

AUTOMATED  
DISTRIBUTED COMPUTER  
MANAGEMENT  
(ADCM)

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SESSION S039



# AUTOMATED DISTRIBUTED COMPUTER MANAGEMENT

## (ADCM) AGENDA

- 0 MOTIVATION - STATEMENT OF PROBLEM
- 0 GENERAL GOALS
- 0 DEVELOPMENT STRATEGY
- 0 ADCM DATA FLOW MODEL
- 0 GENERIC SOFTWARE MODEL - INTEGRATED PRODUCTS
- 0 SOFTWARE PRODUCTION SUBSYSTEM
- 0 SYSTEM MANAGEMENT SUBSYSTEM
- 0 NODE MANAGEMENT SUBSYSTEM



## MOTIVATION FOR ADCM

- 0 SOFTWARE INSTALLATION - HIGH-TECH CLERICAL WORK
  - SIMPLE IN CONCEPT
  - COMPLEX IN DETAIL => BORING => ERROR-PRONE
  - TIME CONSUMING
  
- 0 SYSTEM CONFIGURATION MANAGEMENT IMPOSSIBLE
  - LEGAL HAZARDS
  - MANAGEMENT OF THE UNKNOWN
  - UPDATE NIGHTMARE
  
- 0 UNNECESSARILY DIVERSE ENVIRONMENTS
  - ROLL YOUR OWN SYSTEM STRUCTURE
  - POORLY DOCUMENTED
  - SYSTEM ENGINEERS RE-ORIENT  
FOR EVERY SYSTEM
  - POOR MIGRATION CAPABILITIES  
FOR USER GROUPS

## GENERAL GOALS OF ADCM


- 0 ACCOMMODATE SYSTEM CONFIGURATION MANAGEMENT
- 0 UNIFORM NODE ARCHITECTURE
- 0 CORE NODE ENVIRONMENT
- 0 TAILORABLE NODE ENVIRONMENT
- 0 AUTOMATED DISTRIBUTION
- 0 AUTOMATED INSTALLATION
- 0 SYSTEM MANAGER CONTROL
- 0 LOGICAL ISOLATION OF PHYSICAL STRUCTURE

## DEVELOPMENT STRATEGY

- 0 TOP LEVEL PROBLEM ANALYSIS - BROAD SCOPE
- 0 IDENTIFICATION OF CRITICAL AREAS
- 0 DETAILED ANALYSIS OF CRITICAL AREAS
- 0 PRIORITIZATION OF PROBLEMS
- 0 DEVELOPMENT OF SOLUTIONS (MANUAL AND AUTOMATED)
- 0 INCREMENTAL REFINEMENT

## DEVELOPMENT FRAMEWORK

DATA FLOW MODEL OF DISTRIBUTED  
COMPUTER SERVICES SHOP



## GENERIC SOFTWARE

- 0 DEFINES A PRODUCT REGARDLESS OF FUNCTION
- 0 OPERATIONAL CONTEXT PARTITIONING
- 0 CONTEXTS DEFINED AGAINST SYSTEM EVENTS
- 0 ORGANIZATION OF CONTEXT-PARTITIONED FUNCTION COMPONENTS CONSTITUTES PRE-INTEGRATION (PRE-INSTALLATION) OF SOFTWARE

HENCE:

THE INTEGRATED PRODUCT (IP)

# INTEGRATED PRODUCT CONTEXTS

## (COMPONENT TYPES)

### SYSTEM FUNCTIONS

STARTUP \*  
SHUTDOWN \*  
MONITOR  
ALARM  
EVENTLOG

### PROCESS FUNCTIONS

LOGIN \*  
LOGOUT \*  
SETUP  
RUNDOWN

### PRODUCT FUNCTIONS

INSTALL \*  
REMOVE  
DOCUMENT  
TEST

### USER DEFINITION FUNCTIONS

ADD USER  
DELETE USER  
MODIFY USER

### LOCAL DATA

\*SEQUENCED OPERATION

CYCLE OF EFFORT

0 RAMP-UP

0 ANALYSIS

0 DESIGN

0 IMPLEMENTATION

0 CODE

0 TEST


0 INTEGRATION

0 PACKAGING

0 ANALYSIS (NEXT CYCLE DEFN)

0 WRAP-UP





## ADCM SYSTEM CONFIGURATION


### DATABASE

- 0 RELATIONAL DATABASE - ENTITY FORMALISM
  
- 0 RECORD OF RESOURCE ITEMS
  - INTEGRATED PRODUCTS
  - INTEGRATED PRODUCT RELEASES
  - HARDWARE ITEMS
  - PERSONNEL
  - NODES (GEOGRAPHY/FUNCTION)
  
