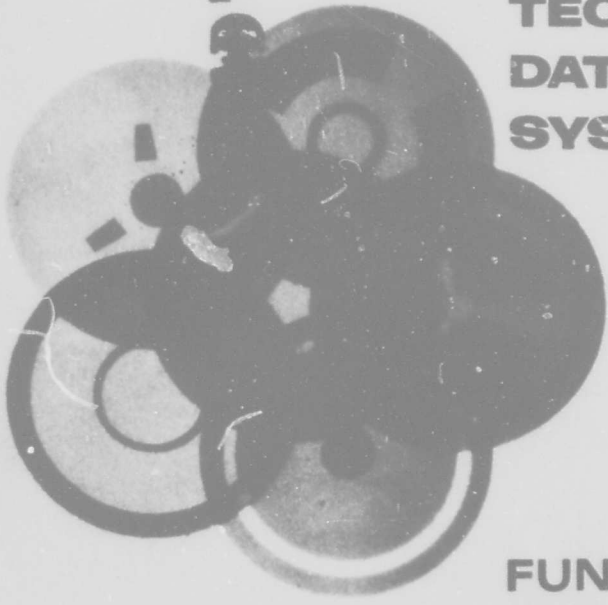


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# INTEGRATED TECHNICAL DATA SYSTEM



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## FUNCTIONAL DISCIPLINES SUBSYSTEM:

ADMINISTRATIVE MANUAL

JUNE 1969

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PREPARED FOR

U.S. ARMY MATERIEL COMMAND  
CONTRACT NO. DA-49-186-AMC-324 (X)

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SYSTEMS GROUP  
WASHINGTON OPERATIONS  
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**INTEGRATED  
TECHNICAL  
DATA  
SYSTEM**



**FUNCTIONAL DISCIPLINES  
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## FOREWORD

TRW Systems was awarded a contract (Contract Number DA-49-186-AMC-324(X)) by the U. S. Army Materiel Command to develop an Integrated Technical Data System (ITDS). The ITDS is intended to provide assistance to the Army Systems Manager in performing his management and technical functions and tasks by operating on relevant data to produce, summarize, and condense information. This allows the manager and technical support personnel to (a) determine status and monitor technical progress, (b) identify and predict system technical/management problems and their impact, (c) comprehend and evaluate proposed system changes, and (d) assign and maintain awareness of responsibility for action.

The ITDS is composed of personnel, procedures, equipment and computer programs. The organization of these elements provides a capability for the processing of systems program data, including the following functions:

- Data receipt and indexing
- Validation and verification for authenticity
- Storage
- Manipulation
- Retrieval
- Display and dissemination

The organization is divided into three major subsystems: the Functional Disciplines Subsystem, the Data Operations Subsystem, and the Computer Subsystem. ITDS user documentation, of which this manual is a part, is oriented to the above subsystems, with the exception of an overall System User's Guide and a Configuration Management Plan.

Following is a tabulation of ITDS user documentation (title of this volume is heavily underscored):

ITDS - overall:

- System User's Guide
- Configuration Management Plan

Functional Disciplines Subsystem:

- Administrative Manual
- Operations Manual
- Personnel Position Descriptions

Data Operations Subsystem:

- Administrative Manual
- Operations Manual
- Equipment Descriptions
- Personnel Position Descriptions

Computer Subsystem:

These 12 manuals, in general, cover administration of the subsystem, operation and maintenance instructions for the programs, computing equipment descriptions, and personnel position descriptions.

- Administrative manual
- Generalized Processing Program, General Description
- Applications Programs, General Descriptions
- Peripheral Programs, General Descriptions
- Computer Programs Maintenance Manual
- Computer Programs Operations Manual
- Data Processing Center Operator's Manual
- Equipment Descriptions
- Personnel Position Descriptions
- Generalized Processing Program, Programming Documentation
- Applications Programs, Programming Documentation
- Peripheral Programs, Programming Documentation

This manual prescribes the requirements for administering the ITDS functional disciplines subsystem. Only minimum essential requirements are

provided in recognition of the fact that the extent of administrative control employed in the applications of ITDS will vary, depending on a number of factors. These include the stage and type of the system program using ITDS and the attitude of management toward "loose" or "tight" control.

