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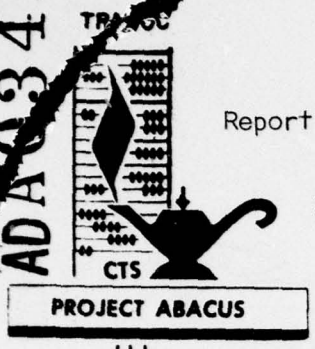
THIRD YEAR STATUS REPORT. COMPUTERIZED TRAINING SYSTEMS PROJECT. PROJECT ABACUS

ARMY TRAINING SUPPORT ACTIVITY
FORT GORDON, GEORGIA

1 AUGUST 1975



Report CTSD - TR - 75-4

AD_____

THIRD YEAR STATUS REPORT
COMPUTERIZED TRAINING SYSTEMS PROJECT
PROJECT ABACUS

Donald A. Kimberlin

Technical Application Staff
Computerized Training Systems Directorate
US Army Training Support Activity
Fort Gordon, Georgia 30905

1 August 1975

Approved for public release:
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Prepared for:
US Army Training and Doctrine Command
Fort Monroe, Virginia 23651

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Computerized Training Systems Directorate
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US Army Training and Doctrine Command
Fort Monroe, Virginia 23651

13. ABSTRACT

This report covers the actions which have transpired during the third year of Project ABACUS, the Army's program for the development of a Computerized Training System. It includes a narrative summary, key documents, and amplifying annexes.

As a historical document, it will be utilized in preparation of the final project report. It is also meant to provide the current reader with an understanding of how the project has moved to its present position, and what actions are anticipated to be completed in the near future.

DD FORM 1473, 1 JAN 64, WHICH IS

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Instructional Strategies						
Instructional Models						
Training Technology						
Educational Technology						
Curriculum Development						
Training						
Military Training						
Computer Assisted Instruction						
Computer Managed Instruction						
Self-paced Training						

NOTICES

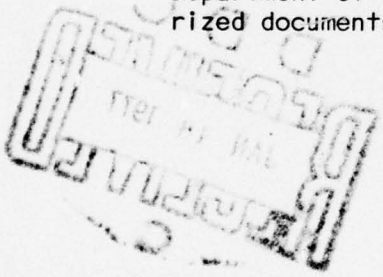
This report has been reviewed and is approved.

FRANK E. GIUNTI
Director, Computerized Training
Systems Directorate

G. B. HOWARD
Colonel, Signal Corps
Product Manager, Computerized
Training Systems Directorate

Disclaimer

The contents of this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.



Disposition

Destroy this report when it is no longer needed. Do not return it to the originator.

FOREWORD

This report covers the actions that have transpired during the third year of Project ABACUS, the Army's program for the development of a prototype Computerized Training System. It includes a narrative summary, key documents, and amplifying annexes.

As a historical document, it will be utilized in preparation of the final project report. It is also meant to provide the current reader with an understanding of the progress to date of Project ABACUS, its present position, and what actions are anticipated to be completed in the near future.

ROBERT G. FOSTER
LTC, SigC
Program Director, Project ABACUS

TABLE OF CONTENTS

I. INTRODUCTION

The mission of Project ABACUS is to design, develop, test and evaluate a 128-terminal Computerized Training System (CTS), utilizing the multi-minicomputer concept. At the conclusion of three years, the project is progressing satisfactorily.

II. BACKGROUND

The events leading to the implementation of the CTS project and the project progress through the first two years are documented in CTS Report TR-73-4 "One Year Status Report, Computerized Training System Project, Project ABACUS" dated 1 August 1973 and CTS Report TR-74-4 "Second Year Status Report, Computerized Training System Project, Project ABACUS" dated 1 August 1974.

The Product Manager Charter and the DA Management Plan were reviewed as required on the project's anniversary data of 1 August 1974. There were no changes made in either document.

The annual review of the Memorandum of Understanding (MOU) between the Product Manager (PM) and the Commandant, United States Army Signal School (USASIGS), was made and the new MOU was approved and signed. A copy is at Annex A. Significant changes to the MOU are as follows:

a. Designation of the US Army Southeastern Signal School (USASESS) to the US Army Signal School (USASIGS).

b. Designation of the Computerized Training System to Project ABACUS.

c. The Product Manager, CTS, assumes responsibility for funding and programming for FY75 and FY76 as pertains to hardware, software, contracting change orders, systems maintenance, and communications installation.

The Commandant, USASIGS, will provide FY75/76 O&MA funds for normal operating supplies, computer consumables, and magnetic device media.

The mission and functions of Project ABACUS remain unchanged as described at Annex A.

III. PERSONNEL

COL G.B. Howard has been designated Commander, US Army Training Support Activity (TSA), Fort Eustis, Virginia. He continues as Product Manager, CTS Project ABACUS. LTC Robert G. Foster is the Program Director and Contracting Officer Technical Representative (COTR), Project ABACUS, Fort Gordon, Georgia. Mr. Donald A. Kimberlin is the Chief,

Technical Applications Division and alternate COTR for Project ABACUS, Fort Gordon, Georgia. The Office of the Product Manager, Computerized Training Systems, Project ABACUS, Fort Monmouth, New Jersey, and the Training Aids Management Agency, Fort Eustis, Virginia, merged and consolidated to become the US Army Training Support Activity (TSA) on 1 July 1975. The present organizational relationships are shown in the TSA Organization Chart at Annex B.

The staffing for Project ABACUS, Fort Gordon, Georgia, provides for 10 military and 6 civilian spaces as shown at Annex C. Note that 3 positions, 2 military and 1 civilian, reside in TDA spaces within the Evaluation and Studies Office and Computerized Training Systems Directorate, TSA, Fort Eustis, Virginia, with duty station, Fort Gordon, Georgia. At the present time 13 military and 6 civilian personnel are assigned to the project with duty station at Fort Gordon, Georgia. A roster of personnel is at Annex D.

The excess military are programmers assigned to the project to keep programming support in all areas on schedule with the time-phase plan. The area of systems and applications programming was indicated as a potential problem area in the Second Year Status Report. The acquisition of these personnel serves to alleviate this problem. This is a one time, 7 man year programming effort.

IV. COMPUTER SYSTEM

Summary of procurement. The following is a summary of the major procurement actions that have been completed prior to and during the third year of the project. The actions described at subparagraphs f, g, and h below are the result of modification changes to the original CTS contract with GTE-Sylvania and were brought about by the Project ABACUS move to Fort Gordon, Georgia.

a. April 1973 - Request for a Proposal was issued to industry.

b. December 1973 - GTE-Sylvania was awarded the contract.

c. April 1974 - Initial computer system delivered to the Office of the Product Manager.

d. July 1974 - Initial 32-terminal display controller delivered to USASIGS.

e. May 1975 - Full, six processor multiminicomputer system was delivered and installed including 16 terminals. One hundred and twelve terminals were placed in local storage.

f. June 1975 - Communications study completed.

g. July 1975 - Communication and cabling contract negotiations.

h. July 1975 - FY76 Maintenance of CTS contract negotiations.

Status

The Phase I Acceptance Test of the initial 32-terminal system was run at the USASIGS in August 1974. The software performed to standards and was accepted. The central processor hardware did not perform to standards and has not yet been accepted. Also, there was a manufacturer keyboard error that has since been corrected. The Phase II Acceptance Test of the system, less the display controller at the USASIGS, was run at the GTE-Sylvania facility in Needham Heights, MA, in February 1975. The CLASS I language and much of the systems software were tested at this time. This hardware and software were accepted.

The project, as initially planned for implementation at USASCS, Fort Monmouth, New Jersey, was to be colocated in one building with the three selected courses. The consolidation of the Army Signal Schools at Fort Gordon, Georgia, has resulted in the computer system being located in a building separate from two of the courses selected at the USASIGS, Fort Gordon, Georgia. The computer system is located in Moran Hall, with terminals located in Moran Hall, Brant Hall, and Greely Hall. This has increased terminal communication requirements relative to cabling and the electromagnetic environment not planned in the original installation. To date, a study has been made and it has been determined that: subterranean cable construction is required between buildings since there is no existing duct work available; and, amplifiers and isolation transformers are required to stabilize the signal circuits between the computer and the remote terminals. The results and recommendations of the study have served as a basis for the following on-going actions:

a. Modifying of the original GTE-Sylvania contract.

b. Obtaining the necessary funding required.

c. Negotiating the contract changes with GTE-Sylvania and US Army Computer Systems Support and Evaluation Agency (CSSEA).

These actions will enable GTE-Sylvania to install the required communications for the CTS. Additionally, a contract has been negotiated for the cabling required for the linkup of the three buildings, and the

cable has been ordered. The inside and outside cable installation is to be done by the US Army Communications Command at no cost to the project.

