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Title: The Formal Representation of Joint Operational Relationships

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The Formal Representation of Joint Operational Relationships

A primary impetus of the Global Force Management (GFM) Community of Interest (COI)[1] is the establishment of a transparent and universal process to manage, assess and display the world-wide disposition of US forces including availability, readiness and capability in a variable scale and/or time continuum(s). This process enables insight into global availability of US forces and provides a means to assess risks associated with proposed allocation, assignment and apportionment.[2] A major task of this endeavor is the creation of Service, Joint, and Office of the Secretary of Defense (OSD) organization computer servers that contain joint, hierarchical force structure data for integration across Service lines. This data must be formally documented using unambiguous semantics so that sophisticated computer programs can economically exploit the data without compromising its integrity.

This simple sounding objective became complex as historically accepted, but informally defined, relationships associated with the assignment, allocation and apportionment processes began to be used in formal representations and manipulated by computer programs. Interactions of terms such as Administrative Control, Operational Control, and Combatant Command became clouded as disagreements on simple questions were debated; for example: "can an organization have more than one simultaneous relationship of the same type?" Clearly, the answer depends on the precise interpretation of the relationship and its definition. These debates are further confounded when heterogeneous components such as reserve forces, government civilians, and contractors are included.

The following taxonomy of the **DOD Levels of Authority** has been derived from Joint Publication (JP) 0-2 [Unified Action Armed Forces (UNAAF), 10 July 2001]:

I. Command Authority
   A. ADCON [Administrative Control]
   B. Command Relationships (Operational in Nature)
      1. COCOM [Combatant Command (Command Authority)]
      2. OPCON [Operational Control]
      3. TACON [Tactical Control]
      4. Support
         a. General
         b. Mutual
         c. Direct
         d. Close

II. Coordinating Authority

III. DIRLAUTH [Direct Liaison Authorized]

At the 11th ICCRTS, the assignment process was formally defined in a paper entitled *The Formal Representation of Administrative and Operational Relationships within Defense Organizational Constructs* using the COCOM (I-B-1) and ADCON (I-A) relationships. This paper will describe

1 Community of Interest (COI), from the *Department of Defense Net-Centric Data Strategy*, 9 May 2003; see: http://www.defenselink.mil/nii/org/cio/doc/Net-Centric-Data-Strategy-2003-05-092.pdf

2 The GFM-COI was established in the summer of 2003 by the Joint Staff, Force Structure, Resources, and Assessment Directorate (J-8) and the Office of the Under-Secretary of Defense for Personnel and Readiness (USD(P&R)),

the allocation process using the remaining relationships contained in I-B: OPCON, TACON, and Support. The paper will include rigorous definitions of these relationships that include their principle properties and constraints on their use. Further, the paper will describe the continuing process of identifying and unifying these representations across the Services to facilitate the definition of joint military capabilities. In some cases, where consensus has not (yet) been achieved, the ongoing debate of alternative interpretations will be presented along with the implications of those options. Finally, the implementation of these results via the GFM Information Exchange Data Model, that is an augmented subset of the NATO JC3IEDM[3], will be described including recommended modifications to the semantics of the coalition model.

[3] JC3IEDM: Joint Consultation, Command and Control Information Exchange Data Model, the impending result of the Multilateral Interoperability Programme (MIP) combining efforts with the NATO Data Administration Group. See: http://www.mip-site.org/