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FUNCTIONAL DISCIPLINES SUBSYSTEM:  
ADMINISTRATIVE MANUAL

1. INTRODUCTION

One of the principal aspects of ITDS is its recognition of the role of people in systems management. This recognition takes the form of actually incorporating the various kinds of people who perform technical and management tasks directly into the operation of the data system.

1.1 PURPOSE

This manual is intended to describe the requirements for administration of the organizational elements that make up the Functional Disciplines Subsystem. This manual and its companion document, Functional Disciplines Subsystem: Operations Manual, complement one another. All administrative requirements necessary for accomplishment of the operational procedures are set forth in this manual. The separation is made in order to avoid cluttering procedural directions to personnel with administrative (resource) requirements which cover the entire scope of operations.

1.2 SCOPE

The administrative requirements set forth in this manual pertain to the Functional Disciplines Subsystem as a whole. It is incumbent on managers of the organizational elements that comprise the subsystem to further define administrative requirements for the particular ITDS application and also any requirements peculiar to their own individual organizational elements. Administrative requirements are provided herein to cover those summary level ITDS functions which are assigned to this subsystem on the ITDS Summary Function Flow, Figure 1, in Functional Disciplines Subsystem: Operations Manual.

## 2. THE ITDS FUNCTIONAL DISCIPLINES SUBSYSTEM

This section covers resource requirements, organization, efficiency standards, and other non-material aspects of ITDS application.

### 2.1 ORGANIZATION AND FUNCTIONAL COMPOSITION

The Functional Disciplines Subsystem is nominally composed of the following specialty categories:

- Management (Project Information and Control, Data Management, Contracts Management, and Configuration Management)
- System Engineering
- Engineering Design
- Quality Assurance
- Operational Engineering
- Production Engineering
- Test
- Logistics
- Production and Procurement

These specialty categories are not necessarily all that might be utilized in an ITDS application, but they represent the disciplines generally encountered in a system program. Any application of ITDS must select those needed in any time frame by the particular system program.

Proper organization of the disciplines is a requirement at the outset of ITDS application. It would be inefficient to maintain each one as a separate organization element. They should be grouped according to the needs of the system program, taking into account such considerations as:

- Packaging of source data. For example, if logistics and quality assurance data is normally reported under one cover by the source agency, it is not only convenient but also more efficient to organize these disciplines together.
- Communication between related disciplines.

- The extent of creative analytic activity which is asked of ITDS in any application. The point here is that the more ITDS is considered a repository for data, the less organizational separation is needed between disciplines. Conversely, creative analysis demands more separation and attendant staff support.

Proper organizational planning is essential to implement the procedures defined in Functional Disciplines Subsystem: Operations Manual. It establishes who will do what. Provision must be made for the following personnel categories in each functional discipline organization.

- Clerical - Self-explanatory. Level should be commensurate with type of activity and needs of the organization.
- Data Analysis - This activity includes abstraction and extraction of data elements and keywords for entry into the data base, and establishment of data base dictionaries.
- Technical Specialists - These are professional personnel representing the above technical and management disciplines who provide an integral capability for technical analysis, evaluation, and quality assurance of all technical data handled by the ITDS.
- Management - This is the function of planning, organizing, and directing the activities of the foregoing elements of the functional discipline organization.

## 2.2 RELATIONSHIP TO OTHER ITDS SUBSYSTEMS

The functional discipline organizations work in an integral way with the Data Operations and Computer Subsystem by means of procedures outlined in the respective subsystem operations manuals. As a general rule, it may be said that the Data Operations Subsystem is a service function for data handling for the functional disciplines. The administrative aspects of implementing this service function are covered in Section 3.6 of this manual.

