ETA FORTRAN

- 77 ANSI Standard
- Anticipated 8X Array Notation
- State-of-the-art Vectorizer
- User Directives
- Performance Analysis
- FORTRAN 200 Compatibility

AUTOMATIC VECTORIZATION

- Do and If Loops
- Scalar Promotion
- If Then Else Constructs
- User Feedback and Directives
- Four Levels of Vectorization

AUTOMATIC VECTORIZATION

- Automatic Strip Mining
- Array Bounds Checking
- Round-off Error Control
- Nested Loop Collapse
- Alternate Complex Storage

SOFTWARE RELIABILITY

- **Domains**
  - Intraprocess Address
- **Capabilities**
  - Controlled Access to System Resources
- **Other Standard Techniques**
  - Redundant Data
  - Atomic Actions
  - Critical Regions

MULTI-ENVIRONMENT PRODUCTS

- ETA FORTRAN
- Pascal
- C
- Network Interfaces
- Multitasking Libraries

ETA SYSTEM V ENHANCEMENTS

- Multiple CPUs
- Memory Hierarchy
- High Performance Distributed I/O
- Thousands of Processes
- Security Controls

ETA USER ENVIRONMENTS

SYSTEM V VSOS

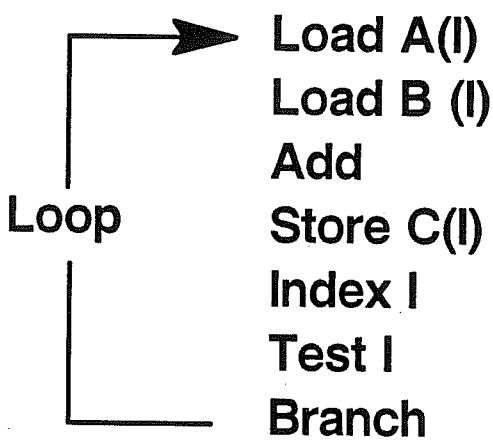
Working Context for:

- Command Processing
- Libraries, Utilities, and Tools
- Language Processors

VECTOR PROCESSING

SCALAR

```
      DO 5 I = 1,500
5     C(I) = A(I) + B(I)
```



1 Result / Multiple Clocks

VECTOR

```
C(1;500)=A(1;500)+B(1;500
```

Vector Add
A + B = C

Multiple Results / Clock

ETA^{10} SYMBOLIC DEBUGGER

- Source and Machine Level Debug
- Multitasking Support
- Optimized and Vectorized Code
- Source Text Display
- Window Oriented User Interface

