CENTRALIZED TRAINING ANALYSIS FACILITY FOR LIVE TRAINING

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Abstract

Analysts support observer/controllers (OCs) at the Army's live instrumented Maneuver Combat Training Centers (MCTCs) by performing exercise control functions and preparing after action review (AAR) aids for feedback sessions. The Army plans to field an instrumentation system that will give units a MCTC-like training capability at their home stations, but the Army cannot afford to provide the same degree of dedicated analytical support that has been provided for MCTCs. The benefits of home station instrumentation are likely to be reduced when OCs at home station are supported by unit personal tasked temporarily to serve as analysts. The US Army Training Modernization Directorate (ATMD) envisioned the concept of a training analysis and feedback center of excellence (TAAF-X), supporting multiple MCTCs and home stations concurrently. A TAAF-X can provide home stations with access to experienced analysts, possibly reduce the ratio of analysts required per unit trained, and provide a continual human link between MCTCs and home stations. ATMD asked us to assess the feasibility of implementing the TAAF-X concept. We identified potential problems implementing the TAAF-X concept and proposed solutions where possible. Through an iterative process we refined the TAAF-X concept.

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Centralized Training Analysis Facility for Live Training

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BACKGROUND

The US Army maintains three maneuver Combat Training Centers (MCTCs) providing live force-on-force and live fire training exercises. The MCTCs are the National Training Center (NTC) at Fort Irwin, California, the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana, and the Combat Maneuver Training Center (CMTC) at Hohenfels, Germany. The Army conducts high quality training at MCTCs due, in part, to analysts that leverage data from co-located instrumentation systems to help observer/controllers (OCs) in the field perform exercise control and feedback functions.

Analysts use an instrumentation system to monitor exercises and alert the OCs they support to impending changes in the tactical situation and/or potential safety problems. These alerts help to ensure an OC is prepared to observe a unit's response to the situation change or intervene to avoid injury and damage. Analysts also use instrumentation to help simulate weapons effects and the activities of notional higher, adjacent and supporting units. Under the direction of OCs, analysts use their systems to prepare after action review (AAR) aids for post-exercise feedback sessions and Take Home Packages (THPs) summarizing a unit's performance over a series of exercises.

MCTC analysts gain extended experience working with specific OCs. For example, an armor company OC may work with a particular armor company analyst for several years. The power of analysts to support OCs is enhanced by the fact that members of the analyst team share information with each other. For example, the analyst for one company team may alert the analyst for a second team of a situation important to the latter .

Although the Army plans to enable MCTC-like training at home stations by fielding instrumentation (Department of the Army, 1999a and b), it is unlikely that home stations can be staffed with an adequate number of analysts. The Army Training Modernization Directorate (ATMD) projected the future resource needs of the live training community in the "Report on Live Environment Research Requirements" (Faber, 1996). One of the projected requirements was for a centralized analysis facility, called the Training Analysis and Feedback Center of Excellence (TAAF-X). The original TAAF-X concept stated that analysts at a centralized facility will assist trainers at the MCTCs and selected home station locations perform exercise control, AAR preparation, AAR delivery, and THP preparation functions from platoon to battalion task force level. The concept assumed that automation of exercise control and feedback functions and advanced data transmission will allow a single facility to support several, simultaneous field training exercises at multiple locations.

Three major benefits are likely to accrue from implementing the TAAF-X concept. First, the number of units that can be trained with the help of a given number of analysts should increase. Second, using the same analysts to support MCTC and home station training offers a means of helping to bridge the quality gap between home station and MCTC training. Third, the quality of training feedback products at home station can be increased.

STUDY OBJECTIVES

ATMD requested that the Army Research Institute examine the feasibility of implementing the TAAF-X concept. The objectives of this study are listed below.

- Refine the TAAF-X concept
- Identify and describe behavioral and technical problems likely to reduce the acceptance or value of the TAAF-X concept

- Describe candidate strategies for addressing the identified problems.
- Develop an electronic database to wargame decisions regarding TAAF-X implementation
- Estimate the overall feasibility of implementing the TAAF-X concept.

