

Measures of Social Network Analysis
and Situational Awareness

Craig Schreiber
U.S. Army Research Laboratory
Aberdeen Proving Ground, MD

Cadet Daniel P. Baller
United States Military Academy
West Point, New York

ABSTRACT:

Soldiers must have situational awareness to survive and complete their missions in combat. Situational awareness consists of all situational-specific information and inferences represented in a person's mind which he or she uses to make decisions. Theories have been developed regarding communication between soldiers on the battle field and how these interactions can impact an individual soldier's situation awareness. This paper examines the communication patterns and situational awareness of a group of soldiers who participated in a warfighting simulation at FT. Leavenworth, KS in 2007. Six measures of social network analysis were analyzed with the Organizational Risk Analyzer and the relationship between these measures and situational awareness was analyzed through regression analysis. Total Degree Centrality was found to be statistically significant however explained very little of the variance in the model, suggesting to determine the situational awareness of an individual it is necessary to know more than the communication structure of the organization. On the battlefield, connectivity is not in it self sufficient to create situational awareness. It is likely that knowledge management activities will play a vital role in ensuring the right information gets to the right person, creating the necessary situational awareness. This will take into account knowledge distribution, flow, and need. Future experiments should focus on knowledge management activities within the network.

KEYWORDS: Social network analysis, situational awareness, regression

CONTACT: Craig Schreiber, U.S. Army Research Laboratory, HRED, Aberdeen Proving Ground, MD, Tel: (410)-278-5980, Email: craig.schreiber1@arl.army.mil

CDT Daniel P. Baller, United States Military Academy, West Point, NY, Tel: (845) 515-1928, Email: daniel.baller@usma.edu