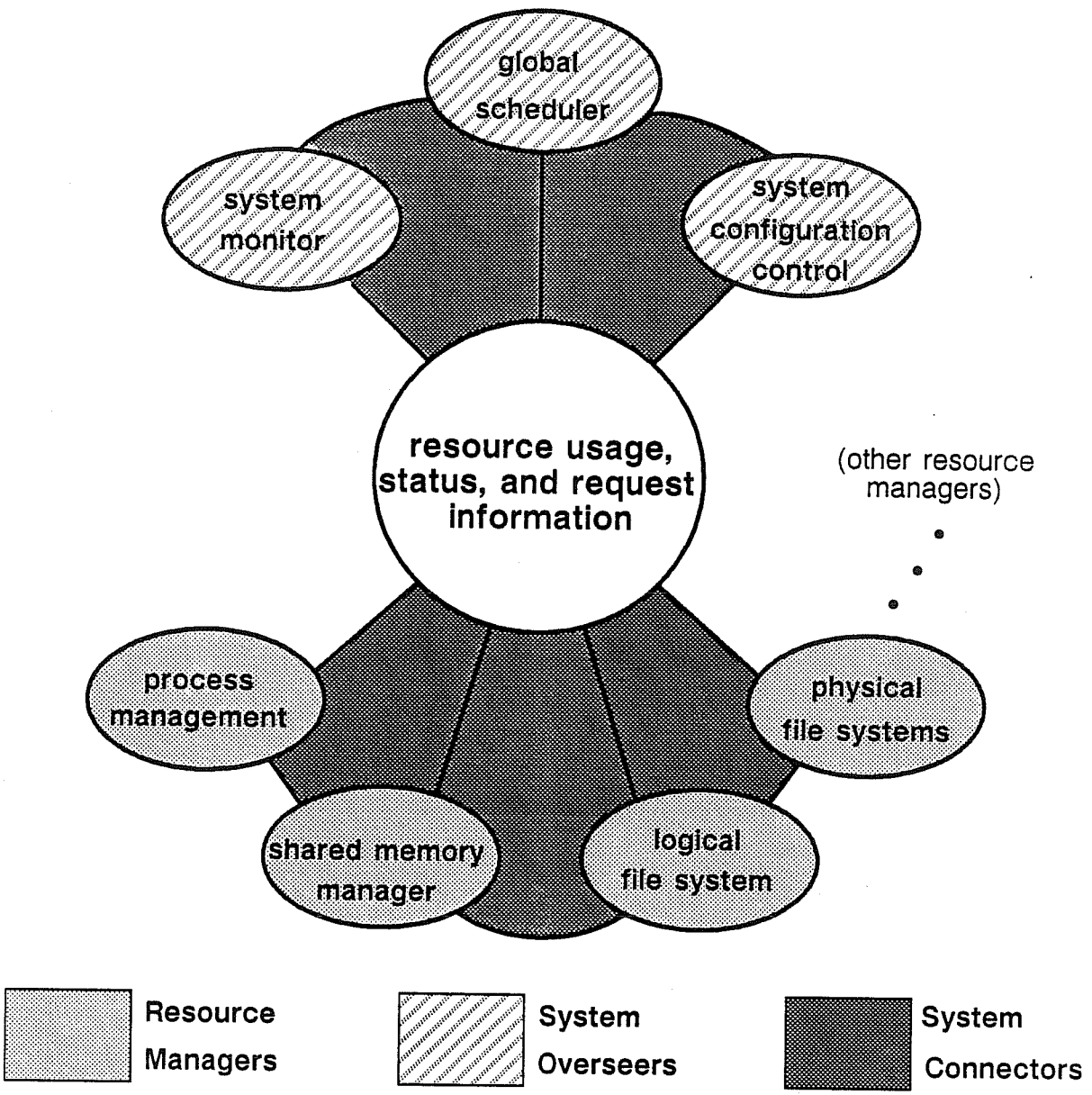
ETA^{10} MULTITASKING

- Total Solution Environment
- Encourages Correct Programming
- Top Down Approach
- Active Experimentation