A fixed-fee maintenance contract has been negotiated to provide system maintenance for the next fiscal year.

The Phase III Acceptance Test has been rescheduled to take place after all 128 terminals have been connected. It is anticipated that this will be February 1976.

To date, GTE-Sylvania has provided all the training required by the contract. In addition to this training, Project ABACUS personnel, under a separate contract with Digital Equipment Corporation, received a special two week programming course on the RSX-11D operating system used with the CTS. This training was done on site at Fort Gordon, Georgia.

The current status of computer system contract is at Annex E.

V. COURSE DEVELOPMENT

Course development has not progressed as rapidly as expected at the time of the publication of the 2nd Year Status Report. The failure to progress as anticipated can be directly attributed to a number of significant events that occurred in the second year but did not impact until the third year of the project. Major among these events was the move of the project to USASIGS, Fort Gordon, Georgia. Some of the results of this move were: the requirement to select three different courses for implementation; establishment of a task group at USASIGS; movement and recruitment of personnel required to establish a CTS field office; and the need to train personnel at the USASIGS in CTS course development during the critical initial stages of the project.

There are several problems that have contributed to course development delays that are endemic in an operational, military school environment. Among these problems are the changes in course programs of instruction because of changing training requirements and doctrine. A case in point is the revision of the Teletypewriter Repair Course, MOS 31J20. After approximately a year of development, the POI was changed to accomodate new equipment. This resulted in the obsolescence of a significant quantity of prepared lesson material.

Another problem that is common in a military environment is the change in personnel due to transfers, reassignments, and expiration of terms of service. This personnel turbulance necessitates an on-going training program to prepare new personnel for their duties with a CTS course development project.

A significant amount of lesson material has been prepared for entry into the system in spite of the problems alluded to in the preceeding paragraphs. However, there have been a number of factors that have delayed the entry of the lesson material into the computer system. These factors were: the delay in site preparation for the full 128 terminal system at Fort Gordon, Georgia; data file structure of the initial 32 terminal system installed at Fort Gordon was not compatible with the file structure of the final system and a conversion routine had not been prepared; poor system reliability of the CTS on-site at Fort Gordon, Georgia, after the move from the contractor's facility; and the lack of entry specialists for on-line entry of prepared lesson material.

The effects of the above cited events and problems have had a serious impact on the original milestones in the time-phase plan for course development. This has necessitated the establishment of new implementation dates for the three courses. These dates are as follows:

Course	Original Date	Present Date
MOS 31E20	August 1975	April 1976
MOS 31J20	October 1975	June 1976
MOS 35L20	November 1975	July 1976

The presently planned implementation dates were established predicated upon the system being installed in the fourth quarter of 1975. However, the rescheduled Phase III Acceptance Test date may cause the present implementation schedule to be reconsidered.

The current status of course development is at Annex E.

VI. SYSTEMS AND APPLICATIONS PROGRAMMING

The original programming responsibility of the CTS Field Office encompassed only the preparation of the data items and the automated data collection routines and reports required to support the project evaluation. After the loss of key personnel in the Programming and Systems Operations Division, CTS Product Manager's Office, Fort Monmouth, NJ, it was deemed necessary to transfer the system and applications programming effort and its responsibilities to the CTS Field Office.

The systems and applications programming effort commenced in September 1974, with the assignment of the ADPS Operations Officer to the CTS Field Office.

The Project ABACUS programming responsibility encompasses the following:

a. Prepare the applications programs required to interface the CTS with the on-going training program.

b. Prepare the macro routines required to implement the instructional decision making strategies designed within the instructional model which also collect real-time student data. These data are used to generate the necessary records and reports.

c. Generate reports required for the academic records, and course development.

d. Prepare the automated data collection routines required for course development and resource allocation.

e. Perform the systems programming required to modify, update, or generate changes to the CTS operating software and the CLASS I language systems.

The systems and applications programming staff was complete by May 1975. However, the ADPS Operations Officer is scheduled as a loss by September 1975. His replacement has been requisitioned and will be aboard by October 1975.

The work is progressing satisfactorily in this element of the project. An outline of the current status of this programming effort is at Annex E.

VII. PROJECT EVALUATION

The Preliminary Evaluation Plan has been updated and modified to an Operational Test Plan. Due to its preliminary nature and the number of changes incurred by the project since the initial evaluation plan was prepared, this modification was considered appropriate. Some of the project changes which impacted on the evaluation were the relocation of the project; selection of different courses of instruction with an attendant change from "lock-step" courses to "self-paced" courses; decrease in anticipated use of tutorial computer applications; and a new emphasis on Computer Managed Instruction (CMI). The main effects of these changes have been to shift the evaluation from a rigorous "lab" test of CAI to a predominant operational test of CMI. It is anticipated that the Operational Test Plan will be available in the October 1975 time frame.

Despite the changes to the evaluation plan, certain data items will be required to determine attitudes, course development time, and a number of other aspects of training and system (hardware/software) effectiveness. These data items have been stabilized based on known requirements. The

surveys for students and instructors in the on-going, self-paced courses and the CTS instructional programmers have been completed and are being administered. Other attitude questionnaires and surveys for system programmers, console operators, school staff personnel, and course management personnel are in draft stage for later use as required. Samples of these questionnaires are at Annex F and Annex G.

Student base-line data has been collected since August 1974. This data will be used to assist in determining the training effectiveness of CTS. Although course changes have taken place, a substantial core of material will be available for a valid comparison of training effectiveness between the current self-paced training programs and the CTS. Data collection will continue until a sufficient amount is accumulated to provide a valid sampling base. A number of aspects of the training effectiveness and system operational test have been expressed in the form of goals/objectives. These goals/objectives and their collection methodology have been incorporated into the operational test plan. The training effectiveness data items and methodology of collection are at Annex H.

The cost analysis aspect of Project ABACUS is being conducted in three phases: developmental, capital, and operational cost phases. Collection of data for the developmental phase is complete and capital costs are currently being tabulated. From a larger perspective, the cost analysis will encompass descriptive costs (budget/accounting), comparative costs (effectiveness/benefits), and predictive costs (extrapolation/forecasting). This analysis referred to as the Cost and Operational Effectiveness Analysis (COEA) represents one of the major portions of the operational test plan (i.e., the "proving" phase). The other major and larger section is the data analysis of how the system performed including problems encountered (i.e., the "improving" phase). Both sections will make recommendations for the future of Project ABACUS.

VIII. CONCLUSION

Taken in perspective, Project ABACUS is progressing at a satisfactory rate.

There have been a number of events relative to relocation, course POI stability, site preparation, system failure, terminal communications, et al, that have been addressed and their impact on the project assessed. Each event, taken individually, would not have been a serious obstacle, but in aggregate, has proved to be too formidable to overcome within the present time phasing of the project. No extension of the 4-year time schedule has been requested. However, as the project enters the fourth

year, it is imperative that an assessment be made with the objective of making the determination of the impact of events and preparing a realistic adjustment of milestones.

As the project progresses, it becomes ever more apparent that fielding this prototype CTS in a dynamic, operational school environment will provide experience and lessons in dealing with problems that would never arise in a research milieu. These experiences and lessons learned will prove invaluable in closing the research-user gap.

ANNEX A

MEMORANDUM OF UNDERSTANDING

BETWEEN

Product Manager
Computerized Training System
Fort Monmouth, New Jersey

Commandant
US Army Signal School
Fort Gordon, Georgia

1. INTRODUCTION:

a. References:

(1) USASESS Reg 10-2, subject: Organization, Mission and Functions, dated July 1973.

(2) Prototype Computerized Training System Management Plan (as revised 13 Nov 73).

(3) Product Manager Charter, Prototype Computerized Training System (as revised 5 Nov 73).

(4) *Letter*, ATSN-CTS, USASCS, 29 Nov 73, subject: Designation of Courses for Prototype Computerized Training System (CTS), with 1st Ind, ATTS-ITR, TRADOC, 11 Dec 73.

b. In accordance with cited references, this Memorandum of Understanding delineates responsibilities, command and control channels, and procedures to be followed in the operational test and evaluation of a Prototype Computerized Training System (Project ABACUS) by the Office of the Product Manager, Fort Monmouth, and the US Army Signal School (USASIGS), Fort Gordon, Georgia.

