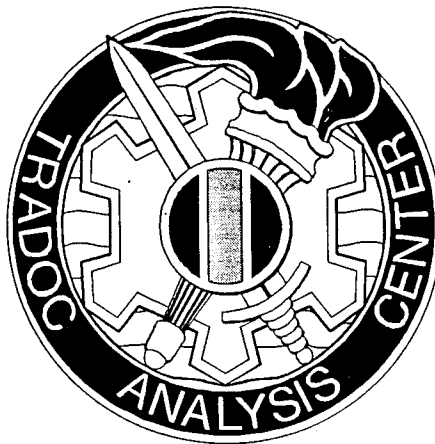
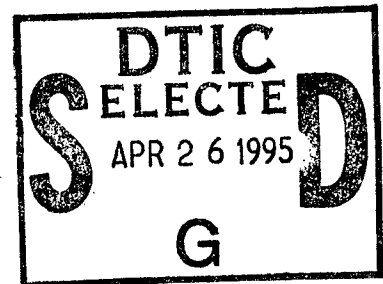


Video Teleconference (VTC) Capability

An Assessment of Battle Command
Advanced Warfighting Experiment Observations



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19 August 1994

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Video Teleconference (VTC) Capability

Introduction

The purpose of this paper is to briefly describe the video teleconference (VTC) capability as applied to battle command in the Advanced Warfighting Experiments (AWE) in the Battle Command Battle Laboratory (BCBL), January - May, 1994. The BCBL had the mission of technology insertion into command and staff processes to enhance battle command and the tactical decisionmaking process. One of the technologies inserted during this series of AWEs was VTC. The BCBL stated the purpose of VTC as follows:

VTC is an aid designed to facilitate information exchange and staff coordination. VTC is a collaboration tool that allows two or more people, remotely located, to talk face to face in real-time. Supports course of action (COA) development and mission execution tasks.

VTC - Virtual Co-Location for Real-Time Face-to-Face Collaboration

The BCBL believed that VTC aids commanders and staff members to perform mission analysis, intelligence preparation of the battlefield (IPB) and other intelligence functions, COA analysis and comparison, and execution tasks. VTC does not provide a single functional assistance per se, but rather like the telephone, VTC is a communication tool used to facilitate the performance of any functions which involve dispersed or remotely located personnel.

Background

VTC assists the commander and staff by providing the capability for dispersed or remotely located personnel (if only cell to cell) to be virtually co-located for real-time, face-to-face communications. VTC capability is rapidly proliferating in the commercial world, primarily for business applications. The Yankee Group estimates that there will be 92,000 systems in use in the U.S. by 1995, up from 1,113 in 1989. The systems' sizes and prices have fallen exponentially, to where room-size systems in the \$15,000-100,000 range are poised to lose to desktop systems in the \$6,000 and under range in the near future. The BCBL technology insertion for VTC capability was a PC-based, Haugepauge video card. With a small gooseneck camera at the workstation, this provided the capability to transmit, receive, and display real-time video voice and images at remote stations on the monitor screen, either full screen or some part of it, and up to four other remote stations at a time.

Business applications predominate among the current uses for VTC capability, whether via large system or desktop oriented. There are both advantages and drawbacks acknowledged for VTC in business applications. The major business advantages usually cited for VTC are as follow:

- Decisions are made faster because meetings between remote personnel can be held more often
- Research and development is faster (products can be gotten to market sooner) - decisions are made real-time between dispersed personnel
- More meetings can be held for less travel costs (in terms of time and money)
- Reduces the need for "local" travel and time associated with it
- Allows personnel not traveling to remote locations to stay involved, informed
- Being able to associate a face with a name fosters closer interpersonal relationships
- VTC participants get body language messages they would not get via telephone
- Meetings can be more concise
- VTC allows talking face-to-face with more subordinates (will not replace "management by wandering around", but VTC is cost and time effective)

The major drawbacks usually cited for VTC are as follow:

- New users are usually uncomfortable being on camera
- There is a tendency to speak louder than necessary
- It is easy to step on the other conversation end (because of transmission delay)
- Users can get caught off-guard (everything in the camera's view area will be observable)

The drawbacks all are germane to military tactical usage. Among the advantages cited, those most germane to military tactical usage are related to decisionmaking time, travel to remote locations, and the leadership effects of face-to-face communications.

Decisionmaking Time Reduced
Travel to Remote Locations Reduced
Face-to-Face Communications Enhances Leadership

AWE Observations

The observations discussed in this paper are based on viewing 28 Battle Command Elective (BCE) students using VTC capabilities in varied exercise situations. Over the course of the AWEs, VTC supported all command and staff functions. The particular functions and tasks for which VTC was most often used included dissemination of commander's intent, synchronization of operations graphics, and various coordination during the planning and execution of all operations. During the AWEs operations graphics were interactively coordinated via VTC. The VTC camera was positioned in front of electronic map displays on other monitors. The VTC was essentially used as a proxy for electronic pen (message board) capability.

28 Students, "Observation" Context

The study team observed that VTC appeared to enhance the communication of commander's intent. The intent was clearer, partly because of the visual effects of body language and the transmission of graphics. Because the intent was clearer, it was better understood by the staff and subordinate commanders. The intent was also simultaneously disseminated to a wider audience.

The BCE students were solicited with a questionnaire for comments regarding ease of use of hardware or software provided to support BOS functions and tasks. The comments which related to VTC capability can be summarized as follows:

- ◆ Face-to-face coordination for planning desired
- ◆ Lack of conference call capability severely hampered C2
- ◆ Voice confirmation of orders/directives preferred

Real-Time Face-to-Face Conferencing Enhances Battle Command

In a related effort conducted by Army Research Institute (ARI), students and data collectors were also asked to assess the utility of information technologies. This assessment addressed the following categories: overall system value, effect on task performance, process quality, product quality, system usability, human factors, flexibility, system fit with processes, match with users' needs, and fit with the organization. Of all evaluated technologies, VTC received the highest positive rankings in every assessment category.

The study team observed that VTC appeared more suitable for use in certain staff groups or cells. The most appropriate groups can be characterized as command or operations cells. VTC was most used by commander/operations type personnel and cells, but further, the capability could most influence and thus, enhance battle command by facilitating actions in these cells. During the Prairie Warrior exercise VTC was used to disseminate the daily commander's briefing to staff and subordinate units.

VTC Most Useful for Commander/Operations Type Personnel and Cells

Conclusion

VTC provides the commander and staff, and subordinate units with a means of assured, real-time, face-to-face communications with remote personnel. VTC is a powerful complement to the other information technologies in the battle command support system (BCSS). This capability must be included in the objective BCSS. It should be updated to keep pace with technological advances to provide a greater proliferation of less expensive, higher definition video over time.