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Network Topology in Command and Control: Organization, Operation, and Evolution

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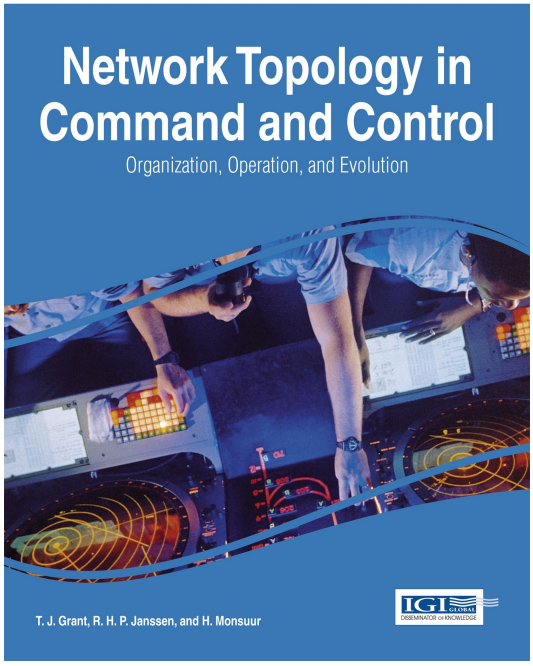

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Network-enabled Command and Control (C2) and network science both emerged in the mid- to late-1990s. Found in applications ranging from military operations and emergency management to process control, modern C2 systems link tens of thousands of computers and their users. With unmanned vehicles, sensors, and other devices being added, the number of C2 nodes is increasing exponentially. Modern network science provides the mathematical techniques for representing and analyzing networks with millions of nodes, i.e. for handling "big data."

C2 has been making a transformation from top-down, directive command to Network Centric Operations (NCO) and Network Enabled Capability (NEC), self-synchronization, and agility. As the terms NCO and NEC suggest, C2 systems are regarded as networks, rather than a hierarchy. Accordingly, it is appropriate to view the C2 process and C2 systems through the lens of network science.

Network Topology in Command and Control: Organization, Operation, and Evolution aims to connect the fields of C2 and network science. Featuring timely research on topics pertaining to the organization, design, operation, and evolution of C2 networks, this publication is ideal for reference use by professional users and developers, academicians, and students in the fields of C2 and network science. No previous books have comprehensively applied network science to C2, as this book does. It advances the state of the art by covering networked organizations and the modeling and design of C2 systems, and by broadening the applications of network science techniques.

Topics Covered:

- C2 System Design
- Command and Control
- De-Conflicting the Activities of Coalition Partners
- Integrating Cyberspace into Land, Sea, Air, and Space Domains
- Modeling C2 Systems as Networks
- Network Science
- Networked Organizations
- Situation Awareness in Networks of Sensors and Actors
- Viewing C2 Systems as Multi-Layered Networks

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