2. GENERAL RESPONSIBILITIES:

a. The Commandant, USASIGS, reference 1a (1), is responsible for preparing, conducting and administering course of instruction/programs of instruction (POI).

b. The Commandant, USASIGS, reference 1a (2), is responsible for monitoring and supporting the three courses reference 1a (4) involved in the operational phase of Project ABACUS for the Product Manager.

c. The Product Manager, CTS, reference 1a (3), is responsible for the design, hardware/software development, course development, operation, and evaluation of Project ABACUS. In this capacity the Product Manager, CTS, will advise the Commandant, USASIGS, during the operational test period in those areas of responsibility as they apply to the operational test and evaluation.

3. DETAILED RESPONSIBILITIES:

a. The Product Manager, CTS, will:

(1) Procure, deliver, install and conduct the acceptance test of the hardware/software system for operation at USASIGS, Fort Gordon.

(2) Provide necessary interfacing between USASIGS and other activities, elements, and contractors in matters pertaining to the prototype operational test and evaluation.

(3) Develop the evaluation plan; designate data to be recorded and required format; collect and analyze test data and prepare the formative, interim, and final evaluation reports.

(4) Prepare appropriate program and planning documents as required by and for submission to higher headquarters. Documents applicable to the operational test and evaluation will be coordinated with the Commandant, USASIGS. The final document shall include Commandant, USASIGS concurrence/comments.

(5) Establish and provide to the Commandant, USASIGS, operational test facilities requirements.

(6) Provide a training program for USASIGS system and course personnel in the system, the instructional model, and course development techniques.

(7) Establish and maintain a field office at USASIGS, Fort Gordon, with the missions and functions and phased personnel augmentation as set forth at Inclosure 1. The organizational relationships between the field office and the USASIGS task group are as indicated at Inclosure 3.

b. The Commandant, USASIGS, will:

(1) Provide appropriate facilities for the operational test in accordance with requirements established by the Product Manager.

(2) Coordinate with appropriate Fort Gordon activities to support the installation of the hardware/software system at Fort Gordon, as required by the Product Manager.

(3) Provide administrative support for the acceptance testing at Fort Gordon, as required by the Product Manager.

(4) Operate and maintain the hardware/software system after the final contract acceptance of the system by the Product Manager until the conclusion of the operational test and evaluation with the monitorship and advice of the Product Manager.

(5) Plan, program and budget additional system capacity not required by the operational test and evaluation. Any additional use of the system in this manner will be limited to Project ABACUS applications to be jointly concurred in. The Product Manager CTS will retain approval authority for recommended system use that is in addition to the test and evaluation.

(6) Accept full responsibility for the system established at Fort Gordon at the conclusion of the operational test and evaluation for use in accordance with TRADOC regulations in effect at that time.

(7) Provide the USASIGS Task Group leader and implementation staff as indicated at Inclosure 2 to conduct the course development and operational test of the prototype system.

(8) Prepare, conduct and administer the POI for the operational test and evaluation with the advice and monitorship of the Product Manager.

(9) Record evaluation data under specified training/testing conditions in the required format as designated by the Product Manager.

(10) Provide administrative working space for the PMO field liaison office and coordinate normal post support.

4. OTHER:

a. Funding: Product Manager, CTS, is responsible for programming and funding for FY 1975 and 1976 as pertains to: hardware and computer software acquisition and associated contract change orders, systems maintenance, interconnecting video and signal cables between the display controller and student terminals. The Commandant, USASIGS, will provide FY 75/76 O&MA funds for normal operating supplies, computer consumables, and magnetic devices (i.e., magnetic tape, discs, and disc packs). The Commandant will also provide for system operations and maintenance effective 1 July 1976.

b. Responsibilities for items not specifically covered in this Memorandum of Understanding will be resolved by mutual coordination.

c. This Memorandum of Understanding is subject to review and revision on the anniversary date of the Product Manager Charter or when major program changes are made by higher headquarters.

d. This Memorandum of Understanding is effective on date of signing by the Product Manager, CTS and Commandant, USASIGS.

G. B. HOWARD, COL
PRODUCT MANAGER, CTS

DATE 4 December 1974

CHARLES R. MYER, MG
COMMANDANT, USASIGS

DATE 13 January 1975

3 Incl
as

Project ABACUS/CTS Field Office

Mission

Directs and coordinates the design, development, test and evaluation of Project ABACUS for Army training.

Functions

1. Serves as program director and principal advisor to the Product Manager for Project ABACUS.

2. Serves as liaison officer and principal advisor to the Commandant, USASIGS, on all matters relating to Project ABACUS design and development of courses and operational test and evaluation.

3. Monitors USASIGS participation in Project ABACUS.

4. Serves as COTR for the system contract.

5. Interfaces with the DA Steering Advisory Group (SAG), US Army Computer Systems Support and Evaluation Agency (CSSEA), US Army Research Institute (ARI), Human Resources Organization (HumRRO) and designated contractors and consultants.

6. Augments the course development and systems programming/operation capability of the Commandant, USASIGS, as regards Project ABACUS.

Proposed
Project ABACUS/CTS Field Office Composition

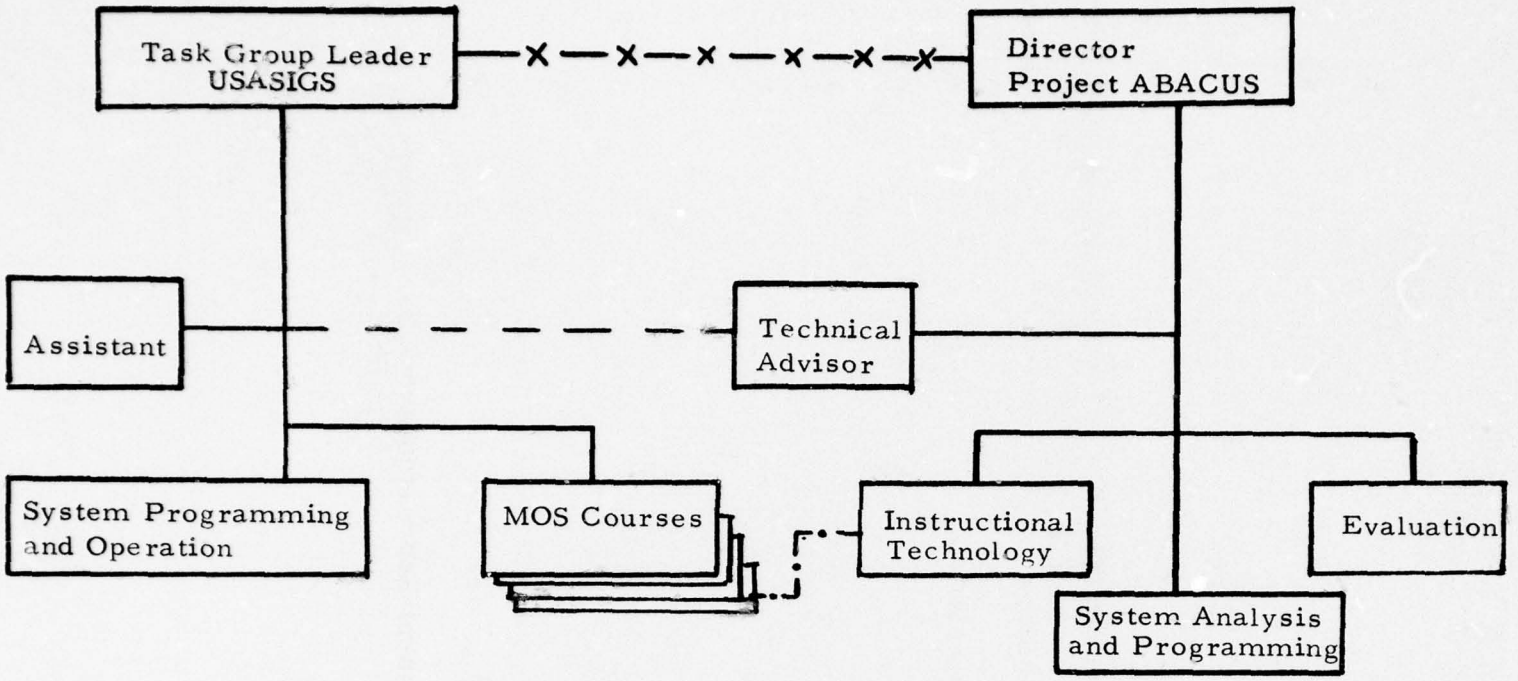
Position	Grade	MOS	Br	Req	Auth
Chief	05	04300	SC	1	1
Admin NCO	E7	31G40	SC	1	1
Clerk Typist	03	00322	GS	1	1
Instructional Tech Team					
Chief	13	01710	GS	1	1
Ed Spec	12	01710	GS	1	1
Ed Spec	11	01710	GS	2	2
Crse Writer	E7	32E40	SC	1	1
Crse Writer	E6	32E40	SC	1	1
Crse Writer	E6	31E40	SC	2	2
Crse Writer	E6	31J40	SC	2	2
System Prog Team					
Chief	03	02402	SC	1	1
Sr Prog Sp	E7	74F20	SC	1	1
Prog Sp	E6	74F20	SC	1	1
Eval Team					
Chief	12	01710	GS	1	1
Statistician Anal	02		SC	2	0
			TOTAL	19	17