- 0 EACH RESOURCE MAPPED TO NODE(S)
  
- 0 AUDIT REPORTS




DISTRIBUTION PERSPECTIVE OF  
INTEGRATED PRODUCTS

- 0 COMPONENTS AND NATURE OF IP ARE INVISIBLE
- 0 IP IS SMALLEST UNIT OF DISTRIBUTION
- 0 DEPENDENCY AND COMPATIBILITY DESCRIPTION
- 0 DISTRIBUTION CLASS (RED-TAPE FILTER)
  - ASSIGNED BY MANAGEMENT
- 0 PRE-DISTRIBUTION PRODUCT BUILD/TEST
  - DEVELOPER SUPPLIES SOURCE AND BUILD PROCEDURE
  - DEVELOPER SUPPLIES FUNCTIONAL TEST PLAN
  - PERMITS ONE PRODUCT REVISION TO BE RELEASED  
AGAINST MANY VERSIONS OF HOSTING OPERATING SYSTEM
  - ARRANGES COMPONENTS INTO PACKAGING ARCHITECTURE



## ADCM SOFTWARE DISTRIBUTION

- 0 CONFIGURATION ENTRY
  
- 0 VALIDATION OF SOFTWARE COMPATIBILITY
  - REQUIRED PRODUCTS (OPTIONAL AUTO-INCLUSION)
  - HARDWARE (TYPE/REV-LEVEL)
  - COMPATIBLE REV-LEVELS OF SOFTWARE
  - OPERATING SYSTEM
  
- 0 VALIDATION OF LICENSING
  - LICENSING REQUIREMENTS ARE PROPERTIES OF IP IN DATABASE
  - LICENSE WAIT
    - CONFIRMATION OF LICENSER
    - AUTHORIZATION OF MANAGEMENT
  - LICENSER NOTIFICATION



## ADCM SOFTWARE DISTRIBUTION

- 0 ASSEMBLY OF INSTALLATION KITS
  - BUNDLE DEPENDENT SOFTWARE
  
- 0 SHIPMENT OF SOFTWARE
  - MAGNETIC MEDIA
  - NETWORK
  
- 0 CONFIRMATION WAIT
  - RECEPTION
  - ACCEPTANCE/REJECTION
  - INSTALLATION



## ADCM SOFTWARE INSTALLATION

- IP DELIVERED INTO RECEIVING AREA
- HOLD FOR SYSTEM MANAGER APPROVAL AND SCHEDULING
  - DISAPPROVAL OPTION WITH REASON
  - LAST CHECK FOR CORRECT DISTRIBUTION
  - SCHEDULE INSTALLATION
  - INSPECT RELEASE NOTES
  - OPERATOR INITIATED INSTALL - ACCEPTS APPROVED KITS
  - AUTO-APPROVAL MODE
  - AUTO-SCHEDULE MODE
- DEFAULT INSTALL
  - GENERALLY ADEQUATE FOR PRODUCTS WRITTEN AS IP
- INSTALL COMPONENT
  - PROVIDED BY PRODUCTS WHICH REQUIRE INSTALLATION OPERATIONS BEYOND THE DEFAULT
  - USED PRIMARILY BY REPACKAGED PRODUCTS



# INTEGRATED PRODUCT OPERATIONS

## COREDRIIVE

- 0 EACH NODE HAS TWO BASE PRODUCTS
  - COREDRIIVE - COORDINATES IP OPERATIONS
  - ADS NODE - RECEIVING HALF OF AUTOMATED DISTRIBUTION SYSTEM
- 0 COREDRIIVE "UNDERSTANDS" IP FORMAT
- 0 COMPILES "SCRIPTS" FOR EACH CLASS OF FUNCTION
  - RELATIONAL DATA BASE PRIMARY
  - REDUNDANT "TUNED" FILE SECONDARY
- 0 EACH IP COMPONENT INSERTED INTO APPROPRIATE SCRIPT AT INSTALLATION
- 0 COREDRIIVE ACTIVATES EACH COMPONENT ACCORDING TO THE SCRIPT AUTOMATICALLY