ONGOING INITIATIVES ENABLING THE TAAF-X CONCEPT

Force Modernization Studies

TAAF-X was the fifth in a series of six ARI studies conducted, at the request of ATMD, to define live training support requirements that reflect force modernization. The first four studies help to set the stage for TAAF-X by defining interventions that can reduce analyst and OC workloads and enable analysts to support a greater number of OCs. Training Analysis and Feedback Aids (TAAF Aids) described the impact of force modernization on what OCs and analysts must do, in the absence of interventions, to support the simulation of new operational systems (intrinsic feedback) and provide units with post exercise extrinsic feedback regarding system employment. TAAF Aids addressed 142 new and emerging weapon, digital, and reconnaissance, surveillance and target acquisition (RSTA) systems (Brown, Nordyke, Gerlock, Begley, and Meliza, 1998). TAAF-Aids also identified 25 OC and 86 analyst AAR preparation tasks that are independent of specific operational systems. The TAAF Aids study concluded that OCs and analysts will be overwhelmed supporting future exercises, but it also described high level interventions that can reduce support requirements.

Three overlapping studies were then performed to better define requirements for interventions (see Figure 1). Advanced Tactical Engagement Simulation Concepts (ATESC) focused on the work required to help simulate weapons effects and collect data on unit employment of RSTA systems (Brown, Anderson, Begley II, and Meliza, 1999a). Cognitive Requirements for Information Operations Training (CRIOT) focused on defining and addressing exercise control and data collection requirements associated with unit employment of digital command, control, communications, computers, and intelligence (C4I) systems at battalion task force level and below (Brown, Anderson, Begley II, and Meliza, 1999b). Advanced AAR Media (A3RM) focused on using automation and battlefield digitization to reduce analyst and OC workloads concerned with AAR preparation and delivery (Brown, Anderson, Begley II, and Meliza, in preparation).

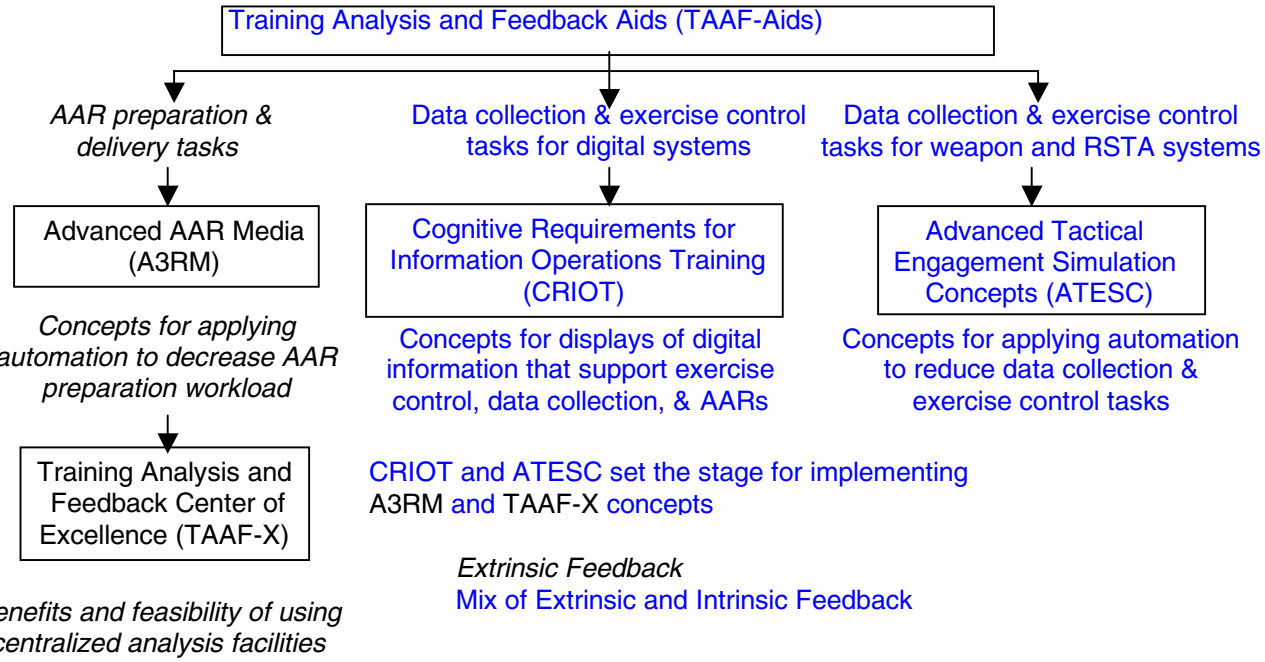

Figure 1. Live Training Support Studies supporting implementation of the TAAF-X concept.