USASIGS

CTS Task Group Composition/Representation

1.	Task Group Leader	
2.	31J Course	5
3.	31E Course	5
4.	35L Course	5
5.	Data Systems	
	a. Computer Programmers	5
	b. Computer operators	as required
	c. Educational specialists	2
6.	Staff Support	
	a. Curricula Br	1
	b. Evaluation Br	1
	c. Operations Br	1
	d. ETV Br	1
	e. Fac Dev Br	1
	f. Lib/Learning Center	1
7.	Academic Department Representatives	1

Operational Test and Evaluation
Organizational Relationships
USASIGS/CTS



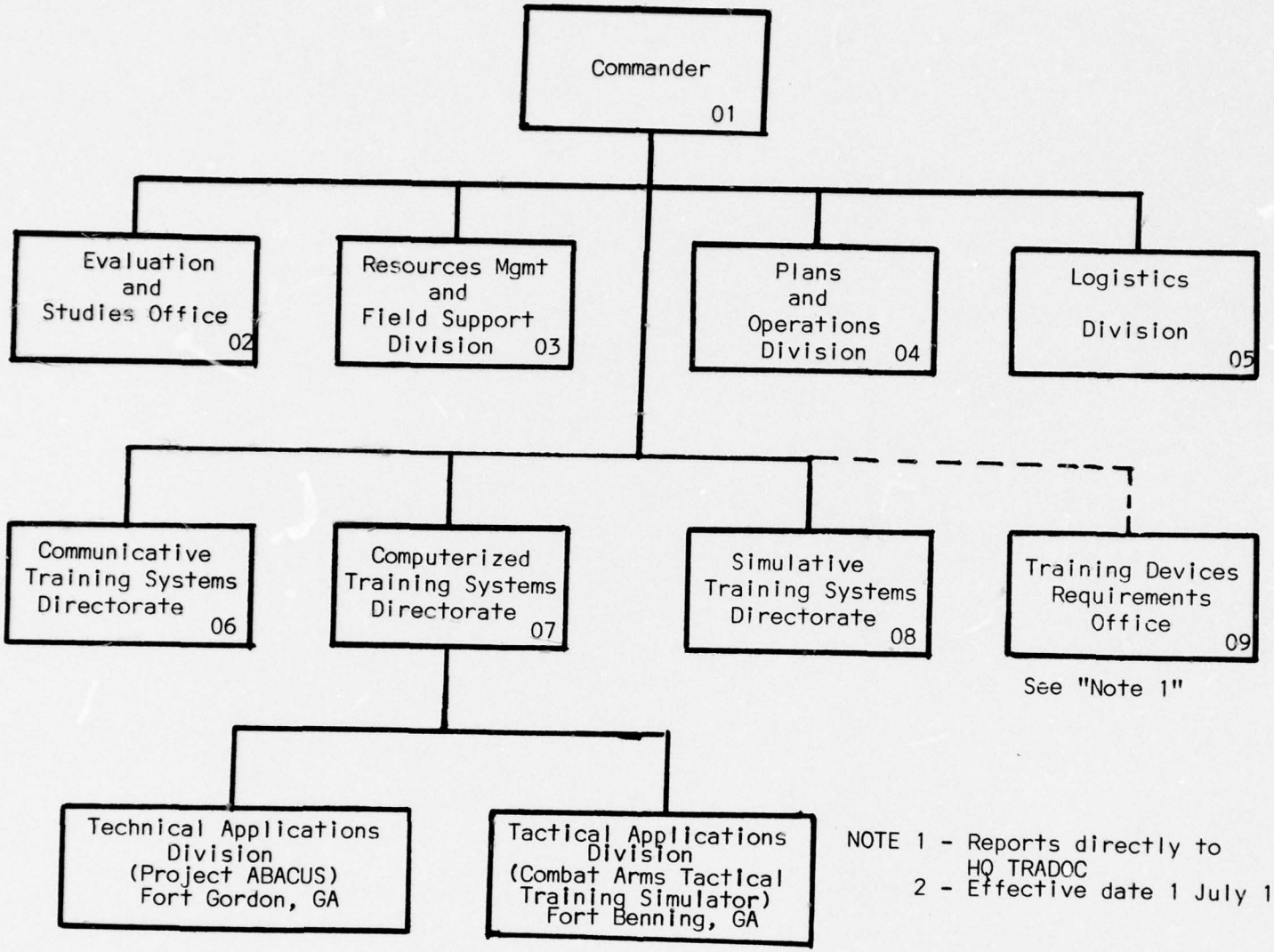
Command and Control

Monitor and Coordinate

Technical Advice

Augments course TM's under the operational control of USASIGS Task Group Leader.

US ARMY TRAINING SUPPORT ACTIVITY
ORGANIZATION CHART



NOTE 1 - Reports directly to HQ TRADOC
2 - Effective date 1 July 1975

ANNEX C

DETAILED TABLE OF DISTRIBUTION AND ALLOWANCES
SECTION II - ORGANIZATION

TDA NO. TCW3E9AA-
DATE 1 Jul 75 CCNUM TCO 176
TDA ☒ MTDA ☐

DESIGNATION

BASE FOR COMPUTATION OF CHANGES

INDEX PAR a	INDEX LINE b	DESCRIPTION c	GRADE d	MOS e	BR f	ID g	ARMY MGT STRUCTURE CODE h	REQ i	AUTH j	RMK k
07A	02	ADP Officer	04	02402	SC	O	818809734000	1	1	XG(1)
07C	01	Chief	13	01710	GS	C	818809734000	1	1	XG(2)
	02	ADP Officer	03	02402	NC	O	818809734000	1	1	XG(2)
	03	Instructional Programmer	E7	31E40	NC	E	818809734000	1	1	XG(2)
	04	Instructional Programmer	E7	31E40	NC	E	818809734000	1	1	XG(2)
	05	Instructional Programmer	E6	31E40	NC	E	818809734000	1	1	XG(2)
	06	Instructional Programmer	E6	31E40	NC	E	818809734000	1	1	XG(2)
	07	Instructional Programmer	E6	31E40	NC	E	818809734000	1	1	XG(2)
	08	Programmer	E6	74F40	NC	E	818809734000	2	2	XG(2)
	09	Education Specialist	12	01710	GS	C	818809734000	1	1	XG(2)
	10	Education Specialist	11	01710	GS	C	818809734000	2	2	XG(2)
	11	Clerk Typist	03	00322	GS	C	818809734000	1	1	XG(2)
02	05	Mathematics Assistant	E5	74E20	NC	E	818809734000	1	1	XG(3)
	06	Education Specialist	12	01710	GS	C	818809734000	1	1	XG(3)

XG - Duty Station at Fort Gordon, GA.

XG(1) - TDA position in Computerized Tng Systems Directorate

XG(2) - TDA position in Technical Applications Division

XG(3) - TDA position in Evaluation and Studies Office

ANNEX D

PERSONNEL ROSTER - PROJECT ABACUS

Name	Rank/ Grade	Job Title	Arrival Date: 1 Aug 74 / 1 Jan 75 / 31 Jul 75
ROBBINS, WILLIAM	LTC	Prog Dir	
FOSTER, ROBERT G.	LTC	Prog Dir	
KIMBERLIN, DONALD A.	GS-13	Chief, Tech Appl Div	
HARTMAN, LARRY K.	CPT	ADP Off	
HAINES, B. E.	GS-12	Ed Spec	
MUSSELWHITE, HARRY A	GS-12	Ed Spec	
ALTMAN, BRYAN D.	GS-11	Ed Spec	
LAMB, JANET M.	GS-11	Ed Spec	
BROWN, DONALD L.	SFC	Instr Prog	
BURNS, WILLIAM T.	SSG	Instr Prog	
DIXON, JOHN W. JR.	SSG	Instr Prog	
HOOKER, BERNARD L.JR	SSG	Instr Prog	
STOTTS, JAMES D.	SSG	Instr Prog	
DUNCAN, WILLIAM L.	SP5	Programmer	
HUTSKO, GARRETT L.	SP5	Programmer	
MALCOLM, VARA G.	SP5	Programmer	
MASHEY, JOEL A.	SP4	Programmer	
PEAK, EDWIN R. III	SP4	Programmer	
ZARSKY, DAVID J.	PV2	Programmer	
JANTZEN, RAILI A.	GS-3	Clk-Typist	