## COREDRIIVE UTILITIES

- 0 DOCUMENT CATALOG (USER)
  - DISPLAY AVAILABLE DOCUMENTATION BY PRODUCT
  - PRINT OR COPY ON-LINE DOCUMENTATION
  - ORDER ENTRY FOR OFF-LINE DOCUMENTATION
  
- 0 SOFTWARE CATALOG (USER)
  - DISPLAY AVAILABLE SOFTWARE ON NODE
  - SHORT NAME, REVISION LEVEL, VENDOR NAME, SHORT DESCRIPTION, ABSTRACT
  
- 0 HARDWARE CATALOG (USER)
  - DISPLAY AVAILABLE HARDWARE RESOURCES
  
- 0 IP RECEIVER
  - RECEIVE IP DISTRIBUTION (OPER)
  - APPROVE/REJECT (SYSMGR)

## COREDRIIVE UTILITIES

- 0 INSTALL (OPER)
  - LIST ALL IP DISTRIBUTIONS AWAITING INSTALLATION
  - INITIATE INSTALLATION  
(ACCEPTS APPROVED DISTRIBUTIONS ONLY)
  
- 0 IP CONTROL (OPER)
  - IP AVAILABLE/UNAVAILABLE
  - MONITOR CONTROL
  - ALARM CONTROL
  - SYSTEM MODE
  
- 0 EXTERNAL PRODUCT (OPER)
  - INTEGRATION OF NON-IP COMPONENTS INTO FUNCTIONAL SCRIPTS  
OF COREDRIVE
  
- 0 USER DEFINITION
  - ADD/MODIFY/DELETE