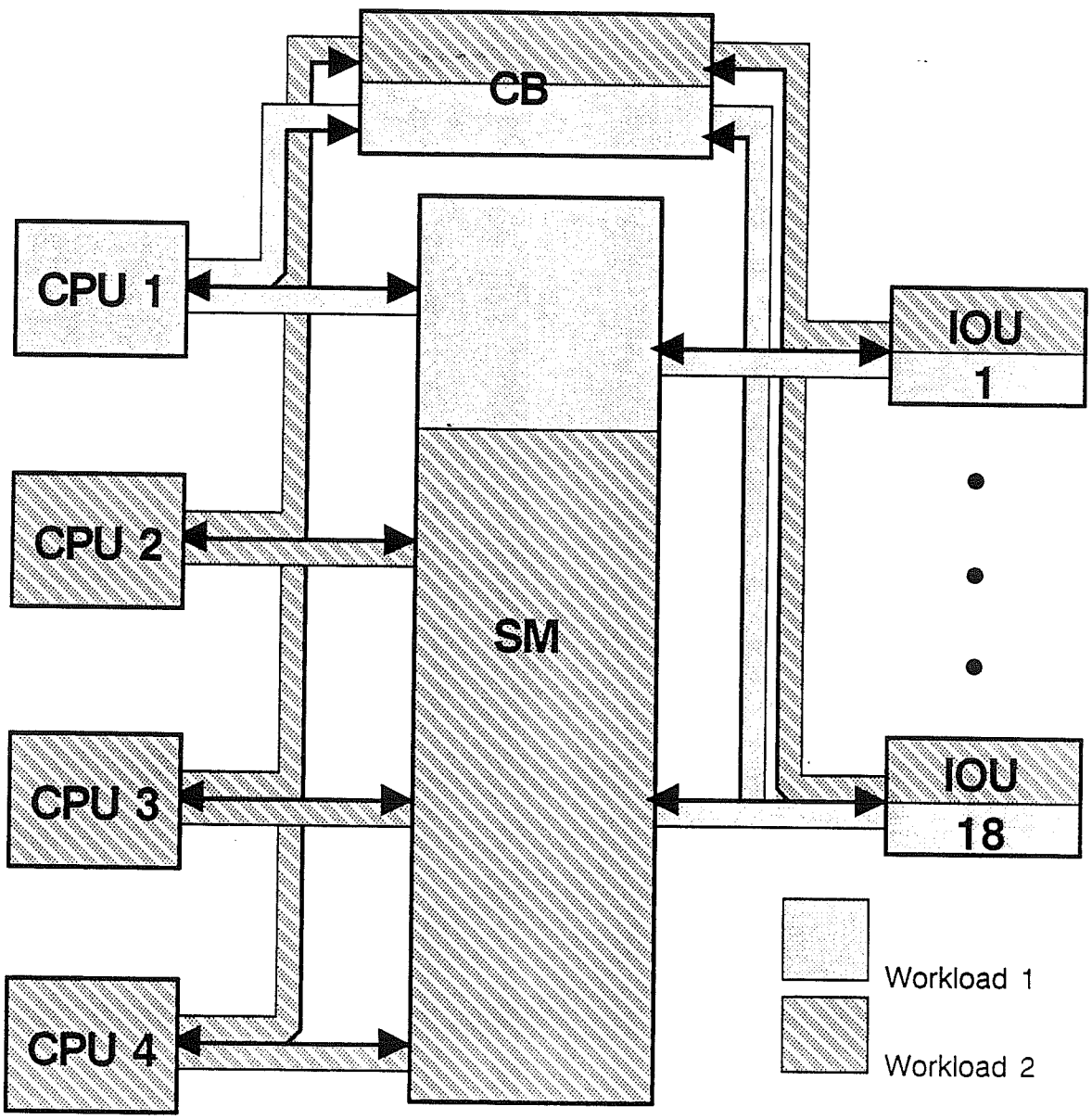
ETA VSOS FEATURES

- Interactive and Batch Access
- Easy to Learn
- Mature Environment
- Multi-host Network Support
- FTN200 and ETA FORTRAN