Common Instrumentation Architecture

At the current time, most home station training sites have no instrumentation system, and each of the MCTCs have a different instrumentation system. Under the MCTC Objective Instrumentation System (MCTC-OIS) concept, all of the MCTCs and major home station sites will share a common instrumentation system. (Heath, 1999, Hanford, 1999). This feature increases the feasibility of a centralized analysis facility by reducing the software systems with which analysts must interact to one. The MCTC-OIS concept also calls for applying automation to the feedback process (U.S. Army Training and Doctrine Command, 1995),. This requirement enables a decrease in the number of analysts needed to support MCTC plus home station training.

REFINED CONCEPT

After performing the literature search, conducting interviews at JRTC and NTC, and obtaining input from ATMD experts, we created a refined TAAF-X concept and defined additional assumptions. Concept refinement was an iterative process that continued throughout the study. The refined concept calls for a permanently staffed, centralized facility that will assist OCs perform AAR preparation, AAR delivery, and THP preparation functions from company team to brigade combat team level at MCTCs and from company team to battalion task force level at home stations. For safety reasons, TAAF-X will not support exercise control functions. Instead these functions will be supported by a small number of analysts at MCTC or homestation sites that will also serve as a link between OCs and TAAF-X.

The refined concept is based upon the assumptions listed below.

- Analyst workloads will be reduced substantially from current levels by improvements in TES and instrumentation systems and automation of the AAR aid preparation process.

- The TAAF-X must allow analysts to support multiple exercises concurrently, allow analysts to support both a MCTC and home station site, and/or improve the quality of home station training. That is, there must be benefits that accrue through the act of centralizing analytic functions.

- The relationship between TAAF-X and a MCTC may differ from that between TAAF-X and a home station training site. MCTCs will remain the proving ground for tactics, techniques and procedures as well as providing capstone training exercises.

- Communications infrastructure will be in place capable of handling all communications needs between the MCTCs and TAAF-X and the selected home stations and TAAF-X.

- TAAF-X will have the capability to integrate live, virtual and constructive training.

- When MCTC or home station analysts enter information on their workstations, that information must be visible/usable to the TAAF-X analyst at the centralized facility on his workstation.

- A substantial degree of AAR aid standardization is needed to automate AAR aid preparation and enable TAAF-X implementation.

POTENTIAL IMPLEMENTATION PROBLEMS AND STRATEGIES FOR ADDRESSING PROBLEMS

At a broad level, we found two implementation problems. The first problem is that analyst workloads do not allow for an increase in the number of OCs or exercises that an analyst can support. The second problem is lack of user acceptance due to perceived incompatibilities between the TAAF-X concept and training situations. Certain implementation strategies address both of these general problems, while others address only one.

Growing Analyst Workloads

The number one impediment to implementing the TAAF-X concept is the large and growing analyst workload. The U.S. Army is already at a point where heavy requirements result in a situation where AAR aids are produced for battalion and brigade levels at the expense of company AARs. Additional exercise control

and feedback duties required to support new operational systems will make the situation worse. Requiring analysts to assume AAR preparation duties for additional units or for a greater number of OCs than they currently support does not make sense unless we can reduce the analyst's workload through the application of automation.

As part of the current study, we revisited the ATESC, CRIOT and A3RM studies to produce an electronic Analyst Task Database that supports wargaming of TAAF-X implementation concepts. The database is a tool that gives the user an indication of how a specific strategy or a combination of strategies will assist in reducing analyst workloads and solving problems associated with TAAF-X implementation.

