CW85001. Corps of Engineers Automation Plan (CEAP-IA)

Scope. This Requirement Statement category applies to the CEAP Program as managed through the HQUSACE Directorate of Information Management. (DIM). Implementation of CEAP began with the award of the contract to CDC on 6 October 1989. A CEAP pilot test was conducted, based on ASA(CW) and Congressional Appropriations Committee direction. On 28 September 1990 the ASA(CW) advised the Corps that all requirements had been met and to proceed with the CEAP-IA project. On 14 December 1990 the Major Automation Information Systems Review Council (MAISRC) granted Milestone III approval for the deployment of CEAP-IA. Milestone IV approval was obtained in June 1993.

The CDC contract, an indefinite delivery and indefinite quantity procurement, was awarded for a one-year period with 10, one-year options to provide the following:

- CYBER 962-32/31/11 and various RJE (CDC 400 series) configurations with provisions for technology upgrades throughout the life of the contract. The present deployment includes nine CYBER 962 systems, two SUN 6000 systems, and five SUN 2000 systems at the CEAP-IA Processing centers. Field systems include Control Data 4330, 4360, and 4460 systems as well as SUN Sparc workstations and SUN 3000 centralized servers.
- Communications backbone support to all Corps sites including transition to FTS2000. The system will provide gateways to Army, Air Force, and other required facilities.
- ORACLE database management system along with other CDC software libraries and system operational software.

The CEAP consists of two Corps computer sites: one at Portland, OR, and the other at Vicksburg, MS. Thus, all mainframe processing for the Corps of Engineers will be accomplished at the Central Processing Center or the Western Processing Center. Each Major Subordinate Command (MSC), Laboratory, and Field Operating Activity (FOA) will be assigned to a Processing Center (PC) for processing and will be connected to these PCs through the data communications network. To achieve a single integrated environment, command and control of CEAP-IA will be under the centralized direction of HQUSACE.

Figure 3-1 depicts the management structure for CEAP-IA and major functions of each organizational component.

The CEAP-IA Program Manager's Office (PMO) is responsible for providing resources to acquire major automated data processing hardware, operating software, and network communications equipment as provided in ER 25-1-70, Corps of Engineers Automation Plan, Objective IA (CEAP-IA), Command, Control and Management The PMO also programs resources to operate and manage the CEAP-IA communications network, the two regional processing centers and the Headquarters management office. For those MSC, Labs, and FOA desiring to purchase support services, training, or ancillary equipment within the scope of the CDC CEAP-IA contract to augment their ADP programs, the PMO, using funds provided by the appropriate organizations, is responsible for processing and administering such procurement actions.

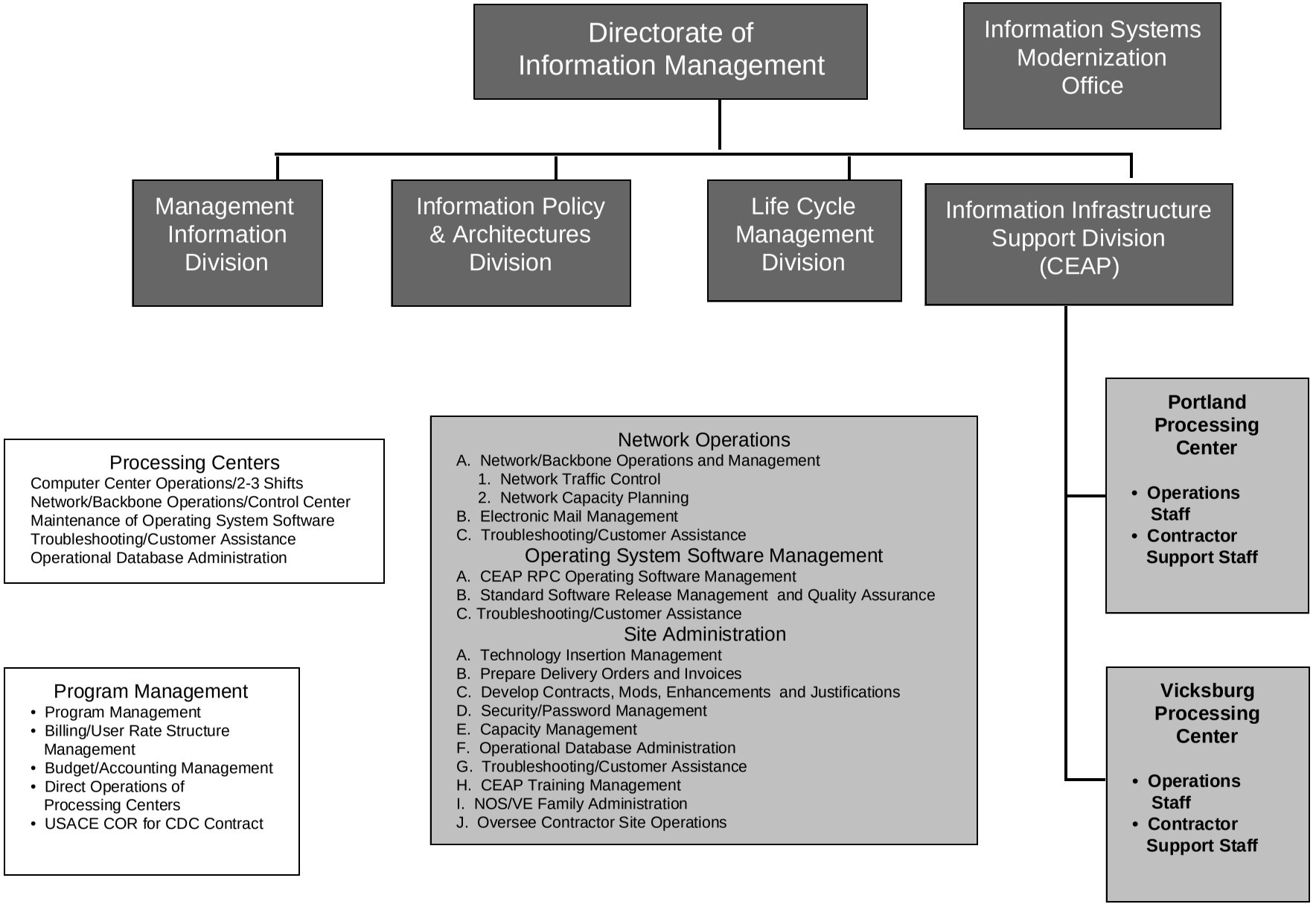

Figure 3-1. CEAP-IA Management Structure and Major Functions.

RSMS Input Guidance.

a. This Requirement Statement category is reserved for use by the CEAP-IA Program Manager. The information provided under "Scope" is to be used for general planning purposes and information only.

b. Automated Information System (AIS) software development and conversion requirements directly related to implementation of CEAP-IA within an organization should be reported under Requirement Category CEXX004 Automated Information Systems. The "Exceptions" guidance under CEXX004 applies.

c. Data communications requirements directly related to implementation of CEAP-IA within an organization should be reported under Requirement Category CEXX010.

d. General purpose data processing requirements that are specifically associated with an AIS or are directly resourced by CEAP-IA should be reported under Requirement Category CEXX019 General Purpose Data Processing. This would include general purpose data processing hardware acquired through the CEAP-IA contract or any other contract.

e. General purpose file servers should be reported under Requirement Category CEXX005, Office Automation Modernization.

f. CW85001 is a HQDA approved Requirement Statement.

HQUSACE POC: Mr. Ken Calabrese, CEIM-S, (202) 761-1244.

CW85002. Military Construction–Programming, Administration and Execution System (PAX)

Scope. This Requirement Statement (RS) category applies to the Programming, Administration, and Execution System (PAX) and any associated RS by Major Subordinate Commands (MSC), Laboratories (Labs), and Field Operating Activities (FOA) directly related to implementation or support of PAX within their respective organizations.

Exceptions for this Category.

a. This category will be used by MSC, Labs, and FOA to identify only those RS that are not reimbursed by the HQUSACE PAX Functional Proponent and are required to directly support PAX implementation. No initiative will be reported by MSC, Labs, or FOA for execution of reimbursable funds provided by the HQUSACE PAX Functional Proponent.

b. Functional Proponents desiring to have individual Automated Information System (AIS) approved for implementation on PAX must first coordinate with the HQUSACE PAX POC and submit an individual RS under the appropriate USACE RS category. The RS should also cross reference the intent to implement the AIS on PAX. The HQUSACE PAX Functional Proponent requires an inten-sive economic analysis prior to any decision to implement an AIS on PAX.

Definition. PAX is a major USACE AIS which primarily supports the Army military construction mission from HQDA to the Directorates of Public Works worldwide with community facilities support.

RSMS Input Guidance.

a. RS currently validated in the RSMS database, requiring no changes for this planning period, remain approved. No further action is required unless approval was contingent on corrections, or the original RS needs updating (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS.

b. CW85002 is a HQDA approved RS. No further action is required.

c. New PAX related requirements will be included as new RS in this category.

Planning Guidance. The following is an update on PAX and should be considered in the planning process.

Description. PAX is a major Corps system, presently outside of the CEAP/ISMP programs. PAX has been in existence for several years, running on hardware and communications provided by a commercial time share service. All Telecommunications Service Provider (TSP) services are charged to system users on an actual fee-for-service (FFS) basis, i.e., the users are charged exactly for the services used. PAX will be maintained in this mode of operation, providing the present range of services for the foreseeable future. A re-compete of the contract is due in 1995. Though operated by the Corps primarily for military construction, PAX services support several other Army commands and other DoD agencies in both CONUS and OCONUS locations.

PAX supports over 2000 users worldwide, with a variety of specific applications supporting military construction and other processes. Corps and non-Corps organizations are proponents for the various applications, while HQUSACE (CEMP) provides the basic TSP contract vehicle, system maintenance, fee for service (FFS)

billing, and support services.

Hardware Systems Support: PAX resides on a single, central mainframe computer. The underlying TSP contract provides a common source of hardware, software and communications support for all users. These services include as a minimum the following features:

(1) A full service worldwide communications network supporting, in an interactive mode, users located in the continental United States, Hawaii, Alaska, Europe, Japan, Korea, Saudi Arabia, Puerto Rico, Panama, Turkey, and other locations.

(2) Hardware configuration/network responsiveness requirements in the interactive mode of no more than 4 seconds for CONUS and no more than 6 seconds for OCONUS sites. (Performance exceeds requirements.)

(3) A hardware configuration/network that is available to PAX users for at least 23 hours per day, seven days a week.

(4) Full system onsite and remote backup.

(5) Fourth generation database management systems (DBMS), FOCUS, NOMAD II plus SQL-DS and other software.

(6) Other application packages (e.g., Statistics, Financial, Project Management, Graphics).

(7) Handshaking ability between mainframe, mini and microcomputer.

The PAX office in HQUSACE also provides FFS billing support to all PAX users, including automated update of revolving funds maintained by COEMIS/CEFMS.

Software/Applications: In its present form, PAX consists of many automated application sub-systems. These applications are individually managed. Very complex interfaces and operations involving two or more applications provide for integration of data and composite output reports. A brief description of the most significant of these applications follows:

(1) The LCMIS approval for the Automated DD Form 1391 Processor System (1391 Processor) is dated 12 August 1994.

Included with this application is the sub-system, ECONPACK.

The 1391 Processor helps MACOM, Installations and HQDA develop, submit, review, edit, prioritize, and approve DD Forms 1391 (Military Construction Project Data). Projects are developed at Army Installations, prioritized, and submitted electronically to MSC and MACOM, where they are reviewed, edited, prioritized and resubmitted electronically to arrive at the DA Program Manager level. USACE Subordinate Commands participate in the development/review process and receive the 1391 documents as the primary descriptions of projects to be designed.

(1a) The Economics Package (ECONPACK) is a sub-system of the 1391 Processor and is included with the 1391 Processor LCMIS.

ECONPACK is an economic analysis program that performs life cycle cost comparisons on proposed MCA/AFH projects and alternatives. ECONPACK's analytic capabilities are generic and provide standard economic analysis methodology and calculations to evaluate a broad range of capital investment categories, such as barracks, hospitals, family housing, utility plants, maintenance facilities, ranges, and information management systems. ECONPACK complies with all DoD and Federal regulations for economic analysis, and has been adopted by

USACE for all economic analyses. ECONPACK is available on PAX or as a stand alone PC version with the capability to upload/download to the host version.

(2) The LCMIS for the Construction, Appropriations, Programming, Control, and Execution System (CAPCES) has been submitted to CEIM-L and is awaiting approval.

Included with this application are the sub-systems, MOBPRO and DIRNET. CAPCES supports the funds management and program formulation functions as related to the MCA, AFH, and MED (Defense Medical Facilities Office, DMFO) construction programs. CAPCES enables HQDA, MACOM and Installations to program and track approximately 35,000 individual projects in the Army Construction Programs. It manages and controls projects through the planning, programming, budgeting, and execution phases (fiscally and physically). CAPCES is the basis of system processes and organizational performance analysis, providing historical information, trend analysis and projections. The system provides project and program status reports to Congress, OMB, OSD, DA, MACOM, Installations, and USACE FOA.

(2a) The Mobilization Construction Programming System (MOBPRO), is a sub-system of CAPCES and is included with the CAPCES LCMIS.

MOBPRO is used in case of mobilization to report the status of the MCA program, allow instant review and revision of project priorities, determine current funds available to the MCA program, initiate design and construction of mobilization facilities and analyze the fiscal consequences of completing, canceling or accelerating active MCA projects.