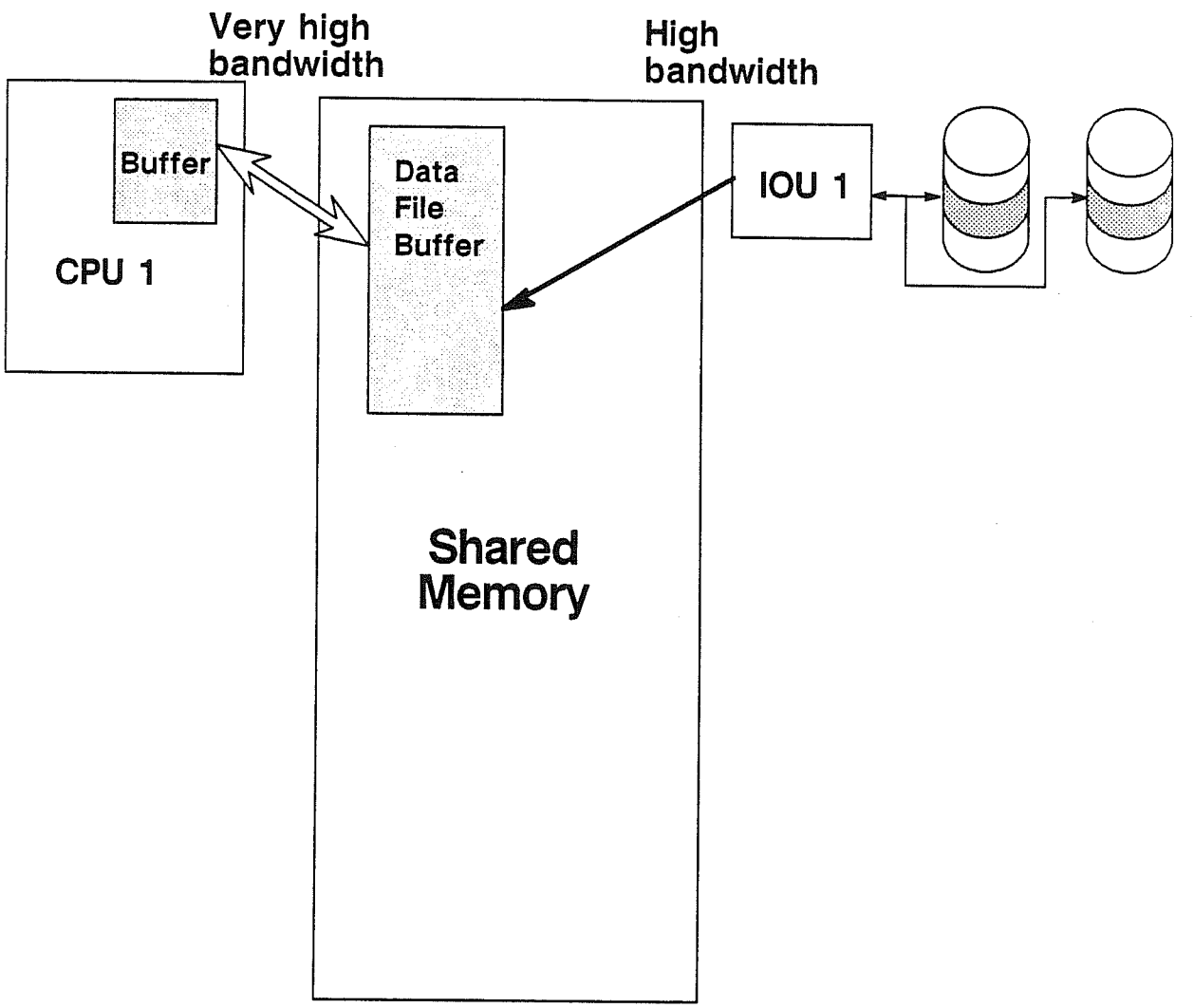
KERNEL


global scheduler
system monitor
system configuration control
resource usage, status, and request information
(other resource managers)
process management
physical file systems
shared memory manager
logical file system
Resource Managers
System Overseers
System Connectors

