

A Simulation Analysis of Effectiveness Measurement for Unmanned Ground Vehicle

Lee Jaeyong
Industry and Academia Cooperation
Foundation
Myongji University
Yongin, Republic of Korea
lees1000@gmail.com

Kim Chongman
Dept. Industrial Engineering and
Management
Myongji University
Yongin, Republic of Korea
chongman@mju.ac.kr

Shin Sunwoo
Dept. Industrial Engineering and
Management
Myongji University
Yongin, Republic of Korea
seagullwing@naver.com

Abstract—In general, Unmanned Ground Vehicle like robot is one of the most effective weapon system based on leading edge technology in the modern warfare. However, its efficiency is still a difficult question to answer. Moreover, since the future warfare is getting more network centric rather than platform centric, it is even more difficult and complex to estimate its operational effectiveness. Therefore it is challenging task to develop a methodology or approach to show how efficiency it is during a ground battle of the network centric warfare. One clear distinction of this paper from others is that we are considering communication error effects depending upon terrain condition near each platform. The terrain condition is defined based on a small cell and its altitude in each cell. In this paper, we propose a new simulation framework for how to measure the operational effectiveness of unmanned ground vehicle in a small unit combat scenario. The framework is processed with following three phases. At first, we consider all relational factors for input and output variables in communication network environment of all platforms. Secondly, build a simulation model and select a measure of effectiveness based on purpose of the system performance. Thirdly, execute a simulation model and produce MOE do the output analysis. We compared the difference among three cases based on terrain condition.

Index Terms—Operational effectiveness, Modeling & Simulation, Communication error