## 2.3 OFFICE EQUIPMENT

The proper use of office equipment increases productivity and quality, and reduces paperwork costs. Improper application of office equipment complicates record making and increases costs. Procurement of equipment and supplies should be carefully and continually monitored by competent personnel familiar with the needs created by the particular ITDS application.

## 2.4 EFFICIENT OFFICE LAYOUT AND WORK FLOW

In planning for and monitoring the operation of ITDS, an analysis should be made of the anticipated and/or actual flow of data through an office. The procedures in Functional Disciplines Subsystem: Operations Manual are intended to be sufficiently flexible to permit adaptation of one of the following methods of data travel and work flow. This type of planning is particularly important when several types of data may be packaged together, but are of interest to different technical specialists.

### 2.4.1 Serial Plan

A single channel is developed in the organization through which the source data flows. Specialists perform their analyses, extractions, etc., in turn. This plan is best used for routine operation with source data too voluminous to reproduce.

### 2.4.2 Concurrent Handling Plan

Multiple work flow channels are developed when source data can be separated into portions of interest to particular specialists, or when it is cost-effective (by virtue of low volume or urgency of processing) to reproduce the data item.

## 2.5 PROJECT IMPLEMENTATION PROCEDURES

One of the most important administrative requirements for ITDS application is the development and maintenance of project implementation procedures. These procedures of course must fall within the scope of Functional Disciplines Subsystem: Operations Manual. Definitive project procedures, however, have the following further advantages:

- They force decisions on policy and procedural details.
- They facilitate the training of personnel.
- They promote uniformity of understanding and performance.
- They spread knowledge of what is done elsewhere.
- They establish a basis for control.
- They preserve the experiences of the organization.
- They facilitate the examination and revision of procedures.
- They facilitate establishment of other ITDS applications.

### 3. ADMINISTRATION OF THE FUNCTIONAL DISCIPLINES SUBSYSTEM

This section relates administrative requirements to the event-oriented operational procedures set forth in Functional Disciplines Subsystem: Operations Manual. No attempt is made to create procedures here, but rather to specify what resources are required on a continuing basis to support the operational procedures.

#### 3.1 DATA RECEIPT

The receiving of data is normally accomplished by provision of a receptacle in a convenient place for inter-office mail delivery. Such delivery is not a function of this subsystem.

Date and time stamps, when used, should be applied with care to avoid obliteration of information on the data item.

The data receiving and logging functions are integral.

#### 3.2 LOGGING

The format of the general purpose log sheet is shown in Figure 1, together with definition of the entries to be made.

#### 3.3 ROUTING DATA FOR WORK FLOW

Section 2.4 discussed the alternate methods of routing data for efficient work flow within the organization. Routing, by whatever method selected, should be accomplished by means of an intra-organization routing form of local design. It should indicate to whom the DAI is to be sent, in what sequence, and should enable notation of special operational instructions.

#### 3.4 INTERNAL REFERENCE DATA

The Data Operations Subsystem periodically generates four reports and a manual which comprise useful internal reference data for operation and administration of the functional disciplines. These are discussed in paragraphs 3.4.1 through 3.4.5.

##### 3.4.1 Keyword-DAI Cross-Reference Index

This is a formatted, computer-produced report which lists alphabetically all keywords together with the numbers of the documents (DAI numbers),

NUMBER	DAI/INQUIRY		KEYWORD LOADSHEET OUT	EXTRACT LOADSHEET OUT	ALPHA CODE(S)	ITDS SERVICE REQUEST	REPORT	
	DATE IN	DATE OUT					IN	OUT
①	②	③	④	⑤	⑥	⑦	⑧	⑨