MONTHLY STATUS REPORTS PROJECT ABACUS
CONTRACT: DAHC26-74-C-0006 with GTE-Sylvania Inc. 31 Jul 75
START DATE: 26 December 1973

DESCRIPTION	ITEM	COMPLETION SCHEDULED	COMPLETION ACTUAL	REMARKS
Initial Subsystem	0001AA	Apr 74	May 74	
Display Control Subsystem	0001AB	Jul 74	Jun 75	See "Remark" for Acceptance Test, Phase I.
Other Hardware and Peripherals for Complete System	0001AC	Jan 75	Apr 75	
Software for 0001AA	0002AA	Apr 74	May 74	
Software for 0001AB	0002AB	Jul 74	Oct 74	
Complete Software w/Class I	0002AC	Jan 75	Apr 75	
Class I Training Course	0003AB	Jan 75	Jul 75	
Systems Training Course	0003AC	Jan 75	Jun 75	
Technical Data				
Administrative Management	0005AA	Oct 75		
Engineering and Configuration	0005AB	Oct 75		
Financial	0005AC	Oct 75		
Human Factors	0005AD	Oct 75		
Technical Publications	0005AE	Oct 75		
Procurement/Productions	0005AF	Oct 75		
System/Subsystem Analysis	0005AG	Oct 75		
Test	0005AH	Oct 75		
Disk Drive RK05-AA	0007	Apr 75	Apr 75	
Communications Study	0006	May 75	Jun 75	
Acceptance Test				
Phase I		Sep 74		Hardware not accepted. See "Remark" for Line Item 0001AB.
Phase II		Apr 75	Apr 75	
Phase III		Nov 75		
Communications Installation		Nov 75		

	PROGRAM ID	START DATE	START LEADER*	% COMPLETE	COMPLETION SCHEDULED	COMPLETION ACTUAL	REMARKS
COURSE DEVELOPMENT							
Written	31E	Feb 74	W. Whitaker	86	No interim		USASIGS re-
	31J	Feb 74	R. Burry	77	dates		sponsibility,
	35L	Feb 74	B. Wilkins	40			CTS augments.
Reviewed, Off line	31E	Feb 74		20	"		In process.
	31J	Feb 74		51	"		
	35L	Feb 74		0			
Coded	31E	Feb 74		85			
	31J	Feb 74		5			
	35L	Feb 74		40			
Stored, on data base	31E	Jun 75		0	15 Feb 76		
	31J	Jun 75		0	15 Apr 76		
	35L	Jun 75		0	15 May 76		
Validation	31E	15 Feb 76		0	1 Apr 76		
	31J	15 Apr 76		0	1 Jun 76		
	35L	15 May 76		0	1 Jul 76		
Convert to CTS	31E	1 Apr 76		0			
	31J	1 Jun 76		0			
	35L	1 Jun 76		0			
							*USASIGS Task Leader

	PROGRAM ID	ASSIGNED DATE	ASSIGNED PROGRAMMER	PRIORITY	COMPLETION SCHEDULED	COMPLETION ACTUAL	REMARKS
CLASS I Macros	PRINØ1	1 Mar 75	Malcolm/ Brown	1	1 Jun 75	30 May 75	
	PRPIØ1	"		1	"	"	
	PRMCØ1	"		1	"	"	
	PREVØ1	"		1	"	"	
	POINØ1	"		1	"	"	
	POPIØ1	"		1	"	"	
	POMCØ1	"		1	"	"	
	POEVØ1	"		1	"	"	
	UNINØ1	"		1	"	"	
	INCIØ1	"		1	"	"	
	UNTRØ1	"		1	"	"	
	LEINØ1	"		1	"	"	
	LEMCØ1	"		1	"	"	
	LENRØ1	"		1	"	"	
	LECRØ1	"		1	"	"	
	PFEVØ1	"		1	"	"	
	PRNRØ1	"		2	15 Jul 75	18 Jul 75	
	PRCRØ1	"		2	"	"	
	PONRØ1	"		2	"	"	
	POCRØ1	"		2	"	"	
	POEVØ2	"		2	"	"	
	PFEVØ3	"		2	"		Further study to determine if Class I can accomodate requirements.
	PRMCØ2	4 Aug 75	SFC Brown	2	11 Aug 75		New variations of existing macros.
	PRNQØ2			2	"		
	PRCRØ2			2	"		
	UNSOØ1			2	"		Picking up responsibility; contains data collection requirements.

MONTHLY STATUS REPORTS PROJECT ABACUS 31 Jul 75

	PROGRAM ID	ASSIGNED DATE	ASSIGNED PROGRAMMER	PRIORITY	COMPLETION SCHEDULED	COMPLETION ACTUAL	REMARKS
APPLICATIONS PROGRAMMING REPORTS							
Monthly	Ques Anal	15 May 75	SP5 Duncan	6	30 Sep 75		50% complete
	Test Anal	"	"	6	"		
	TAIS	"	"	6	"		
	Course/ Task	"	"	6	"		
	Course Absence	"	"	6	"		30% complete
	Company Absence	"	"	6	"		30% complete
Weekly	Class Roster	"	"	6	"		
	Stu Actv Report	"	"	6	"		20% complete
	Grad Rpt	"	"	6	"		
	Grad Pred Rpt	"	"	6	"		
Daily	Inactive Student	"	"	6	"		

	PROGRAM ID	ASSIGNED DATE	PROGRAMMER	PRIORITY	COMPLETION SCHEDULED	COMPLETION ACTUAL	REMARKS
CLASS I MACRO FORTRAN	TIME	1 Jul 75	SFC Brown	4	15 Jul 75		60% complete
	XFER	1 Jul 75	SFC Brown	4	15 Jul 75		60% complete
	EV DATA		Unassigned	4	31 Aug 75		40% complete*
	LERRTN		"	4	31 Aug 75		40% complete*
	CMNUPD		"	4	31 Aug 75		40% complete*
	CMNINI		"	4	31 Aug 75		40% complete*
	NBRCVT		"	4	31 Aug 75		40% complete*

*Work done in conjunction with other macros.

	PROGRAM ID	ASSIGNED DATE	ASSIGNED PROGRAMMER	PRIORITY	COMPLETION SCHEDULED	COMPLETION ACTUAL	REMARKS
DOCUMENTATION	CLASS I Macros	Apr 75	Malcolm/Brown		30 Nov 75		
	Applications Programming	Apr 75			"		
	Systems Programming	Apr 75			"		
	CLASS I Macros (FORTRAN)						

MONTHLY STATUS REPORTS PROJECT ABACUS 31 Jul 75

	PROGRAM ID	ASSIGNED DATE	ASSIGNED PROGRAMMER	PRIORITY	COMPLETION SCHEDULED	COMPLETION ACTUAL	REMARKS
SYSTEMS PROGRAMMING	Update(P)			5	31 Aug 75		
	Update(A)			5	"		
	Registra-tion	3 Jun 75	SP4 Peak	3	"		40% complete
	DISREC			4	"		
	LOG-ON	2 Jun 75	SP4 Mashey	3	"		50% complete
	LOG-OFF	3 Jun 75	SP5 Malcolm	3	"		50% complete
	STU FILES	1 Mar 75	SP4 Peak	2	"		90% complete

ANNEX F

INSTRUCTIONAL PROGRAMMER SURVEY
COMPUTERIZED TRAINING SYSTEM

The purpose of this survey is to obtain your assessment, comments, problems encountered, and suggestions concerning the instructional programmer's developmental process. The results of this survey will help evaluate areas where developmental problems exist and serve as guidelines for future CTS development of other courses.

DATE_____ COURSE: 31E20 31J20 35L20

PART I: Attitude Toward CTS Model Strategies and Course Development

Please check the appropriate space to indicate your opinion of the following statements. Other comments you may have will be appreciated.

1. The instructional model is sensitive to the abilities and needs of the individual students:

___ Strongly Agree, ___ Agree, ___ Neutral, ___ Disagree, ___Strongly Disagree

Comments:

2. The instructional model is flexible enough to permit a multimedia approach to instruction.

___ Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

INSTRUCTIONAL PROGRAMMER SURVEY

PART I: Attitude Toward CTS Model Strategies and Course Development (Cont)

3. The instructional model is not suitable for both off-line management of lessons and for CAI lessons.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

4. Recycling of students under computer control using the instructional model and strategies should be effective.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

5. The instructional model is flexible enough to permit the application of diverse instructional strategies.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

INSTRUCTIONAL PROGRAMMER SURVEY

PART I: Attitude Toward CTS Model Strategies and Course Development (Cont)

6. The instructional model has sufficient latitude to permit the use of existing instructional strategies.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

7. The instructional model is too restrictive to enable easy modification of the existing instructional strategies.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

8. The instructional model tends to emphasize the preparation of lesson material for computerized presentation rather than the needs of the student.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

INSTRUCTIONAL PROGRAMMER SURVEY

PART I: Attitude Toward CTS Model Strategies and Course Development (Cont)

9. Since no instructional strategy has attained the ideal interaction between each student and the subject matter, which strategies available for use do you think need the most improvement?

