The drone identity – investigating forensic-readiness of U-Space services

Summary

The project is investigating the *forensic-readiness requirements* of unmanned aerial systems (UAS), to help identify causes of safety and security related air traffic incidents. It is a collaborative effort between researchers at The Open University (OU) and NATS.

The project will contribute to addressing the vulnerabilities and global security of communications, navigation, and surveillance systems in air traffic management (CNS/ATM). Security and safety incidents in such 'systems of systems' are challenging to investigate, particularly given the diverse digital technologies and human behaviours involved, and the different degrees of automation involved. Unmanned aerial vehicles (or drones hereafter) are increasingly creating challenges for managing the safety of the aircraft that share the airspace with them. Recent high-profile incidents at airports arising from unidentified drones (such as those at Gatwick and Heathrow airport), underline the urgent need to investigate the risks and incidents in such managed airspaces. The collection and use of forensic data associated with drones and surrounding physical contexts is key to effective investigation.

The research will be conducted in the context of *U-Space*, focusing on the architecture and concept of operations for European unmanned traffic management (UTM), and the ability to preserve such vital information as evidence for forensic investigations The goals of such forensic readiness is to ensure that the root causes of incidents can always be analysed, facilitated by evidence collected during operation (drone flight). The project has a focus on drone data, examining ways in which key drone characteristics can be determined and recorded soundly, if and when incidents involving the drone(s) occur. In particular, the key attributes that characterise and identify the drones, their operators, and their anomalous behaviours will be investigated. A prototype demonstrator will be developed, including a technical architecture, to illustrate and evaluate the forensic readiness requirements for U-Space services.