This database integrates information on 138 analyst functions, TAAF-X implementation problems, and ATESC/CRIOT/A3RM/TAAF-X intervention strategies influencing analyst workloads. We used Microsoft™ Access 97 and Microsoft™ Excel to create the database. Trial applications of the database found that combinations of interventions can be used to automate a substantial number of analyst functions in whole or in part.

Concern that Standardization will Reduce Ability to Support Specific Exercises.

A degree of AAR aid standardization is necessary in order to apply automation in reducing workloads, but potential user acceptance problems emerge when standardization is recommended. Analysts and OCs at NTC and JRTC were very concerned about losing their capability to create AAR products "as needed". Analysts and OCs saw the concept of having only the option to select specific types of AAR products from a list as reducing their flexibility and effectiveness. Additionally, they stated that with every rotation they come up with a new requirement for an AAR aid that is different from what they have on file. Analysts reported that they need the capability to tailor aids to the specific event. Analysts said that they often construct an AAR aid showing what happened during an exercise, and then modify the aid by adding graphics and text questions that would support the OC's planned use of the AAR aid. Analysts reported that no matter how comprehensive the proposed standardized AAR aid list could become, there would still be a need to modify the AAR aid to support and clarify the OCs specific intent for the AAR presentations. Analysts stated that the AAR process was highly fluid in the preparation phase in support of the OC. The inability to modify the AAR products in a timely manner before AAR presentations, as required, would reduce the quality of support to the trained units.

One strategy for addressing this problem is to include an editing capability for the "standardized" menus of AAR aids that matches the variety of editorial changes OCs are likely to want. A second strategy is to be prepared to have TAAF-X analysts spend up to a certain portion of their time preparing requested, unique AAR aids for an exercise. (The OC requesting the aid could possibly identify a new type of aid that TAAF-X adopts if it meets an information need not being met by existing aids.)

Distractions in Home station Training will Lead to Inefficient use of TAAF-X

Army units plan training in cycles based on the Green, Amber and Red time management system as stated in Field Manual (FM) 25-100 and FM 25-101 (Department of the Army, 1988 and 1990). This system specifies what should be the priority of training during each cycle. During the Green training cycle, units focus on collective task training at multi-echelon unit levels. The unit maximizes soldier participation in mission essential task list (METL) training during the green cycle. Priority of training resources such as major training areas, local training areas, and key training ranges are provided to units in the green cycle and administrative support requirements are kept to a minimum. A home station unit in the Green cycle should be totally dedicated to training collective tasks that support the METL. Typical activities during a Green cycle include gunnery qualifications, field training exercises, combined arms live fire exercises, and planned rotations to one of the MCTCs. The Green cycle is also be the logical place for commanders to schedule the use of TAAF-X for training at home stations.

Despite the use of long and short range planning under the cycle system, units still have distractions that affect training (Holz, Hiller and McFann, 1994; Government Accounting Office, 1999). Analysts said that training distractions

are increasing, further reducing unit training time. A Senior OC at the NTC stated that "there used to be three training cycles (Green, Amber, Red) and now there are only two, Red and Green". In one instance a unit had trained, prepared and spent resources for their "warfighting" NTC rotation only to be diverted for peacekeeping duty in Bosnia. This is a drastic example, but the same process could happen when scheduling training with the TAAF-X facility. Personnel shortages, reduction of training funds, and increased OPTEMPO for units have increased the training distractions in units at all levels.

TAAF-X can use down time resulting from cancellation of exercises to prepare lessons learned reports in cooperation with the Center for Army Lessons Learned (CALL). An important function of MCTC analysts is to provide information gatherers with observations and findings regarding trends in performance, but heavy training workloads greatly reduce the time available to support this function.

Unit Leaders may not Want Information About Their Unit's Performance Going to a Central Site

The MCTCs protect information on the results of unit performance. They purposefully remove unit identification information they send to CALL for lessons leaned analyses. Similarly, although not sent to CALL, home station training performance information stays in command channels at the home station location. Protecting unit anonymity under the TAAF-X concept will require a well thought out process. The TAAF-X will have real time unit data from all over the world that could be compromised without the proper technical and procedural safeguards. Information created at a remote location and sent over some type of long-haul communications network concerning unit performance may be of concern to commanders.