_____Pretest _____Preskill

_____Posttest _____Skill

_____TAIS _____Practice

_____Lesson

Please give suggestions for improvement.

10. It is easy for the instructional programmer to write course materials compatible with the instructional model and strategies.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

INSTRUCTIONAL PROGRAMMER SURVEY

PART I: Attitude Toward CTS Model Strategies and Course Development (Cont)

11. Courses put on the computer should be prepared by instructors who have day to day contact with students, rather than a separate group of instructional programmers.

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

12. Any qualified instructor can develop course material for a computerized training system:

___Strongly Agree, ___Agree, ___Neutral, ___Disagree, ___Strongly Disagree

Comments:

13. Give the percentage (%) of total course development time (to date) that has been lost because a computer terminal was unavailable.

_____%

INSTRUCTIONAL PROGRAMMER SURVEY

PART I: Attitude Toward CTS Model Strategies and Course Development (Cont)

14. Show break out of lost course development time indicated in Question 13. Total should equal 100% of lost time.

_____% Author load

_____% Student load

_____% Computer failure

_____% Terminal failure

_____% Other Input/Output failure

_____% Poor response time

_____% Assembly failure

_____% Merge failure

_____% Lesson code lost

_____% Parity errors

_____% Other (identify):

100 % Total

Comments:

INSTRUCTIONAL PROGRAMMER SURVEY

PART II: Authoring Language

Please check the appropriate block to indicate your opinion of the following statements. Other comments you may have will be appreciated.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Comments
15. It is easy to create text displays using CLASS I language						
16. It is difficult to create graphics using CLASS I language.						
17. It is difficult to code for implementation of strategies using CLASS I language.						
18. Generally on line authoring is easy.						
19. On line editing of displays is difficult.						
20. On line debugging of logic is easy.						
21. On line graphic creation is more difficult than off line coding for graphics.						
22. CLASS I language meets the needs for the computer training system at the present time.						

INSTRUCTIONAL PROGRAMMER SURVEY

PART III: General

23. What training do you think is necessary for CTS instructional programmers?

a. Prior to assignment:

b. After assignment:

24. What guidelines or suggestions would you give to a newly assigned instructional programmer?

25. List the advantages you have identified in using the one-man concept (author, audio-visual specialist, logic coding) in developing course material.

INSTRUCTIONAL PROGRAMMER SURVEY

PART III: General

26. List the disadvantages you have encountered in employing the one-man concept for course development.

27. What problems have you encountered using the one-man concept of course development?

28. If you were in a position to dictate policy for future CTS development in other service schools, what changes would you make to the existing concept of course development?

INSTRUCTIONAL PROGRAMMER SURVEY

PART IV: Instructional Programmer Background

STATUS: Military ( ) Civilian ( ) Date of Birth _____

TOTAL MILITARY SERVICE (if applicable) _____

EDUCATION:

CIVILIAN SCHOOLS:

Month and Year	Name and Location of School	Graduate	Degree

SERVICE SCHOOLS, TECHNICAL OR SPECIALIZED TRAINING (Do not include those less than five days duration):

Length of Course	Course Title or Area of Specialization

How long have you been working in an Instructional Programmer position (months)?

How long have you worked as an Instructor at a Service School (years, months)?

ANNEX G

STUDENT ATTITUDE QUESTIONNAIRE

SELF-PACED INSTRUCTION

This is not an information test. Therefore, it has no right or wrong answers. Rather, we are interested in your candid opinion of the following statements. Your complete frankness is answering these questions will be greatly appreciated. Individual responses will be held in strictest confidence.

Please check the appropriate block to indicate your opinion of the following statements. Explain your selection in the comments if necessary.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Comments
1. Overall the course content holds my interest.						
2. The material in each lesson is organized in a way that I can learn.						
3. The objectives of the course are clear and I know what is expected.						
4. Generally the lessons are hard to understand.						
5. The lesson material requires you to think.						
6. Generally the examinations cover what is presented in the lessons.						
7. Generally the lessons are too long.						
8. I can not learn what I want to learn in this kind of instruction.						
9. The level of reading skill required in the lessons is too high.						
10. I find myself hurrying through the lessons to get it over with rather than trying to learn.						
11. I answer questions wrong (pretest, quiz, etc.) intentionally to get more instruction.						
12. Generally the lessons seem to be planned just for me.						
13. I learn the lesson material very quickly using this method of instruction.						

Please check the appropriate block to indicate your opinion of the following statements. Explain your selection in the comments if necessary.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Comments
14. I feel that electronics instruction can be tailored to suit my training needs using this method of instruction.						
15. I feel I can retain electronics material (forget less) using this method of instruction.						
16. I pay more attention using this method of instruction.						
17. I waste no time using this method of instruction						
18. I always know how well I am doing in this course.						
19. I am not afraid of making mistakes using this method of instruction.						
20. I do my best as a result of this method of instruction.						
21. This method of instruction is a very effective method of instruction.						
22. I feel that no one really cares whether I learn or not using this method of instruction.						
23. The instructors can answer my questions.						
24. There is a good working relationship between the instructors and myself.						
25. I feel that I am pushed too quickly through the lesson material.						
26. An instructor is readily available for assistance.						

Please check the appropriate block to indicate your opinion of the following statements. Explain your selection in the comments if necessary.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Comments
27. I do not have enough interaction with other students.						
28. My work and movements are watched too closely in this method of instruction.						
29. Background noise (voices and personnel movement) is distracting.						(Specify)
30. The lighting in the work area is adequate.						
31. There is enough space in the working areas or carrels to work comfortably.						
32. Working in the working areas or carrels over a long period of time becomes tiring.						
33. Constant movement from one instructional media to another interferes with learning.						
34. There are too many devices (TV cassettes, slide projectors, etc.) to operate that it detracts from the instruction.						
35. There is too much operating noise from the equipment.						(Specify)
36. The audio is clear and easily understood.						
37. There is too much material presented on the slides.						
38. The pictures on the slides are clear and do not cause excessive eyestrain.						
39. The instructional devices are difficult to operate.						(Specify)
40. The instructional devices break down too often which waste my time.						(Specify)
41. If I am to take another course in the Army, I would prefer using this method of instruction over other methods.						

42. What do you like best about this method of instruction:

a. I can go at my own speed.

b. It presents material in a clear and interesting way.

c. I am always being asked questions.

d. I like the freedom offered by a less formal environment.

e. I am not bothered by an instructor except when I need him.

f. Others (specify)_____

_____

_____

43. What do you like least about this method of instruction:

a. I cannot ask questions.

b. It is too much work.

c. Have to learn to operate too much instructional equipment.

d. It is too impersonal.

e. It leaves out too much information that an instructor would provide.

f. Could not get assistance when I needed it.

g. Others (specify)_____

_____

_____

_____

44. Which lessons or part of the course caused the most difficulty? (Be as specific as possible.)

45. What instructional devices or classroom (working) conditions cause the most annoyance? (Be as specific as possible.)

Detach the last page and then put the questionnaire (first six pages) in the inclosed envelope.

- DETACH -

Background Information

To insure that all students have completed the questionnaire, you are asked to answer the following items, detach from the questionnaire, and return to the instructor. Put the questionnaire in the inclosed envelope, seal, and return to the instructor also.

DATE: _____

NAME: _____

COURSE: _____

Check the approximate time you have been in this course:

_____3 weeks; _____entire course.

- DETACH -

ANNEX H

TRAINING EFFECTIVENESS

DATA ITEMS AND COLLECTION METHODOLOGY

I FORMATIVE 30 June 1975

A. Instructional Process

1. What are the advantages/disadvantages of the one-man concept (author, audio-visual specialist, logic coding, entry specialist, validation and revision) in the development of CTS instructional materials?

o Method: The opinion of the respective course managers is important in the assessment of the one-man concept because of the impact it will have on the method employed in the preparation of CTS instructional materials in the future. Data for this item will be gathered by questionnaires directed to the instructional programmers and course supervisory personnel.

