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"Software Engineering : Yang Terabaikan dalam Pengadaan dan Pemeliharaan Alutsista TNI AU", *"Angkasa Cendekia"*, Edisi April 2008, Dinas Penerangan TNI AU, Jakarta, hal. 72-101, ISBN 979-95490-0-2.

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"Sistem Perlindungan Aset Strategis Berbasis Teknologi Biometrik", *Studi Pertahanan "Satria"*, Vol. 4, No. 2, April-Juni 2008, Badan Pendidikan dan Pelatihan Departemen Pertahanan RI, Jakarta, hal. 100-113, ISSN 1907-2058.

Mayor Lek Arwin Datumaya Wahyudi Sumari, S.T., M.T.

"Information Fusion for Decision Support System in Military Decision Cycle", *Studi Pertahanan "Satria"*, Vol. 4, No. 3, Juli-September 2008, Badan Pendidikan dan Pelatihan Departemen Pertahanan RI, Jakarta, hal. 49-59, ISSN 1907-2058.

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Design and Implementation of Multi Agent-based Information Fusion System for Decision Making Support (A Case Study on Military Operation)

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Abstract. Quick, accurate, and complete information is highly required for supporting strategically impact decision making in a Military Operation (MO) in order to reduce the decision cycle and to minimize the loss. For that purpose, we propose, design and implement a hierarchical Multi Agent-based Information Fusion System for Decision Making Support (MAIFS-DMS). The information fusion is implemented by applying Maximum Score of the Total Sum of Joint Probabilities (MSJP) fusion method and is done by a collection of Information Fusion Agents (IFA) that forms a multiagent system. MAIFS uses a combination of generalization of Dasarathy and Joint Director's Laboratory (JDL) process models for information fusion mechanism. Information fusion products that are displayed in graphical forms provide comprehensive information regarding the MO's area dynamics. By observing the graphics resulted from the information fusion, the commandant will have situational awareness and knowledge in order to make the most accurate strategic decision as fast as possible.

Keywords: *decision making support, information fusion, MAIFS-DMS, military operation, MSJP, multiagent system.*

1 Introduction

In a dynamic Military Operation (MO), the quality of information that is sent to the decision maker (commandant) gives a significant impact to a combat strategic plan in order to win the war and reduce the loss. A quick-and-correct decision making depends on accuracy and speed of information processing obtained from sensors that are distributed and placed strategically. In an MO, data obtained from intelligent activities such as surveillance, and reconnaissance, are processed and analyzed by the commandant's supporting staffs, which consist of intelligent, operation, personnel, logistics, and communication electronics staffs, from each one perspective. The analyzed data are then inferred and presented to the commandant as the basis for decision making.