The Need to Consider Differences Among Training Sites may Overwhelm TAAF-X Analysts

TAAF-X implementation involves porting a process that works well in one environment to a more complex environment. TAAF-X analysts at the MCTCs are highly familiar with the terrain on which exercises are conducted. They know, for example, that if a unit selects certain routes of advance that it is likely to be engaged early by the opposition force. The experience of the analyst is critical also in anticipating problem areas based on the terrain of the CTC. This may translate into knowing that there are communications problems in certain areas in the training area. The analyst will anticipate potential problems with communications, observe, and possibly produce AAR products based on how the unit reacts to overcome the problems. Armed with this knowledge, OCs and analysts will be prepared to observe and illustrate key unit actions for the AAR. Under the TAAF-X concept, an analyst is likely to support exercises on terrain that is largely unfamiliar to the analyst. An analyst may even be required to support two such exercises concurrently.

The use of local analysts as intermediaries between OCs and TAAF-X can help to address the information shortfall of TAAF-X analysts regarding specific training sites. Another strategy for addressing this problem is to restrict the number of training areas with which an analyst normally works, but this complicates the process of scheduling TAAF-X support. A second, less disruptive strategy, is to prepare a database with training-area-specific information (locations normally used for defensive positions, etc.) for use by TAAF-X analysts.

Terminology for AAR Aids and Organization of Analyst Cells Vary Among MCTCs.

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The terminology used to describe AAR products differs across MCTCs. For example, an AAR product showing an animation of the units moving in an engagement is called a "hyper" AAR aid at NTC. The same type AAR aid at JRTC is called a "flip book" AAR aid. TAAF-X personnel cannot reasonably be expected to understand terms for three different MCTC locations plus all of the home stations when referring to AAR products.

The problem of lack of standardization extends to the organizations of analyst cells at the MCTCs. Analysts are task organized into cells to support OCs, and the structure of the cells differs among MCTCs. The standardization of the terminology and organizations of cells at the MCTCs and home stations will improve the TAAF-X's ability to support all units.

Potential Problems Adjusting TAAF-X Staffing to Match Workloads

Staffing of MCTC training analysis facilities is currently adjusted to match workloads by having analysts work long days during rotations and providing compensatory time off between rotations. During rotations, staffing is also adjusted so that more analysts are available during mission execution and fewer are available during planning and preparation phases. Long work days make it possible for the same analyst to track unit performance during a mission and then participate in the AAR preparation process. Sustained involvement with the same unit also helps the analyst contribute to THP preparation. These patterns of analyst involvement will be hard to duplicate in a situation where an analyst may be required to support multiple training sites, with sites differing in terms of the day on which field training is initiated and the start times for specific exercises. JRTC analysts suggested that it may be necessary to run three eight hour shifts of analysts at a TAAF-X to address the loss of the ability to employ the massed workload/ compensatory time strategy. This approach creates problems providing analyst continuity in terms of supporting specific units and exercises.

One strategy that will allow continuity of analysts supporting an exercise is to create a TAAF-X cell for each exercise, coordinating local analyst duty times and manning with TAAF-X duty times and manning. This approach also makes it possible to adjust TAAF-X staffing to fit day to day requirements. A drawback to this approach is that the unit's training schedule may change at the last moment so that the schedules of TAAF-X analysts no longer match unit needs.

Delays in Receipt of AAR Materials May Occur if There are Communications Problems with TAAF-X

The TAAF-X concept involves transferring the responsibility for producing AAR products from local sites to centralized TAAF-X facility. This process will make OCs and local analysts totally dependent upon TAAF-X for AAR products. MCTC OCs and analysts are very concerned about access to the TAAF-X analysts that support them and the ability of TAAF-X to deliver timely AAR products. Their concern about access to the TAAF-X analyst was that there may be trouble "getting in contact" with them considering so many other locations would be supported concurrently by the TAAF-X analyst. Additionally, analysts and OCs are concerned about alternatives if there is a communications failure between the TAAF-X and the training site. In the case of a communications failure they would have no capability to support units with AAR products.

