Overview

Position, Navigation, and Timing (PNT) is an underpinning technology that supports UAS operations, along with being an element of critical national infrastructure. PNT includes technology such as Global Navigation Satellite Systems (GNSS), Inertial Measurement Units (IMUs), and visual navigation.

In response to an expected increase in dependence upon PNT services due to an increase in Beyond Visual Line of Sight (BVLOS) UAS operations, the CAA has started the Resilient PNT project to examine how we use PNT and the risks associated.

This survey is intended to improve the CAA's understanding of operational performance of PNT, specifically GNSS systems like GPS.

This work and survey do not constitute a change in the CAA's position on the current use of GNSS and wider PNT for UAS operations at present.

As BVLOS UAS operations become routine at scale, we need to better understand the risks and vulnerabilities associated with GNSS degradation, failure, denial, jamming or spoofing, and the implications for safety.

This survey will help inform us about the vulnerabilities users have been experiencing when using GNSS. This will, in turn, inform our wider work to support the use and development of PNT for aviation.

If you have any questions, please reach out to resilientpnt@caa.co.uk.

Target Audience

We are looking for input from individuals and organisations conducting UAS operations in the UK. There is no specific timeframe for reported events, but those from the past 2 years are of particular interest.

Although this survey is particularly concerned with GNSS performance, if you operate a UAS that is not dependent upon GNSS we would be interested in hearing from you.

How we will use the information

The information gathered through this survey will be used to inform our decision making and prioritisation with regards to our immediate, short-term, and long-term work on PNT regulation for UAS. This information will be supplemented by research that is currently being undertaken and will also inform future research activities.

After the survey closing date, we will analyse the information and publish a summary of our findings. We will not publish any specific information related to individual responses. Any information we decide to publish will be anonymised and aggregated

with the aim of visualising emerging trends, rather than identifying specific individuals, organisations or products.

No personal data will be published in relation to this survey, but please read our general privacy notice for further information regarding how the CAA uses personal data.
General privacy notice | UK Civil Aviation Authority

THE BELOW IS CONTEXT TO THE QUESITONS IN THE SURVEY.

GNSS degradation may not change the aircraft behaviour or operation.

GNSS loss will prevent GNSS features from functioning.

GNSS degradation can be identified by:

- Signal bars on the Command Unit (CU) display
- Voice alerts from the CU
- Drift in UAS position
- Reduction in accuracy of the UA flight path

GNSS loss is characterised by:

- Alerts
- Change in UAS behaviour
    - Stops mid flight
    - Position drifts due to wind
    - Loss of position hold flight mode