LEGEND

- ① Enter DAI (Data Acquisition - ITDS) Number shown on the DAI Form which is attached by Data Operations. In case of inquiries, written or oral, enter a sequence number assigned by each organizational element.
- ② The date the DAI is received.
- ③ The date the DAI is sent out of the organization, either for further routing or to Data Operations.
- ④ The date a keyword loadsheet for the DAI is sent to Data Operations.
- ⑤ The date extract loadsheets containing data from the DAI are sent to Data Operations.
- ⑥ The Data List(s) which are loaded by the DAI. This is an optional entry but is a convenient reference.
- ⑦ The date that an ITDS Service Request is sent out of the organization. Requests may take either of two forms: (1) a Data Bank Inquiry for retrieval of hardcopy or microform or (2) a User Service Request for service by the Computer Subsystem.
- ⑧ The date a report (from the data bank or from computer processing) is received in response to an ITDS Service Request.
- ⑨ The date a report is sent out to the user via Data Operations in response to an inquiry.

Figure 1. ITDS Control Log

the contents of which the keywords have been used (assigned) to describe. Normally, this report is used within Data Operations, but may be available for reference purposes.

#### 3.4.2 Document List

This is a formatted, computer-produced report which lists sequentially by DAI number all documents processed to the ITDS by the system or program management office. The list also shows the document title and other pertinent information.

#### 3.4.3 Master Microfilm Listing

This is a periodic, computer-produced printout which lists by source, in numerical sequence, all engineering documents in the data bank which have been microfilmed.

#### 3.4.4 Keyword Thesaurus

This is a computer-produced listing of authorized words, terms, abbreviations, and acronyms, called keywords, which is used for identification of documents for retrieval purposes.

#### 3.4.5 Data Element Manual

The Data Element Manual consists of user dictionary entries which reflect the characteristics of item identification and attributes.

### 3.5 SUSPENSE AND STATUS

Suspense dates should be established for processing data and, particularly, inquiries. There are several actions in the ITDS functional discipline work flow to which suspense dates are applied. These are:

- priority processing of certain data determined to be urgent inputs to the data file;
- return of processed work from another subsystem of ITDS;
- return of valid data after a discrepancy is identified and processed out;
- response to a user inquiry.

Suspense may be statused in certain cases by means of a special purpose ITDS Action Item System which has been designed to:

- ensure the systematic initiation, definition, and recording of task assignments within the system program office;
- standardize and accelerate the establishment and recording of priorities, progress milestones, and suspense dates for critical tasks;
- provide procedures and information for the rapid evaluation, approval, and dissemination of constructive changes in task descriptions, assignments, priorities, and schedules;
- provide for systematic reporting, recording, and display of task accomplishments;
- provide history and status information for the resolution of deficiencies that may be identified in operations of the system/program office.

In more routine cases, status of suspense is monitored by management as a normal part of that function.

### 3.6 INTERFACE WITH OTHER ITDS SUBSYSTEMS

In Section 2.2 it was stated that the Functional Disciplines Subsystem uses Data Operations as a service function between itself and actual data, both in the computer and in hardcopy/microform files. The purpose of this section is to describe administrative practices used to implement that function for four primary purposes:

- keywording,
- data input to the computer files,
- data bank inquiry,
- user - computer service.

These are implemented by preprinted forms, typical designs for which are described or illustrated in paragraphs 3.6.1 through 3.6.4. The format and use of these forms are of mutual concern to both the Data Operations Subsystem and the Functional Disciplines Subsystem. Both should collaborate in their design and use for any application of ITDS.

