NETWORK OPERATING SYSTEM FOCUS TECHNOLOGY

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AN ACTIVITY STRUCTURED TO PROVIDE SPECIFIC DESIGN REQUIREMENTS AND SPECIFICATIONS FOR THE SS DMS NETWORK OPERATING SYSTEM (NOS) BY THE 1987 PHASE C/D RFP IS OUTLINED. EXAMPLES ARE GIVEN OF THE TYPES OF SUPPORTING STUDIES AND IMPLEMENTATION TASKS PRESENTLY UNDERWAY TO REALIZE A DMS TEST BED CAPABILITY TO DEVELOP HANDS-ON UNDERSTANDING OF NOS REQUIREMENTS AS DRIVEN BY VARIOUS ACTUAL SUBSYSTEM TEST BEDS PARTICIPATING IN THE OVERALL JSC DMS TEST BED PROGRAM. DISCUSSION IS PROVIDED OF A BASIC NOS CONCEPT BASED ON A RECENTLY COMPLETED FY-85 STUDY WHICH PRESENTS A SET OF MINIMUM AND MAXIMUM NOS REQUIREMENTS CONSISTENT WITH A MODULAR/DISTRIBUTED DMS CONCEPT.
OBJECTIVE: DEVELOP, PROOF TEST AND DELIVER A SET OF DETAILED DESIGN REQUIREMENTS FOR SS DMS NOS TO SUPPORT PHASE C/D RFP

RATIONALE: DMS IS INTEGRATING MEDIA FOR ALL SS DISTRIBUTED SYSTEMS AND SYSTEM/DMS INTERFACE MUST BE STABLE AND WELL DEFINED TO ALLOW RESPECTIVE VENDOR(S) DEVELOPMENT OF EACH SYSTEM.

APPROACH: USE SS DMS TEST BED HANDS-ON INTEGRATION OF REPRESENTATIVE SYSTEM(S) TEST BEDS (D&C, PM&D, ECLSS, C&T, ...) TO FORMULATE VALID SET OF DMS SERVICES AND NOS REQUIREMENTS.
o NETWORK TECHNOLOGY COMMUNICATIONS ASSESSMENT (LEMSCO SUPPORT CONTRACT)

o NOS FUNCTIONAL REQUIREMENTS STUDY (LEMSCO/UNIVERSITY CONSULTANT)

o LAYER 7 REQUIREMENTS DEFINITION STUDY (AT&T; CANCELED AFTER FIRST REPORT)

o ADA SUITABILITY FOR NOS DESIGN/DEVELOPMENT STUDY (CSDL)

o DEFINITION/DEVELOPMENT OF DMS USERS GUIDE (LEMSCO SUPPORT CONTRACTOR)

o HARDWARE/SOFTWARE FOR DMS TEST BED NETWORK TO SUPPORT NEAR TERM SYSTEM INTEGRATION ACTIVITIES
PRINCIPAL ELEMENTS OF THE DMS

X NETWORK OF HARDWARE & SOFTWARE WHICH CONNECTS OTHER COMPUTER ELEMENTS AND SUPPORTS DATA EXCHANGE AND REMOTE CONTROL

X DATA BASE HARDWARE & SOFTWARE WHICH PROVIDES DATA STORAGE/RETRIEVAL SERVICES FOR SHARED DATA AND MANAGE CONCURRENCY ASPECTS OF DATA ACCESS

X MULTIPURPOSE APPLICATIONS CONSOLES (MPAC) TO PROVIDE UNIFORM MAN-MACHINE INTERFACES TO ALL FUNCTIONS

X FACILITIES MANAGEMENT HARDWARE/SOFTWARE TO PROVIDE SYSTEM-WIDE RESOURCE AND CONFIGURATION MANAGEMENT, ANALYSIS, AND SCHEDULING SERVICES
MODULAR DMS ORGANIZATION

NETWORK

MPAC

DATA BASE

APPLICATION

FACILITIES MANAGEMENT

APPLICATION

APPLICATION

USERS
SUBSYSTEMS

DMS

FACILITIES MANAGEMENT

MPAC

DATA BASE MANAGEMENT

NOS

USERS

CLASSICAL OS

OPERATIONS SUPPORT

COMMAND INTERPRETER

FILE SYSTEM

KERNEL

PARALLELS BETWEEN DMS AND CLASSICAL OPERATING SYSTEMS
*CLASSICAL OPERATING SYSTEM ELEMENTS

× KERNEL--SET OF BASIC FUNCTIONS AND SERVICES
  UPON WHICH ALL SYSTEMS CAPABILITIES ARE
  ARE BASED

× FILE SYSTEM--PROVIDES A LOGICAL ORGANIZATION
  AND HIGH-LEVEL INTERFACE TO EXTERNALLY
  STORED DATA

× COMMAND INTERPRETER OR SHELL--PROVIDES AN
  INTERACTIVE MAN-MACHINE INTERFACE

× OPERATIONS SUPPORT--PROVIDES A SET OF UTILITIES
  WHICH CAN BE USED TO CONFIGURE, MANAGE,
  MONITOR AND OTHERWISE AID MANUAL OPERATION
  OF COMPUTATIONAL RESOURCES
**NETWORK OPERATING SYSTEM**

**DEFINITION AND DESIGN**

*PRINCIPAL NOS FUNCTIONS*

- Control use of medium, including all conditions for how long
- Provides standard applications-level communications interfaces for inter-subsystem transactions
- Provides continuous operation of the network including gathering performance and fault data, supporting configuration changes, and error recovery.