FROM THE INDUSTRY

Reconnaissance, command and effect, for high mobile special operations

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System approach of griffity defense for a tactical reconnaissance, command and control system

We are in the so-called information or digital age, a wealth of information is available to us, through modern transmission technologies almost everyone can communicate with everyone, software programs enable the fast and professional display of information, high-resolution monitors give crisp images.

Nevertheless, there are information gaps in the identification of critical situations and thus a comprehensive presentation of the situation. Information is not available on demand, data reconciliation is difficult or impossible because the systems used are incompatible, required information cannot be made available in the required time due to a lack of transmission capacity. It doesn't have to be like that. The concept described below, which we have developed with the involvement of partners from industry and research, shows how, by skillfully combining a comprehensive reconnaissance and effective system with

current and future challenges. It consists of 5 mobile modules:

· Air support,
· Sensor sensor control and evaluation,
· command vehicle,
· operational vehicle,
· operational force

and can be extended by further specific modules/components.

Each module can also be integrated into existing equipment. The consequent use of standards ensures a high degree of flexibility and adaptability to the various requirements of the customer.

The operational force is also defined as a "platform", since it is the carrier of various sensors, guidance, effect and support systems.

Air support module

An OPV (Optional Piloted Vehicle) serves as a platform for the reconnaissance sensors. This enables a high degree of operational flexibility and endurance as well as training and

Communication node

In order to be able to transmit the high data rates (video streams) generated by the sensors to the respective operational forces without delay, modern and efficient means of communication such as LTE are used for the transmission. In addition, the platform can also serve as a communication node for the local communication of the forces among themselves.

Armament

To be able to react quickly and immediately to threats, the platform can optionally be equipped with effective means. This enables a precise and timely employment against the recognized opponent, taking into account the current situation and information available. The use of the effects ranges from non-lethal to lethal agents and is scalable.

Sensor sensor control and evaluation module

The data from the relevant sensors is gathered here, processed, supplemented and made available to the leadership for further assessment and decision making in the command vehicle. The reconnaissance module (Fig. 2) uses the input from the various sensors and information systems and has a large number of evaluation functions such as for example:

· Interactive retrieval of overflight data from a wide-range sensor, generation and display of results from radio reconnaissance
· Coordination of sensor deployment, fusion of data and independent processing of reconnaissance missions,
· Joint control and evaluation of hetero-geneous sensors and carriers on site as well as connection to existing monitoring and guidance systems, and
· Distribution of reconnaissance results and provision of them in a CSD (Coalition Shared Database).
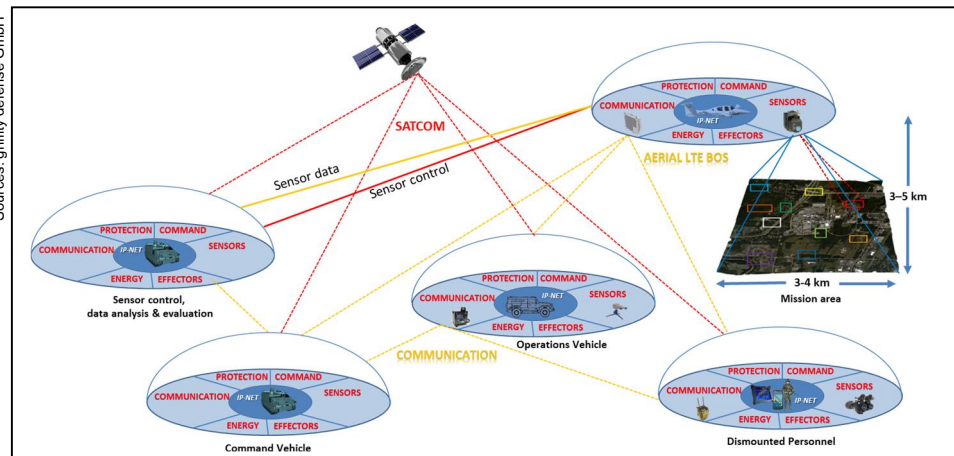
Sources: griffity defense GmbH

Fig. 1: Exemplary illustration of the networking between the different mobile platforms up to the operational force and its respective subsystems

situation-specific visualization and modern communication, a network is created that supports military and emergency forces in the tactical area in a variety of ways.

System concept

An essential aspect of modern operational command is the networking of the actors, including the relevant support systems. The system concept described here has been developed to directly support special military forces in tactical operations to cope with

missions in areas that cannot yet be flown over unmanned.

