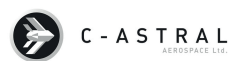




SAFIR stands for Safe and Flexible Integration of Initial U-space Services in a Real Environment. The SAFIR consortium is led by Unifly and consists of 13 public and private organisations.

The SAFIR project demonstrated the safety and economic viability of integrated drone traffic in a challenging environment. Three U-space service providers (USSP) and an Air Navigation Service Provider jointly controlled the airspace. Interoperable, harmonized and standardized U-space services can be deployed in a safe and reliable manner across Europe.

The SAFIR use cases were first successfully tested at the state-of-the-art secured test environment of **DronePort** in Sint-Truiden. Next, the team moved their operations to the larger Antwerp area, including the city and Port of Antwerp, to test the viability of the use cases in a realistic environment.



sesarju.eu/projects/safir



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Safe and Flexible Integration of Initial U-space Services in a Real Environment



Monitoring

Portuguese drone solution provider **TEKEVER** continuously monitored the port area for irregularities, such as oil spills.

Explicit, a technology company from Denmark, used drones equipped with micro sensor technology to verify if ships' emissions met the requirements within the port. In each case, the harbour master could request the drone to inspect a certain ship or area should it warrant further inspection.

Over the course of 18 flights with 6 types of drones flights, SAFIR successfully demonstrated use cases in the following areas. Besides drone technology companies and U-space service providers, several other specialized companies joined forces to make SAFIR a success.

Unify is the global leading provider of Unmanned Traffic Management (UTM) technology. The Unify platform supports drone pilots and operators in planning and executing drone operations in line with applicable legislation. It also allows the authorities to monitor, track and manage drone activities within their airspace.

Aveillant, part of the Thales group, deployed radar technology for the ground-based detection of all aerial movements, calculating the likelihood that an unidentified object could be a drone.

Proximus is the leading Belgian telecommunication company. Within the **SAFIR** project, Proximus demonstrated their customised, separate mobile (LTE, 4G) network to drone operations as part of the Internet of Flying Things. Their 'drone layer' network makes sure drone related data does not interfere with mobile phone data and vice versa.

C-Astral is a Slovenian manufacturer of long-endurance drones, and an aerospace solutions provider. In collaboration with Elia, they performed power line and environmental mapping. Elia Group is part of Europe's top 5 in electricity transmission, operating 18,600 km of high-voltage connections. **Elia** explored the use of drones to conduct the inspection and mapping of critical infrastructure; in particular pylon inspection.

Delivery

Amazon Prime Air demonstrated integrated and collaborative UAS Traffic Management by exchanging flight plans, real-time position data and dynamic flight re-routing for in-progress operations. To guarantee and maintain a safe airspace, it was essential for the UTM system of the drone operator to continuously exchange the necessary information in real-time with the other U-space service providers as well as **skeyes**, the Belgian air navigation service provider.

Skeyes is ready to integrate the ever-growing drone traffic into existing air traffic and continue to secure the safety of all air traffic. In case of a conflict, all drones need to be immediately aware of any necessary deconfliction.

Helicus develops aerial logistic solution for the medical sector, enabling hospitals to rapidly exchange medical samples and medications without delays due to traffic. During the SAFIR demonstrations, Helicus and Belgian aeronautical company **SABCA** demonstrated medical inter-hospital transport by drone.

Averting Calamity

Covering over 120 km², the **Port of Antwerp** is a very large area with critical infrastructure. In case of calamity, every second counts to avert disaster. The **SAFIR** project has proven that the use of drones is an immense addition to the safety as the Port authorities can manage, inspect and control a large area in a swift and safe manner.

SAFIR proved the ability of drones to safeguard critical areas, such as an international port or an urban environment. It was demonstrated how the Port of Antwerp could request a drone to inspect a certain area should there be reason for concern, as well as create no-drone zones to manage the safety in the port.

In addition, the project showed how multiple UTM systems can be interoperable, ensuring every airspace user is aware of airspace conditions at all times.