2. How much time is required to convert the training materials contained in the operational self-paced course annexes to CTS instructional materials?

o Method: This item will focus on two instructional alternatives - (1) annexes which include a substantial amount of instruction in the CAI mode (computer serves as the instructional medium); and, (2) annexes primarily employing the CMI mode (material presented via off-line media under computer management). The data for this item will be gathered from CTS time logs and questionnaires completed by the instructional programmers.

3. To what extent does CAI interface with other media (television, audio/visuals, performance guides, tape recorders) employed in the courses? How can it be optimized?

o Method: Data for this item will be gathered from questionnaires addressed to instructors, instructional programmers, course supervisors and members of the staff concerned with review and approval of course design.

4. To what extent has the test distractor counts and collection of unanticipated responses provided feedback necessary for revising tests and instructional materials?

o Method: The data for this item will be collected by observation and item question sheets directed to the instructional programmers. The primary concern will be whether the test feedback will highlight any deficiencies in the instructional materials or test questions per se.

5. Has any difficulty been encountered in fitting the previously developed self-paced instructional materials into the CTS instructional model?

o Method: Observations and questionnaires will be used to develop the data on this item. The major thrust will be to determine whether the instructional programmers experienced any real problems in adapting the existing training materials, to include the sequencing of instruction, to the CTS instructional model; and identify those adjustments or modifications that were necessary. Input to this item will be made by course development personnel.

6. What is the optimum on-line time-length per session for individual students?

o Method: The data for this item will be collected by observations and questionnaires from users. The student's opinion is essential; as the sole user he is dependent on the computer for his progress through the course and should have the most valid assessment of the optimum on-line time-length per session.

B. Support Functions

7. What special problems, if any, were encountered when entering training materials on-line?

o Method: Observations and item question sheet will be employed to obtain this data. Instructional programmers will be the source for this item.

8. Has the course Program of Instruction remained stable during the transition from self-paced to CTS?

o Method: Data for this item will be obtained from a review of systems engineering documents.

9. To what extent does the system enable timely modification, revision and evaluation of course materials?

o Method: The primary objective of this item will be to determine the administrative time inherent in the review and approval process as it impacts on the introduction of new instructional material into the system. This data will be gathered by observations and questionnaires directed to instructional programmers, course supervisory personnel, and members of the staff involved in the review and approval of course materials.

10. Was it necessary to assign additional instructional programmers to course development in order to prepare back-up training materials to be utilized during computer down time? Were other instructor man-hours devoted to this task?

o Method: Data for this item will be gathered by questionnaires directed to course managers, instructional programmers and other course development personnel concerned. The primary object will be to pinpoint any personnel resources dedicated exclusively to the preparation of CTS back-up training materials per se, over and above those needed to prepare ongoing self-paced and CTS instructional materials.

11. What is the average development time (hours) required for one hour of instruction in the CAI mode?

o Method: The CTS Monthly Time Reports will provide input for this item. However, the data gathered may be somewhat subjective in nature as it may be necessary to include "best estimates" of course development personnel concerned. Questionnaires to course managers and instructional programmers will be employed in this instance.

II ADMINISTRATIVE

A Reports

1. Do recurring student activity reports provide adequate and timely information concerning student progress, achievement, and graduation predictions?

o Method: The data concerning the effectiveness and utilization of the weekly student activity and graduation reports will be gathered by observations, and questionnaires to course managers and staff personnel concerned.

2. Does the system provide the respective courses with the necessary on-going operational reports?

o Method: Data, with regard to the format, quantity, usability, and content of the recurring operational reports, will be obtained by observations and questionnaires addressed to course managers and supervisory personnel.

3. Does the system provide real time access to student data files, both on-line and printouts, as required by the instructors and course managers?

o Method: Observations and questionnaires directed to instructors and course managers will be utilized to provide the input for this item. Information will be obtained as to the ability of the system to support the counseling, guidance, and faculty board requirements and concurrently administer student progress through the course.

4. What is the impact on the administrative processing of student records when the system is down and the flow of recurring reports is halted temporarily?

o Method: Observations and questionnaires directed to system operators and department administrative personnel will be used to gather the data on this item. The information obtained will establish whether or not the student data can be retrieved and, if not, whether this will cause any delay in student processing or graduation.

5. What problems were encountered in updating the student activity reports following computer down time?

o Method: The data for this item will be collected by observation and questionnaires addressed to course managers and department administrative personnel. In addition to any unanticipated problems that may surface, any requirement to maintain a dual set of manually maintained student records will be specifically addressed.

B. Resource Allocation

6. Did the implementation of CTS cause any changes in the accounting of student time in the course?

o Method: Data for this item will be obtained from on-line programs, instructor logging and an item question sheet addressed to the classroom instructors. The special area of interest will be accounting for non-academic, as well as, academic pursuits.

7. Has the system been effective in maintaining accountability of students within the respective tasks/annexes?

o Method: Observation, and item question sheets directed to primary instructors and section chiefs, will be employed to gather the data on this item.

8. Has the system been effective in directing the student progress through the course via the several learning alternatives?

o Method: Data for this item will be gathered by observations and questionnaires directed to the instructional programmers and course managers.

9. Has the system been successful in routing students through the respective courses according to standard flow or prior accomplishments, or to alternate tasks and positions on space available basis?

o Method: (Same as II.B.8)

10. Does the administrative burden of collection outweigh the value of accounting for student time within the various tasks?

o Method: Observations and a questionnaire addressed to the instructors will be used to collect this information. This data will provide an insight into the relative value of detailed accounting of students' time in each learning element and will be geared to future applications.

11. What changes, if any, are recommended to the TRADOC School Staffing Guide to accomodate the unique role of the instructional programmer?

o Method: Data for this item will be obtained by observations and questionnaires directed to course managers and to management and operations personnel at department level.

C. Instructional Process

12. What is the optimum student position/terminal relationship?

o Method: The data for this item will be gathered by observations and item question sheets directed to students, instructors and course managers. The information obtained will provide an insight into the number of terminals required in relationship to the number of student positions which will insure maximum utilization of the system and, at the same time, prevent queuing.

13. What changes in the "reward for early completion" have occurred that may have impacted on student motivation?

o Method: The data for this item will be found in changes to promotion policies, assignment instructions, or other regulations that may impinge on the student's desire for early completion (e.g., reduction in number of promotions for high academic standing).

14. Is there an adequate back-up capability to provide instruction during computer down time?

o Method: Data for this item will be obtained by an item question sheet directed to instructional programmers and section supervisors and it will, specifically, address the production of hard copy that can be used for this purpose.

15. Has the implementation of CTS increased the interaction time between student and instructor?

o Method: A major problem in self-paced courses has been the non-availability of the instructor to the student when the occasion arises. Data for this item will be gathered by an item questionnaire directed to instructors and course supervisory personnel.

D. Support Functions

16. What administrative and personnel resources were required to establish training programs for CTS Instructors and Workshops for Instructional Programmers and IPES personnel?

o Method: Data for this item will be obtained from USASIGS Faculty Development and Data Systems Branches.

17. What special qualifications are required by the Instructional Program Entry Specialists (IPES)?

o Method: Observations and questionnaires addressed to instructional programmers and administrative supervisors will be utilized to provide data input for this item.

18. Can clerk typist/key punch operators double as IPES effectively?

o Method: (Same as D.17 above)

19. Is the system capable of maintaining uninterrupted instruction and simultaneously process student data in real time?

o Method: Data for this item will be collected by observations and an item question sheet addressed to systems operational personnel.

20. What is the average in-house (USASIGS) cost per student week for the self-paced courses of instruction selected for the field test? For the same courses after instituting CTS?

o Method: Data for this item will be obtained from Management and Budget, USASIGS.

21. What unanticipated side effects or by-products can be attibuted to the implementation of the computerized training system?

o Method: Observations, questionnaires and spot reports will be used to gather data for this item. Input will be gathered from USASIGS and Project ABACUS personnel concerned with the CTS field test.

III SUMMATIVE

A. Within and Across Courses

1. Is there any significant difference in task/annex training time before and after conversion to CTS?

o Method: Wherever feasible at the task/annex level, the student Progression Index (PI), self-paced vs CTS, will be examined to determine whether the mean performances of the two groups are significantly different. The t test will be used to determine whether the difference between the two means is significant. It should be noted that the integrity of all tasks will not be maintained throughout the field test period because of revisions to the program of instruction and translation of self-paced instructional materials to CTS. Data for this item will be gathered from the daily/weekly student activity reports.

2. What differences have been discerned in the failure and attrition rates in the respective courses before and after conversion to CTS?

o Method: The data for this item will be obtained from the Monthly Course/Test Report and the Quarterly Review and Analysis (USASIGS) recorded in matrix form.