  - PRODUCT SUPPLIES RUN-TIME FUNCTIONALITY AND MENU TITLES

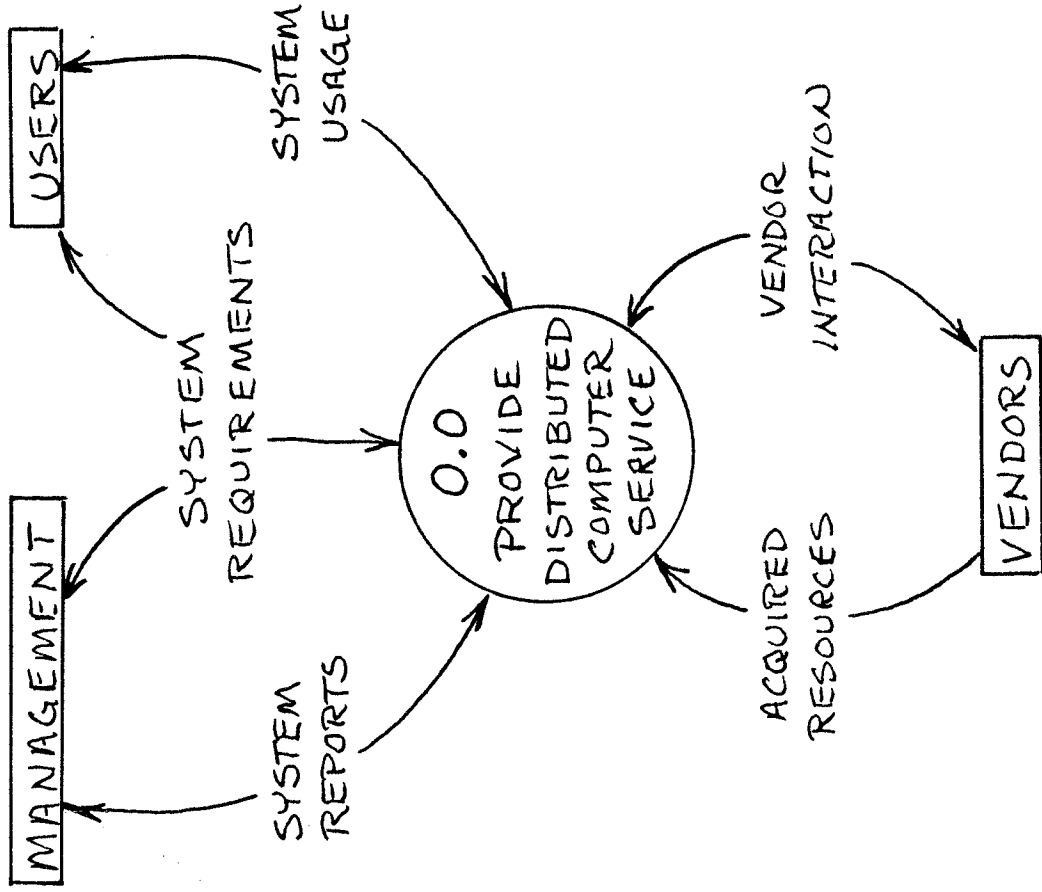


## TIME SHARE NODE MANAGEMENT

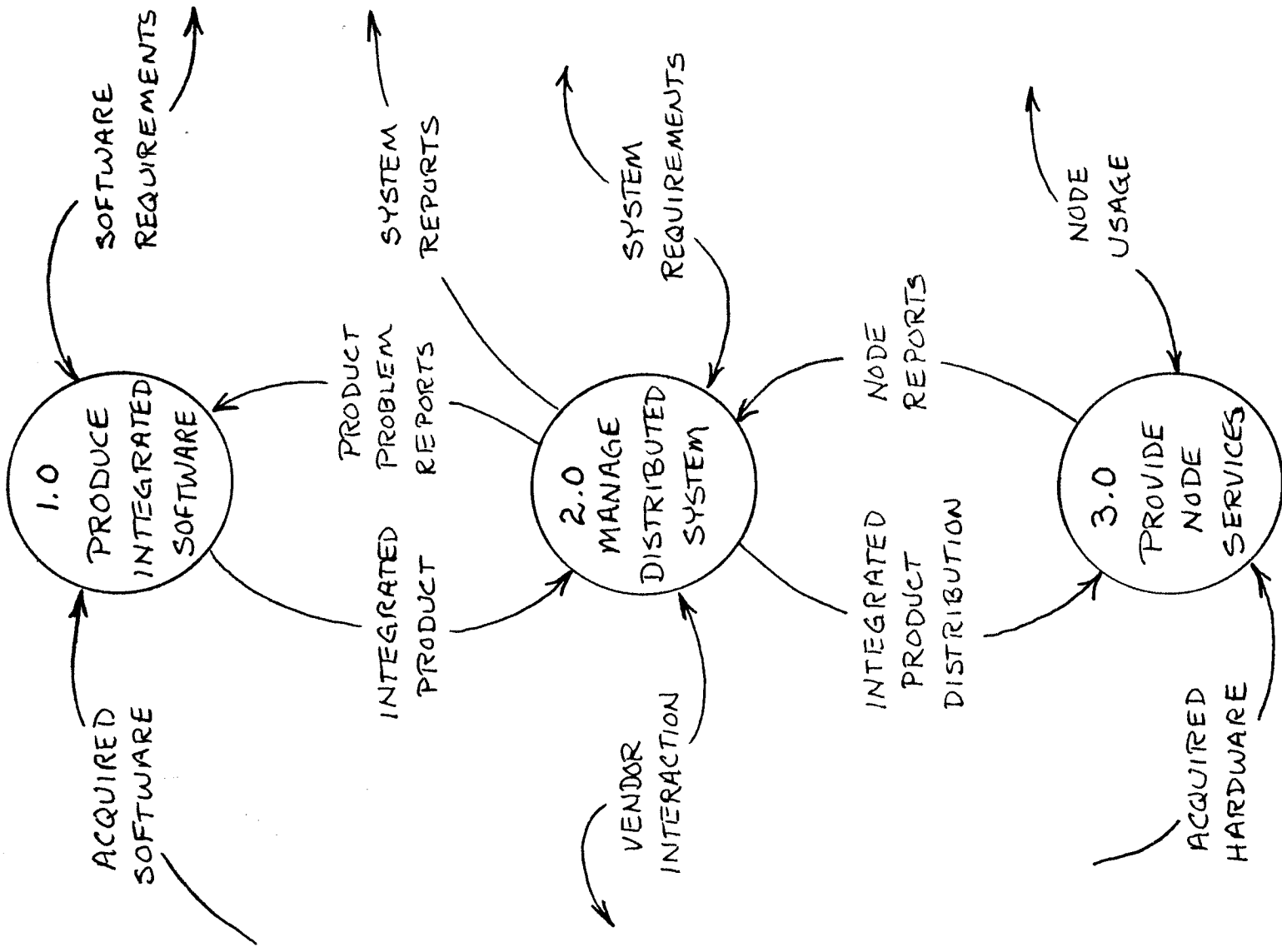
- 0 DATAFLOW MODEL OF TIME-SHARE NODE MANAGEMENT
- 0 PRODUCTS DEFINED IN MODEL CALLED ANCILLARY CORE PRODUCTS (ACP'S)
- 0 ACP'S
  - HRDWRMGR      DEVICE DRIVERS, HARDWARE DATABASE  
                  HARDWARE STATUS CALLBACKS
  - VOLMGR         DISK MOUNTS, DISK ARCHIVE, TAPE ARCHIVE,  
                  BACKUP, VOLUME INTEGRITY
  - USERCOMM     LOGIN BANNERS, NEWS UTILITY, BROADCAST  
                  UTILITIES
  - USERSCRN     SCREEN USERS AGAINST SYSTEM MODE, USES  
                  AUTHORIZE FOR SOME FUNCTIONS
  - VASP           ACCOUNTING UTILITY, RESOURCE USAGE BY ACCOUNT
  - PRINTQMGR    AUTOMATED MANAGEMENT OF QUEUES, MENU DRIVEN  
                  QUEUE STARTUP
  - BATCHQMGR    SIMILAR TO PRINTQMGR
  - PMIS          PERFORMANCE MONITORING (TUNING)