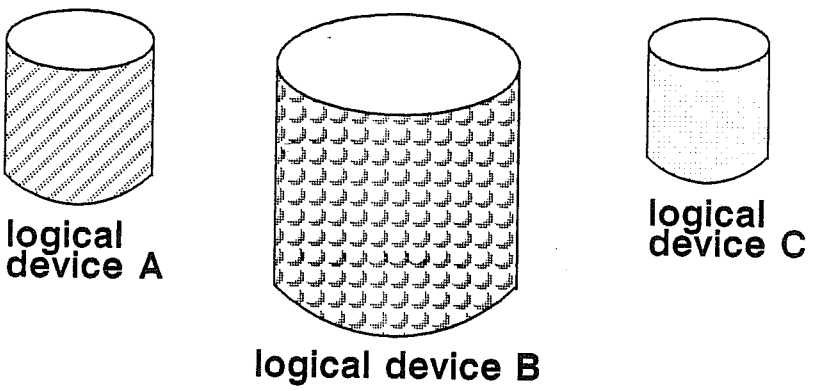
ETA^{10} SYSTEM PARTITIONING



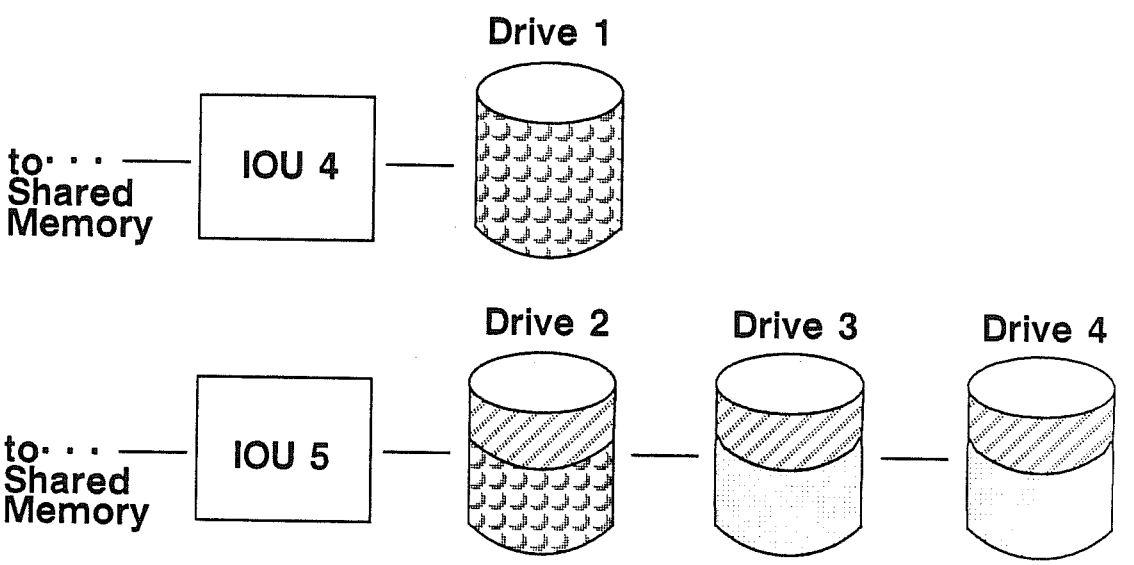
DATA MOVEMENT



USER'S LOGICAL DEVICES



SYSTEM'S PHYSICAL DEVICES

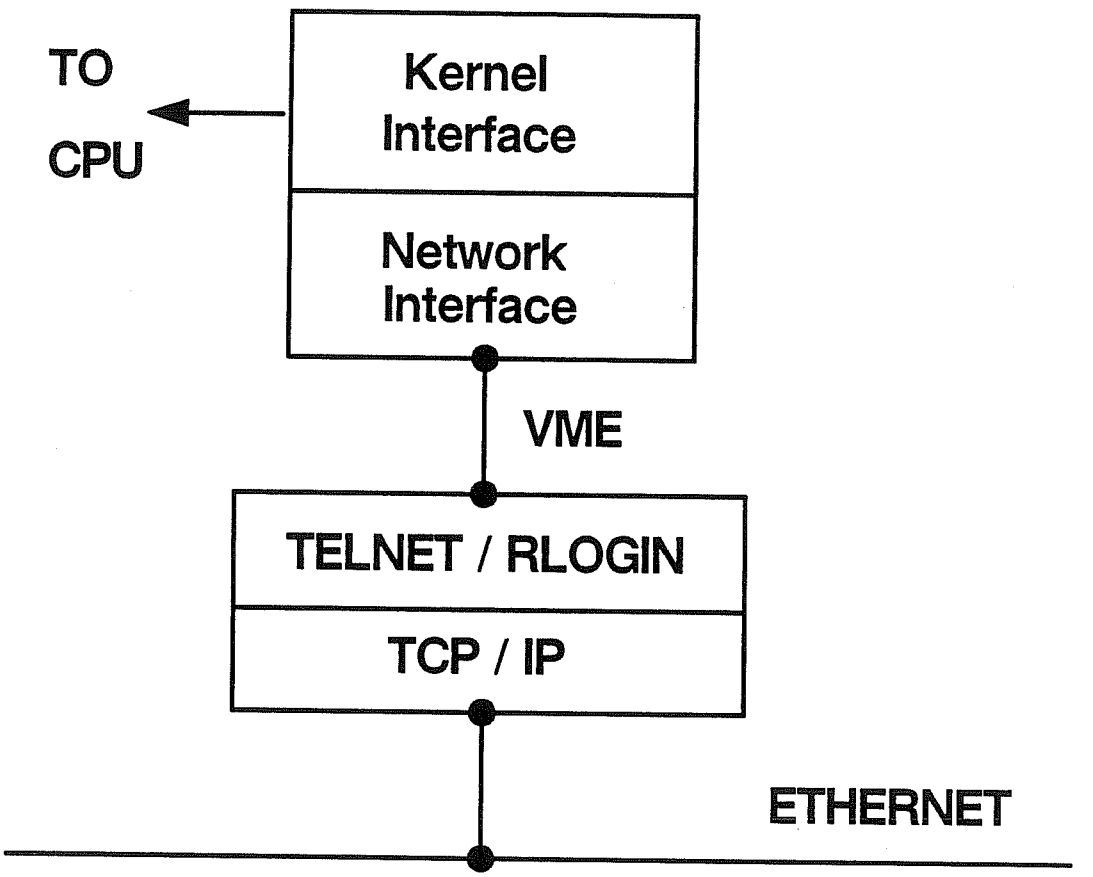


NETWORK OBJECTIVES

- Minimal CPU Overhead
- Industry Standard
- Multiple Connections

NETWORK ARCHITECTURE

SINGLE BOARD COMPUTER (SBC)



