

REENGINEERING DEFENSE: THE ROLE OF C4

Significant changes occur in post-communist societies. Most notably, the changes are characterized by remarkable scale, depth, and speed. This is especially true for the change in the area of defense and security. Roles and missions, force structure, equipment, doctrine and training are all being redefined. The current situation is typical of the process of reengineering. According to the definition by Dr. Hammer, reengineering is "... the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed." Almost three years ago, Bulgaria launched the reform in defense and security adhering to the formula "success = leadership + reengineering + IT." Now, accounting to the experience gained in defense reform, the formula for this area is a little different: "success = democratic control of armed forces (top-down) + Command, Control, Communications, Computers (bottom-up) + education and training, research and development aimed at manning the system with quality people, equipment and procedures."

The purpose of the articles in this issue of *Information & Security* is to present our Vision, Will, Confidence and Capability to implement the above formulas in the area of C4. The goal will be achieved with a set of papers on different issues and focused on different aspects of the C4 life cycle and C4 dimensions prepared by people who were directly involved in the process during recent years as members of distributed and integrated teams.

The first article in this volume provides a comprehensive, if no detailed, account of the changes in the area of defense and security in Bulgaria, with emphasis on the particular role information technologies played—and continue to play—in this endeavor. The account is provided by Dr. Velizar Shalamanov – Deputy Minister of Defense, Plans, and Policy, and one of the leaders and visionaries for the future of Bulgarian defense.

A group of articles presents the policy for developing and implementing Command, Control, Communications, Computers and Intelligence (C4I) systems under strict

resource constraints. Mr. Loren Diedrichsen presents the fundamentals of using C4 in the defense reform process. His article covers issues in three areas of decision-making as formulated during his lecture in Defense College in Sofia:

- Studies to provide basis for fundamental rethinking (informational decisions);
- Documents and organizational structures to support the process (organizational decisions);
- Action plan for the process (operational decisions).

There are different aspects of the role of C4 in defense reform. Broadly, C4 includes not only communications and information systems (CIS) but also the set of decision-making and information management processes that are known as Command and Control (C2). Therefore, C4 covers even the knowledge base of defense reengineering, and in many publications the Chief Information Officer (CIO) is referred to as “Chief Knowledge Officer (CKO).” In this case C4 can be considered as process with many steps and elements:

- Definition of goals and vision;
- Studies conducted by integrated joint teams to define variants for defense reform, including all types of R&D required;
- Selection of optimal variant and development of plans;
- Programming – linking goals, results, resources in a time frame;
- Program management;
- Education and training;
- Development of C4 for defense system;
- CIS support of the above processes.

Therefore, C4 is essential for the reengineering of all aspects of the defense process: fundamental rethinking, radical redesign of business processes, implementation to achieve dramatic improvements in critical measures of performance such as cost, quality, service, speed, progress measurement and assessment of success.

Reengineering of the C4 area itself is “recursive” in relation to what we discussed above. It means that we can test the approach in the C4 area and, when success is achieved there, to accelerate processes in other areas supported by C4 through application of lessons learned from C4 experience. C4 is critical to the two other elements of the “success formula” - democratic control (transparency) and E&T/R&D. Having “strong” C4, it is possible to support and track effective decision making and effective education and research. Because it is of such importance, the issue of security (information assurance) becomes crucial - “small mistakes” can

influence too many important decisions and to become a “real and present” threat to the overall process of defense reengineering.

These are preliminary thoughts about the role of C4 in defense reengineering. It will be interesting to develop a more comprehensive theory of this phenomenon, but currently our goal is to start the presentation of empirical experience of the Bulgarian MoD during the last three years based on the following steps:

- Study of the defense reform;
- Study of the organizational structures and their performance;
- Study of C4 systems;
- Study of the Air Defense System;
- Introduction of the PPBS system for resource management;
- Introduction of the C4 systems life cycle support model, CIO institution and integrated management structures;
- Introduction of an integration “roadmap” based on joint technical architecture and common operating environment;
- Introduction of the integrated E&T / R&D model based on “massive use” of CIS for modeling and simulation, distance learning, Computer Aided Exercises, Computer Aided Engineering, testbed / evolutionary development facilities, Internet/Intranet, etc.;
- Introduction of a common strategy for information assurance.

It is important to stress that although the above steps, successfully implemented in the MoD of Bulgaria, were entirely a national responsibility, they were effectively supported by close cooperation through foreign consultancy and assistance programs. The next step, already underway, is to implement this experience in other government agencies, that is, to support national reengineering efforts and the building of the Information Society in Bulgaria.

Papers included in this issue of the journal will highlight some aspects connected with the development of the roadmap for reforming C4, operational requirements and system implementation of advanced command and control, C4 architectural frameworks in coalition environments, practical dimensions of information support for decision-making during the Kosovo crisis, the application of advanced IT in the context of participation in the Consortium of Defense Academies and Security Studies Institutes, and the engagement of MoD in the building of the Information Society. The next volume of the journal will provide details on the implementation of the C4 policy in particular projects.

We believe that these initiatives that became possible during last three years will facilitate the implementation and integration of defense reform plans and will be of interest to other countries undergoing similar transition. The discussion started with this volume can be reinforced by a conference on the two aspects of the task: the purely technical aspects of C4 life cycle support and, more broadly, the C4 implications of democratic control of the security sector, education and training, research and development. Any feedback on the above spectrum of problems will be greatly appreciated.

Information & Security