# AUTOMATED DISTRIBUTED COMPUTER SERVICES

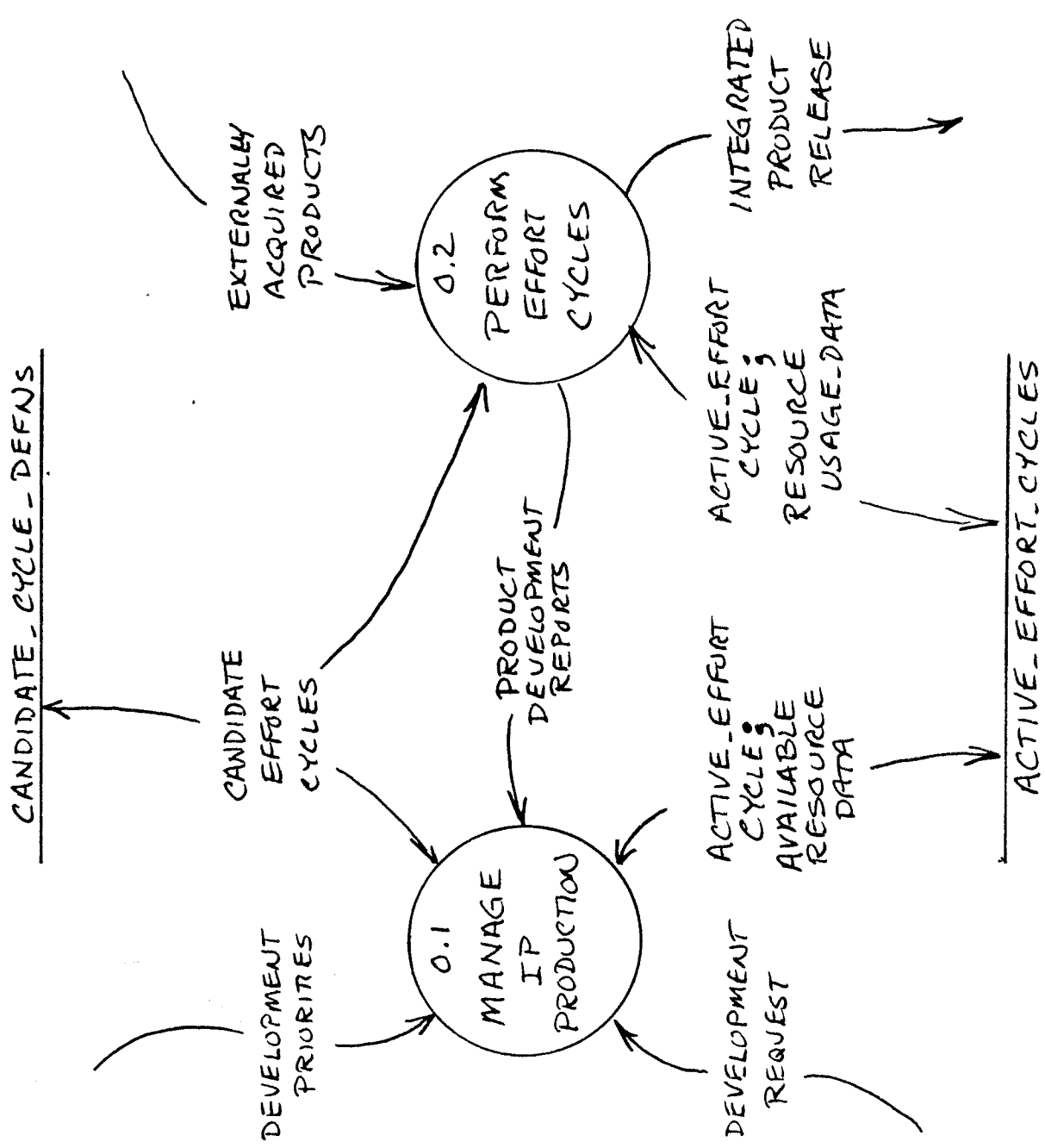
## CONTEXT DIAGRAM



# 0.0 PROVIDE - DISTRIBUTED - COMPUTER - SERVICE

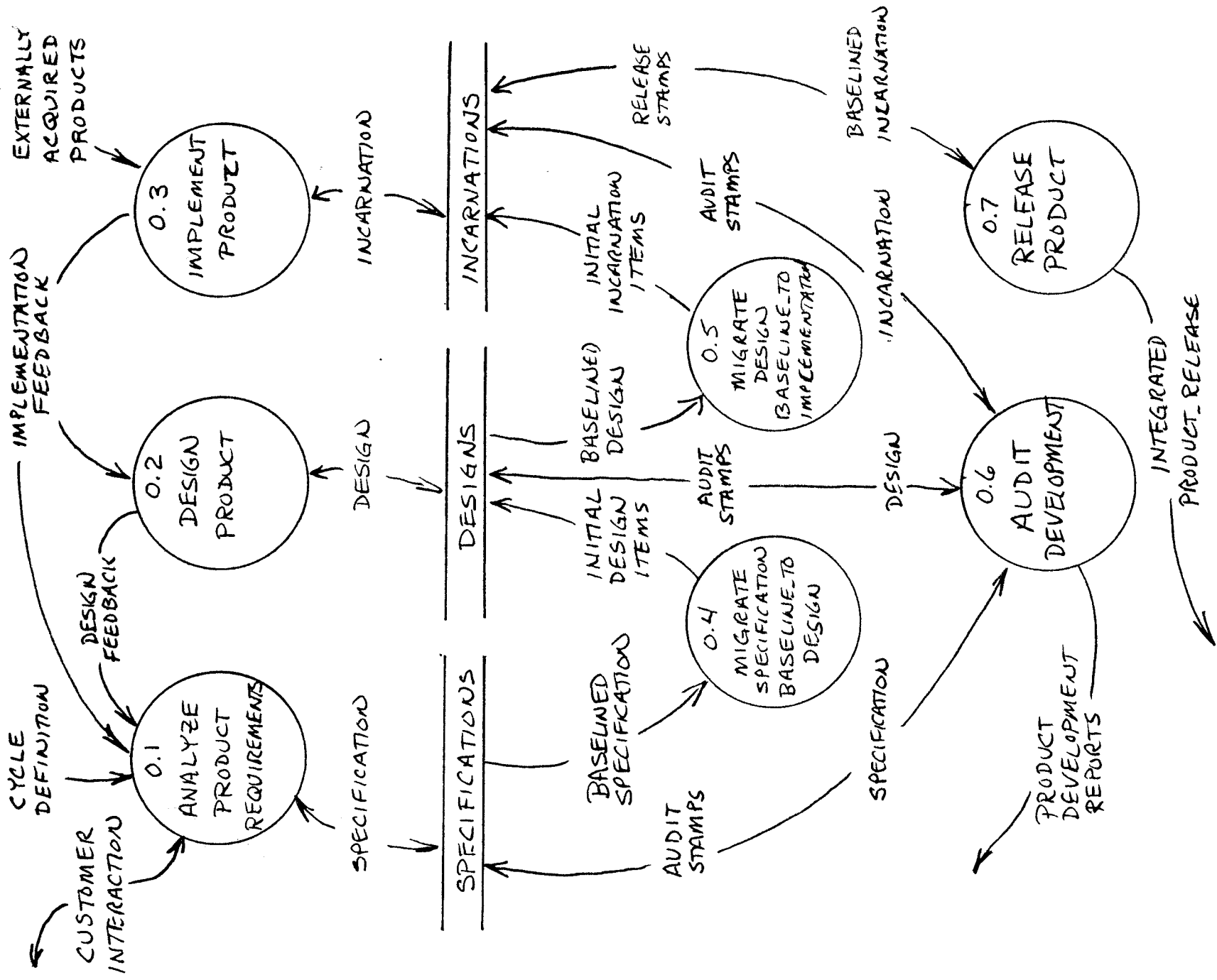


# 1.0 PRODUCE - INTEGRATED - PRODUCTS