ETA VSOS ENHANCEMENTS

- Based on VSOS 2.2
- Multiple Sessions per User
- Shared Files
- File Position Retained across Processes
- Device Classes vs Pack Names

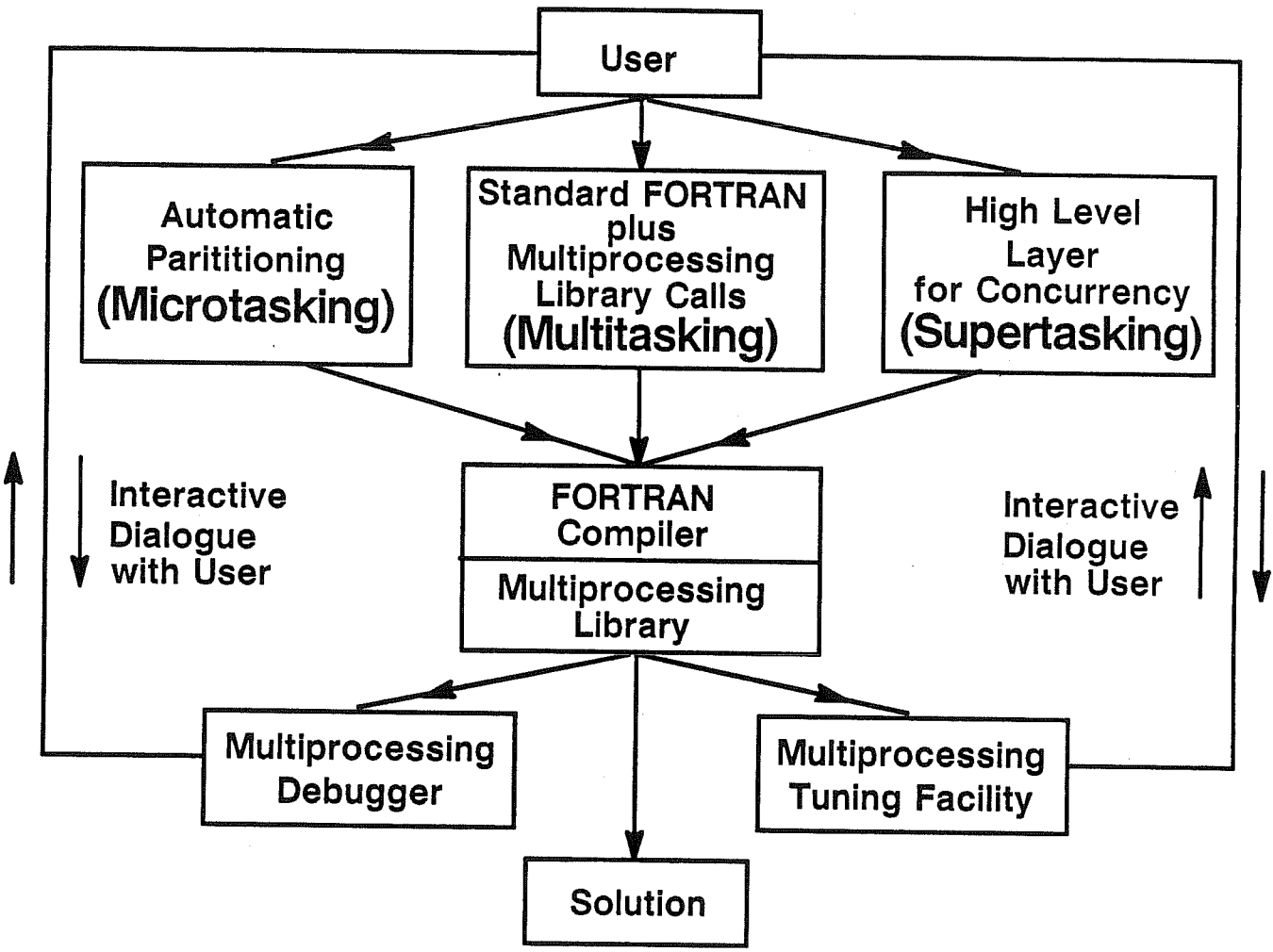