(2b) The Directives System (DIRNET) is included with the CAPCES LCMIS.

DIRNET is the interface between USACE and USACE customers. Its primary purpose is to electronically transmit design and construction directives to USACE Subordinate Commands and FOA.

(3) The LCMIS for PC DUGOUT has been submitted to CEIM-L and is awaiting approval. PC DUGOUT is an application developed to transmit files via PAX. PC DUGOUT is a sophisticated yet very easy to use application that allows PC application managers to distribute software enhancements and modifications to any registered PAX PC DUGOUT user. PC DUGOUT also allows any of its users to transmit any file, including binary, to any other DUGOUT user.

(4) PAX is the mainframe teleprocessing platform described earlier.

(4a) PAXMAIL is an electronic mail system which provides a versatile E-Mail capability, uniquely tailored to operate in the PAX environment. A user friendly, PC-based front end to PAXMAIL (PC-PAXMAIL) has been operational since 1991. PC-PAXMAIL and CORPSMAIL (PC front end for USACE administrative E-Mail) are derivatives of PC-PAX efforts. A PAXMAIL-CORPSMAIL gateway provides for mail interchange between the two mail systems.

(4b) The Accounting and Control System provides for total automated control of log on security, accounting functions (including usage reporting, billings, printing SF 1080s, etc.).

PAX, PAXMAIL, and the Automated Control System (ACS) are all included

in the PAX LCMIS which was approved on 3 September 1993.

(5) The Army Criteria Tracking System (ACTS) is not managed by the PAX functional proponent. The functional proponent for this AIS is ACSIM. ACTS provides MACOM, including USACE, Installations, and HQDA, immediate access to Facilities Authorization Criteria data.

There are several other applications hosted on PAX, primarily by non-Corps organizations throughout the Army and DoD. There are also several applications under development or under consideration. A strict economic analysis is required to prove that PAX is the most economical solution for any new application. Expediency is not considered a valid reason for hosting an application on PAX. The PAX office will provide support and assistance in developing new PAX applications. For more information contact HQUSACE, CEMP-MC (DSN 763-0577).

Status/New Developments: A CEAP-IA/PAX gateway is in place. This has file transfer capability. Interactive capability is not planned until after the PAX re-compete. The 1995 Corps Corporate Information Architecture envisions both a gateway and a possible PAX extract resident on the CEAP-IA processors. Refer to a brief discussion on the extract concept under Section 2, "Group I Systems" of this planning guidance.

Impact to USACE Commands for FY97 and FY98:

- PAX will continue to be a FFS system through FY01. The new PAX tele-processing contract effective 01 Oct 97 will produce upgraded services at a reduced cost.

- New functionality, as described above, will continue to be added to the system. In addition, PAX will have greater reliance on micro front end processing using AI methodology.
- CEAP-IA will increase data and information available on PAX in the near future.

HQUSACE POC: Mr. John Sheehey, III, CEMP-MC, (202) 761-0577, DSN: 763-0577.

CW87001. Information Systems Modernization Program (ISMP)

Scope. This Requirement Statement (RS) number is reserved for use by the Program Manager - ISMP for approved ISMP development efforts. Included in this category are modernization efforts for Automated Information Systems (AIS) that support the Corps Information Architecture.

Definition. The ISMP AIS are managed and resourced based on a strict project slate. The HQ Information Resource Management Steering Committee (IRMSC) approves and prioritizes this ISMP project. See Section 2 for detailed discussion of the Corps Information Architecture and AIS modernization efforts. Refer to guidance under Requirement Statement category CEXX004 for discussion of the Corps philosophy on Life Cycle Management of Information Systems (LCMIS) and Corps Information Engineer Methodology (IEM). Hardware requirements (PCs, electronic signature boards, card readers, etc.) and software associated with the development of ISMP systems should be planned for under RS category CEXX002. The ISMP project slate currently consists of the four major AIS:

- Corps of Engineers Financial Management System (CEFMS)
- Program and Project Management Information System (PROMIS)
- Resident Management System (RMS)
- Real Estate Management Information System (REMIS)

Planning Guidance. Guidance for assessing current PC inventory and determining site requirements for deploying ISMP systems is contained in memorandum, CEIM-P, 10 May 93, subject: Personal Computer (PC) "Minimum Productive Configuration".

RSMS Input Guidance. This Requirement Statement category is reserved for use by the Program Manager - ISMP.

CEFMS and the Program/Project (PROMIS) AIS have received HQDA Requirement Statement approval. No further action is required.

HQUSACE POC: Ms. Brenda A. Gooden, CEIM-ZP, (202) 761-1043.

CEXX002. Support to Standard Systems

Scope. This category is to be used to identify single purpose, stand alone, or sole source hardware, software, and other support requirements *specifically related to* the implementation of DoD, HQDA-directed Standard Army Management Information Systems (STAMIS), or Class VIa or higher automated information systems (ER 25-1-2), and for which a Corps organization must resource directly (as opposed to being centrally funded by the automated information system Functional Proponent). Information Mission Area (IMA) assets which *aggregate* at $5,000 or greater are to be reported.

RS Candidates. Any new RS in this category will specifically identify the automated information system (AIS) to be supported *by name*, acronym, and the organization (e.g., DoD, HQDA, HQUSACE Staff Element) directing the AIS implementation. All IMA assets associated with a specific RS need to be discretely identified.

Exclusions. IMA assets acquired for general purpose use are *not* to be included in this category. Requirements for general purpose data processing or support for multiple AIS will be entered into a more appropriate RS category (e.g., CEXX019, General Purpose Data Processing; CEXX005, Office Automation Modernization; CEXX010, Communications Support; etc.). With the increased deployment of AIS in open systems environments, it is anticipated that use of this RS category will be the *exception*, rather than the rule.

Planning Guidance.

1. **PC/Workstation.** The USACE Personal Computer (PC) "Minimum Productive Configuration" Guidance, now called “PC Guidance”, for key applications being implemented by the Corps was updated on 30 Jun 1996. Information on ISMP systems and other AIS was expanded and updated. Trade-down exchange guidance, with new PCs being procured for "Power Users," is also included in this guidance. The section on New PC procurement was completely updated and expanded, and now provides a *minimum* set of specifications to be used for new PC acquisitions for single tasking systems (DOS or Windows-based). “PC Guidance” is expected to be updated by 30 July 1997.
2. **Standard Systems Development.** IM Policy Memo 25-1-21, USACE Application Development and Open System Environment Policy, dated 23 Feb 93, was renewed on 3 Mar 94, 22 Feb 95, and 18 Feb 97. Updates to the DoD Technical Architecture Framework for Information Management (TAFIM), the approval of the Army Technical Architecture - Version 4.5 (with Version 5.0 expected to be approved in Aug 97), the approval of the Joint Technical Architecture - Version 1.0, and the Corp’s evolving Architecture 2000 will influence the services, standards, design concepts, components and configurations which, in turn, will determine the contents of the follow-on ER (under development) to this policy memo.
3. **Upcoming Modifications/Influences.** Compliance with the Army Technical Architecture (ATA) is mandated. Each Major Army Command and Program/ Product Manager is responsible for compliance with the ATA. Compliance with the ATA will be evaluated at each MAISRC/CMAISRC Milestone Decision review and by each Milestone Decision Authority.

Related References.

- ER 25-1-2, Life Cycle Management of Automated Information Systems (AIS)

HQUSACE POC: Mr. Larry T. Kennedy, CEIM-P, (202) 761-1627

CEXX003. Technical/Scientific/ Engineering (TSE) Support

Scope. This Requirement Statement category applies to requirements to specifically support technical, scientific, engineering (TSE) processes for the Corps. It includes all devices, components and systems, exclusive of communication, which provide engineering support, statistical analysis and modeling, to include high resolution graphical presentation capabilities. It supports the Corps Corporate Information Architecture 2000 currently under development. TSE requirements are envisioned to operate on the TSE segment of the backbone LAN. See Section 2 for TSE LAN segment details, and Appendix 6, Backbone LAN.

Currently, the three principal users of this architectural concept are Computer Aided Design and Drafting (CADD); Geographical Information Systems (GIS); and Water Control Data Systems (WCDS). Other uses and functions that may fall into this category include scientific and statistical data analysis, modeling, environmental analysis, land and natural resource management, and disaster recovery operations as they relate to topographical mapping or modeling. Other prospective uses of this category for technical requirements not listed should be coordinated with HQUSACE, CEIM-L.

Definition. Technical/Scientific/ Engineering (TSE) requirements in this category include automation hardware and software applications that support those TSE functions and business processes identified above. The category also includes training, facility/utility upgrades, and other items which, by design, directly support TSE functions. The category also includes other peripheral equipment, *except communications* (i.e. plotter, special printers, dual monitors, scanners, tape interfaces), which are used in direct support of TSE functions.

Exceptions for this Category.

a. This category does not include general OA business applications such as word processing, spreadsheets, business graphics, general database management, Electronic Data Management Systems (EDMS) or desktop publishing, even if solely in support of TSE functions, unless the publishing capability is an integrable add-on to a TSE-specific environment.

b. Applications or hardware in support of Water Control requirements will be included in category CEXX007.

c. Local Area Networks (LAN) and Wide Area Networks (WAN), such as the Backbone LAN, which are multi functional (e.g., support administrative as well as TSE) will be included in category CEXX010.

Planning Guidance.

1. The Corporate Information Architecture for computing and communications must be considered (as it develops and evolves) when creating RS under this category.
2. The technical provisions contained in Category CEXX010, communications/ network support, should be consulted to ensure that procurement under this category which interface with communications systems are functionally and technically compatible.
3. New RS, and changes to current RS, in this category need to comply with the integration/migration requirements of the Corporate Information Model for the Backbone LAN (e.g., on and after FY97, new procurement will be made against, and be compatible with, the architectural models contained in Section (2)).

4. Include special purpose TSE software in this category.
5. Life cycles should be considered at four to six years for TSE support systems to ensure cost-effective amortization of acquisitions.
6. Two other major systems which influence TSE design, and affect the extent of integration of function, should be considered when procuring new hardware or software under this category. These are:

   a. Water Control Data System (WCDS). Although the Water Control system will be a separate subnet of the backbone LAN for data collection and assimilation, summarized and aggregated data will still need to flow within the Command network backbone and be transported to higher HQ for congregated analysis. See Category CEXX007 for further details. Where possible, workstation procurement requirements that can accommodate both WCDS and other TSE requirements should be consolidated for compatibility purposes.

   b(1). Computer Aided Design and Drafting(CADD)/Computer Aided Engineering (CAE) Systems. The Corps CADD contract for the Intergraph System expired at the end of FY92 for new procurement purposes, and at the end of FY95 for maintenance support. Replacement systems may be purchased through the Navy CAD2 contract. CADD requirements can also be met through competitive procurement, through GSA contract schedules, other government contracts, and/or sole source for requirements of less than $50,000.

   Maximum consideration should be given to multi-use capacities (i.e., CADD and Geographical Information System (GIS) or Water Control Data Systems (WCDS)) of equipment to be purchased. The HQUSACE CADD POC is Mrs. Jean McGinn, (202) 761-1052. The POC for technical support and technical information on the CAD2 Contract is John Hood, U.S. Army Engineer Waterways Experiment Station, (601) 634-3138.

   b(2). Geographic Information Systems (GIS). A GIS is an information system that captures, stores, manipulates, analyzes, and presents geospatial data-data coded to a particular location on the earth's surface (e.g., latitude/ longitude, state plane coordinates, hazardous waste site, etc.). A GIS allows users to overlay multiple digital images such as roads and wetlands to facilitate analysis. A GIS can also integrate the attributes from each unique layer, while maintaining spatial referencing. In essence, a GIS is both a tool and a process for bringing together, from various sources, data about boundaries (geospatial data) and data about those features (attribute data) to query , manipulate, analyze, and present those data. A GIS integrates the attributes from each unique layer. Most Corps districts, divisions, and laboratories use a GIS to some extent to produce such products as river and harbor maps; environmental studies; and channel condition reports.

   The administration has placed emphasis on geospatial data and the related technologies, such as GIS, in Executive Order 12906 -Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure (NSDI). Specific guidelines and deadlines are outlined in Executive Order 12906 that require Federal agencies to document their geospatial data holdings and make this documentation and data available to the public.

   Engineering Regulation 1110-1-8156, Policies, Guidance, and Requirements for

Geospatial Data and Systems; Engineer Manual 1110-1-2909, Geospatial Data and Systems; and Engineering Circular 1130-2-206. Dissemination of Electronic Geospatial Data on Navigation Projects; outline the plans to maximize the Corps' investment in GIS and other geospatial data-related technologies and to comply with Executive Order 12906.

GIS and Geospatial Data and Systems technologies are coordinated through HQUSACE, CECW-EP, Mr. M.K. Miles, (202) 761-8885.

7. Computer Aided Engineering (CAE), CADD and GIS. These systems are increasingly bound together by similar functionality requirements and system environments that can accommodate both tasks. These applications are storage-intensive and may involve procurement of larger capacity fixed drives for microcomputers or workstations or other large volume storage devices. Future plans beyond FY97 also call for the integration of CADD, specifications, and CACES (Computer Aided Cost Engineering Support) Systems. Project managers, designers and engineers can rapidly determine construction costs after design, and see cost alternatives for engineering design changes.
8. Global Positioning Systems (GPS). Validated RS are required for acquisition of GPS equipment intended for USACE field activities engaged in real-time, or near real-time, navigation or positioning (e.g., dredges, hydrographic survey vessels, marine construction plant, vehicles, or aircraft); engineering and construction surveying functions; controlling or mapping planimetric, topographic, facilities, and other geographic/spatial features; or development of GIS databases.