One way of addressing this problem is to provide each local training site with software capable of automatically generating candidate AAR aids. In order for local analysts to support exercise control functions they will need to have a workstation capable of displaying exercise data. The cost of giving local sites the same software used by TAAF-X to automatically generate candidate AAR aids is likely to be quite small, but it increases the level of AAR aid preparation expertise that will be required of local analysts. The level of expertise required depends upon the degree to which local analysts are expected to tailor the candidate AAR aids.

Lack of a Habitual Relationship Between OCs and Analysts.

To some extent, the great degree of success enjoyed by having analysts support OCs at MCTCs comes from the fact that this is a habitual relationship. This habitual relationship cannot be duplicated at home stations, and it cannot be duplicated at MCTCs under the TAAF-X concept. Personnel are assigned as OCs at MCTCs for a minimum of two to three years. Additionally, the majority of the analysts at MCTCs are civilian contractors with some stability and experience in the position. This system allows the OC and TAF analyst to become familiar with each other. The analyst becomes familiar with the OC's priorities in observing units and can anticipate the need for specific AAR products. After working with an OC, the analyst may know, for example, that the OC always wants a top down view AAR aid showing the unit's positions when crossing the line of departure. In this case the analyst would automatically construct the AAR without causing the OC to request it, thus saving time for the OC.

The relationship between OCs at home station and a particular TAAF-X analyst would likely be

limited to a single exercise. Further, the OCs that support home station exercises are currently not trained as OCs, and only perform their duties for the duration of the exercise.

Having a local analyst connecting OCs at home station with TAAF-X analysts can help replace some elements of the habitual relationship, if the local analysts have a relatively permanent position. That is, the local analyst would have knowledge of the local training situation and yet be familiar with the process of working with TAAF-X analysts.

The current concept for home station instrumentation does not address manning of the system by analysts. This could potentially mean that both the OCs and analysts at home station could be temporary and work together for the duration of an exercise only. This makes the advantages of a habitual relationship impossible to achieve. This will also increase the workload in communications between the OC and home station analyst, and between the local analyst and the TAAF-X analyst to support the units needs for AAR products. The untrained home station analyst may have problems effectively communicating AAR product requests to the TAAF-X analyst. Additionally, if the home station analyst is temporary there is no possibility to build an experience base and reputation for competence in the job. This will cause turbulence and lack of confidence in the analyst and reduce the effectiveness of training support to units.

Analysts and OCs at the NTC stated the habitual relationship between them is helpful in streamlining operations but not a critical requirement. This is an issue that warrants further examination.

It is unlikely that any solution can be devised that will provide the same level of OC/analyst rapport currently found at MCTCs. To the extent that local analyst positions are made to be relatively permanent, a degree of indirect rapport can be established between OCs and TAAF-X analysts through local analysts.

TAAF-X Analysts may be Overwhelmed with AAR Product Requests

During certain phases of the battle, several MCTC and home station analysts may be requesting AAR product support from the TAAF-X analyst at the same time. The MCTC and home station analysts could be requesting multiple AAR products of the same type or a number of different AAR product types. The TAAF-X analyst must respond to the information to support the AAR requests and could be overwhelmed. To illustrate how the TAAF-X analyst could be overwhelmed let's use the example of a TAAF-X analyst supporting three MCTC/home station analysts at the same location. While supporting the three MCTC/home station analysts, the TAAF-X analyst receives a request for three AAR products from MCTC analyst # 1. While taking information to support specific AAR needs for MCTC analyst # 1, the TAAF-X analyst receives a call from MCTC analyst # 2. for five AAR products. At this point the TAAF-X analyst asks MCTC analyst # 2 to wait. The TAAF-X analyst finishes gathering information from MCTC analyst # 1 information, then takes the information from MCTC analyst # 2, and begins working on AAR products. Next there is a call from MCTC TAF analyst # 3. To take the required information from the MCTC TAF analyst # 3, the TAAF-X analyst must stop work on the other requests. A pace like this could easily cause the TAAF-X analyst to make mistakes in AAR production, and could easily overwhelm the analyst.

