

12th ICCRTS
“Adapting C2 to the 21st Century”

Developing a Framework for Linking Clustering Coefficient to
Loose Coupling of Hardware and Software Systems

Topics
C2 Technologies & Systems
Networks & Networking
C2 Metrics & Assessment

John W. Dahlgren

The MITRE Corporation
903 Gateway Blvd, Suite 200
Hampton, Va 23666
757-825-8529
Dahlgren@mitre.org

Approved for Public Release. Distribution Unlimited. # 06-1415

Abstract

This paper will discuss the concept of the Clustering Coefficient as is used with regard to the connectivity between people or organizations. The paper will use an example of a hypothetical group of people as would be found on a small project team to determine a possible best range for the coupling coefficient to resolve the optimal number of tight and loose connections. The concept of diminishing marginal returns and the tradeoff between tight and loose connections will be examined to determine how tight connections may actually destroy options on exchanging information with other people, and thus lower the value of the organization. The concept of the coupling coefficient will then be applied to discuss the concept of Loose Coupling as is often applied to hardware and software systems, or systems of systems. The goal of this section of the paper will be to determine a framework to examine the level of coupling between subsystems in a system of systems, and to then determine to what degree a system is coupled, with possible implications to the difficulty and costs for spiral developing the subsystems. Coupling to standards will be presented as analogous to limiting the tight connections between people.