   RS validation requirements are prescribed in CECW-EP policy memorandum, dated 27 January 1994, subject "Acquisition and Use of Differential GPS Equipment (DGPS) for USACE Activities."

   The objectives of this GPS acquisition policy are to: (1) ensure USACE compatibility with current and future Federal DGPS policy, (2) develop Corps-wide consistency in DGPS instrumentation and system operation, (3) ensure DGPS acquisitions are technically sufficient and are fully utilized, and (4) prevent redundant establishment or development of independent USACE DGPS navigation or positioning networks where other Federal (e.g., U.S. Coast Guard Radio beacon DGPS) or private DGPS network systems will provide adequate coverage and accuracy.

   This policy applies to both code and carrier phase DGPS positioning techniques; absolute GPS equipment is excluded.

RSMS Input Guidance.

Update RS. Previous initiatives supporting TSE should be reviewed to see if changes are required. Some current RS may not have been approved for out-years and should be updated and/or reallocated as appropriate. For those funded and in progress, update accordingly.

HQUSACE POC:

CADD/CAE: Mrs. Jean McGinn, CEMP-ES, (202) 761-1052

GIS: Mr. M.K. Miles, CECW-EP-S, (202) 761-8885

CEXX004. Automated Information Systems (AIS)

Scope. This Requirement Statement (RS) category applies to Automated Information Systems (AIS) for which Major Subordinate Commands(MSC)/Districts, Laboratories, and Field Operating Activities (FOA) are the Functional Proponent or Material Developer for Milestone 0 through Milestone 3. DoD Directive 8120.1, Life Cycle Management of Automated Information Systems (AIS); AR 25-3, Life Cycle Management of Information Systems; and ER 25-1-2, Life Cycle Management of Automated Information Systems (AIS) (Corps implementation) define these milestones. AIS that are defined as Class I through Class VI must be included in a Requirement Statement (See AR 25-3 and ER 25-1-2 for an explanation of classes). AIS, regardless of program costs, that will be deployed at multiple sites beyond the jurisdiction of the MSC, Lab, or FOA must meet the requirements of a Class VIa or higher approval authority. This category primarily applies to new systems which do not yet have a special category, or have not been accepted by ISMP for management and development.

Exceptions for this Category. AIS being developed under ISMP will be identified under category CW87001, Information Systems Modernization Program. Support to existing programs will come under category CEXX002, Support to Standard Systems.

Definition. An AIS is defined as a combination of information, computer hardware, computer software, telecommunications, and other related resources which collect, record, process, store, communicate, retrieve, and display information. For purposes of this guidance, consider these additional factors to assist in defining an AIS for this category:

- Requires specific recurring information gathering and processing to support one or more Corps business processes with defined and approved requirements.
- Requires structured database support, either from new database requirements or modified existing requirements.
- Requires computer programming support for development and for maintenance.

Requirement Statement Management System (RSMS) Input Guidance.

a. RS currently validated in the RSMS database, requiring no changes for this planning period, remain approved. No further action is required unless approval was contingent on corrections, or the original RS needs updating (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS.

b. Each AIS requires a separate RS.

c. RS for AIS that duplicate the functionality of other RS within an MSC, Lab or FOA should be consolidated into one RS. RS that cross MSC, Lab or FOA boundaries will be treated as Class VIa systems and must be submitted to HQUSACE for validation. This will facilitate the approval process.

d. Hardware and communications acquisition costs to support this RS category must be separately reported in the Remarks section or narrative, by Fiscal Year as appropriate.

Planning Guidance.

The following should be considered when planning for an AIS requirement:

1. **Program Costs.** AIS program cost estimates should be used in developing a RS. Program costs must include, but are not limited to: acquisition and approval process, design and development, travel, training, documentation, personnel, hardware, software, contract services, leases, supplies and site preparation costs. Program costs include only those costs incurred from the need justification phase through completion of deployment at each site (AR 25-3).
2. **LCMIS.** AIS must comply with the Life Cycle Management of Information Systems (LCMIS) documentation required by AR 25-3 and ER 25-1-2. A discussion of LCMIS and Corps Software Engineering Methodology follows.
3. **Technical Guidance.** All AIS submitted under this category will follow LCMIS procedures and be developed according to the Corps Information Engineering Methodology as discussed below.
4. **Systems Platform.** All AIS developed under this paragraph will use the CEAP-IA platform as the primary carrier, holder, and distributor of data and information. Exceptions must be fully justified through the Information Resources Management Working Committee (IRMWC) to the HQUSACE Information Resources Management Steering Committee (IRMSC).

USACE Life Cycle Management Information System (LCMIS).

LCMIS is a management framework for incorporating modern information management practices consistent with Congressional, DoD, and Army regulations and guidelines. The USACE LCMIS is in accordance with the Army LCMIS model and AR 25-3, Army Life Cycle Management of Information System, and ER 25-1-2. This ER is a complement to AR 25-3, geared specifically to Corps users. **LCMIS is mandatory for USACE-developed AIS.**

LCMIS Phases.

Specific guidelines on classes of systems and the requirements decision authority, as well as a complete description of the LCM phases and milestones and activities to be accomplished within LCM phases are contained in ER 25-1-2. These phases are:

- Mission Need Justification. (precedes initiation of the LCM phases)
- Concept Exploration and Definition - Phase 0
- Demonstration and Validation - Phase I
- Development - Phase II
- Production and Deployment - Phase III
- Operations and Support - Phase IV

Application Development Methodology (ADM).

The Corps Application Development Methodology (ADM) is a methodology that efficiently provides quality information systems. It is supported by the Managers Guide to Life Cycle Management of Automated Information Systems. The methodology recommended by the USACE, CEIM-SE, accomplishes the following objectives in developing AIS:

- User-driven requirements for AIS. Every AIS falling under this requirement must have a functional user as the proponent, designated in writing by the sponsoring unit's Commander.
- Information systems that contribute to the mission, and are efficient and cost-effective. AIS developed under this requirement must have an appropriate cost analysis.
- Methodologies to bring together users

and technicians in effective Application Development Teams. For Corps systems, the ADM (previously PDC) approach is the preferred method of systems development.

- Techniques to document analysis and decision making in a standard format for Corps-wide interchange and understanding.
- Conformance with DoD and Army Standards but with extensions and clarifications as needed if required by Corps unique business needs. Developers must adhere to these standards at all times. Only in rare cases will exceptions be made.

ADM is the mandatory methodology that must be used when developing Corps-wide information systems (i.e., Groups 1, 2, and 3 systems) and is the recommended methodology for developing all Corps AIS. Figure 3-2 shows a generalized model for ADM. Its explanation follows:

ADM Activities.

ADM has six major activities, each of which include a number of sub-activities. These activities are:

- Perform Conceptual Development and Plan
- Perform Design
- Acquire Applications
- Program Development
- Perform Integration and Beta Test
- Perform Operational Transition and Deployment

Application Development.

There are three interacting and concurrent functions performed during the execution of the six major ADM activities. These functions are Technical Support, Project Management, and Product Assurance. Each of these major functions is discussed below. Figure 3-2 shows the relationships of ADM activities to the functions.

Technical Support.

These are the actual technical activities performed during each phase of systems engineering which ultimately result in the development of the AIS. These tools and techniques include:

- **Structured Modeling Techniques.** Structured Modeling Techniques are graphically oriented, structured approaches for specifying, analyzing, and modeling the Corps' business, data, and activities. Although there are a number of structured modeling techniques available, **IDEF is the formal modeling technique recommended by the Corps.** IDEF, an acronym for **I**ntegrated Computer-Aided Manufacturing **DEF**inition, an Air Force-developed modeling language/technique, has two components: FIPS PUB 183, "Integration Definition for Function Modeling (IDEF0)" for activity modeling; and FIPS PUB 184, "Integration Definition for Information Modeling (IDEF1X) for data modeling.

  Training and education on the IDEF Modeling techniques and how they are applied in support of systems engineering is required.

  The data and activity models are supported by the Data Encyclopedia and any IDEF-compliant PC modeling tools (e.g., BPWin, ERWin). This system is used to support Systems Engineering activities and promote the use of the Corps standard data. The Data Encyclopedia addresses the Corps' needs by providing users with an information sharing tool, a repository of metadata (information about data), and an automated cross reference resource tool which are all used by the information

resource methodology adopted by the Corps.

- **Applications Development (AD) Environment.** The Information Infrastructure Support Division (CEIM-S) proposes the definition, development, and/or acquisition of an application programming support environment. AD's goals are to unify the systems development throughout the organization using system engineering techniques, and to master a common set of tools in the Data Encyclopedia. Technical development guidance is detailed in the Manager's Guide to Life Cycle Management of Automated Information Systems. The manual contains recommended procedures and outlines USACE technical guidance to be followed during the AIS development process. These tools should preferably operate on micro to mini to mainframe, and in a multilingual (Ada, C, COBOL, and FORTRAN) environment.

  These tools include project management and resource estimation technologies, debuggers, test data generators, and the use of the Corps Data Encyclopedia.

- **Database Management System (DBMS).** The Corps utilizes a relational database management system that facilitates creating AIS that can be integrated easily and readily share information. The Army has mandated the use of American National Standards Institute (ANSI) Structured Query Language (SQL) as the standard DBMS access language for all business AIS. This does not apply to Technical/ Scientific/ Engineering systems which rely on data for mathematical analysis, modeling or other TSE type functions. SQL literacy must be given a high priority for systems developers. The Corps major business systems (Groups 1, 2, and 3 of the 1995 Corporate Architecture) have migrated to the ORACLE DBMS. The use of Corps-licensed ORACLE products/services should be given strong consideration when developing AIS.

- **Corps Data Elements.** See discussion of Data Management under Product Assurance.

- **Programming Languages.** HQDA Ltr. 25-90-1, dated 16 July 1990, provides guidance on the use of specific programming languages in support of AIS. Although Congress recently passed laws mandating the use of Ada for all DoD AIS, this letter remains the primary reference in the use of fourth generation languages of AIS development. Until changed, highlights are: The approved ad hoc query Data Base Management System interface language for Army systems is the Structured Query Language, Federal Information Processing Standard (FIPS) 127.

  Requests to use other higher order languages (FORTRAN, COBOL, etc.) will be granted when the use of such language is estimated or calculated to be more cost effective or more operationally effective over the application's life cycle.

Project Management. This is the set of tasks necessary to manage information systems development projects, including defining the milestones, determining task durations, allocating resources, and tracking project progress. Tasks under this function also include ensuring that DoD, Army and Corps requirements are met throughout each phase of the life cycle including:

- DoD-STD 7935-1 (e.g., System/Subsystem Specifications, Software Unit Specifications, and Database Specifications)
- AR 25-3 (e.g., Mission Need Statement, and System Decision Papers)

- ER 25-1-2 (Corps implementation of AR 25-3)

Product Assurance. This function involves major systems development tasks performed to ensure the development of a quality product. These tasks include:

- **Data Management.** Data Administration and Database Administration continue to be critical components during the life cycle of ISMP and non-ISMP AIS. The Corps has spent considerable time and resources reducing redundancy of data elements within its AIS infrastructure. All AIS should be technically aimed at fully utilizing the USACE Command Data Model, Data Encyclopedia, and Data Dictionary for source and identity of data elements. The Corps Encyclopedia, when fully developed, will contain references to re-usable code. For future planning, it is suggested that, when a proposed AIS has more than 40% commonality with existing Command data elements, the proponent should strongly consider supplementing or augmenting existing systems to meet the requirement. Data Management tools and techniques include:
  - IDEF Modeling Techniques: used to develop the Corps activity and data models to graphically and descriptively depict the Corps business processes.
  - Command Data Model (CDM): a graphical representation of the structure of the USACE corporate data. It contains entities, relationships, and data elements of Corps-wide interest.
  - Command Data Dictionary (CDD): a printed glossary of data terms also residing in an automated Data Encyclopedia. The Encyclopedia is a central repository of metadata (information about data) used in Corps AIS

  The CDM is the base from which shared information will evolve in the Corps. Corps-wide 1995 architecture information systems (Groups 1 and 2) must use the Encyclopedia/CDM as the basis for their conceptual and physical data models. In the interim, until full deployment of the Encyclopedia, the CDD/CDM will be used. FOA are encouraged to use these tools and techniques in the design and development of all AIS.
- **Configuration Management.** This is the discipline that applies technical and administrative direction and surveillance over the life cycle of items IAW DA PAM 25-6, Configuration Management for Automated Information Systems, to:
  - Identify and document the functional and physical characteristics of configuration items.
  - Control changes to configuration items and their related documentation.
  - Record and report information needed to manage configuration items effectively, including the status of proposed changes and implementation status of approved changes.
  - Audit configuration items to verify conformance to specifications, drawings, interface control documents, and other contractual requirements.
- **Quality Assurance (QA).** Software QA includes procedures, techniques and tools that are applied to ensure that an AIS meets or conforms to stated objectives, goals and requirements. Standards and methods are prescribed in AR 25-1, The Army Information Resources

Management Program. QA includes:

- Standards and Compliance
- Verification and Validation
- Auditing
- Testing (Unit, Integration, System, and Acceptance) (TB 18-104, Army Automation: Testing of Computer Software Systems)
- Documentation (TB 18-111, Army Automation: Technical Documentation)

Manager's Guide to Life Cycle Management of Automated Information Systems. The recently revised Manager's Guide to Life Cycle Management of Automated Information Systems, version 1.1, March 1995, provides general guidance on the use of the Corps Application Development Methodology (ADM), tools, and techniques for developing AIS.

