

## UAVs

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**DATE:** 20/10/06

**SOURCE:** Flightglobal.com



## JAPCC air power conference: Nominal UAV sense and avoid framework proposed by NATO think-tank

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A nominal three-system approach to sense-and-avoid capability for UAVs is being proposed as part of draft co-ordination arrangements for unmanned systems laid out by the newly released draft "Flightplan for UAS in NATO" prepared by the alliance's Joint Air Power Competence Centre.

The proposed approach would potentially see the adoption of automatic dependent surveillance – broadcast (ADS-B) for use by UAVs flying above flight level 150; **the use of sense-and-avoid display systems (SAVDS) for high-density, low-altitude airspace;** and laser obstacle avoidance monitoring (LOAM) systems for beyond-line-of-sight, low-density, low-altitude airspace.

The draft flightplan, released on 18 October at the JAPCC's annual air power conference in Kleve, Germany, also says the alliance should explore development of its own military standards for sense-and-avoid technologies.

It says "standards for sense and avoid are being suggested by Eurocontrol and are being developed for regulation by the US Federal Aviation Administration, but sense and avoid requirements and capabilities for use in NATO-controlled air space do not exist".

NATO should study "the various sense-and-avoid systems in development as well as the prospects for using these same systems in civil aviation, and then set a NATO standard for air operations."

That study should be considered a medium-priority requirement by the alliance and would ideally see an initial review completed by the end of 2007.

In parallel, the draft flightplan calls for stepped-up efforts by NATO to address UAV air traffic integration challenges on an across-the-board basis, but again with particular emphasis on airspace controlled by the alliance during operations. It warns that there have been "three mid-air collisions between UAVs and helicopters in either Iraq or Afghanistan in the past few years".

NATO has been examining arrangements for military UAV access to civil airspace since late 2003 under the flight in non-segregated airspace (FINAS) initiative.

The draft flightplan describes the FINAS work as being "of great assistance for unmanned air systems that want to travel at general air traffic or operational air traffic through European civil airspace". However, it notes that "both FINAS and the Eurocontrol working group on UAV flight in non-segregated airspace are producing only guidelines and procedures that 'should' be followed. It will be up to each individual nation to allow or not allow unmanned air systems to fly in their non-segregated airspace."

The draft flightplan also says that the FINAS work will not resolve military air space co-ordination arrangements, which are currently based on establishment of restricted operating zones (ROZ). "Fully integrated airspace can be characterised by a lack of ROZs. The airspace may be de-conflicted, it may be synchronised, but until ROZs go away, the airspace is not segregated," the plan says.

Development of a full NATO UAV air traffic integration architecture remains dependent on broader decisions between now and 2010 on operational doctrine, procedures and practices the draft document says.

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