

"Digitizing the Battlespace" - Buzz Word or Planning Concept ? Part 1

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Therefore, the changes in the art of war are a result of the changes in politics, and far from proving that both are separate entities, they are rather a strong proof of their close linkage.

Carl von Clausewitz

Buzzwords can make people prick up their ears and arouse their curiosity. With the expression "digitizing the battlespace," we want to achieve the same effect in order to draw people's attention to the influence of information technology as a manifestation of radical social changes, to the urgent tasks associated with this and to the expected drastic changes in the Army.

We want to highlight the significance and consequences of a change which is called "digitization". We would like to expand the public discussion on command and control, and command and control support to include the growing influence of information technology, and to draw people's attention to less obvious and usually ignored aspects.

We will explain the consequences of digitization and requirements for the structure and actions of the Army as well as for its operations and procurement.

Under the heading of "*Digitizing the Battlefield*," the U.S. Army has started roughly 15 years ago and still pursues the aim of an integrated and overarching ("*From the White House to the Foxhole*") employment of information technology for command and control support:

"Digitizing the Battlefield is the application of information technologies to acquire, exchange, and employ timely digital information throughout the battlespace, tailored to the needs of each decision maker (commander), shooter, and supporter ... allowing each to maintain a clear and accurate vision of his battlespace necessary to support both planning and execution."

The core and conceptual framework is designed to integrate the command, control and information systems of different command echelons as an overarching formal and doctrinal concept: "*An interoperable integration of C2 systems that provides Commanders with the means to synchronize the forces*". The U.S. Army is on the way onto the *superhighway* of information technology. Numerous other armies, particularly in NATO, took over tasks and speed in conceptual and technical development of information technology (IT), and so did NATO itself. It became a

common goal for modern armies to strive for an overarching software architecture which is to be designed as a truly seamless data and communication architecture.

A *"core data model"* and user interfaces with the *"same look and feel"* for all users will apparently be the central elements of the common architecture. Differences will always occur where different information is to be processed, or to be more exact, where available data have to be displayed in a different form and context. Depending on the purpose, the branch or command echelon, the display or processing of data requires various types of access to the data offered and various applications (*"... the only differences between battlefield automation systems are the applications"*). However, despite all the differences in terms of display and utilization of the data, the system will provide the *"common (relevant) picture"* of the situation to every soldier.

Integration

Digitizing the battlespace thus means designing an integrated command, control and information system (CCIS plus BMS) as part of a program which provides the basis for planning and coordinating the development and realization of individual projects. This describes a wellknown strategy: *top-down-planning and bottom-up-building*. Such a top-down approach or Systems-approach will meet the current and future operational requirements of the Army. Just as every IT system is the reproduction or model of a real world, the design of an overarching military command, control and information system is to reflect the military *"detect, decide, deliver cycle"* in the current political framework of the post-cold war era. It is exactly in this environment that the following principle applies for digitizing the battlespace:

The combined arms combat and especially noncombat operations can only be conducted successfully if those involved communicate with each other on a real-time basis. Digitization, which is by necessity the final goal of increasing the efficiency of modern reconnaissance systems and conventional weapon systems, requires equal integration of the command and control as well as weapon delivery systems. As a medium, digitization offers at the same time the capability of more or less direct cooperation between the elements of the integrated reconnaissance, C² and fires system by reducing the number of gateways and interfaces. The information network is thus the mainstay of cooperation within the integrated reconnaissance, command and control, and fires system.

The intention and primary function of digitizing the battlespace is thus the synergistic improvement of the command and control capability and the related enhancement of the military efficiency and effectiveness of the Army. If this outstanding significance of information is basically acknowledged, it will affect the planning, structure and economic considerations of all modern armies. So it does! (...)

And the planning documents for the armies of the future reflect the acknowledgement of the special importance of the operational factor "information". (...)

Socio-Technical System

One might think that the extensive theoretical work, planning efforts and organizational preparations might have contributed toward the implementation of the digitization concept, i.e. toward the comprehensive employment of information technology. However, in our opinion the decisive step in many cases has not yet been made and without this step the full potential the fielded hardware and software cannot be realized and it might even have a degrading if not destructive effect on the organization and personnel and, by extension, on the command and control capability of the armies! This decisive step is recruitment and provision of personnel. And in this context, the word personnel in the organizational or economic sense always means of course people with certain qualifications, that is capabilities or skills.

Any information system and thus any command, control and information system, any network is an integral whole consisting of people, software and hardware. It is not an automatic machine and not the electric version of known working rules and habits! It is an integral whole, because it only works if all its elements interact. The capabilities of the components, that is people, software and hardware supplement each other and thus make up the whole information system! It is something completely new, because apart from the superstructure comprising the areas of planning, conceptual design and coordination, it also requires a substructure consisting of configuration control, maintenance, software maintenance, system and user service as well as training.

This highlights the fact that the successful employment of information systems will only be possible with competent personnel. This may sound trivial, but it's true!

**Hardware? - today seems to be no problem at all,
Software? – shall be work as usual,
but Peopleware and Orgware are the real challenge!**

Very we see, that it is also true that the personnel side in many armies is not yet sufficiently considered in the allocation of resources, e.g. in the assignment of instructor personnel, or the provision of funds for the individual projects. As a rule, the U.S. and the German Armies, for example, still have to face the bitter truth that their personnel are unable to handle the available technologies, which leads to considerable frictions during operations. *"This just goes to show once more that funds spent on the development and procurement of defense materiel are a waste of money, unless an excellent and rigorous training and exercise program for operators and commanders is conducted at the same time."* This U.S. lesson had to be relearned on the German side by participants in experimental programs conducted in support of the Battlefield Management System projects, by numerous organizations after the urgently demanded and highly welcomed fielding of PCs and networks, and not least by the soldiers of the German contingents in Bosnia, Kosovo or within ISAF. And in many cases, the problem of insufficient funds and time for training was realized too late.