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CEXX005. Office Automation (OA) Modernization

Scope. This category applies to all IMA requirements in support of general business-type functions and processes which do not require specific-type support to accomplish well-defined specific processes, approved or to be approved under other initiatives or RS. For example, a minicomputer with ten terminals for CAD/CAM processing is not OA; the addition of another workstation to provide word processing, database, and other support applications for users of that system is OA. The two are kept separate.

Exceptions for this Category. OA does not include LAN communications equipment (i.e., multiplexors, bridges, routers, etc) or file servers dedicated to LAN management. These are communications devices and belong in category CEXX010. An exception may be made for systems which permit peripheral and printing sharing without data storage or manipulation. E-Mail systems are requested here. If yearly aggregate costs of OA are more than $5,000, they must be reported here.

Definition. The USACE working definition of Office Automation is:

"The use of computer systems and communications technology to perform general, every day tasks such as document management, electronic mail, archiving and retrieval of text/graphics groups. The operation of systems in which a machine interface is required for the user to create, work with, display or delete records within a general office environment."

OA supports Corps missions and business processes by providing end users with the following automated capabilities:

- Text processing and printing;
- Numerical and mathematical processing and calculating;
- Data collection, storing, processing and reporting;
- Creating and displaying graphical images;
- Access to the World Wide Web (WWW);
- Transmitting data through messages and files; and
- Sharing files and applications via LAN access methods.

Office automation is considered, as a category, to be **a set of local information resources**, normally used by **individuals** in general support of the various business processes of the Corps. It does not have the characteristics of an Army or Corps standard automated information system (e.g., crossing several commands, either horizontally or vertically). It also does not generally support a singular business function; rather, OA generally supports several business functions.

Components of Office Automation.

Office Automation will be grouped into two major categories: computer hardware and computer software. These categories normally consist of *commercial off-the-shelf (COTS) components*. A general description of each category, and its associated components, follows and includes a discussion of the Corps' policies, information transfer standards, and guidance regarding each technology. These policies, transfer standards, and guidelines provide the Corps with an overall framework for designing more effective, efficient, and cost-beneficial office automation systems. Computer Hardware. The computer hardware that supports office automation comprises general purpose, multifunction end-user workstations consisting of some of the devices described below. The standards and guidance provided should be used within

commands to optimize as much as possible the following:

Central Processing Unit (CPU). This houses the boards and electronics that allow the computation of data. All supported applications will operate with the MS/PC DOS operating system version 5.0 or higher. All general-purpose microcomputers must support or emulate the Intel 80xxx or Pentium CPU. The Corps' current target and objective architectures standardize to an advanced Intel-based workstation. New equipment should focus on upgrade capability at the processing chip/memory chip level. This should be most economical.

Monitor. This includes the display terminal and the graphics card adapter. For general OA computing, a monitor system should have a 14" VGA screen, be non-interlaced with color, .28 dpi and graphics card supporting, at a minimum, 640 X 480 resolution. Most vendors sell the CPU and monitor as a package; cost, technical needs and utilization should determine purchasing a separate monitor.

Keyboard. Differences in keyboard format impacts the typing speed of the user (productivity). To reduce incompatibility, the enhanced AT style keyboard is recommended for standardization, but the newer ergonomical manufactured keyboards should be given consideration for personnel displaying signs of corporal tunnel syndrome.

Disk Drives. These are the devices used for the physical exchange and storage of data. The devices must support the following characteristics:

Floppy:

5.25" Disks DS/HD 1.2 mb

3.5" Disks DS/HD 1.44 mb

Hard Disk:

Interfaces. At present Integrated Drive Electronics (IDE) and Extended Integrated Drive Electronics (EIDE) are the most prevalent disk architectures for individual workstations. The Enhanced Small Device Interface (ESDI) is used mostly in IBM equipment. Small Computer System Interface (SCSI) is recommended for LAN and individual file servers, but is being used in Multimedia PCs. USACE commands should follow industry standards to reduce costs and allow interchange of equipment for rapid repair. The size of the hard disk should reflect the most economical $/MB in addition to compatibility.

Memory Requirements. Memory is driven both by user requirements and software requirements. Today's OA software require more than 640k Random-Access-Memory (RAM). Multitasking and Graphical User Interface (GUI) environments push memory requirements even further. Memory sizes should be at least 24mb, with easy expandability. For servers or general LAN controllers, minimum memory requirements should not be less than 32mb. Cache memory does speed operation considerably; however, it also has a cost.

Computer Software. The computer software applications that support office automation are general purpose, multi functional software.

Operating System. All office automation applications should operate with the MS/PC DOS operating system version 5.0 or higher. Microsoft NT and Windows 95 platforms are also permissible. UNIX can be used for specialized workstation functions.

Graphical User Interface (GUI). Standardizing the graphical user interface

of workstations offers a consistent user interface from one application program to the next, and from one workstation to the next. A standardized GUI saves time, makes programs easier to use, and reduces the learning curve. Graphics-based GUI include Windows, GEM and Deskmate. UNIX also has GUI, the most notable of which is X-WINDOWS.

Word Processor. Word processing packages must be capable of importing and exporting files in the American Standard Code for Information Interchange (ASCII). The most common packages currently in use at the Corps are developed by COREL Corporation, Microsoft Corporation and Borland International. With the advent of the CEAP backbone network, document interchange and format conversion plays a predominant role. USACE commands are encouraged to use the WordPerfect 5.1 format for document exchange and interoperability with the Headquarters and across Divisions. Divisional/ Directorate preferences can be any word processing package capable of this conversion.

Spreadsheet. Spreadsheet programs must be capable of importing and exporting data, formulas, and macros in Lotus 1-2-3 WK1 format. The most common packages currently in use at the Corps are developed by Lotus Corporation and Microsoft Corporation. USACE commands are encouraged to use the Lotus 1-2-3 WK1 format for data interchange and interoperability. Divisional/Directorate preferences can be any spreadsheet package capable of this conversion.

Database. Database programs must be capable of importing and exporting data, reports, and macros in dBASE III formats. ORACLE is the corporate Database Management System (DBMS) standard for Corps-wide databases. To access the corporate databases, an SQL language must be supported by the OA DBMS. USACE commands are encouraged to use the dBASE III format for data interchange and interoperability. Divisional/Directorate preferences can be any database package capable of this conversion.

Business Presentation Graphics. For general business graphics, the Corps has established format specifications and standards in ER 25-1-90. Business presentation graphics programs must be capable of importing and exporting ASCII and Computer Graphics Metafiles (CGM). USACE commands are encouraged to use the CGM format for data interchange and interoperability. Divisional/Directorate preferences can be any presentation graphics package capable of this conversion.

Communications Software. The standard asynchronous PC communication application package for use by the Corps is Vistacom. Vistacom is available through a Corps-wide site license. For general communications to other local hosts, commercial communications software must support full binary and ASCII file transmission with complete error checking. At a minimum, the software must support xmodem, ymodem, zmodem and/or kermit transfer protocols. Transmission speed should be no slower than 19,400 baud. The Army has a site license for Procomm v2.4.2.

Electronic Mail. The Corps has a certification process it requires for X.400 compliancy. To date, three E-Mail systems have been certified; they are Novell GroupWise, Lotus (cc:MAIL) and Microsoft (Microsoft Mail). Any other X.400 compliant systems must first be certified before acceptance as valid.

RSMS Input Guidance.

a. RS submitted under this category need not be consolidated for subordinate activities (e.g., districts), unless they are part of a larger MSC/Lab/FOA Office Automation solution. Use the formula contained in Table 1, Office Automation, USACE Information Management Strategies Plan (Addendum), Nov 91, for planning OA requirements.

b. RS currently validated in the RSMS database, requiring no changes for this planning period, remain approved. No further action is required unless approval was contingent on corrections, or the original RS needs updating (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS. The OA category represents one of the largest IMA categories for expenditures; thus, close management is necessary.

Planning Guidance.

1. **Additional Considerations.** Workstations. PCs and workstations fall into three basic categories. Planners should use these guidelines when selecting and costing equipment.

   - **Low End User.** These are basic type workstations normally used by administrative personnel but can be used for guest stations or in a loner pool. The standard workstation for these users should be a high-end 386 to mid-range 486 with 12mb RAM, 500 mb hard drive and other peripherals, depending on job function. There is no requirement for VGA color monitors, EGA will suffice since most modern application systems use color.
   - **Medium End User.** These are workstations used by action officers and project officers. They should be high-end 486 machines with a minimum of 20mb RAM, 800+ mb hard drive and high speed modem to handle more specific software applications, e.g., database, spreadsheet, business graphics, E-Mail, special connections to mainframes. These machines should be equipped with graphics capability (VGA standard).
   - **High End User.** These machines are for power users, software engineers and data administrators who work with large amounts of data and are multi-functional in duties. They should be high-end 486/Pentium machines with a minimum of 24mb RAM, 1+ gig hard drive and high speed fax modem. Monitors are minimum VGA with more in SVGA models and 2-4mb VRAM. These machines should be able to support multimedia and web access. Common peripherals could include color printers, plotters, digitizers and scanners.

2. **Additional Hardware Guidance.**

   - Each MSC should develop procedures for the downward migration of older equipment as new requirements became satisfied.
   - Cost effectiveness includes determining the cost differential between new equipment and upgrading old equipment to meet new requirements, i.e. new motherboard, faster CPU, graphics board with memory.

3. **Additional Software Guidance.**

   - Try to plan for software upgrades in a controlled manner. The best plan is to upgrade simultaneously, organization-wide. Although high in initial costs, in the long run it is cheaper. Better deals can frequently

be made with software manufacturers. This method also eliminates "version variance" among users, a productivity "thief".

- LAN versions of applications. Best to determine this on a per-application basis; all are different and all have different usage loads. As a guide, LAN versions seldom are cost effective if less than 25% of the LAN users use the application less than 25% of the time.
- Minimum copies on LANs. There is no specific guidance or standard. Again, it depends on the application. Of critical importance are the requirements of the copyright laws for each software application in use and there can be no chance of more than the maximum number of copies in operation at any time than is authorized. If 10 licenses have been procured for the LAN, then no more than ten users may execute simultaneously.

4. **Upgrade of software.** Vendors are offering upgrades and switch-overs at very attractive rates. Consideration should be given to this method of staying current with latest versions. The Corps-wide IT contracts are viable vehicles for obtaining new products, upgrades and maintenance for required products.
5. **Laptop and Notebook system computers.** These items are to be considered solely under this category, regardless of business process supported. When acquiring these systems, independent systems are better, for they easily integrate with a variety of other equipment. They also can be loaners for equipment under repair.
6. **Acquisition.** During acquisition, consider the cost of the following:
   - Purchase of equipment. Priority should be given to existing pre-negotiated
   - Contracts (Corps-wide ITs, Desktop (x), SMC Contract, GSA)
   - Buying now versus waiting for better technology.
   - One-time license fees associated with software.
   - Upgrading versus migrating to a completely new software.
   - Planning and selecting personnel to use the equipment.
   - Training of personnel to use the equipment.
   - Initial hook-up charges for carriers.
   - Initial wiring costs.
   - Upgrading office electrical supply

In planning for office automation, the full life-cycle cost considerations must be taken into account, and LCMIS cost/ benefits will be a factor. General purpose OA life cycle should be considered to be three years for the primary user, with an additional three years for the secondary, or follow-on user(s).

Office automation is an aggregate of several things. However, try not to shove everything in this category if other categories exist; this will increase the dollar amount and could cause delays in approvals.

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CEXX006. Automation Security Support

Scope. This Requirement Statement (RS) category applies to the security of information resources (e.g., systems, software, and data), for Major Subordinate Commands (MSC)/Districts, Laboratories, and Field Operating Activities (FOA). Particular emphasis is placed on microcomputer and Local Area Network (LAN) security. Security requirements in support of "office automation" should be included here. See the definition of office automation under CEXX005.

Exceptions to This Category. Automation security requirements which directly support development and design of a specific Automated Information System (AIS) should be included by the Functional Proponent in the RS supporting that particular AIS.

RSMS Input Guidance. RS currently validated in the RSMS database, requiring no changes for this planning period, remain approved. No further action is required, unless approval was contingent on corrections, or the original RS needs updating (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS.

Planning Guidance.

- **Security (New Systems).** The security of information resources (systems, software, and data) is receiving more attention. It is well known that controls designed into a system are generally much more effective than retrofitted controls. It is also well known that security is one of the last things system developers and functional proponents consider when developing a new system. Therefore, more effort needs to be devoted to security during the design phase of system development.

Although access control has been the emphasis of most past security, the view of security and trust in our automated information resources must be expanded. There are three major categories under which security and trust requirements can be cataloged. These are:

- **Confidentiality:** controlling who gets to read information;
- **Integrity:** assuring that information and programs are changed only in a specified and authorized manner, and
- **Availability:** assuring that authorized users have continued access to information and resources.

These three requirements may be emphasized differently in various systems/applications or databases, but all need to be included in the security requirements for any system.