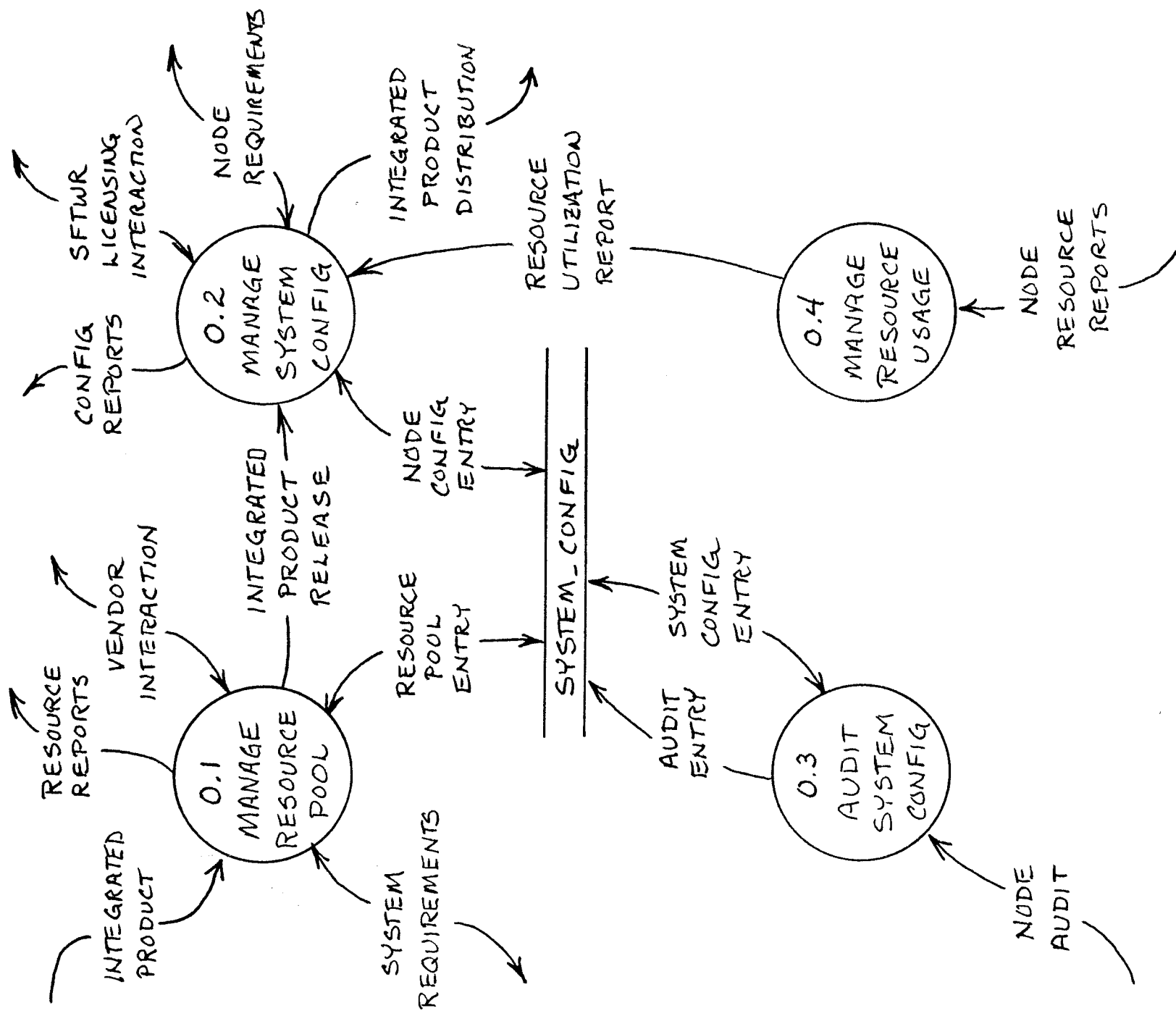


# 1.2 PERFORM EFFORT CYCLES

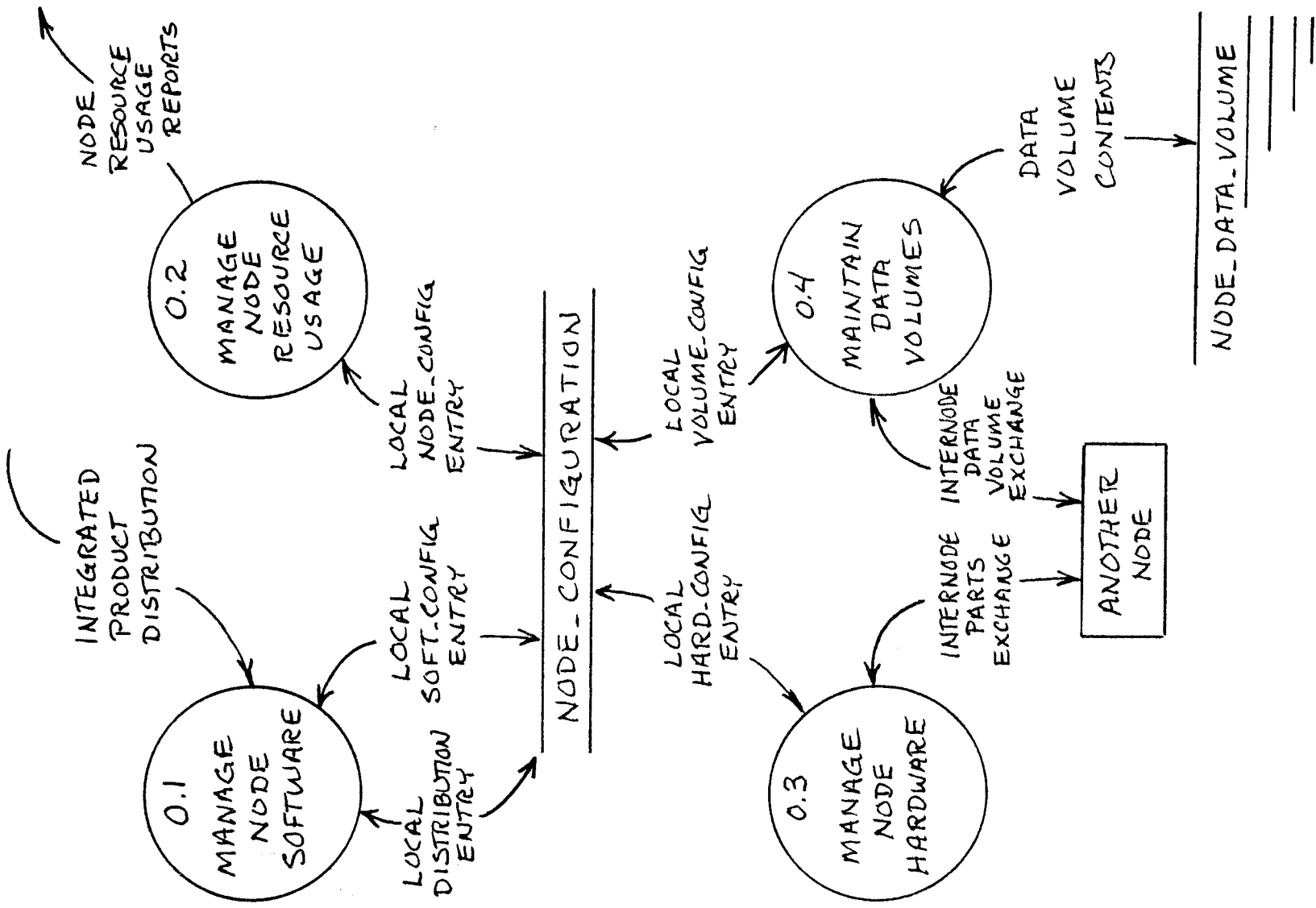
RESOURCE USAGE DATA \* Typical



# 2.0 MANAGE - DISTRIBUTED - SYSTEM



### 3.0 PROVIDE\_NODE\_SERVICES



### 3.1 MANAGE\_NODE\_SOFTWARE

