

NATO - Joint Air Power Competence Centre



By LCdr Dave Ehredt

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.

Recognizing the lack of an overarching NATO vision for Unmanned Aircraft Systems (UAS), the JAPCC published the "JAPCC Strategic Concept of Employment for UAS in NATO" in January 2010. During the drafting of the Concept of Employment (CONEMP) the JAPCC sought and received the expertise of many NATO nations and organizations specializing in UAS, such as the US Joint Unmanned Aircraft Systems Center of Excellence (JUAS CoE). This JAPCC document was produced in full coordination with the second edition of the JUAS CoE, "Joint Concept of Operations for Unmanned Aircraft Systems."

The CONEMP seeks to provide a NATO vision as well as a joint and coalition context for the operation, integration, and interoperability of UAS in campaign operations through 2025. It describes a capabilities-based approach to UAS employment, and also aims to establish Joint NATO guidance for UAS planning and execution at the operational level across the full range of

military operations. The primary audience of the CONEMP is intended to include Ministries of Defence, Combined/Joint Task Force (CJTF) staffs and Service Component staffs. The document is also applicable to national service headquarters staffs, operators, national acquisition and logistics agencies, multinational partners, and other governmental agencies.

UAS provides its own set of capabilities and limitations. Capabilities include: (1) use of Unmanned Aerial Vehicles (UAV) for high-risk missions, (2) design flexibility which allows for extremely small sizes as well as performance beyond human aircrew capacities (in terms of high G-Forces, for example), (3) high endurance, and (4) mission flexibility (multi-tasked role in a single sortie). UAS also have two important differences from manned aircraft which are: (1) the challenge of employing Unmanned Aircraft (UA) seamlessly alongside manned aircraft, and (2) the requirement for a data link connection between the aircraft and the ground control station.

Three types of UA exist: fixed wing, rotary wing, and lighter-than-air vehicles. All the varying types of payloads can be reduced to four categories: sensors, communications relay (voice and data), weapons, and cargo. The CONEMP shows that each combination of airframe type (fixed wing, rotary wing,

Class	Category	Normal employment	Normal Operating Altitude	Normal Mission Radius	Primary Supported Commander	Example platform
CLASS I (less than 150 kg)	SMALL >20 KG	Tactical Unit (employs launch system)	Up to 5K ft AGL	50 km (LOS)	BN/Regt, BG	Hermes 90 Luna
	MINI 2-20 kg	Tactical Sub-unit (manual launch)	Up to 3K ft AGL	25 km (LOS)	Coy/Sqn	Aladin DH3 DRAC Eagle Raven Scan Skylark Strix T-Hawk
	MICRO <2 kg	Tactical PI, Sect, Individual (single operator)	Up to 200 ft AGL	5 km (LOS)	PI, Sect	Black Widow
CLASS II (150 kg to 600 kg)	TACTICAL	Tactical Formation	Up to 10,000 ft AGL	200 km (LOS)	Bde Comd	Aerostar Hermes 450 iView 250 Ranger Sperwer
CLASS III (more than 600 kg)	Strike/ Combat	Strategic/National	Up to 65,000 ft	Unlimited (BLOS)	Theater COM	
	HALE	Strategic/National	Up to 65,000 ft	Unlimited (BLOS)	Theater COM	Global Hawk
	MALE	Operational/theater	Up to 45,000 ft MSL	Unlimited (BLOS)	JTF COM	Predator B Predator A Harfang Heron Heron TP Hermes 900

Table 1 - NATO UAS Classification Guide. September 2009 JCGUAV meeting

or lighter-than-air) and payload type results in a unique set of capabilities and limitations for that particular combination.

At the UAV meeting in September 2009 the NATO Joint Capabilities Group agreed to divide UAS into three categories, CLASS I, II, and III, and the JAPCC utilizes this categorization in its CONEMP as shown in Table 1. Each class is further divided into subcategories with their associated parameters. Parameters such as altitude and mission radius are guidelines, whereas UAV weight is the single determining factor of CLASS if a discrepancy exists between weight and any other factor. By virtue of size, Class I UAS are normally man-portable, hand-launched and operated by an individual controller, and normally have a range of less than 20 miles. They may be tracked using a force tracking system and typically have an endurance of up to two hours. Simplicity of launch and recovery allows a unit to employ Class I UAS assets quickly. In contrast with Class I, most Class III fixed wing UAS require runways for launch and recovery, as well as greater logistical support and infrastructure. Class III UAS will require more airspace considerations than other classes, leading to airspace management requirements on par with manned aircraft.

UAS are typically used for three types of military missions in operational theatres such as Afghanistan and Iraq. The three mission types are: Intelligence Surveillance and Reconnaissance (ISR) or Reconnaissance Surveillance and Target Acquisition (RSTA), tactical Command and Control, and Joint Fires. But UAS are applicable as well for the following Joint missions: Battle Damage Assessment (BDA); Chemical, Biological, Radiological, Nuclear, or high yield Explosive (CBRNE); cargo delivery; logistic resupply; psychological operations; combat identification; early warning; electronic warfare; border monitoring; explosive device detection; signals

intelligence; maritime vessel identification; meteorology; personnel recovery; and law enforcement support.

As a baseline step in the creation of doctrine for UAS operations within the Alliance, the aim of the JAPCC is to gain endorsement of the CONEMP from NATO's Allied Command for Transformation (ACT) as the NATO standard for UAS. Visit our website www.japcc.de for a copy of the UAS Concept of Employment and the latest information on JAPCC unmanned aircraft activities.

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