At present, Corps automated information system security policy is derived directly from Army policy. The primary guiding Army regulation is AR 380-19, Information Systems Security, 1 August 1990. There are plans to produce a USACE supplement to this AR as soon as the new update of AR 380-19 is published. AR 380-19 also defines requirements for accreditation of all Army information systems. It says that "cost-effective information security measures" should be used "to respond to specific threats and vulnerabilities associated with each information system," and that "measures taken to attain information systems security objectives will be commensurate with the importance of the operation to mission attainment, the sensitivity and criticality of material being processed, and the relative risks (threats and vulnerabilities) of the system. " It also states that statements of security-related requirements will be part of all new development. This includes not only new system development but any new programming or even any significant

program or system maintenance where security requirements may change. A statement of requirements is necessary even if it is known that the capabilities to meet these requirements is not immediately available. In this case, a plan as to how the security requirements will eventually be met is required. *Every Corps system must be accredited before it can be used!*

It can be derived from AR 380-19 and other laws, directives and guidance that security requirements are to be measured using three primary criteria:

(1) Sensitivity of the data-primarily legal definitions based on several public laws, DoD directives, and AR;

(2) Criticality of the information resource – how important the data or processing is to your organization; and

(3) Risk (or risk/benefit) - threats and vulnerabilities of your system which are most likely to be exploited and the relative costs associated with various protective actions.

All of these factors need to be taken together to develop a comprehensive, cost-effective security strategy.

Of these three factors, data sensitivity, the "confidentiality" requirement, continues to have the most emphasis because of the legal requirements associated with protection of the cordidentiality of "unclassified but sensitive data. " But with ever increasing reliance on automation, system developers must begin to scrutinize more carefully the criticality of the system. Security controls must be developed based on cost/benefit analysis of the cost of losing control of the data, the "integrity" factor, or losing access to the information resources (the "availability" factor vs. the risks imposed by threats to the system).

To assist in this process, a security requirements development methodology is being developed for inclusion in the Manager's Guide to Life Cycle Management of Automated Information Systems, App. 7, Security and Internal Control Consideration. This methodology primarily covers development of security requirements and appropriated control methods for the confidentiality, integrity and availability controls that need to be imbedded within all new systems and applications software. The methodology also captures the sensitivity, criticality and some of the risk information required for procedural and other security controls. It is recommended that these procedures be used as the model for internal controls development for local use software. The bottom line is that all new development must be supported by security analysis and determination of requirements, and appropriate security controls must be part of the system design.

- **Security (Microcomputer)**

The most recent Army Information Mission Area (MA) planning guidance (Information Mission Area (MA) Plan for the Continental United States (CONUS) HQ USAISC, May 1992) states that single user workstations used to generate, store or transfer sensitive, unclassified information, including E-Mail, will require an upgrade to class C2, which is controlled access protection. FOA should have installed security software on their PC and LAN used sharing of computers as the sharing of software. Service technicians and salesmen demonstrating software unwittingly spread viruses. So do people who bootleg or use pirated software. Conscientious people who "do everything by the book" spread viruses. Occasionally, software which is downloaded from electronic media also contains viruses.

The people responsible for introducing viruses to a given organization are not necessarily malicious, criminal, or even careless. They are generally highly experienced, capable users and engineers. Once a computer virus is released to the "public environment," at least one computer

is infected by it. If the virus in that infected computer is successful at copying itself to another computer (replicating), then there will be two infected computers. If each of these viruses successfully replicates, then there will be four infected computers, then eight, then 16, 32, 64, 128, 256, 512, and so on. The number of infected computers at any given time is not likely to follow these numbers exactly, but if a computer virus is successful at replication in the "public environment" its growth process is essentially geometric.

Today, even if there were only a few computer viruses replicating in the "public environment," the threat would still be very serious because each successful virus grows at an exponential rate. But there are more and more viruses every week. In October 1988, by most accounts, there were only three MS DOS computer viruses (The Brain, Lehigh, and Jerusalem viruses). By October 1989, IBM had cataloged almost 30 and other organizations had cataloged about 670 different viruses. In the spring of 1995, there are nearly 6,000 known viruses worldwide, and as many as 200 new ones pop up each month. If computer viruses were an annoyance or curiosity in the past few years, they are a real and significant problem for most corporations today.

Viruses are most dangerous in a network environment because the doubling time is reduced from day or weeks to minutes or seconds. The time to infect 120 systems for a slow moving virus such as Jerusalem B in a stand-alone environment is about two years. In a network environment it is around two hours. One Corps organization has already been the victim of such an infestation. Within three hours almost all of the 160 computers tied to a LAN, including servers and CADD systems became infected with a virus causing systems to crash. The clean up process took a week and required expenditure of significant resources, not to mention lost productivity.

With remote connectivity between LAN within the Corps, this type of incident could happen Corps-wide within a few years. Therefore, protection from virus infestation and attack from other malicious software must become a priority issue.

The Department of Defense has negotiated a DoD-wide acquisition of anti-virus software products. This software is available, free of charge, for use on any/all DoD-owned (to include Army) DOS-based microcomputers. The latest version of the software can be downloaded from one of several government bulletin board systems. Information on the Army-wide acquisition of anti-virus software products and assistance on downloading these software products is available from Mr. Thomas J. Aubin, USACE, Information Systems Security Program Manager, Security and Law Enforcement, HQUSACE.

HQUSACE POC: Mr. Aubin, CEPM-ZC, (202) 761-8723, DSN 763-8723.

CEXX007. Water Control Management

Scope. This category applies to all data gathering and information processing systems and software directly supporting the Corps' mission of regulating water resource projects to meet project purposes. It includes field data monitoring; data transmission to primary collectors; principal processors; water control local area subnet components; data storage; and direct supporting, non-shared peripherals.

Exceptions for This Category. Excluded are non-integral, separate data transmission systems; multi-purpose equipment used for other than Water Control missions; CEAP wide area network components; district local area network components; and shared storage devices and peripherals (scanners, plotters; general graphic support systems).

Description. Water Control Data System (WCDS) is a dedicated Automated Information System (AIS) that supports the Corps of Engineers water control mission including the hardware, software, manpower, and other resources required to acquire, develop, maintain, operate, and manage the system. The WCDS includes the collection, acquisition, retrieval, verification, storage, display, transmission, dissemination, interpretation, modeling and archival of data and information needed to carry out the water control mission of the Corps.

Typically this data and information includes hydrologic, meteorologic, water quality, and project data and information. The system collects data on a continuous basis from thousands of sensors throughout the nation. In addition the system collects spatial satellite and radar imagery, graphical products, text products, and lab and field analyses of chemical, physical and biological samples. The system, through its software, incorporates this data with simulation model results and other information into various user products and system outputs.

The WCDS is a nationwide integrated system of hardware and software that allows controlled user access to virtually any data and information in the system. A suite of software gives users the ability to display, manipulate, disseminate, interpret and transmit this information throughout the Corps and to numerous other interested users.

The primary source of automated data is acquired through communication with Geostationary Operational Environmental Satellite (GOES) downlinks for remotely sensed data relayed by satellite. National Weather Service (NWS) River Forecast Center (RFC) systems for Automated Field Operations Service (AFOS) data will be collected directly from these sites by selected Corps offices. Data, including rainfall information horn the new NWS Radar Sites, will also be collected directly from the radar sites by selected Corps Offices.

RSMS Input Guidance.

a. RS should include those requirements in direct support of the Water Control mission of the Corps. Requirements that are part of other system categories that also may help support Water Control missions are not to be reported here.
b. RS for Water Control Systems need to follow the Corporate Information Architecture.
   (See Section 2 of this guidance.)
c. RS that contained fiscal year data beyond FY95, which were not zeroed out, stand approved.
d. RS which contained FY95 approved data maybe used to build FY96 -FY03 requirements.
e. All hardware and software must be included in the Divisions' WCDS Master Plans.

Planning Guidance.

Program Costs. WCDS Life Cycle

Management Information System (LCMIS) cost estimates should be used in developing a Requirement Statement. Program costs can include, but are not limited to: acquisition and approval process, design and development, travel, training, documentation, personnel, hardware and software contract services, leases, supplies and site preparation costs. Program costs include only those costs incurred from the need justification phase through deployment at each site (AR 25-3).

a. **Current Situation.** The existing WCDS is composed of an initial fielding of a dedicated local area subnet of engineering workstations interconnected through the Corps CEAP wide area network. The Ethernet based water control subnet permits the interconnection of a variety of TCP/IP conforming components. Sun Spare 20 workstations acquired from the CEAP-IA contract are the designated data processing and modeling workstations. UNIX-based Intel PC are used for communications processors to GOES (DOMSAT) and NEXRAD (PUPIE) sites.
   The foundation of the program lies in the fact that the WCDS reporting function requires 24-hour-per-day, 7-day-per-week service capability and constant data flow from USACE and non-USACE sources. The WCDS LAN operating environment and mission essential functions require uninterrupted, dedicated service to preserve data integrity and currency. From that perspective, it is considered essential that system integrity and stand alone operational capacity be maintained through design redundancy at the local level.

b. **Future Systems.** The target future system is an extension of the existing system and will consist of 1) Additional engineering workstations to be added to the water control subnet as software products are implemented, additional watersheds are modeled, and new data communications requirements are defined; 2) Implementation of Corps standard Oracle relational database for water control information; and 3) Application of GIS technology to water control information processing and watershed modeling.
   Redundancy of access to data server(s) and processing platforms is a fundamental requirement because of the critical nature of the work performed. New workstations and data acquisition devices must support government and industry-wide standards for operating systems, communications and software.

c. **Water Control Subnet (Special Requirements).** The WCDS additions should meet the following requirements. WCDS will be a LAN based, distributed processing system, configured as a real-time fiber optic (FDDI standard) sub-

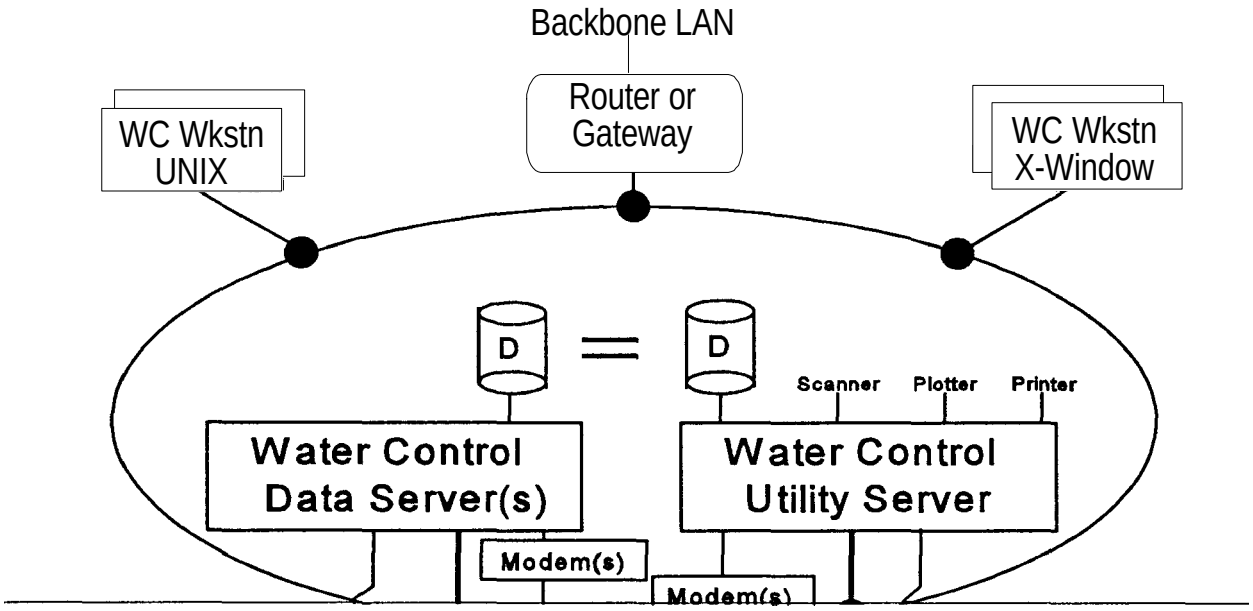

Figure 3-3

network connects via abridge to the local command wide technical/scientific/ engineering (TSE) LAN backbone as depicted on the Corporate Information Architecture. It will operate as a real-time subset with redundant capacity servers and storage. (Figure 3-3)

Hardware:

- Uninterruptable Power Supply (UPS) on critical data acquisition devices and primary workstations.
- Operate in a standard office environment with standard office HVAC. Tolerant to moderately extreme environmental conditions (outside bounds of "normal" office environment for temperature, humidity and power).
- Provide system redundancy to ensure that no single-point failure can prevent any critical system function from being performed. Alternate physical database servers which can become the database server in emergency. Information collection requirements are continuous,
- and reliability of the master database is wholly dependent on the ability to monitor and access data without interruption.
- Ability to experience unscheduled or emergency disconnect from other district local area technical/graphics network and still maintain functionality of 24-hour/seven day per week information collection requirements.
- Binary compatibility across Water Control Processors.
- Physical portability of workstations for movement to alternate locations in emergency.
- Direct network interconnection of all Corps water control District and Division Sites.

Software:

Software will be government and/or industry standard wherever possible. Commercial Off

The Shelf (COTS) will be preferred where necessary capabilities exist. A suite of software will be developed and supported to meet needs not addressed by COTS. Unique watershed or project specific District needs will be addressed by software developed locally. However, LCMIS documentation will be required for this type of development.