AAR aid preparation activity for an exercise is most intense from a point late in the exercise until the time the AAR begins. The exercises assigned to a specific TAAF-X analyst or TAAF-X analyst cell need to be dispersed in time to minimize overlap during the most frantic AAR aid preparation periods. In addition tools will be needed to help TAAF-X analysts track AAR aid preparation activities for multiple exercises concurrently.

ADDITIONAL FEEDBACK FROM ANALYSTS

Portions of the study results were briefed to the Analytic Support to Training Working Group at the 68th Military Operations Research Society (MORS) Symposium. An important question raised by a member of the audience is whether it is more efficient to have the analysts most experienced in tactics to be at the local training site rather than at the TAAF-X. Under this approach, the role of TAAF-X analysts would be limited to editing candidate AAR aids in

response to requests from OCs and local analysts.

Under this approach, analysts at the TAAF-X would not be required to become involved in the tactical details of a specific exercise. This approach would remove the requirement for analysts at the TAAF-X to be familiar with the training situation at a particular local site, remove the need to tailor TAAF-X staffing to match the training schedules of specific units, make local training sites be more self sufficient if communication problems with TAAF-X occur, and reduce problems associated with having sensitive data sent outside the local chain of command. This approach might also allow for more efficient use of TAAF-X analysts to allow an overall reduction in the number of analysts (local plus TAAF-X) needed to support training. A potential drawback presented by this approach from the staffing perspective is that there is no role for soldiers temporarily assigned to serve analytical functions. The job tasks performed at local sites and at the TAAF-X would require substantial expertise. Another drawback is that the human tactical experience link between MCTCs and home stations would not be offered by the TAAF-X.

SUMMARY AND CONCLUSIONS

We refined the TAAF-X concept to require OCs to be supported by both local and TAAF-X analysts. Local analysts would help OCs perform exercise control functions and act as intermediaries between OCs and TAAF-X analysts for AAR aid preparation activities. Through the development of improved TES and instrumentation, the Army can reduce the exercise control and data recording activities of local analysts to enable a substantial reduction in the analyst to OC ratio.
The development of common instrumentation architecture across training sites, combined with tools for automated AAR aid generation, can increase the number of AAR aids a TAAF-X analyst is capable of preparing per unit of time.

The use of experienced local analysts can help to address many problems implementing the TAAF-X concept. Local analysts having experience with the local training site can provide TAAF-X analysts with information about local training areas and the operational equipment available to the unit being trained. Local analysts, if assigned to this function for extended periods, can gain a rapport with TAAF-X as well as establishing a local reputation for their ability to support training. Local analysts can also produce AAR aids on an emergency basis, although the quality of the aids may not match that of those produced by a TAAF-X.

The need to gain a reduction in the ratio of analysts to units trained through the centralization of analytic functions becomes less crucial as automation itself is used to reduce the workloads of analysts. Whether or not there is an additional personnel cost savings to be gained from centralizing analytic functions at a TAAF-X probably depends upon the extent to which units at home station can adhere to training schedules. The benefits that are most likely to be gained by centralizing TAAF-X functions are those associated with having the same personnel support training at both MCTCs and home stations; linking MCTC and home station environments, improving the quality of training feedback, and reducing the need for home stations to train analysts to perform AAR preparation activities

Few of the costs of research and development needed to implement and test the TAAF-X concept are unique to TAAF-X. Most of the technical research and development needed to implement the TAAF-X concept is beneficial in its own right, because it involves using automation to reduce workloads and improve the quality of training. Most of the behavioral research and development needed to insure user acceptance of the TAAF-X concept is also required to support user acceptance of new instrumentation systems, independent of the TAAF-X concept.

A variable that needs to be explored in greater detail is whether it is best to locate the most experienced tactical analysts at local sites rather than at the TAAF-X. This approach helps to address many problems associated with implementing the TAAF-X concept, but it also requires a higher standard for overall (i.e., local plus TAAF-X) staffing requirements. This approach removes an important component of the human link between MCTC and home station training offered when the tactical expertise of analysts is concentrated at the TAAF-X, but it may provide the highest quality of AAR aids.

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