RTO-TR-IST-030 - Information Management over Disadvantaged Grids

Gestion des informations sur des maillages désavantagés

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Abstract	This report summarizes a four-year study carried out by NATO RTG-012/IST-030 Research Task Group on the problem of "Information Management over Disadvantaged Grids". Such disadvantaged grids (e.g., tactical ad hoc military radio networks) are characterized by low bandwidth, variable throughput, unreliable connectivity, and energy constraints imposed by the wireless communications grid that links the nodes. The scope of this study was limited to land-based digital data exchange below brigade level where all nodes are mobile and the exchange medium is combat net radio. Managed information exchange in this communications environment was analyzed from three different perspectives within a system architecture: the application level, the middleware level and the network level. Due to the highly variable quality of the tactical

communications channels and the unpredictable nature of the tactical battlefield, it was concluded that dynamic adaptation to rapid changes in either the communications or battlefield environment, without user intervention, was key to achieving optimum information exchange. This report identifies functional and performance objectives for the application, middleware and network levels that enable the levels to cooperate to detect and adapt to those changing environments in a way that will enhance delivery of data of highest operational importance.

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