- Solaris 2.4- UNIX operating system
- Network Communication TCP/IP
- X-Windows RI 1 / Motif 2.3
- Oracle Relational Database V. 7
  Geographic Information System (GIS) (Recommended: Arc/Info V. 7)
- Real Time Water Control Software System (Suite of software developed by the Corps to meet needs not addressed by COTS)

Data Servers.

Water Control data servers must provide storage for critical real time data acquisition activities. Database activity will consist of a wide array of static and dynamic information. Data types include: real time gaging station environmental data, project data, spatial NEXRAD precipitation data, satellite imagery, NWS AFOS graphics products, text bulletins, water control operation manuals, GIS information, and model simulation results.

Water Control data servers require fault tolerance and the ability to continue to operate at a reduced capacity during routine and emergency maintenance, power loss and related Continuity of Operations Plan (COOP) contingencies.

Workstations.

WCDS engineering workstations are designed to accomplish a wide variety of data analysis and modeling activities. These workstations will provide for data validation, analysis, forecasting, project operation, data visualization, and product generation.

The WCDS requires the capability to peflorm administrative tasks, such as office automation, spreadsheet and database management operations in a stand-alone mode. These activities may be performed using office automation technology. The workstation must have the capability to interface to office automation systems performing a wide range of administrative, financial, and technical activities in support of the WCDS subnet.

d. Considerations.

The modernization of WCDS system represents an additional investment in new software. In developing a WCDS modernization strategy, optimum use will be made of standardized COTS software products for database, graphics and communications fimctions. USACE developed WCDS applications software will focus on unique water resource modeling and reservoir operation requirements.

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CEXX008. Facility Modernization
Scope. For purposes of this category, Facility Modernization is any upgrade, repair, enhancement, or development of a facility which requires acquisition of Information Mission Area (IMA) assets (non embedded FIP resources), and/or the IMA required support, which aggregate at over $5,000 per modernization initiative. For example, communications network cabling and wiring for the construction or relocation of a physical facility or visual information equipment to create a new video teleconferencing facility.

RS Candidates. There are guidelines from the Military Construction Army (MCA) Program which should be considered in developing RS for facility modernization. The Architectural and Engineering Instructions (AEI) Design Criteria, dated 15 Jul 94, is a Corps of Engineers document published by HQUSACE CEMP-E. The AEI provides detailed planning, design criteria and standards for buildings and facilities world-wide. For planning purposes in the Facility Modernization category refer to AEI Design Criteria, chap. 12, paragraph 13, Information Systems. Examples in this guide include criteria for Pathways and Spaces; Cabling (including Fiber Optic); Conduit and/or Raceway systems; and Premises Wiring Distribution Plans. Examples of standards covered in this guide include the EIA/TIA 568, Commercial Building Telecommunication Wiring Standard, and the EIA/TIA 569, Commercial Standard for Telecommunications Pathways and Spaces. (EIA/TIA numbers refer to standards promulgated by the Electronics Industry Association and the Telephone Industry Association.)

Exceptions for this Category. What should not be included in this category are costs for physical furnishings such as furniture, actual construction costs associated with the facility, or costs for embedded processors, such as those associated with HVAC units, lighting, or security systems.

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CEXX010. Communications Support

Scope. The communications discipline provides the ability to gather and disseminate information through the transmission, emission, and reception of information of any nature by audio, visual, electro-optical, or electromagnetic systems. Communications support provides inter- and intra-communications between the various information systems, and is provided through both common-user and dedicated networks. Hardware, software, and support services are included within this discipline.

RS Category Consolidation. With the issuance of this planning guidance, there is no longer a requirement to segregate Requirement Statements (RS) addressing communications support into two separate categories. Many of the information planning guidance goals associated with the Corps 1995 Corporate Information Architecture model have been realized, so the RS categories addressing communications can be consolidated into a single RS category. Beginning with this planning cycle, all new RS will be developed under the CEXX010 Communications Support category. RS existing in the CEXX011 category should be reevaluated, and transferred or phased out as appropriate.

RS Candidates. Areas of RS planning consideration which are likely to result in a capital investment of $5,000 or greater per unit include the categories described below. This is not to preclude the fact that other types of communications equipment could meet or exceed the $5,000 capital investment threshold.

Exclusions. Most of the Corps' communications requirements are satisfied through service type contracts. While these services must be carefully planned and budgeted for in advance, such services are not appropriate candidates for formal RS. A further discussion of communication services contract considerations is at the end of this guidance section. While it is also important to plan, budget, and program for communications items such as facsimile machines, cellular telephones, small telephone key systems, interface devices, etc., their cost range is usually below the $5,000 threshold, and, therefore, not appropriate for RS.

Satellite Communications.

International Maritime Satellite (INMARSAT) communications traditionally has been used in emergency situations. The acquisition of an INMARSAT requires a capital investment of approximately $25,000 - $30,000; usage costs are approximately $6.25 per minute. INMARSAT need HQDA approval in accordance with HQDA Memorandum, SAIS-SM, dated 25 Oct 94, and AR 71-9, Materiel Objectives and Requirements, dated 20 Feb 87. RS must be developed for INMARSAT requirements.

Very Small Aperture Terminals (VSAT) are a less expensive alternative which now can be acquired using the Federal Telecommunications System (FTS2000) contract. VSAT is a satellite-based communications system which provides access to switched voice service, dedicated transmission service, and packet switched service. VSAT are available to service permanent, portable/flyaway, and mobile locations. The cost of a VSAT is approximately $22,000 - $25,000, with a nominal monthly maintenance fee. However, the acquisition of a VSAT and associated service is not considered to be a capital investment, or an RS candidate item, because the FTS2000 contract is a service contract

only (See further discussion under "General Planning Considerations for FTS2000 Services.").

High Frequency (HF) Single Side Band (SSB) Radio Communications.

The Corps has two HF-SSB radio systems fielded throughout the command. Although most of the planned upgrades will be centrally funded, RS planning is anticipated to possibly be active in only one of the two categories, i.e. the DA Harris radio. Proposed enhancements to the CONUS HF Radio System include the addition of packet modems, securing the network, multimedia connectivity, and the establishment of an e-mail capability over HF. However, all enhancements are dependent upon the availability of funding.

a. The Corps of Engineers will maintain an HF capability in accordance with Department of Army (DA) policy, in order to insure that the Corps will be able to carry out its emergency support function (ESF#3) under the Federal Response Plan (FRP) in the event of a catastrophic disaster. The Department of Army (Harris) radio, the HF radio communications system required to support the CONUS portion of the Army Command and Control System (ACCS), will be used in the event of a major disruption of the Defense Communications System (DCS) and/or the public switched network (PSN) resulting from either a national emergency of crisis.

   Based on recommendations of a year-long comprehensive review of the total HF radio program within USACE, conducted by an independent agency (Defense Information Systems Agency [DISA], a decision has been made to standardize HF radio equipment at all Corps locations by utilizing the DA Harris HF radio with MILSPEC Automatic Link Establishment (ALE). This is an automated voice and data system that makes efficient use of the frequency spectrum by scanning frequencies and automatically linking with the best path available. All Harris Radios within the Corps have been equipped or upgraded to this standard. A status report and guidance letter is expected to be approved and forwarded to the field by the end of FY97 which, among other things, will mandate the commencement of ALE operation on all HF radios in the Corps network.

b. USACE (MacKay) HF-SSB Natural Disaster Radio (NDR) System was implemented to provide an alternate, backup communications capability for times of domestic natural calamity where normal communications are disrupted. Operational requirements of the NDR system during peacetime and non-emergency situations are limited to periodic system tests and operational exercises. The MacKay system is the fixed HF-SSB radio that was purchased with Civil Works funds.

   Based on the recommendations of a year-long comprehensive review of the total HF radio program within USACE, conducted by DISA, a decision has been made to begin phase-out of the MacKay radio system and other acquired, non-interoperable radio equipment which are no longer required or desired for daily operations.

   The Corps-provided MacKay radio equipment does not include an ALE capability and cannot be economically configured for this system. It is no longer considered a command and control asset and therefore will no longer

be supported by emergency management funds. Exceptions will be considered on a case-by-case basis.

Communications Servers and Network Encryption Systems.

Communications equipment procurement (i.e., Communication Servers, Routers, Brouters, Directory Servers, Network Encryption Systems, etc.) may be considerations for RS and could meet or exceed the $5,000 threshold. There is also HQDA guidance that is applicable to this equipment category. Specifically, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASDC3I) memorandum, dated 9 Mar 95, subject: Electronic Messaging Policy - Implementation Guidance, imposes a moratorium on the acquisition of non-compliant electronic messaging components unless a transition path to full compliance can be documented. Defense Message System (DMS) compliant electronic messaging is defined as follows:

"Electronic messaging X.400 and directory X.500 components that have undergone DMS conformance, interoperability and compliance certification by the Defense Information Systems Agency (DISA) Joint Interoperability Test Center (JITC) and are on the certified DMS components list for DoD use. Proper implementation requires the use of the FORTEZZA PCMCIA (Personal Computer Memory Card International Association) card (now known as PC Card) for authentication, integrity, and confidentiality, as well as registration of organizations and individuals."

Military services and DMS Managers or the DISA DMS Program Office provides guidance on acceptable messaging and directory components and security requirements. EC 25-1-246, Enterprise Network Operating Security Procedures, 30 Nov 1996, provides guidance on CEAP Wide Area Network (WAN) connections, and the minimum security standards and procedures necessary to safeguard corporate information assets - hardware, software, data, and capacity (processing, storage, and transmission/bandwidth). Local sites (e.g., Divisions/Districts) are not to make changes to brouters that make up the CEAP backbone network without coordination and the approval of the CEAP Network Support Staff. Brouter configurations are highly interrelated, and insufficient coordination can result in significant outages. Sites planning to install new devices or equipment on the network should first coordinate with the CEAP Network Support Team. The CEAP-IA Users Guide (The Book), provides guidance on day-to-day operations. Procedures contained in The Book are mandatory at the Processing Centers and strongly encouraged for other sites operating CEAP-IA equipment.

Private Branch Exchange (PBX)/Private Automatic Branch Exchange (PABX).

PBX/PABX and premise distribution systems are a planning consideration usually when an organization or activity relocates or has outdated technology which is costly to maintain and/or has restricted capacity. Where available, PBX/PABX should be obtained through the GSA Purchase of Telephones and Services (POTS) contract. An average (no frills) basic PABX system configuration consisting of 56 trunks and 200 stations has a unit installed price of approximately $334.00 per line, not including telephone instruments. When replacing a PBX/PABX, one must consider future flexibility and growth, state-of-the-art technology, expandability, and the need for

digital and Integrated Services Digital Network (ISDN) capabilities.

Upgrades to Existing Microwave Systems.

Based on 1991 tentative findings of the U. S. Army Audit Agency, the Corps was found in violation of the public law regarding the use of microwave in lieu of FTS2000 for transmission of intercity voice and data. In 1992, the Corps petitioned GSA for an exception from the use of FTS2000. The Corps was granted a *limited exception* for operational traffic until Dec 98. GSA required the Corps to transition all administrative traffic to FTS2000 immediately. All anticipated acquisition of communications equipment supporting upgrades to existing microwave systems or for expansion must be identified as a RS. With the expansion of the FTS2000 contract to include radio access connectivity (digital microwave) capabilities, granting of exceptions by GSA will be on a case by case basis, and, anticipated to be *only* when FTS2000 services *cannot* satisfy the requirement. After the FTS2000 contract has been modified, FTS2000 microwave services will be included in the mandatory use provisions as defined in Public Law and Federal Information Resource Management Regulations.

Phase II of the site-specific microwave transition meetings began with the Corps' identification of mission requirements. Districts, in coordination with their respective Divisions, have as the next step the responsibility of identifying their requirements from the Area/Resident/ Project/Other levels into the District backbone LAN or other communications systems. This self evaluation should address present and future electronic communications requirements. Flexibility and growth considerations are important. Once this self evaluation process has been completed, AT&T representatives should be consulted regarding technical solutions and recommendations for satisfying identified requirements. AT&Twill then return, at no cost to the Corps, site specific solutions/ recommendations for Major Subordinate Command (MSC) consideration. Based on a HQDA memorandum, 14 Apr 95, subject: Title VI, Communications Licensing and Spectrum Allocation Improvement, Omnibus Budget Reconciliation Act of 1993, a reallocation schedule has been published which mandates the Army to terminate the frequency authorizations affected by Title VI. The spectrum reallocation schedule spans dates of August 1995 through January 2004, and affects frequency band allocations used by Corps organizations, including those bands in the 1710-1755 MHz range. Each Corps organization has been notified separately to terminate their frequency authorizations in accordance with the published schedule. Using commands were also advised that several options were available to provide continuing service. Among these options are: (a) relocate their system or equipment to another frequency or frequency band, or (b) shift to another means to provide the required service.

General Planning Considerations for FTS2000 Services.

