

Situation awareness in maritime traffic control: a comparison of two methods

Erik Wiersma¹ & Rene Butter²
¹Safety Science Group
Delft University of Technology, Delft
²Maritime Simulation Rotterdam b.v.
The Netherlands

Abstract

In maritime transportation, traffic control is carried out by Vessel Traffic Services (VTS). VTS operators monitor traffic, provide information on request and coordinate movement of ships in (emerging) conflict situations. Relevant for the performance of the VTS operator is the operator's mental representation of the traffic. Situation awareness is a useful concept in describing this mental picture. The SA concept has been successfully introduced in maritime traffic control and several methods for assessing SA in the VTS context have been developed.

This paper compares two methods for measuring VTS operator performance based on the SA concept: *SATest*, based on Endsley's SAGAT paradigm, and Performance Monitoring Instrument PMI, a performance-based assessment technique. Both methods have their strengths and weaknesses. Both can be useful, depending on research question and confining conditions. The results of the comparison have implications for assessment of performance on traffic management tasks in other transportation domains as well.

Introduction

Every day large quantities of goods and people are transported around the globe. A major part of this transportation takes place over water. Increased quantity and complexity of maritime traffic, combined with the necessity to optimise traffic streams and logistics in harbours make traffic control ever more needed. In maritime transportation, traffic control is carried out by Vessel Traffic Services (VTS). According to the IMO Guidelines (Res. A857(20)), a VTS is defined as

“A service implemented by a competent authority, designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with the traffic and to respond to traffic situations developing in the VTS area.”

In D. de Waard, K.A. Brookhuis, J. Moraal, and A. Toffetti (2002), *Human Factors in Transportation, Communication, Health, and the Workplace* (pp. 377 - 386). Maastricht, the Netherlands: Shaker.