, please contact Vadim Kramar, vadim.kramar@oamk.fi, +358443250770*