As stated at the beginning of this section, identification of communications *services* is not part of the formal RS development process. However, because FTS2000 is mandatory, and forms the nucleus of the Corps communications capabilities, separate guidance follows. This is to be used for information purposes only. FTS2000 is a service-only contract, and is not used for equipment purchase. The contract provides state-of-the-art capabilities, with a continuous program of new technology insertion. It can therefore be considered a

major building block for both improving Corps-wide communications and preparing for new and expanding electronic communications. Use of the FTS2000 services must be carefully planned, as specific items, such as digital microwave and Very Small Aperture Terminal services, have sizeable front end costs that can be as high as $20,000 - $30,000 per service initiation. Communications and networking capabilities are critical to future operations within the Corps. Presently, FTS2000 network services are provided through CEAP-IA down to the District level. Extension of these networking services through the District organization (backbone LAN concept) and down to the Resident/Area/ Project office levels is through individual technical implementation at each District's direction. Future communication service requirements must take into consideration significantly increased usage of online interactive systems, such as the Corps of Engineers Financial Management System (CEFMS), and implementation of technologies associated with video teleconferencing (VTC), electronic data interchange (EDI), electronic commerce (EC), optical disk -- just to mention a few. The migration is from analog to digital services, including more demands for high speed digital data paths. There is a wide range of communications requirements to be met which extend far beyond the Resident/ Area/Project offices, such as voice and data communications to dredges, rivers, and survey boats; onsite support to construction projects; disaster assistance; and support to survey units. There are also monitor and control functions, such as power plants, river traffic, dams and locks, water level, seismic and weather collection platforms, which require communications support.

The scope of the FTS2000 contract is much broader than voice service. Listed below are the major service categories available.

- Switched Voice - long distance
- Switched Data - switched transmission of data at 56kbps and 64kbps
- Dedicated Transmission - point to point, multi-point private line transmission of voice and data
- Packet Switched - transmission of data in packet form
- FTS2000 Mail - electronic message system, supports X.400 protocols
- Video Transmission - transmission of both compressed and wideband video
- Switched Digital Integration - digital transmission of voice, data, and video at transmission rates up to 1.544 megabits per second (mbps) (T-1)
- Primary Rate Interface - Integrated Services Digital Network (ISDN) interface

The following are FTS2000 access methods:

- On-Net - long distance calling on the FTS2000 Network
- Off-Net - long distance calling off the FTS2000 Network
- Virtual On-Net - dialing a 700 number provides access to the FTS2000 Network (similar to 800 service)
- Remote Site Connectivity - (Satellite) Very Small Aperture Terminal (VSAT)
- FTS2000 Request for exception are to be referred to CEIM-P.

Other Considerations.

For future planning purposes, the following are emerging technologies that will have a significant impact on our communications architecture: ATM - Asynchronous Transfer Mode - packet based wide bandwidth, high speed transmission of voice, data, and video,

speeds up to T-3;

SONET - Synchronous Optical Network - high speed transmission of voice, data, and video over fiber links between systems; speeds above T-3; and,

WIRELESS - Communication connection made via spread spectrum or infrared signaling to receiver/transmitter for transmission of voice or data; speeds up to one mbs (no physical wiring). There are distance limitations and security implications associated with this technology.

Related References.

- Federal Property Management Regulation (FPMR), PART 101-35,
- Telecommunications Management Policy.
- ER 25-1-74 Electronic Mail.
- EC 125-1-248, Acquisition and Use of Cellular Telephones and Pagers, 1 Nov 96.
- Memorandum, CEIM-A, 21 Sep 94, subject: Intercity Microwave Communications Changeover to FTS2000, jointly signed by the Chief, Operations, Construction and Readiness Division, Directorate of Civil Works and the Director of Information Management

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CEXX012. Records Management Modernization

Scope. This Requirement Statement (RS) Category applies to modernization efforts in support of the Records Management (RM) Program Corps wide. Records Management includes the plans, policies, and programs to provide efficient and systematic life cycle management of all recorded information, regardless of media.

Definition. The Records Management Program is responsible for ensuring that agency heads, commanders, and their staffs, at all echelons, have the information needed in usable form, and that the Army documents its official business. It also permits the Department of the Army (DA) to maintain compliance with information access laws, and to protect DA's and the individual's privacy rights and interests.

Background. Two laws primarily govern Federal records management: the Federal Records Act of 1950, as amended (Title 44, U.S.C.), and the Paperwork Reduction Act of 1980. The Federal Records Act establishes the basis for records management programs in Federal agencies and assigns agency oversight responsibilities of both National Archives and Records Administration (NARA) and the General Services Administration (GSA). The Paperwork Reduction Act of 1980 (Title 44, U.S.C.), makes records management a part of the Federal Information Resource Management Program.

The Federal Records Act states that Federal Agencies are required to create and preserve Federal records containing adequate and proper documentation of the organization, functions, policies, decisions, procedures, and essential transactions of the agency, and records necessary to protect the legal and financial rights of the government and of persons directly affected by agency activities. It further states that Federal Agencies will establish and maintain an active, continuing program for the economical and efficient management of agency records.

The Records Management Program of the Army Information Resources Management Program (AIRMP) includes provisions for:

(1) Creating by the most efficient, economical, and technologically advanced methods, only that information essential for conducting operations.

(2) Establishing effective controls over the creation, organization, maintenance, use, and disposition of Army information.

(3) Providing for the most expeditious and accurate distribution of information at a minimum cost by applying advanced technology and eliminating all but essential processing procedures.

(4) Ensuring that permanently valuable information is preserved and all other information is retained, reviewed and disposed of systematically under AR 25-400-2.

Two other Public Laws (PL 93-502 and PL 39-579) govern elements of the Records Management Program. The Freedom of Information Act of 1974 provides that disclosure be the rule, not the exception. The principle is that maximum information will be released with minimum exemptions. The Privacy Act establishes standards to ensure that individual privacy is protected.

Program Elements. AR 25-1 governs the Army's Records Management Program. The major subprograms of the Corps' Records Management Program are identified below.

1. Army Recordkeeping Systems

Management -- The objectives of this system are to cost-effectively organize Army files, contained in any media, so that needed records can be found rapidly, to ensure that records are complete, to facilitate the selection and retention of permanent records, and to accomplish the prompt disposition of records. Three elements comprise the system.

- The Modern Army Recordkeeping System (MARKS) -- Procedures for the identification, maintenance, retirement, and destruction of Army information.
- Electronic Recordkeeping Systems- Life cycle management of information contained in automated systems to include audio, visual and image information systems utilizing automation.
- Manual Recordkeeping Systems -- Life cycle management of information contained in manual information systems to include paper, image, audio, and visual information systems.

2. Correspondence Management -- Limits correspondence to essential requirements to improve the quality of correspondence and provide for its creation in an economical and efficient manner.
3. Official Mail and Distribution Management -- Provides rapid handling and accurate delivery of official mail at minimum cost.
4. Freedom of Information Act (FOIA) Program Management -- Establishes policy for open access to information consistent with the need for security and adherence to other laws and regulations.
5. Privacy Act Program Management -- Establishes policy to ensure individual privacy is protected in the collection, maintenance and disclosure of recorded information about the individual.
6. Management Information Control Office -- Establishes policy, procedures and standards for reports control and implements existing Army and external policy.
7. Vital Records Program -- Provides for the selection and protection of vital records required before and after an emergency as well as preservation of rights and interests records.

Exceptions for this Category. This category does not apply to equipment or devices that can be classified as furnishing (e.g., file cabinets, lockers, etc.).

RS relating to forms, copiers, and official publications/ directives will come under CEXX015, Printing and Publishing.

Planning Guidance. Initiatives pertaining to automated records management functions should be categorized in RS category CEXX012 and should be in compliance with Army Technical Architecture standards. Examples include:

- Document imaging systems (to include WORM optical disk, Computer Access Retrieval (CAR) systems, computer output microfiche (COM) systems, etc.);
- Electronic Document Management Systems;
- Automation of records holding area and functions;
- Electronic filing/recordkeeping systems;
- Automated and manual paper filing/retrieval systems/equipment;
- Upgraded postage metering equipment;
- Support services for records management such as contracting out mail

room; records holding areas, etc.

Technology Update. The Corps of Engineers Electronic Recordkeeping Information System (CEERIS), formerly called the Optical Disk Imaging (ODI) Project is planned for implementation in FY97. CEERIS is the Corps standard system for records and document management. It combines optical disk imaging and database technologies and allows multimedia information (engineering drawings, photographs, real estate maps, correspondence, etc.) to be digitized, stored, accessed and retrieved simultaneously by multiple individuals. The objectives of CEERIS are to automate records management function; improve timeliness of record and document access; improve quality of responsiveness; reduce cost of operation; increase productivity; and meet legal requirements for admissibility and trustworthiness. CEERIS will allow the Corps to share information, locally within a MSC on local area network and, eventually, Corps-wide via the CEAP network. The Corps of Engineers Home Page on the INET provides a CEERIS brochure and other documentation at: **http:www.usace.army.mil/inet/functions/im/ceeris.**

The ODI Prototype was completed at St. Paul District, North Central Division, in the Regulatory Branch, Operations Division - Permits functional area in FY96 and cost savings were documented. The Economic Analysis reflected the ROI of 1.29 for space savings and 4.02 for productivity. Approvals have been obtained from the IRMWC, IRMPBC and the IRM Steering Committee and HQUSACE is in the process of notifying Congress of the prototype results and our intention to begin implementing CEERIS in FY97. The Office of Management and Budget (OMB) requested that the CEERIS Economic Analysis be placed on the Internet as a model for other government agencies to follow. CEERIS will be integrated into the Corps overall Strategic Planning Process; performance measurements will be collected and reported upward, and, cost and schedule information will be tracked and monitored.

A Plant Replacement and Improvement Program (PRIP) major new start line item for CEERIS acquisitions, with a total estimated requirement of $12.2M over 5 years, was included in the FY97 program which was approved by Congress. These funds are for hardware and software only and should not be obligated until after Congressional notification is completed. When Congressional notification is complete, the moratorium will be lifted and CEERIS will be implemented as a business process decision made by the local Commander. The Commander has the choice to maintain the current manual recordkeeping and document management system or to implement CEERIS.

CEERIS will be implemented by functional area. CEERIS v1.0 will support the following seven functional areas: Planning, Program and Project Management, Construction, Operations, Readiness/Emergency Management, Regulatory, and Office of Counsel. DIM is working with the HQ functional proponents for Real Estate, Contracting, Environmental Restoration and Engineering to address unique functional requirements such as CADD and GIS. District Offices are currently being identified to prototype these four functional areas. Future CEERIS releases (v1.1, v1.2, etc) will address these functional areas. Plans are also underway to establish a technical center of expertise. Phase I of CEERIS will handle active paper records and incoming documents, and electronic documents will be imported. Phase II will capture electronic documents at the point of creation and manage them

through their life cycle including distribution and final disposition. After CEERIS v1.0 implementation, COTS document management packages will be evaluated to establish standards and integrate them into CEERIS.

MSC'S planning to implement CEERIS should appoint a CEERIS Program Manager, establish a Task Force, develop an Implementation Plan and submit it to CEIM-IR for Policy Review. Upon approval, HQ will send CEERIS software to the Command. This software contains the user interface and Oracle tables. Implementation Plans should address District-Wide requirements. Commands should submit and/or update RS for CEERIS/ODI technologies to support Electronic Document Management. For planning purposes, the chart below should be used to estimate CEERIS hardware and software investment requirements. (See CEERIS User Guide dated 15 May 97 for more detailed information.) These are projections and can vary from site to site.

The figures below are based on the size of an organization, the projected number of images scanned into the system daily, and the projected number of simultaneous users accessing and retrieving the information. The cost data does not include maintenance, documentation, training, scanning, indexing, quality assurance, system management, and integration costs. See the Economic Analysis when it becomes available on the INET for more details.

	SMALL ORGANIZATION	MEDIUM ORGANIZATION	LARGE ORGANIZATION
Organization Size	1-300	301-800	Over 800
Number of Images Scanned Daily	1,000	2,000	4,000
Projected # of Simultaneous System Users	25	50	150
Projected ODI Imaging Workstations	1	2	4
Projected Hardware:	$88,070	$117,620	$173,285
Optical Jukebox, Scanner(s), and Imaging Workstation(s) (PC(s), Dual-Page High Resolution Monitor(s), Laser Printer(s))			
COTS Imaging Software **	$24,100	$32,643	$103,795
	$112,170	$150,263	$277,080

** This figure includes image management software as well as user retrieval software for the projected number of simultaneous users.

NOTE: The Jukebox will be an IM resource and will be shared by functional areas. More information is available in the CEERIS Manager's Guide described below.

The CEERIS Manager's Guide dated 15 May 97 is on the INET. The guide contains information on Preparing to Implement CEERIS, Implementing CEERIS, and Maintaining CEERIS. It also identifies by CLIN number what hardware and software is needed, where to obtain the resources and how much they cost. The acquisition strategy is to use existing contracts such as the Super Mini-Computer Program (SMP), the CEAP contract, and the NIH Contract.

The CEERIS Manual on Document Conversion and Quality Assurance, CEERIS Document User Manual, CEERIS Recordkeeping Manual, and CEERIS System Administration Manual are also available on the INET as well as the revised draft of the ODI Implementation Plan for the St. Paul Prototype. The Manuals will be replaced with updated versions in the near future. The CEERIS Abbreviated System Decision Paper and the Configuration Management Plan are being developed and will also be available on the INET along with the CEERIS Economic Analysis.

Planners Should Consider:

- The Corps must strive to employ new technologies to facilitate recordkeeping. Following is an update of ongoing initiatives that impact the records management discipline in addition to CEERIS.
- HQDA issued a revised AR 25-1, effective 25 Apr 97. The AR contains significantly stronger policy regarding records management. The changes are primarily aimed at correcting existing deficiencies, such as restoring the authority and clout needed to effectively manage the Records Management program. Items of interest include: designating records management officials and duties; more active involvement in life cycle management of information systems, and more specific policy guidelines on electronic records management. It also more clearly defines that all records (visual, ADP, etc), regardless of media, will be managed under the guidelines of the Records Management Program.
- Recordkeeping requirements for an information system will require, at a minimum, full and accurate documentation of the system.

