

RESILIENT OPERATION OF MANNED AND UNMANNED SHIPS FROM ASHORE

Michael Baldauf¹

Momoko Kitada²

Sandro Fischer¹

¹⁾ UAS Wismar, Germany

²⁾ World Maritime University, Sweden

Abstract

Current maritime transportation and shipping is characterized by rapid technological developments effecting the basic concepts of operating ships and even changing traditional paradigms of controlling ships. The e-Navigation concept of the International Maritime Organization specifically aims at more comprehensive and reliable support of the human operators on-board and ashore.

Until today merchant ships are operated by crews on-board and are monitored and supported from shore-based surveillance and control centres. Beside VTS monitoring vessel traffic in sea areas of the national territories, there is an increasing number of company-based Fleet Operation Centres (FOC) that monitor the safe and efficient progress of company-owned ships even on a world-wide scale. So far, the relation between the navigators on board and the operators ashore is characterized by the status quo that the shore operator provides additional information to support the bridge team on-board. The introduction of unmanned and even autonomous navigating ships will probably change the existing system fundamentally.

Present concepts proposing the introduction and operation of unmanned ships usually contain a certain kind of shore-based control centre that monitors the status of such ships and the navigational and technical processes and provides for remote control options in case of its need. The introduction of such transportation systems has various technical, administrative-organizational and human factor related challenges.

In this paper we present investigations and preliminary results of simulation experiments focusing on the challenges of future traffic consisting of conventional manned and future unmanned ships. Simulation trials have been planned, designed and implemented in order to study system's resilience in the frame of monitoring and remote controlling unmanned ships navigating in a coastal VTS-monitored area. The outcome of the experiment will be discussed in the light of evolutionary needs of control centres and requirements from human operators when remotely operating unmanned ships in areas with conventional traffic.