# C4ISTAR MBK
## The „Smart" Part of the Czech Army's Modular Combat Complex



MK SSR TA small platoon set.

Growing international tensions and increasingly frequent asymmetrical conflicts are forcing many military forces to invest in the C4ISTAR small units systems, formerly known as the integrated soldier systems (eg. Land/NettWarrior, Infanterist der Zukunft, FELIN, FIST, etc.). This trend could therefore not be ignored even by the Czech Army, whose forces are mostly operationally deployed in the form of small units, especially as combat companies and platoons. Thus, while in last year during the parade in Moscow on May 9th marched a battalion of Russian paratroopers featuring future soldier system Ratnik, in the Czech Republic field trials of the C4ISTAR Modular Combat Complex (Modularni bojovy komplet, MBK), with the participation of NATO's armament agency NSPA, took place. By now the MBK, built by the Czech company PRAMACOM-HT, is already fully developed and delivered to the Army of the Czech Republic (ACR). The first unit equipped with the MBK has been 43rd Airborne Battalion based at Chrudim.

The C4ISTAR MBK is designed to improve situational awareness of the small unit commanders, to support coordination with artillery and air assets and possibly to improve coordination with reconnaissance. The MBK consists of a platoon set, containing three sets for the squad leaders and equipment for the SSR TA (Sensor Reconnaissance Surveillance Target Acquisition) platoon specialist, who provides platoon leader with relevant information and acts as a unit coordinating element with artillery fire support of and aviation assets. Each combat company also has an SSR TA team supporting the situational awareness of the company commander. This team also uses Wasp AE micro unmanned aerial vehicle (UAV), which can feed acquired image and data to SSR TA platoon specialists, artillery reconnaissance teams and forward air controllers (FACs). The Wasp AE control station could as well be employed to control a battalion-level Raven DDL UAV, which is also usable for relaying high-speed videos from other image sensors.

The common element of all C4ISTAR MBK instruments is a WaveRelay communication network with MPU-4 and MPU-5 terminals, or DICOM RF-40 or IMBITR radios, fitted with WaveRelay module. The MBK network works just like a mobile phone network, only without the vulnerability of terrestrial infrastructure. Each MBK network station is not only a transmitter but also the base station; it is a MANET (Mobile Ad-Hoc Network) type network with its own TCP / IP topologies and COMSEC AES Suite B cryptography. Theoretical and practical transfer rate of the WaveRelay network is in the hundreds of Mbps and allows streaming of the video from multiple sources simultaneously.

Squad leaders and SSR TA specialists and teams are also equipped with personal and portable MyVector terminals with Android OS. The MyVector platform integrates various types of sensors and communication devices with intuitive digital map interface in which it is possible to carry out the necessary measurements, plotting and sharing of messages and other information. For the observation and position plotting of the targets, the squad leaders use PLRF 25C BT small laser rangefinders, the SSR TA specialists MOSKITO TI manual acquisition unit and SSR TA teams (apart from the Wasp AE UAV) TLS 40i manual rangefinder or JIM Compact portable acquisition unit. The C4ISTAR MBK system may also be joined by the uncooled thermal imaging sights attached to the small arms and supporting weapons.

The C4ISTAR MBK sets are fully compatible with other systems used by the fire support management teams and specialists, by the reconnaissance platoons and intelligence units. For this reason, the SSR TA team is equipped with a BVIS (Bojovy vozidlovy informacni system – Combat Vehicle Information System) terminal and AN/PRC-117G portable radio. The entire C4ISTAR MBK system is also compatible not only with UAVs utilizing DDL datalink (Wasp or Raven types) but also with those STANAG 7085 datalink. The latter includes ScanEagle tactical UAVs recently introduced into the ACR service, targeting and reconnaissance pods of the NATO combat aircraft and image sensors mounted on the helicopters.

The aim of the C4ISTAR MBK deployment is to multiply the capabilities of small units, to increase their operational areas, provide

PRAMACOM-HT is a member company of PRAMA-COM GROUP, established in 1995.
PRAMACOM-HT is the main supplier of systems used by Tactical Air Control Party of the Czech Armed Forces.
PRAMACOM-HT is the leading integrator of UAV systems and C4ISTAR solutions for dismounted units of the Czech Armed Forces. PRAMACOM-HT was awarded and signed contract with NSPA for C4ISTAR delivery for the Czech Army in 2014
PRAMACOM-HT is the leading local manufacturer of night vision monocular devices. PRAMACOM-HT was awarded and signed contract with NSPA for delivery of 1.000 pieces of night vision monocular (MUM-14) in 2015 (pictured). Sixteen other companies from NATO countries participated in the tender.
PRAMACOM-HT operates the Center of Excellence for Digital Optics in Central Europe.
PRAMACOM-HT leads its own undergraduate and graduate program at Palacky University in Olomouc
PRAMACOM-HT runs its own R&D programs in cooperation with prestigious universities.
PRAMACOM-HT integrates tactical radios and NATO STANAGs into the Czech Army.

MOSKITO TI manual acquisition unit

them with sensory dominance during both day and night and also encourage efficient use of provided fire support and air strikes by both ACR and NATO member states. The entire MBK communications network system is built on a simple and proven idea that „a single picture says more than a thousand words." High-speed image and information sharing thus contribute to stress reduction of the deployed troops by their timely and clear information awareness, using the familiar environment of smartphones.

**Photos:** PRAMACOM-HT, Vectronix
**www:**

Workplace of the VK SSR TA large set in the field