

# NATO Joint Air Power Competence Centre

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*«We need for unmanned aircraft to act like manned aircraft. We need unmanned aircraft to be tasked like manned aircraft. We need unmanned aircraft to fly in strike packages with manned aircraft. We need to refuel them in the air. We should be capable of flying both manned and unmanned platforms together, to include multiple unmanned airframes controlled by one operator. And we need commanders to have the confidence that unmanned or manned, it doesn't make a difference, as they are equally effective.»*

General William T. Hobbins, JAPCC Conference, 2006

NATO's Joint Air Power Competence Centre (JAPCC) provides innovative and timely advice and subject matter expertise, both proactively and responsively, for the transformation of Joint Air and Space Power to the Alliance and Nations. As a Centre of Excellence with a strategic and operational level focus, the JAPCC offers independent thought, analysis and solutions.

In 2006, recognizing its importance in modern military operations, the JAPCC highlighted UAS to include an air forum with the participation of various representatives of military, industry and academia, and a NATO-wide conference attended by 200 people including more than 50 General officers from 23 Nations. These efforts and many others resulted in the release of JAPCC Flight Plan for Unmanned Aircraft Systems in NATO on 15 March 2007. The aim of the Flight Plan reviewed UAS in NATO, found out where NATO had gaps in its capabilities or issues that needed to be addressed, and suggested the organizations best suited to solve these problems. It discussed problems, standards and future considerations. The Flight Plan provided information useful to NATO commanders, operational planners and procurement personnel. It endeavored to increase awareness and ultimately, interoperability across the Alliance and, proving its usefulness, it became a widely used source and guide document.

The 2007 edition of the Flight Plan identified 25 different operational models of UAS, around 1000 ground control stations (GCS) and 3700 air vehicles in NATO Nations. These numbers have grown to 57, 2000 and 6600, respectively. 2008 figures depict an enormous growth in quantity. In addition to the new mission types that have been identified, significant efforts have been made to address the main problematic areas, and have the main stakeholders of UAS world work together toward common goals. Thus, the JAPCC has published an updated 2008 version of the Flight Plan.

The new document was signed by the director of JAPCC, General Roger A. Brady, earlier this year and is now available at the JAPCC website ([www.japcc.org](http://www.japcc.org)). This document is the second edition of the «JAPCC Flight Plan for Unmanned Aircraft Systems in NATO». As in the previous edition, the primary aim of the paper has remained the same, however, the 2008 update of the Flight Plan is intended to make the document an even more useful tool for the commanders on the field, and high level military decision makers.

The main body of the document maintains the structure of the previous edition, analysing current and projected capabilities focusing on the following six areas:

- Hardware and Software.
- Command and Control Architecture.
- Operators and Training.
- Integration and Interoperability.
- Airspace Management.
- Mission Planning and Tasking.

Further ahead the reader can find JAPCC's suggestions on «what is needed to fill the gaps». These can be summarized as follows:

- Terms need to be standardized but there is no current effort to do so.
- There is a need for a single NATO body that oversees all UAS requirements.
- There are multiple National roadmaps and a NATO road map.
- NATO needs a coherent C2 architecture.
- Frequency spectrum issues jeopardising all network-enabled capabilities have to be addressed at relevant fora.
- Flight of unmanned systems in airspace around the world is an important issue to both the military and commercial operators of UAS.
- Basic principles need to be followed for UAS in NATO.

The final portion of the main body analyses a wide set of identified problems sorted by urgency (Very High, High, Medium, Low or In Work). The problems give a description of the issue, what should be the objective to solve it, the identified responsible agency and a suggested timeline. In total, the main body of the document is less than 30 pages.

To make the document more comprehensive a set of annexes guide the way for readers in today's reality. The type of systems used by NATO Nations are listed and categorized in the simplest and most commonly agreed way, HALE, MALE and tactical, including a short description of parameters, features and frequencies used. The list of most typical sensors is also included in this portion of the document. An annex is dedicated to give an insight on Airspace Management and Command and Control issues and lists a handful of National Laws pertaining to UAS. The annex of UAS mission types has grown in size now listing 51 versus the 37 mentioned in the previous edition, and has been restructured, in order to comply with NATO Air Doctrine. With the annexes, the Flight Plan has grown from about 70 pages in 2007 to over 130 pages in 2008.

### Concept of Employment For UAS

One of the most pressing issues that was identified and highlighted in the 2007 Flight Plan was the need for a Concept of Employment for UAS in NATO. The proliferation of unmanned aircraft across NATO has established this type of weapon system as an enabling capability for consideration by every military in the Alliance. The question is not whether or not a Nation will own unmanned aircraft. Instead, what mission types can be accomplished by UAS and how will they be integrated into combined and joint air operations? Within the Alliance, it is therefore critical that a concept be laid out for how the systems will be employed.

Today, as a follow-on initiative from the findings of the Flight Plan, the JAPCC is the facilitator of developing the Concept

of Employment for UAS in NATO. The document aims to provide guidance for employment of UAS in different operational scenarios. UAS contribute to the full spectrum of the NATO air missions, such as C4ISR, combat and support missions. The great majority of UAS efforts support C4ISR, however, particular situations will dictate which use of UAS is most important. But, we are not talking about military missions exclusively. Rather, we also have to consider civil and military-civil missions where there is the need for assisting civil organisations in their activities or fly military UAS together with civilian air assets, like during major sport events or high level diplomatic events as examples. This Concept of Employment considers interoperability, integration, partnership and leadership to describe how UAS will work within the NATO operational environment. These four aspects build the coherent framework of technological, operational, and human factor-related issues. The scope of the Concept of Employment will include all UAS that require airspace coordination. The timeframe is for the next ten years and it is intended to cover principle concepts that can then be integrated into specific Concepts of Operations.

The development process of the document is ongoing and once a final draft is ready it will be sent to the NATO Standardisation Agency's Joint UAV Panel which then will send it out for Nations' consideration.

The JAPCC has been working and conducting research on UAS related issues since the beginning of its existence, 1 January 2005. It recognised that UAS need constant attention. The Flight Plan became a starting point for important issues such as frequency spectrum, airspace management and operational guidance but there is still a long way to go. Today most of the money is spent, and will be spent in the near future, on ISR capabilities in order to satisfy

commanders need for an unblinking persistent eye on the «empty battlefield». Airframes used these days are designed to fulfil requirements in asymmetric warfare in which they are unlikely to be shot down by enemy fire. In other possible scenarios this is not the case. Today's UAVs are «sitting ducks» in the eyes of enemy air defence, therefore research for fast and stealthy combat unmanned aircraft likely to continue. The mission set for UAS will continue to expand and airways will be even more crowded than today which hampers UAV operations in non-segregated airspace.

The JAPCC's purpose is to foster and develop new ideas for the command, control and employment of air assets from all service branches and to facilitate appropriate measures to implement these ideas. Doing so, it will continue to be a considerable leader of the developmental work regarding UAS along with its partner organisations. To keep updated on JAPCC activities and for a copy of the updated Flight Plan please visit [www.japcc.org](http://www.japcc.org).



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