ETA^{10} SOFTWARE FEATURES

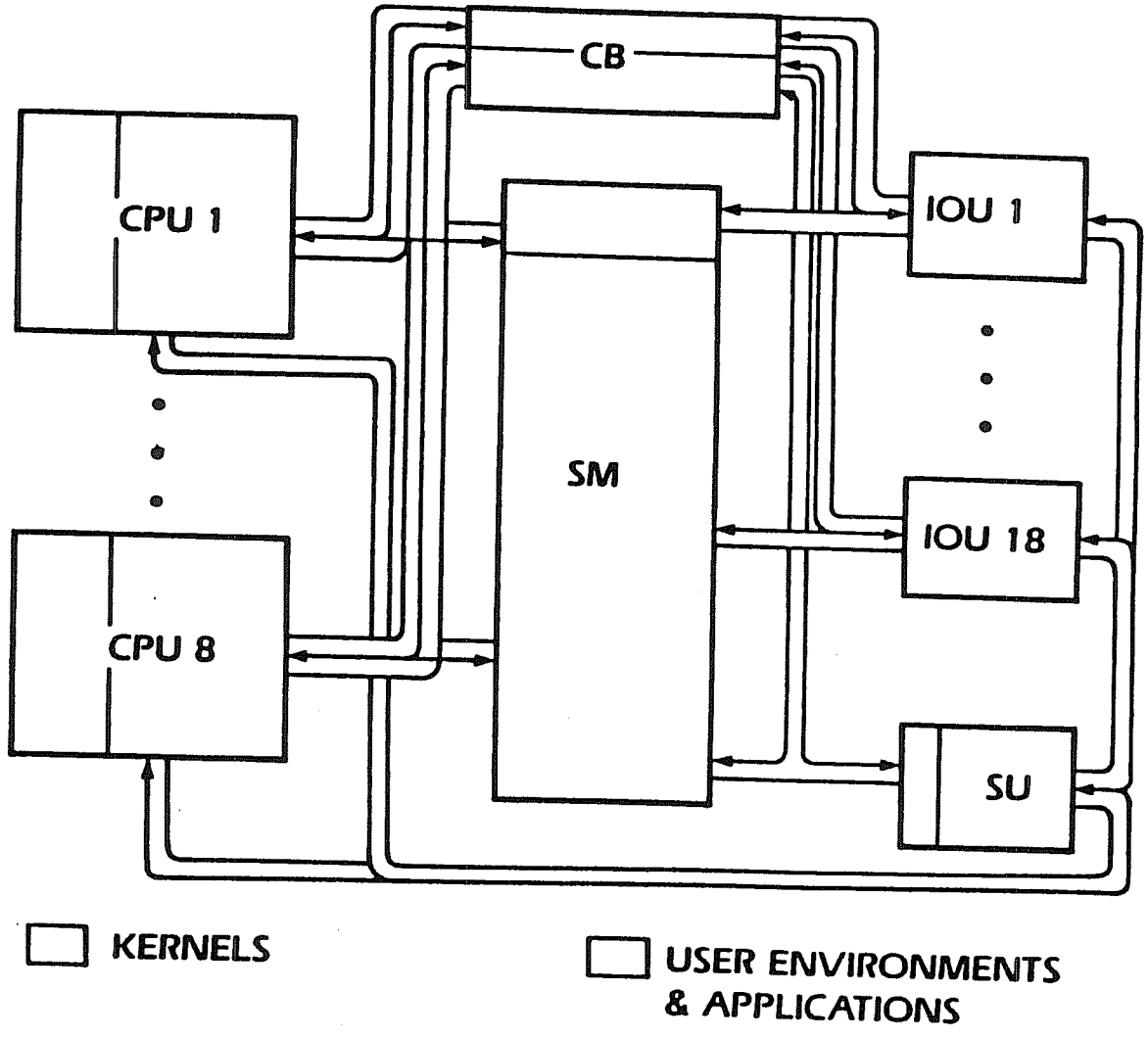
- Multiple User Interfaces
- High Performance Programming Tools
- Network Connectivity
- Flexible System Configurations
- Reliability

