

As reconnaissance and impact began to merge in the shifting spectrum of skills expected of the armed forces, it became necessary to take a holistic approach to the structure of command components. Based on the cross-functional concept of mobile C41 systems, ATM ComputerSysteme GmbH took these premises into account and developed “one-stop command support communication systems solutions”.

As an IT interface between the vehicle, operator and external communication participants, ATM's IT command components guarantee unrestricted operability in all weather conditions and levels of threat.

### Command capability with ATM components

For the Puma IFV, ATM provided the core “command” competency by connecting all relevant networks to the command and weapons deployment system. ATM achieved this using IT equipment based on cross-functional technology, which is not only coordinated in an optimum manner, but

also certified to the relevant military environmental standards.

The command and weapons deployment system runs on the vehicle computer CENTURION, which is the centrepiece of the integrated command equipment. CENTURION can be configured flexibly, meaning that additional, project-related functions are possible by means of plug-ins. The CAN-Bus networks CENTURION with the vehicle. Thanks to its many features, CENTURION is an extremely versatile computer with minimum space requirements.

Squad commanders and gunners can operate the command and weapons deployment system via a 15”

touch display MDU. The MDU is positioned centrally between the squad commander and the gunner.

### KommServer - central intelligence

KommServer embodies the core of communication in the form of a universal communications switchboard. In its “central intelligence” role, the KommServer acts as the essential link between various applications on the one hand, and the expanded and heterogeneous pool of mainly narrow-band command resources used in the Federal Army. The KommServer ties together all existing means of communication from wire to radio to satellite, hence making the communication technology infrastructure available in the first place. As provider for all networks currently used by the Federal Army, the KommServer acts as an agent between the various transmission media – even, in fact, for non-IP-enabled transmission resources. With the aid of dynamic network management, it is able to find an optimum route through all networks, linking any connected (sub)networks to a superordinate meta-network. In this “network of networks”, tactical users no longer have to know the topology; like on the internet, knowing the (tactical) destination is sufficient, as KommServer is able to deal with everything else. KommServer is able to recognise and compensate for network failures by itself. Thanks to the fact that it is highly modular and has an open system architecture, KommServer will have no difficulty adapting to future com-



Central user interface in connection to other AIFV Puma control devices

munication media and software functions. In network-centric warfare, the KommServer therefore proves to be an elementary backbone of tactical communication.

A PowerPack backup battery provides a short-term power supply for critical system components in the event of a voltage drop or complete

system control unit. To this purpose, the SBG boasts ten programmable operating panels which unite the operation of certain function groups. These operating panels are selected via pre-assigned function buttons.

By means of the central control unit (ZBG), which is located between the squad commander and the gunner, the

### Development and realisation on the basis of Safety Integrity Levels (SIL)

The central control unit controls the safety critical functions which, in the event of a technical failure, defective execution or operating errors, could pose a major risk to humans and the environment. For this reason, right from the outset, ATM planned and developed in accordance with the IEC/DIN EN 61508 international safety standard (functional safety of electrical/electronic/programmable electronic safety-related systems).

By adhering to this standard, ATM systematically covers all activities necessary for achieving the required SIL (safety integrity level) for safety-related systems.

### Additional Puma components

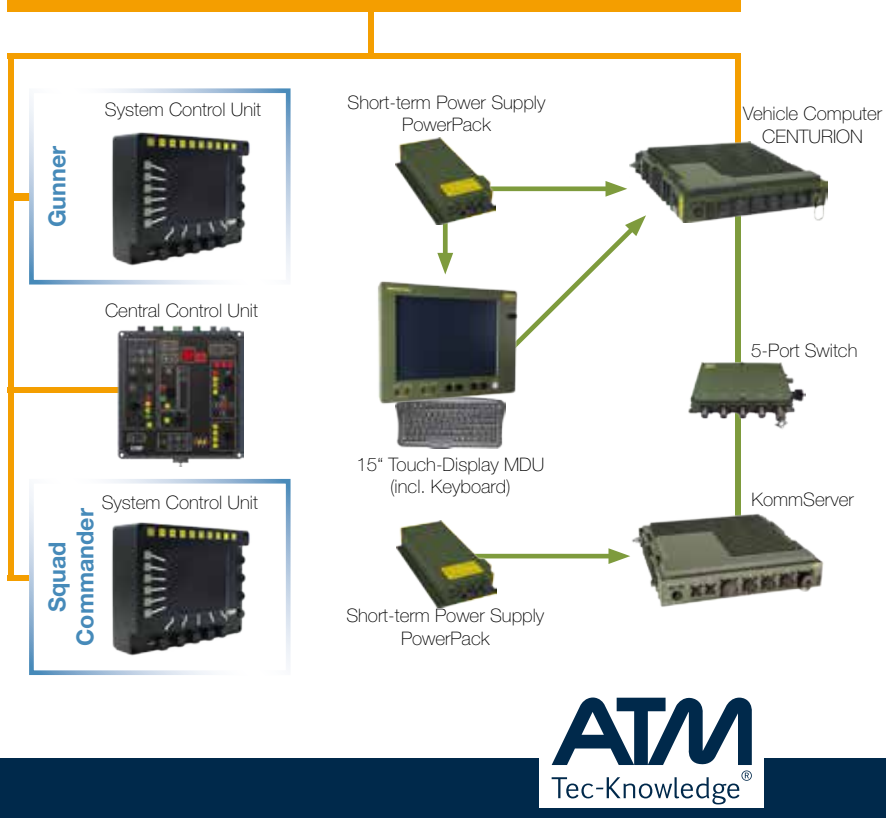
With the MiRec adaptor, ATM has succeeded in constructing a further component which unites two previously separate functions in vehicle voice communication. The MiRec adaptor enables the crew to use the mission recording function, whilst at the same time making announcements to people in the surrounding area via the external intercom loudspeaker in the rear of the vehicle. The MiRec adaptor is switched between the intercom and head-set in the vehicle for this purpose, and mirrors the interface to the computer.

### Everything from a single source

As a technology-based computer retailer, ATM offers from a single source C4I command components for the Puma weapon system, from communication to operator units with the safety functions of central subsystems. Besides the pure hardware, ATM also offers appropriate, customer-specific software as well as convenient concepts for maintenance and logistics. In other words, ATM covers the entire value chain, acting as a competent partner right from the birth of an idea, through development, to the servicing of the finished solution.

## ATM C4I components in PUMA IFV

### Structure of IT-Hardware PUMA



failure of on-board voltage. This guarantees that users can carry on with whatever they are doing, complete their application and close the system down safely without damaging any of the units.

### Customised system solutions

Squad commanders and gunners receive a system control unit (SBG), a standardised and configurable user interface, to help them use the Puma operator unit. Thanks to this technology, it is possible to connect the periscope and the weapon optic, for example, and control these via the

crew controls the primary operating functions (e.g., weapon and ammunition selection, operation of the active softkill system MUSS, operating levels etc.) in close cooperation with the Puma IFV's system logics. Puma IFVs which are fitted out with MELLS (multiple-role lightweight guided missile system) receive a special ZBG. Here, MELLS appears as an additional weapons option, enabling users to control the MELLS guided missiles. In general, the operating functions are controlled via rotary switches and toggle switches, as well as buttons with backlit pictograms. Status information is shown via illuminated display elements.