

JOURNAL OF TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY

Preface

This special issue is entitled "Military communications systems" and contains 15 carefully selected papers, among them 5 papers presented during *5th NATO Regional Military Communications and Information Systems (NATO RCMCIS 2003)* while the rest 10 papers are planning to be presented during this year *6th NATO RCMCIS 2004*. The NATO RCMCIS Conference is the annual event held in Zegrze since 1999. It is a joint activity of three organizations: Military Communication Institute from Zegrze (Poland), NATO NC3A Agency from Den Haag (The Netherlands) and Military University of Technology from Warsaw (Poland). The general aim of the conference is to gather the experts from NATO countries and to discuss the issues corresponding to the development of military communications and information systems.

Developing an effective military communications system is the inter-domain issue and demands good familiarity of designers with such areas as networking techniques, network management, network security and applications. Additionally, military systems should satisfy the requirements of mobility, robustness, security and fast deploying. To satisfy these expectations, a variety of different issues should be considered and this leads to co-operation of many teams working on specific topics, as mentioned.

For this special issue, we have selected papers with good technical content and which correspond to the main issues related to military communication system design.

As it was announced, the first 5 papers were presented during last year *NATO RCMCIS 2003*. Two first papers correspond to the important projects in NATO and the U.S. The first paper, by Christopher Echols, deals with the TACOMS Post 2000 architecture that is aimed at providing full interoperability between national networks. It worth to mention, that Poland actively participates in this project, and is represented by 2 organizations: Military Communication Institute from Zegrze and DGT S.A. from Gdańsk. The second paper, by Anh Ta and Scott Starsman, describes lessons learned from a U.S. Navy enterprise integration initiative called Web Enabled Navy (WEN). WEN was initiated in April 2001 with the focus of integrating navy resources and providing a single-point-of-access. The next 3 papers were prepared by the authors from different polish organizations.

The first one is addressed to the mathematical discrete problem connected with local combat operations, written by Tadeusz Nowicki. This paper represents an approach to modeling of the battlefield. The next paper, by Paweł Matusz *et al.*, discusses networking techniques and seamless roaming between UMTS and IEEE 802.11 networks. Finally, a heuristic algorithm for a random generation of feedback functions for Boolean full-length shift register sequences was described by Izabela Janicka-Lipska and Janusz Stokłosa. This paper belongs to the cryptography area.

The list of selected papers from the *NATO RCMCIS 2004* opens the paper prepared by Douglas Wiemer and dedicated to technology solutions for coalition operations. The second paper, by Esra Çiftçi Erkan and Şenol Uzun, describes the user services implemented in the modern TASMUS tactical system. Next, James Busch and Rita Russo propose a strategy of sharing tactical data in a network-enabled coalition. In the following paper, Pavel Eichelmann and Luděk Lukáš provide us with the introduction plan of the Network Centric Warfare concept to Czech Armed Forces. The next 3 papers correspond to different cryptography issues, which are Cryptology Laboratory, by Robert Wicik, IP-KRYPTO cipher machine for military use, by Mariusz Borowski and Grzegorz Łabuzek, and primality proving with Gauss and Jacobi sums, by Andrzej Chmielowiec. The problems of switch architectures are discussed by Grzegorz Danilewicz *et al.* Finally, we have two papers dedicated to other specific topics: Henrikas Pranevicius proposes an approach for integrated analysis of communication protocols by means of PLA formalism and Ferdinand Liedtke introduces the adaptive procedure for automatic modulation recognition.

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Guest Editors