BEST – Belgian Soldier Transformation

CIS challenges for the dismounted soldier

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I.   BEST

The main goal of the BEST program is to improve the effectiveness of the dismounted soldier on the battlefield. The effectiveness of the soldier is determined by the performance of his five combat functions: survivability, mobility, sustainability, lethality, command and control (C2). C2 relies on access to decision support information like the blue and red picture in order to reach an enhanced situational awareness. An improved C2 system will increase the other combat functions and therefore forms the heart of the soldier system. The ability to disable the opponent (lethality) will initially be done with the individual weapon and sensors; however the soldier may also provide the necessary information to another soldier, with a more appropriate weapon system to disable the opponent. With the introduction of the BEST the optimization of the five combat functions must be achieved. These functions must be considered together as an imbalance negatively affects the effectiveness of the dismounted soldier: more body armor and C2 equipment will increase the soldiers' survivability but too much weight decreases mobility and sustainability.

II.   SM@RTVEST – A SYSTEM OF SYSTEMS

Instead of searching for a best permanent trade-off, it may be more pragmatic and useful leaving the decision of what to carry up to the commander, which requires a flexible and modular system layout. Therefore, the Sm@rtvest is an integrated soldier system composed of a modular Load Carriage and Protection (LCP) system and C4I system. The LCP system is an advanced soldier centered integrated multi-layer protection and carriage system. The main focus is on optimal ergonomic biomechanical design and modular body mapping enhancing the soldier's mobility. The soldier's modular C4I system is based on an advanced mobile ad-hoc networking radio with embedded GPS for position distribution and a headset with integrated hearing protection. The radio network provides secure intra-platoon voice and data communication with dual voice net capabilities supporting up to five independent voice nets. Team leaders may add a soldier display with embedded compass and camera to improve the situational awareness, while commanders can use an integrated commander computer for C2. Finally, a vehicular C4I module acts as a relay or gateway node in order to close the C2 chain.

III.   CIS CHALLENGES FOR THE DISMOUNTED SOLDIER

Reliability and the seamless integration with the legacy C2 information systems and networks are the main challenges in the mobile tactical environment. Furthermore, the deployment burden and the spectrum scarcity require a flexible and user-friendly mission deployment support system providing the operator an integrated suite of tools to plan, configure and maintain the C2 information systems and networks. When platoons are deployed on long distances, e.g. peace support operations and the communication between platoon and squad commanders is not possible directly, an Ad-hoc network may increase the available range and robustness of the network. However, the main challenges of Ad-hoc networks are the scalability, the number of hops (increasing delay) and the routing, since a sufficient number

of nodes need to be aware of the network topology. Especially in a mobile network whose topology is quickly changing it will cost much overhead to keep the routing information up-to-date.

IV.   CONCLUSION

The Sm@rtvest provides maximum soldier protection while enabling a high level of modularity and flexibility during operational use, provides blue and red force tracking, tools for terrain analysis, decreases sensor to shooter cycle time and enables interoperability with legacy systems. Therefore, the Sm@rtvest increases the soldier's survivability, mobility and sustainability while decreasing the physical burden and thus improves the soldier's effectiveness. The improved situational awareness and seamless operational integration with the legacy C2 systems and networks will decrease the decision-making process within the platoon environment.