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“Adapting C2 to the 21st Century”

Emerging Staff Roles: Robotics NCO Task Analysis

Organizational Issues Track
Network-Centric Experimentation and Application Track
C2 Metrics and Assessment Track

Elizabeth K. Bowman
Regina Pomranky
Army Research Laboratory
Building 459
Aberdeen Proving Ground, MD 21005
410-278-5920
ebowman@arl.army.mil

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The position of a Robotics NCO (RNCO) is introduced in the Objective Force Operational and Organizational (O&O) Plan (Unit of Action Maneuver Battle Lab, 2003). The RNCO is expected to assist the Platoon Leader in employing unmanned systems, to be a subject matter expert in platoon robotics systems, and to assist the platoon leader in reconnaissance and surveillance tasks (Unit of Action Maneuver Battle Lab, p 3-18). The task analysis conducted in this experiment was designed to provide more detail to the functions identified in the O&O. The product of this task analysis should support the effort to more clearly identify the roles and responsibilities of this position and recommend corresponding rank.

Analysis suggests that the RNCO appears to be an integral platoon asset to manage the logistical and operational tradeoffs necessary for employing unmanned assets. The RNCO should be capable of monitoring system statuses and locations of unmanned assets and disseminating pertinent information on system health to leaders. This position will require suitable rank to allow decision making and tasking of platoon assets as necessary. Initial results suggest that the target rank for the RNCO is too low. Further research in this task analysis will be described.

Outline

1. Introduction

- a. Experiment setting
 - i. Platoon level ISR missions
 - ii. FCS surrogate technologies
 1. unmanned sensor, air, and ground assets
 2. networked digital command and control display
 - iii. Platoon operating in BCT configuration
 - iv. RNCO established and trained
- b. Task analysis goals
 - i. Review existing doctrine
 - ii. Observe RNCO activities
 - iii. Document emerging behaviors and interdependencies
 - iv. Interview relevant platoon leaders to document emergent TTPs for RNCO

2. Method

a. Hierarchical task analysis. This method (Kirwin & Ainsworth,1992) uses task decomposition to structure higher level tasks into supporting activities. The starting point for this decomposition is a set of clear task descriptions that can be decomposed according to relevant categories. Miller (1953, in Kirwin & Ainsworth,1992) suggested the following categories for decomposition of tasks:

- Description
- Subtask
- Cues initiating action
- Controls used
- Decisions
- Typical errors
- Response
- Criterion of acceptable performance
- Feedback

b. Data collection. Direct observation and interviews were used to obtain data.

3. Results

- a. The main categories of activities for the RNCO were documented:
 - i. Planning
 - ii. Emplacement of assets
 - iii. Building situation awareness
 - iv. Taking action
 - v. Maintenance

- b. For each activity, the following were documented:
 - i. Task description
 - ii. Description
 - iii. Start cue
 - iv. Information requirements
 - v. Skills used
 - vi. Operator decisions
 - vii. Operator actions
 - viii. Information sources
 - ix. Difficulties/errors
- 4. Conclusions
 - a. Command and Control (C2) of platoon robotics assets is a difficult and time consuming job
 - b. The RNCO cannot maintain visual control over all assets at one time
 - c. Communicating with unmanned asset operators is essential and time consuming
 - d. Redundancies exist with current practices
 - e. Future work is needed
- 5. Future research
 - a. 2007 experimentation