

## **Chapter 6 – COMMAND POST AND URBAN OPERATIONS**

To be able to follow operations closely, future command posts will be even more mobile than they are today, at least at lower echelons (below division level). In order to achieve high mobility, command posts will be installed on mobile platforms (vehicles etc.). As the number of personnel might be too high for a single platform, a command post may be dispersed on a number of platforms. In addition, this reduces the vulnerability and increases the survivability of the command post.

The requirement for communication within the command post (between the platforms) will be for all services (voice, data and video) with a demand for high capacity (analogous to that of a LAN). The command posts may have to operate in vegetated terrain or in urban areas where direct line-of-sight between the platforms will be difficult to achieve. For those command posts with the highest mobility, this means that the communication system should not rely on frequencies above UHF in order to achieve a reasonable availability without the need to consider communications when locating. For command posts with a lower degree of mobility the need for communications capacity may exceed the freedom of positioning. This will allow the use of higher frequencies that require LOS. All communication systems should also offer automatic relaying of packet-switched information.

For urban operations there will always be a question of bringing own communications equipment to build an infrastructure or to use existing communications infrastructure. Even though cellular phone systems and wireless LANs will be extended to even quite remote and poorly developed countries in the near future, few commanders will be willing to rely on such an uncontrollable infrastructure for military operations (maybe with the exception of purely peacekeeping operations). This means that for most operations the armed forces will have to bring their own communications infrastructure – operational from day one.

Urban operations may be much more challenging with regard to communications than operations in rural areas. Tall buildings, often constituted by reinforced concrete or covered with metallic plates will not only attenuate radio signals, but also increase the problem of multipath propagation and signal fading. Future military communications should address the problem of multipath, utilizing different techniques to combat this problem. There is also the problem of operations under ground, in basements, parking houses and subways and other tunnels. In this situation, reliable communication will be a real challenge. Possible solutions are the use of small, automatic repeaters.

There are two different strategies for the communications network architecture:

- 1) Ad-hoc networks not requiring a base station infrastructure to be operational. Mobile units may communicate directly between each other, or by the aid of any other mobile. Traditional Combat Net Radio (CNR), Military Packet Radio and Wireless LAN (in ad-hoc mode) are typical representatives for this kind of architecture.
- 2) Networks relying on an extensive infrastructure. In this kind of network two mobiles are unable to communicate unless both are connected to the infrastructure. All communication usually is relayed by the infrastructure, even though the mobiles are within radio range.

Both for command post and urban operations there will be a need for two different kinds of communications:

- Intra-network communication within and possibly between the units deployed in the area of operations; and

## COMMAND POST AND URBAN OPERATIONS

---

- Inter-network communications between geographically separated areas of operations and communications “back home”.

These two different communications needs will probably require quite different solutions as the latter is often met by satellite communications while the first is probably best met by ad-hoc radio communications.

To reduce the cost of procurement and in order to be able to exploit the rapid evolution of the commercial telecommunications market, there might be a desire to use commercial equipment to a large extent, or at least to use equipment based on commercial standards and components. This should not be done without a critical mind. Commercial systems and components are not always made with military requirements in mind, and may not always be suitable for such operations. At least, special consideration should be taken in order to ensure that all aspects and properties are evaluated against the military requirements and that the risk is considered to be reasonable for the current operation.

Unlike commercial systems, military communication systems should not rely on qualified technical personnel to be available to manage and repair the system. A high degree of automation should be built into the system, as the users may not be expected to be experts on communications.