Sensors

A wide area sensor (day/night) monitors an zone of approx. 7 km2 and at the same time, a "spot reconnaissance function" allows the operational forces to receive the essential reconnaissance information for their area in real time, directly and/or via an intermediate station (operational or command vehicle).
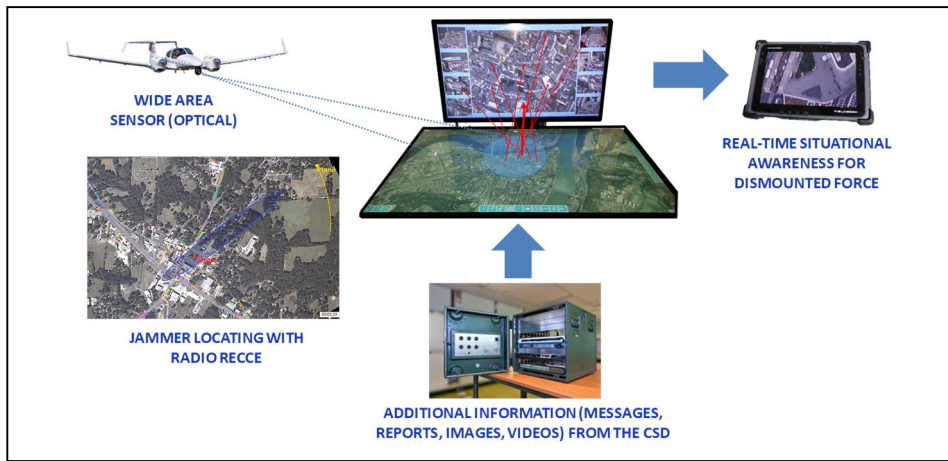
Fig. 2: Reconnaissance module

The common standards (e. g. STANAG) are supported by the system.

Command module

The command module (Fig. 3) is equipped as a mobile command post with workstations for the basic functions reconnaissance (S2), command and control (S3), logistics (S4) and communication (S6). The main focus is on the planning and visualisation of the situational awareness of units during operation, the communication between command and the operational forces as well as other participants. The following functionalities, among others, support the management of the deployment:

· Georeferenced position data of own platforms and troops, as well as associated statuses (e. g. fuel/ammunition),

· Blue force tracking including geofencing and alerting,

· Reconnaissance force reports of enemy movements, etc,

· Insertion of information from different sensors such as cameras,

· Alarms and alarms of detectors (ABC, movement),

· Drawing operations (planning/displaying of corridors, areas, routes),

· Possibility of interactive cooperation between parties,

· Integration of heterogeneous geodata and interaction with 3D and elevation models.

An integrated communication node ensures interoperability between different types of radios and an automated transition to other communication networks (e. g. U/VHF, TETRA, SatCom, LTE).

Operational vehicle module

The operational vehicle forms the connecting element between the dismounted force and the command vehicle. In addition to ensuring the mobility of the operational force, it also ensures effective support and communication with third parties as a relay function.

Operational Force module

Like the vehicle, the module operational Response Force has reconnaissance, communication, support and effective means and consists of the submodules networked together:

· Sensors and weapon view,

· Management tools,

· Communication and

· energy supply.

By networking within the overall system, changes in position can be passed on in good time and additional forces can be assigned if

necessary. This allows a high speed of operations.

Military "apps" to support the dismounted operational force

By the consistent use of military standard components (MOTS), smartphones and tablet PCs based on Windows or Android, the training effort can be significantly reduced as the basic functionalities are known.

Examples for military Apps are:

· Emergency medical computer-aided primary care,

· Blue Force Tracking,

· Situational awareness,

· Display of sensor information (e. g. UAV),

· CAS - Close Air Support.

Summary and outlook

Even today, it is already possible to consistently combine a "more" of information (whether from aerial reconnaissance or other data sources) with evaluation and visualisation tools in order to create a comprehensive, consistent, common picture of the situation.

This, with the ability to present the required situation information in a way that is appropriate to the role and situation, forms the basis for a distortion-free cooperation of the forces involved in the deployment.

Today, modern technologies such as military LTE, also cover the needs for broadband data transmission in addition to language; as a result of the ongoing development, they also increasingly meet the special military requirements.

With the introduction of a system based on already available, future-proof technologies, as described here, a new quality in the planning and management of tactical operations and operations can be achieved within a foreseeable time and budget framework.
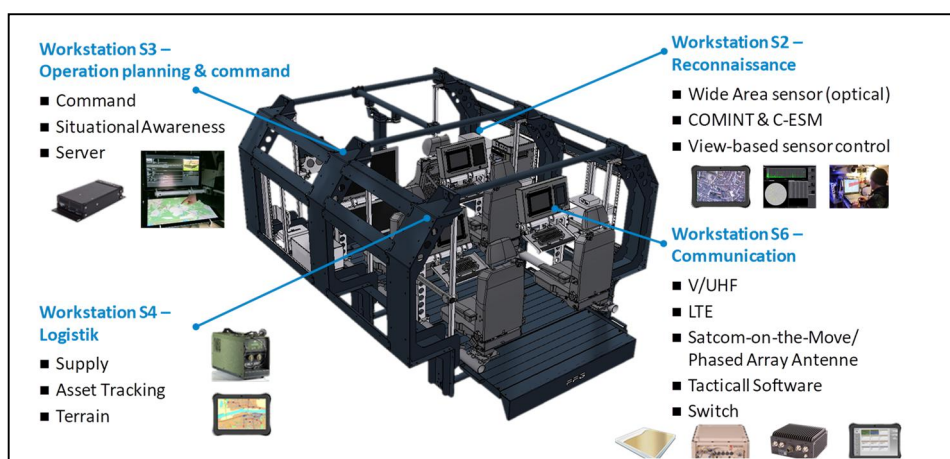
Further information

Fig. 3: Command module as mobile command post