An Online Interactive Whiteboard for Military Applications: a conceptual design

Pakamaj Wongsai, Wichai Pawgasame
Department of Research and Development
Defence Technology Institute, Ministry of Defence
Nonthaburi, Thailand
Email: pakamaj.w@dti.or.th

Abstract—**An Interactive Whiteboard (Virtual Whiteboard) may refer to a device or a computer program providing interactive displays. This interactive whiteboard along with online system can provide efficient interactive long-distance conferencing, training, or educating systems. These systems have been extensively used in classrooms and meeting rooms. In fact, the use of online interactive whiteboard can be applied for the military as a distributed mission planning system. An information can be shared locally through LAN or globally through the Internet. This concept is relatively challenged due to the limitations of military networks in terms of security, frequency, bandwidth, and computational power of the equipment. This paper introduces a novel online interactive whiteboard design framework that specifically aim at the military application.**

I. INTRODUCTION

A military operation involves common three-step process; planning, preparing, and executing. To accomplish the mission, a commander and his supporting staffs must drive the operation processes through understanding, visualizing, describing, directing, and assessing [1]. A mission planner is a tool to help a commander and staffs utilize the operation processes. The use of online interactive whiteboard as mission planning tool can make operation be more effective. An online interactive whiteboard is a device or a program that allows participants from different locations to share the same whiteboard screen. The participants can change content of the screen and in addition the updated screen can be distributed among the participant in real-time. Moreover, participants can create common understanding of the operation using online interactive whiteboard. An online interactive whiteboard provides visualization for situation understanding and determining desire goal. An operation can be described to all participants to shared understanding and purpose using the online interactive whiteboard. A commander may use an online interactive whiteboard to direct the mission by establishing an intent, setting objectives, and issuing clear tasks to subordinate units. An online interactive whiteboard provides an overview of the plan to ease the assessment process of the plan. The participants should be able to join a discussion, leave a discussion, and add information to the whiteboard while always having an up-to-date image of the current whiteboard. An online interactive whiteboard is a network application or device, where the information is exchanged globally via Internet or locally LAN. The online interactive whiteboard systems have been extensively used in the classrooms and civilian meeting rooms depending on public networks. The military application operates in different networks designed specifically for military operation. Due to limitation of military networks in terms of security, frequency, bandwidth, and computational power of the equipment, the design of an online interactive whiteboard require a novel approach. This paper introduces a novel online interactive whiteboard design framework that specifically aim at the military application over Internet. The organization of this paper is as followings. Section II presents background concept and theory behind an online interactive whiteboard. Section III proposes an overview of the system. Section IV discusses design consideration. Section V presents the specification of the design framework in application layer. Finally, the summary of the work is given in Section VI.

II. BACKGROUND

A. Mission Planner

An mission planning is an art that requires an in-depth understanding of numerous critical elements or factors that may impact the mission and an assessment of how those elements or factors can be either negated, overcome or exploited to give the advantage it requires in the execution of the mission. The role of on-going real-time intelligence plays a crucial role in the planning of the mission. It is also this intelligence that will ultimately determine the mission-profile. The mission-profile, in turn, will determine the amount of manpower, weapons, ammunition, the phases of war, tactics, etc [2]. In fact , planning is considered a vital component for success of any mission. A Team leader must be allowed to display flexibility within the overall plan and, in turn, must develop their own plans at their level. The ultimate aim of planning is to ensure that the correct men, correctly equipped, are at the right time and place to achieve the mission. This requires constant coordination between the various elements that will partake in the execution of the plan. With this concept, the casualties can be reduced.

B. Interactive Whiteboard

An interactive whiteboard is a device or a computer program providing interactive display. Typically an interactive whiteboard contains a sensor device that capture the movement on the whiteboard as screen. The captured movements are then