### 3.6.1 Keyword Loadsheet

The form used for keywording is shown in Figure 2, followed by the instructions on required entries keyed to the spaces provided. Further instructions regarding keywording are set forth in Functional Disciplines Subsystem: Operations Manual.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
ORGANIZATION										KEYWORDER										DATE														
ADD DAI-FILE'																																		
KW"																																		
KW"																																		
KW"																																		
KW"																																		
KW"																																		
KW"																																		
D.L.-REF"																																		

Figure 2. Keyword Loadsheet

#### Instruction for Preparation of Keyword Loadsheets

The legend for Figure 2 is as follows:

- ① The name of the functional organization to which the DAI was routed.
- ② The name of the person who assigned the keywords.
- ③ Date the keywords were assigned.
- ④ The number of the DAI from the DAI form attached to the document.
- ⑤ A maximum of six keywords. In the space after the last word, enter #
- ⑥ The name of the data list to which the DAI keywords applies.

### 3.6.2 Data Input to the Computer Files

Extracted and abstracted data is entered on loadsheets, the form of which should be specified in the local ITDS application.

### 3.6.3 Data Bank Inquiries

The form shown in Figure 3 is used for retrieval of hard copy or microform data from the Data Operations files. A legend containing instructions for filling out this form follows the illustration.

### 3.6.4 User - Computer Service

When a functional discipline needs to interface with the Computer Subsystem for other than direct access via the terminal, the form shown in Figure 4 is utilized. A legend containing instructions for filling out this form follows the illustration.

## 3.7 SPECIAL PURPOSE RECORDS RETENTION

The maintenance of data in individual files within a functional discipline organization is contrary to both the policy and philosophy of ITDS. Continual and careful attention of management should be directed toward ensuring that data is utilized for its intended purposes and then forwarded to Data Operations. The exception to this rule occurs when data of special or particular interest is necessary for retention within the organization. The following should be considered as attributes for retention in organization files:

- values for administrative use,
- values for schedule monitoring,
- values for cost monitoring,
- values for performance monitoring,
- values for ITDS operation,
- values for historical use,
- values for research.

In no case is a document under DAI control to be withheld from the system for special purpose records retention. It may be reproduced or the DAI form returned to Data Operations with notation as to the whereabouts of the data.

### ITDS SERVICE REQUEST - DATA BANK INQUIRY

LOG NO. <b>1</b>	DATE <b>2</b>	TIME: <b>3</b>	REQUESTOR <b>4</b>	BLDG ROOM EXT <b>5</b>
SUBJECT AND DESCRIPTION: <b>6</b>				
FORM OF REPLY REQUESTED <b>7</b>				
<input type="checkbox"/> HARD COPY <input type="checkbox"/> 1050 <input type="checkbox"/> REPORT		<input type="checkbox"/> APERTURE CARDS <input type="checkbox"/> REPORT		<input type="checkbox"/> VERBAL
RECEIVED DATE		INITIAL	REPLY DATE	INITIAL
ANALYST				
DATA CONTROL				
SEARCH AND STRATEGY NOTES:				

**INSTRUCTIONS FOR PREPARATION OF  
DATA BANK INQUIRY FORM**

- 1** Reserved for use by Data Operations.
- 2** Date of the inquiry.
- 3** Time of the inquiry.
- 4** Name of the person requesting the data.
- 5** Building, room, and telephone extension of the requestor.
- 6** Enter as much identifying information as is available about the document. The most helpful information is:
  - title
  - source
  - date
  - DAI
  - author
- 7** Form of reply desired by the requestor. Other entries are made by Data Operations.

