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# The Armament Research Development & Engineering Center

Innovative Armaments Solutions for Today and Tomorrow



## SOCIAL NETWORK ANALYSES OF CROWDS

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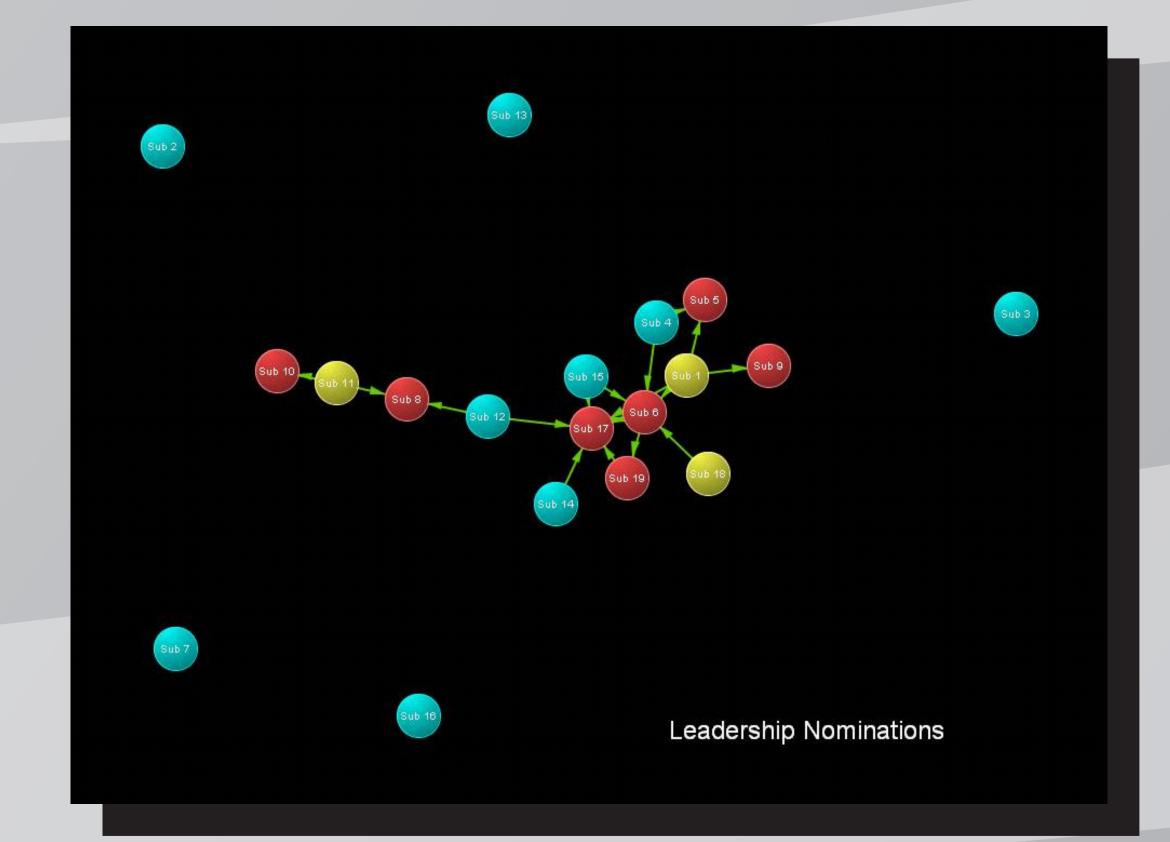
### Brief Abstract

This poster details how social network analysis is used in crowd experimentation to capture crowd level sociometrics among individual members that may affect crowd behavior. These methods are used to assess the possible effects of prior acquaintances, social interactions, and leadership presence.

### Introduction

Response to non-lethal weapons fire depends on social relationships among crowd members Therefore we need method to assess social factors.





#### Data Measurement

#### Social Bonds

"Do you know anyone else who is participating in the study today?

If yes, please indicate who you know based on the subject number assigned to them (on their tee shirt or folder)."

#### Social Interactions

Videotapes coded for pair-wise social interaction among crowd members: Verbal communication, physical contact, gestures, non-verbal auditory signaling. Scored three 2-minute epochs before/during crowd-control force interaction Interrater reliability .94

#### Leadership Nominations

"Was there a person (or people) in your group that you considered to be a leader (or leaders)? If yes, please indicate all the people that you thought were leaders."









### Social Network Analysis

ORA Version 1.9.5.4.3 (Dr. Kathleen M. Carley, Center for Computational Analysis of Social and Organizational Systems (CASOS), Carnegie Mellon)



 Numerical Sociometrics outputted for formal analyses: density, isolates, linkages among nodes

