

12TH ICCRTS
“Adapting C2 to the 21st Century”
Generation of mission-oriented C2 architectures using the C2
capabilities concept*
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Abstract: An approach to the generation of future adaptive mission-oriented command and control architectures is presented that uses “command and control capabilities” concept both for missions and C2 systems. The concept is modeled and formulated so that both missions and C2 systems can be normatively described by it: on the one hand, missions require the military has specific C2 capabilities and on the other hand, any C2 system has C2 capabilities to do C2 activities. Then, the C2 architecture for a given mission can be generated by finding out the suitable C2 system which can satisfy the capability requirements of the mission according to some specific strategies.

Organization of the paper:

The paper is organized as follows. Section I is Introduction in which we explain the motivation of the research and discuss some related work. In Section II we give a complete and brief description of the approach by providing a graph model based on C2 capabilities concept which shows how to construct C2 organizational architectures in a dynamic and uncertain environment. The remainder of the paper demonstrates in details each of the components which constitute the graph model. Firstly, Section III presents the normative quantitative model which is formulized from the C2 capabilities concept and provides a basis congruent description both for missions and C2 systems. Subsequently, Section III shows how to describe the C2 capabilities requirements of missions and the C2 capabilities space of C2 systems. In Section IV, the specific strategy to find a suitable C2 organizational architecture for a specified mission is devised according to the mission environment. It is explained thoroughly and the C2 architecture is then generated. In Section V, a military application is used to demonstrate the feasibility of the methodology. Finally, we will conclude with summary and future research directions in Section VI.