Figure 3. ITDS Service Request - Data Bank Inquiry

**ITDS - USER SERVICE REQUEST**

BATCH NO. ⑧			
REQUESTOR ①	COST CODE ②	JOB NO. ③	DATE ④
FILE NAME		⑤	
ACCESS AUTHORITY		OFFICE OF PRIMARY RESPONSIBILITY ⑥	DATA OPERATIONS ⑦
CLASSIFICATION ⑨		<input type="checkbox"/> TOP SECRET <input type="checkbox"/> SECRET <input type="checkbox"/> CONFIDENTIAL <input type="checkbox"/> UNCLASSIFIED	
TERMINAL <input type="checkbox"/> ⑩ USE ENCLOSED ⑫		BATCH <input type="checkbox"/> ⑪ INPUT QUANTITY CARDS <input type="checkbox"/> LOADSHEETS <input type="checkbox"/> OTHER <input type="checkbox"/>	
LIST REPORT NAME			
1	PAPER SIZE ⑭		NO. COPIES ⑮
2	⑬		
3	OTHER REQUIREMENTS ⑯		
4	⑰		
5	NEED DATE ⑱		
6	RECEIVED FROM USER ⑲		
7	RECEIVED FROM DATA OPERATIONS ⑳		
SCHEDULE		DUE FROM COMPUTER ㉑	
USER		OUTPUT TO DATA OPERATIONS ㉒	

INSTRUCTIONS FOR PREPARATION OF USER SERVICE REQUEST

- ① NAME OF THE PERSON REQUESTING COMPUTER SERVICE.
- ② COST COLLECTION NUMBER, IF APPLICABLE.
- ③ THE SPECIFIC JOB NUMBER OF THE REQUESTOR, WHICH IS AN EXTENSION OF THE COST COLLECTION ACCOUNT RECORDED IN ②. THIS IS THE COST ACCOUNT AGAINST WHICH THE COMPUTER SERVICE IS TO BE CHARGED.
- ④ DATE THE USER SERVICE REQUEST IS PREPARED.
- ⑤ NAME OF THE DATA FILE(S) AFFECTED.
- ⑥ AUTHORIZED SIGNATURE FROM THE OFFICE OF PRIMARY RESPONSIBILITY FOR ACCESS TO THE DATA BASE.
- ⑦ AUTHORIZED SIGNATURE FROM DATA OPERATIONS VERIFYING ACCESS.
- ⑧ BATCH NUMBER ASSIGNED BY DATA OPERATIONS.
- ⑨ SECURITY CLASSIFICATION - CHECK THE APPROPRIATE BLOCK.
- ⑩ TERMINAL ACCESS - CHECK IF REQUEST IS FOR DIRECT ACCESS TO THE DATA BASE.
- ⑪ BATCH - CHECK IF FOR OTHER THAN DIRECT ACCESS TO THE DATA BASE.
- ⑫ INDICATE TYPE AND QUANTITY OF INPUT CARDS OR LOADSHEETS.
- ⑬ LIST THE DESIRED OUTPUT REPORTS BY NAME.
- ⑭ PAPER SIZE OF THE DESIRED OUTPUT.
- ⑮ NUMBER OF COPIES OF THE DESIRED OUTPUT
- ⑯ OTHER REQUIREMENTS
- ⑰ USER NEED DATE.
- ⑱ DATA OPERATIONS ENTRY.
- ⑲ DATA OPERATIONS ENTRY.
- ⑳ COMPUTER SUBSYSTEM ENTRY.
- ㉑ COMPUTER SUBSYSTEM ENTRY.
- ㉒ COMPUTER SUBSYSTEM ENTRY.

Figure 4. ITDS User Service Request

### 3.8 CONTROL OF REPORTS PROLIFERATION

Even under rigidly controlled systems, reports often beget more reports. When reports are uncontrolled, clerical and administrative empires form. Since the functional disciplines are the primary originators, except in the case of inquiries, it is incumbent upon management to continually monitor report production, and to avoid ornate, overlapping, or superfluous reports.

### 3.9 MAINTENANCE OF DISTRIBUTION LISTS

Actual distribution of ITDS output data is performed for the functional disciplines by Data Operations. It is, however, incumbent on the functional disciplines to continually monitor and maintain the list of addressees to whom those outputs are directed. The following should be considered in this regard.

The responsibilities and functions of personnel associated with system programs vary with their positions. Certain data may be considered as being of policy interest to key officials while other data is of more interest to those associated with the routines of the program. The output distribution system should have as an objective minimizing the amount of data to be handled by addressees as a whole.