3. Has the percentage of no-goes (performance test failures) changed substantially since the implementation of CTS?

o Method: The data for this item will be obtained from daily/weekly student activity reports using on-line programs where feasible. Collection and analysis will be limited to those tasks/annexes wherein the integrity of the task has been maintained for both CTS and self-paced instruction.

4. Does the system have the capacity to provide instructional and administrative support concurrently for (1) single shift, (2) double shift operation?

o Method: Data for this item will be collected by observations and questionnaires addressed to instructional programmers, system programmers, and system operators.

5. Does second shift operation present the same administrative and instructor requirements?

o Method: Data for this item will be gathered by observations and questionnaires addressed to course managers and supervisors.

6. Has the system been effective in managing the student's off-line activities (CMI)?

o Method: Since the student will spend only a limited time interacting with the terminal (CAI), it is necessary to know how he responds to computer-directed activities. Input for this item will be obtained from students and instructors. Observations and questionnaires will be used to collect this data.

7. What problems have been encountered in managing the student flow?

o Method: The prime target for this item will be to identify and isolate any unique or unusual problems that have surfaced in the area of managing or directing the student progress through the respective courses. This data will be collected by questionnaires and will impact on both on-line and off-line activities.

8. Was it necessary to make any changes or revisions to the self-paced instructional materials before they could be incorporated into the system?

o Method: Instructional programmers will provide the input for this item. The primary concern will be to ascertain the compatibility of the on-going course materials with the computer mode and, determine how much rewrite or revision was necessary to convert these materials to CTS.

9. Are graduation predictions more timely since conversion to CTS?

o Method: Data for this item will be obtained by inspection of the student activity reports and depicted by matrix and histogram as appropriate.

10. Which student aptitude (ACB) area appears to have the most likelihood of predicting student success?

o Method: Data for this item will be gathered from the student evaluation rosters and daily/weekly student activity reports. Since only one aptitude area can be cited as a prerequisite for attendance to a TRADOC School course and is used exclusively by school personnel in managing the student through a course, it is essential that the best predictor of achievement be determined. The single predictor regression scheme will be used in making this determination.

11. Students, instructional programmers, instructors, and members of the staff and faculty, USASIGS, will be surveyed to determine their attitudes and opinions of the existing self-paced courses and of the computerized training system (CTS) after its implementation. Topical areas, in general, are listed below:

a. Students:

(1) Course content

(2) Instructional methods

(3) Instructional media

(4) Individualization of instruction

(5) Acceptance of self-pacing/CTS

(6) Training conditions

b. Instructor:

(1) All of paragraph 9a above

(2) Instructor role (problems)

(3) Instructor/student relationship

c. Instructional Programmer:

(1) Course strategies

(2) Course development

(3) Authoring language

(4) Training

(5) One-man concept

d. Staff and Faculty:

(1) Acceptance self-paced/CTS

(2) Instructional problems/innovations

(3) Advantages/disadvantages

e. Other related items, as appropriate, may also be addressed in these surveys.

o Method: Surveys/questionnaires will be used to collect this data. Matrices will be developed to record and quantify unstructured responses.

B. Specified Task Analysis (One task selected in each course will be subjected to comparative analysis)

1. Is there any significant difference in the student progression index between self-paced and CTS for the specified task?

o Method: Student PIs will be examined to determine whether the mean performance of the two groups are significantly different. The t test will be used to determine the difference.

2. Does CTS require as much instructor time for student record keeping as self-paced?

o Method: Data for this item will be collected by individual instructors by logging and input by the respective courses. Applicable only to student records per se.

3. Has the computer been more effective in monitoring student progress than the present instructor/summary training record?

o Method: Input for this item will be primarily from the course instructors and supervisors. The student control document in self-paced is the Student/Summary Training Record. Terminal commands and sign-off/return-to messages will track the student through CTS. Data will be collected by observations and item questionnaires.

4. What unique problems were encountered in preparing CTS instructional materials not identified when preparing self-paced materials?

o Method: Observations and questionnaires will be used to collect this data from instructional programmers and course managers. The review and approval process will be addressed within the scope of this item.

5. Have randomly generated performance test items resulted in more effective student testing? Time saving for the test monitor? An increase in test failures?

o Method: This data will be collected by observations and questionnaires directed to the course managers, test monitors and primary instructors.

6. What advantages have been derived by having the system record successful completion of critical actions inherent in task performance tests?

o Method: Current practice dictates that the test administrator record a "go" or "no-go" for the entire test. Feedback on critical action performance is not formalized. This data should provide the course development personnel with another means of validating instruction. Observations and questionnaires to instructors and instructional programmers will be used to collect this data.

7. Has the implementation of CTS reduced queuing time at student positions?

o Method: Data for this item will be obtained by observations and questionnaires to instructors.

ANNEX I

CONFERENCES AND PRESENTATIONS

A. Conferences:

6-7 Aug 74	Policy and Procedures Subgroup Meeting on Development of Proposed TRADOC Regulation 18_____, Applications of Computers to Training and Simulation, Fort Monroe, Virginia
12-16 Aug 74	Association for the Development of Computer Based Instructional Systems (ADCIS), Western Washington College, Bellingham, Washington
11-13 Sep 74	Author Language Conference, US Army Research Institute (ARI), Rosslyn, Virginia
4-6 Dec 74	Consultant Site Visit and DA SAG Meeting, US Army Signal School (USASIGS), Fort Gordon, Georgia
21 Apr 75	Training Resources Application Information Data Exchange (TRAIDEX) Meeting, Defense Advanced Research Projects Agency (ARPA), Arlington, Virginia
17-18 Jun 75	National Security Industrial Association (NSIA) Conference on Application of Advanced Training Technology, US Army Signal School, Fort Gordon, Georgia

B. Presentations:

17 Dec 74	COL G.B. Howard - Presentation on CTS - Institute of Defense Analysis, Blue Ribbon Panel, Institute of Defense Analysis, Washington, DC

ANNEX J

COMPUTERIZED TRAINING SYSTEMS DIRECTORATE
US ARMY TRAINING SUPPORT ACTIVITY
FORT EUSTIS, VIRGINIA 23604

PUBLICATIONS

TITLE	CTS-TR #	DDC #
A Feasibility Study of Computer Assisted Instruction in US Army Basic Electronics Training. Feb 68	(None)	AD 745 402
The Implementation of Computer Assisted Instruction in US Army Basic Electronics Training. Sep 69	69-1	AD 704 339
Audio Utilization Conventions and Techniques for Computer Assisted Instruction. Mar 70	70-1	AD 704 338
An Automated Student Registration Procedure (REGIS). Jun 70	70-2	AD 710 983
A MACRO System for Computer Assisted Instruction. May 70	70-3	(None)
Application of Computers to Training. Apr 71	71-1	AD 749 468
An Instructional Model for Computer Assisted Instruction. May 71	71-2	AD 745 409
Instructional Programming Guide for Computer Assisted Instruction. Jul 71	71-3	AD 749 469
Task Group Report: CAI Volumes I & II. Apr 72	(None)	(None)
A Summative Evaluation of Computer Assisted Instruction in US Army Basic Electronics Training. May 72	72-1	AD 749 470
Vacuum Tube/Solid State Circuit Survey. Mar 73	73-1	AD 759 129
CLASS I Language: Document A (Specif. No: S-125-72). Apr 73	(None)	(None)

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TITLE	CTS-TR #	DDC #
Record Formats: Booklet A (Specif. No: S-125-72). Apr 73	(None)	(None)
Concept Plan: Booklet B (Specif. No: S-125-72). Apr 73	(None)	(None)
Estimated System Use Factors: Document C. (Specif. No: S-125-72). Apr 73	(None)	(None)
A Preliminary Instructional Model for a Computerized Training System. Jul 73	73-2	AD 762 180
An On-Line Electronics Graphics Symbol Set for the PLATO IV System. Oct 73	73-3	AD 776 364
One Year Status Report Computerized Training System: Project ABACUS. Aug 73	73-4	AD 777 767
Preliminary Evaluation Plan for US Army Computerized Training System. Jan 74	74-1	AD 777 783
PLATO IV First Year Report Computerized Training System. Apr 74	74-2	(None)
Survey of Computer Applications in Army Training. Aug 74	74-3	AD 787 429
Second Year Status Report Computerized Training Systems Project ABACUS. Aug 74	74-4	(None)
Effective Writing for a Computerized Training System. Jan 75	75-1	(None)
Computer Applications in Army Training Present Status and Planned Activity. Apr 75	(None)	(None)
Instructional Effectiveness of the PLATO IV Plasma Terminal. May 75	75-2	(None)
The Future of the Computer in Army Training. May 75	75-3	(None)