RSMS Input Guidance. RS currently validated in the RSMS database remain approved if no changes have been made for this planning period. No further action is required unless approval was contingent on corrections or updates to the original RS (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS.

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CEXX013. Visual Information

Scope. This RS category applies to all major requirements involving the capture, manipulation and storage, and dissemination of various visual media, with or without sound. Included are still photography; motion media (video and film); teleconferencing; video and/or audio recording; exhibits; graphic arts, models and displays; high resolution presentation graphics. This category also includes Desktop Publishing (ER 25-1-90).

Exceptions for this Category.

a. This category does not include general OA (off the shelf) software applications used for preparing general support business graphics images by non-graphic-skilled users. (Example are Harvard Graphics, Applause II, GEM, CorelDraw, PowerPoint, PC Paint, etc). While VI does have functional responsibility for managing business graphics, these should be included in RS Category CEXX005, Office Automation.

b. Systems or requirements used solely for visual information support of Technical/ Scientific/Engineering (TSE) functions should be included in RS Category CEXX003.

Definition. By definition, VI is the method of disseminating or communicating data or information in the most effective and efficient manner, accomplished by, but not limited to, the life cycle concerns of still photography, motion picture photography, video or audio recordings, graphic arts, business graphics, computer generated graphics, visual aids, models, displays, visual presentations, exhibits, conference facility design and support, desktop publishing, videoteleconferencing and the processes that support these products and services.

RSMS Input Guidance. RS currently validated in the RSMS database, requiring no changes for this planning period, remain approved. No further action is required unless approval was contingent on corrections, or the original RS needs updating (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS.

Planning Guidance.

1. Video Communications Program. HQUSACE and selected field commands are prototyping a video teleconferencing system which will provide the foundation of a standard Corps wide video teleconferencing capability. Latest developments include the implementation of video teleconferencing at the District level (Phase III). Commands should submit RS for video teleconferencing in generic terms. Do not specify a particular system, for this detracts from the Corps-wide development effort, and will add substantial costs to develop interfaces for non-standard systems with the final Corps selected system. Commands should follow directives prescribed in EC 25-1-194.

   Huntsville Training Division will be conducting a pilot video communications training program in FY97. This prototype will include broadcast (Corps-specific) training for 6-12 USACE Commands.

2. High-End Presentation Graphics. A standard suite of presentation graphic systems is being developed for both low-end (non-skill oriented) and high-end (high quality, skill oriented) equipment, along with low-end and high-end off-the-shelf workstation application packages.

USACE commands should input RS for high-end software applications, and hardware suites only. Low-end workstation graphic software (e.g. Harvard Graphics, FreeLance, Applause II, CorelDraw, PowerPoint) should come under CEXX005, Office Automation.

3. Laser Disc Photographic Cataloguing System:
   a. Optical laser disc storage devices are fast becoming the choice medium for mass storage of visual information. Using video disc recorders and players provides an automated method for cataloging, retrieving and viewing thousands of images quickly.
   b. Standards will include the requirements for data to be managed in compliance with existing and planned Corps naming convention policies, to include appropriate subject area, information classes and architectural modifiers.
4. Visual Information Job Tracking System. Visual Information Job Tracking Systems are being integrated with other systems such as COEMIS/CEFMS and the Information Management Costs Distribution System. In order to properly acquire all Information Management Area products and services, the cost of the items must be consistently captured throughout the Corps of Engineers.
5. Business Graphics. The standard languages for the business graphics industry are Tagged Image File Format (file extension .TIFF); Computer Graphics Metafile (file extension .CGM) and Encapsulated Postscript (file extension .EPS). Output devices (printers, film recorders, etc.) must be able to communicate with this language.
6. Conference Support. Interactive conferencing techniques will prove to enhance communication and productivity. This style of conference will increase in use around the Corps. A training package has been developed by Huntsville Training Division to address effective presentation and conference techniques. Visual Information mangers will have to sharpen technical skills and provide support to these demands by providing white boards, video recorders, playback units and video teleconferencing units.
7. Portable Document Format. Portable Document Format (file extension .pdf) has been established as the official transfer format for all final and or authenticated electronic documents which are distributed by electronic mail, Internet or CD-ROM. EC 25-1-252 provide specific guidance on the implementation and application of this standard. The PDF format should be used when ever practical and possible.
8. Digital Visual Library. The USACE Digital Visual Library (DVL) has been jointly established under a partnership with Information Management, Office of History and Public Affairs. The DVL provides Internet access to digital images of all USACE projects, major activities and events. Photographic images are submitted to a central image processing and inventory control office by all command activities. EC 25-1-259 provides specific guidance on implementation and operation of the USACE DVL. The DVL will provide an invaluable repository of visual images for use in publications, slide shows, exhibits and other media. The quality and quantity of images will be dependent upon support and participation by all command elements.

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CEXX014. Library Modernization

Scope. This Requirement Statement (RS) Category applies to automated systems and communications requirements in support of the USACE Library program, and Library activities at each subordinate command organization. The USACE Library program is a network of 52 scientific-technical libraries that function IAW ER 25-1-96. Each Library provides full services: reference and research, acquisitions and procurement, cataloging, interlibrary loans, document delivery and serials control/routing. Linked by computers, the library network allows each library to go beyond the limitations of size and geography to reach out to the world of information. It is essential to the successful operation of the network that each library share common goals for achieving the same level of automated service. This means standardization of automation, Corps-wide access to information, staff training, and dedicated personnel assets commensurate with the level of library support at the organization. Site-unique systems, inconsistently trained staff and inequitable automation capabilities result in a degradation of these critical services to our engineers, project managers, supervisors, and other support staff. To maximize resource utilization in the face of shrinking budgets, the USACE Library Program Initiatives are based on standardization of automation, open access and common based training.

Exceptions for this Category.

RS having to do with general OA type equipment or LAN topologies are not included here. Those belong in the Office Automation and Communications Support RS categories, respectively. Also, do not include initiatives to modernize the Corps-wide Library Program.

Definition. A Requirement Statement in this category would focus on improving services to the customers of the servicing organization, to include remote users (Area Offices and Project Sites).

RSMS Input Guidance.

RS currently validated in the RSMS database, requiring no changes for this planning period, remain approved. No further action is required unless approval was contingent on corrections, or the original RS needs updating (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS.

Planning Guidance.

1. The Corps recently replaced the LS 2000 computer system with the Corps of Engineers Library Information System (COELIS). COELIS is a centralized, automated, fully-integrated library system for all Corps libraries. Maximum sharing of library resources is accomplished through standardized cataloguing, retrieval, on-line public access catalog, circulation and statistical/management reporting. COELIS does not provide the functions of serials control and acquisition control. At this time, COELIS is only available in Corps libraries, but the database will be made available on the Internet in the near future, in order to better support the Corps' information requirements. Guidance for the use of and charges for COELIS access will be addressed in the Library Program's forthcoming Strategic Plan. This system operates on CEAP, using CEAP computers and communications.
2. Here are initiatives which fall into this RS category:

- CD-ROM technologies to replace reference books, paper copy subscriptions, regulations, forms, etc.
- Automation of clerical library functions of periodicals check-in, routing, ordering, and receiving and circulation.
- Redesign and modification of library facilities
- Replacement of site unique systems with the Corps-wide Online Network.

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CEXX015. Printing and Publishing Modernization

Scope. This category applies to all requirements for modernization requirements in support of large scale printing and publishing; and requirements for small and medium scale copiers.

Exceptions for this Category.

a. Requirement Statements (RS) for CD-ROM or optical disk technology should be reported under category CEXX012, Records Management.

b. RS for desktop publishing requirements should come under CEXX013, Visual Information.

Definition. Printing and publishing involves all activities involved with the layout, camera ready activities, printing, assembly, binding and distribution of all printed media having volume requirements greater than 25 copies. This includes the use of the Defense Printing Service (DPS), Government Printing Office facilities and other Federal or commercial activities to accomplish the Printing and Publishing functions.

Electronic Publishing. The National Performance Review initiative to reduce publishing and printing and the increasing utilization of the World Wide Web for disseminating information is resulting in an integrated electronic publication environment. The ISO standards set forth for text is American Standards Committee for Information Interchange (ASCII) format with Standard Generalized Markup Language (SGML) tagging. All documents published in an electronic file format should be prepared using desktop/word processing software which provides for the conversion of the text to SGML.

Planning and RSMS Input Guidance. As a result of the implementation of the Defense Management Review Board, most RS within this category are suspended until further notice. With the transfer of the printing function to DPS, RS for printing-related equipment and self-service copiers above 70 cpm now must have DPS concurrences prior to purchase. High-speed laser printer requests will be reviewed for their applicability to the printing environment before approval is granted. Office copiers, below 70 cpm, remain under the Copier Program (AR 25-30) guidelines.

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CEXX016. Technology Integration

Scope. Requirement Statements in this category should be limited to initiatives which use integrated IMA technologies to solve a specific information management deficiency. This category should not be used as a "catch all" for identifying IMA technologies that do not relate to a common information deficiency. Use this category sparingly, as RS will be closely reviewed for approval.

RSMS Input Guidance. RS currently validated in the RSMS database, requiring no changes for this planning period, remain approved. No further action is required unless approval was contingent on corrections, or the original RS needs updating (e.g., overall dollar amount of RS increased) because of mission changes. Additional years will not be added to approved RS.

Planning Guidance.

1. Planning guidance provided for the various RS categories should be read as background and applied to development of initiatives in this category.
2. Every proposal for this category should be treated as an individual RS. Be as specific as possible in the RSMS narrative.

Consideration of the assigned USACE Business Process becomes a critical consideration for evaluation of RS in this category. Examples of appropriate RS for "technology integration" include the following. This is by no means an inclusive listing.

- Development/Support of an Emergency Operations Center (EOC).
- IMA support required for specific nation building efforts (e.g. Kuwait reconstruction efforts).
- Development/Support of a Learning Resource Center (LRC).
- IMA support for Disaster/ Contingency/Mobilization Planning.

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CEXX019. General Purpose Data Processing

Scope. This Requirement Statement (RS) category applies to non-CEAP, general purpose, data processing hardware procured through any type of contract. This includes general purpose hardware procured through the CEAP-IA contract, but which is not specifically directed to the deployment of CEAP-IA within the organization. Requirement Statements in this category represent hardware which a Major Subordinate Command/District, Laboratory, or Field Operating Activity must individually resource. Hardware acquired through the central CEAP-IA program funding is not included in this category.

This RS category was formerly numbered "CE89019, FOA Support of the CEAP-IA Program".

This category will also be used for other automation requirements which do not seem appropriate for any other Requirement Statement category. The CEAP-IA Program Office will review and recommend approval of RS submitted in this category.

Acquisition Requirements for Sun Microsystems computers are to be included in this category.

Exceptions for this Category. Data processing hardware acquired in conjunction with a specific Automated Information System (AIS) will be reported as part of that AIS. See further guidance concerning AIS Requirement Statements under CEXX004.

AIS software development and conversion requirements directly related to implementation of CEAP-IA within an organization should be reported under Requirement Category CEXX004.

General purpose file servers should be reported under Requirement Category CEXX005, Office Automation Modernization.

Data communications requirements directly related to implementation of CEAP-IA within an organization should be reported under Requirement Category CEXX010.

Site preparation requirements related to CEAP-IA should be reported under Requirement Category CEXX008.

Automation security initiatives should be reported under Requirement Category CEXX006.

RSMS Input Guidance. General Requirement Statement guidance applies.

A clear description of hardware requirements and the information deficiency to be resolved must be included in the RSMS memo fields. Requirements for this category must be clearly linked to a Corps and/or Army business process.

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CEXX020. Internet

Scope. The Internet (including Intranets/Extranets) is a system of linked computer networks, international in scope, that facilitates data communication services such as remote login, file transfer, electronic mail, and newsgroups. It is a way of connecting existing computer networks that greatly extends the reach of each participating system. It allows for a virtual work environment in which corporate information is shared, and reference documents may be accessed from any computer connected to the Internet. This is done primarily by using hypertext technology, a system of writing and displaying text that enables the text to be linked in multiple ways, to be available at several levels of detail, and to contain links to related documents. In other words, the term, "hypertext" refers to a nonlinear system of information browsing and retrieval that contains associative links to other related documents.

Planning for Internet Requirements. This category applies to all requirements involving the retrieving, manipulation, storage and dissemination of static and dynamic documents or document collections known as web pages which may contain a mix of visual images (still, motion, or 3D) to include sound and text that resides on the Internet. This category includes hardware (e.g., servers on which Internet files are stored) and software (e.g., web analysis tools) required for the support of websites.

Exceptions for this Category. All other commercial off-the-shelf software (COTS) and desktop hardware used primarily to develop Internet web pages will be reported using Office Automation Requirement Statement (RS) category CEXX005. For example, since browsers and web authoring tools are often integrated with Office Automation applications they should be reported using Office Automation RS category CEXX005.

LAN communications equipment requirements (e.g., multiplexors, bridges, routers, etc.) or file servers not dedicated to Internet requirements should not be reported in this category. These communications devices belong in category CEXX010 or CEXX019.

Related References.

- Engineer Circular No. 25-1-231, Use of the Internet, dated 22 Mar 96
- Engineer Pamphlet No. 25-1-97, Internet Implementing Procedures, dated 22 Mar 96
- Engineer Circular No. 25-1-246, Enterprise Network Operating Security Procedures, 30 Nov 96.

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