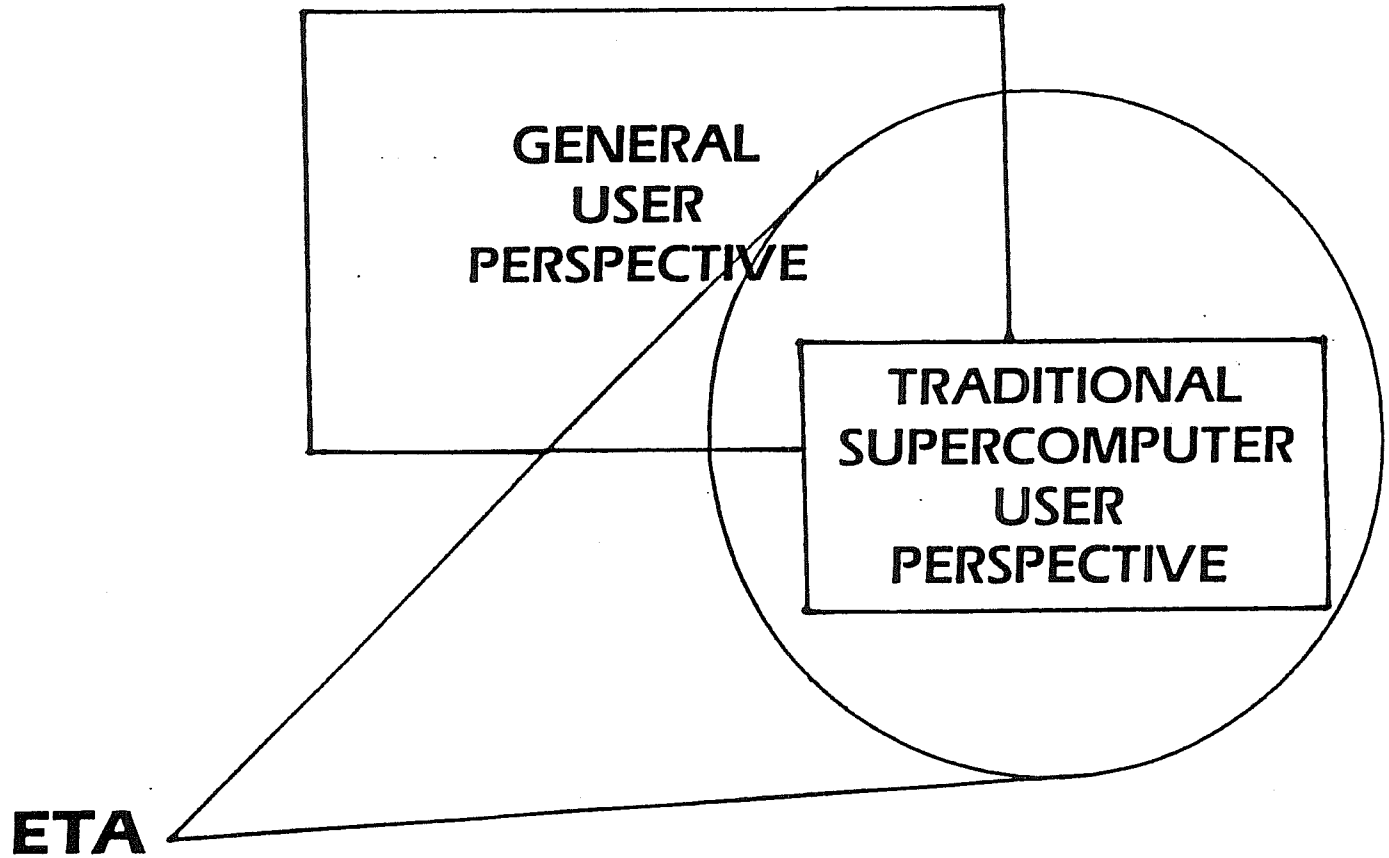
ETA SYSTEM V FEATURES

- Derived from AT&T's UNIX® System V Release 2 Product
- Bourne & C Shells
- Berkeley Networking Extensions
- File Transport Protocol (FTP)
- ETA^{10} Enhancements

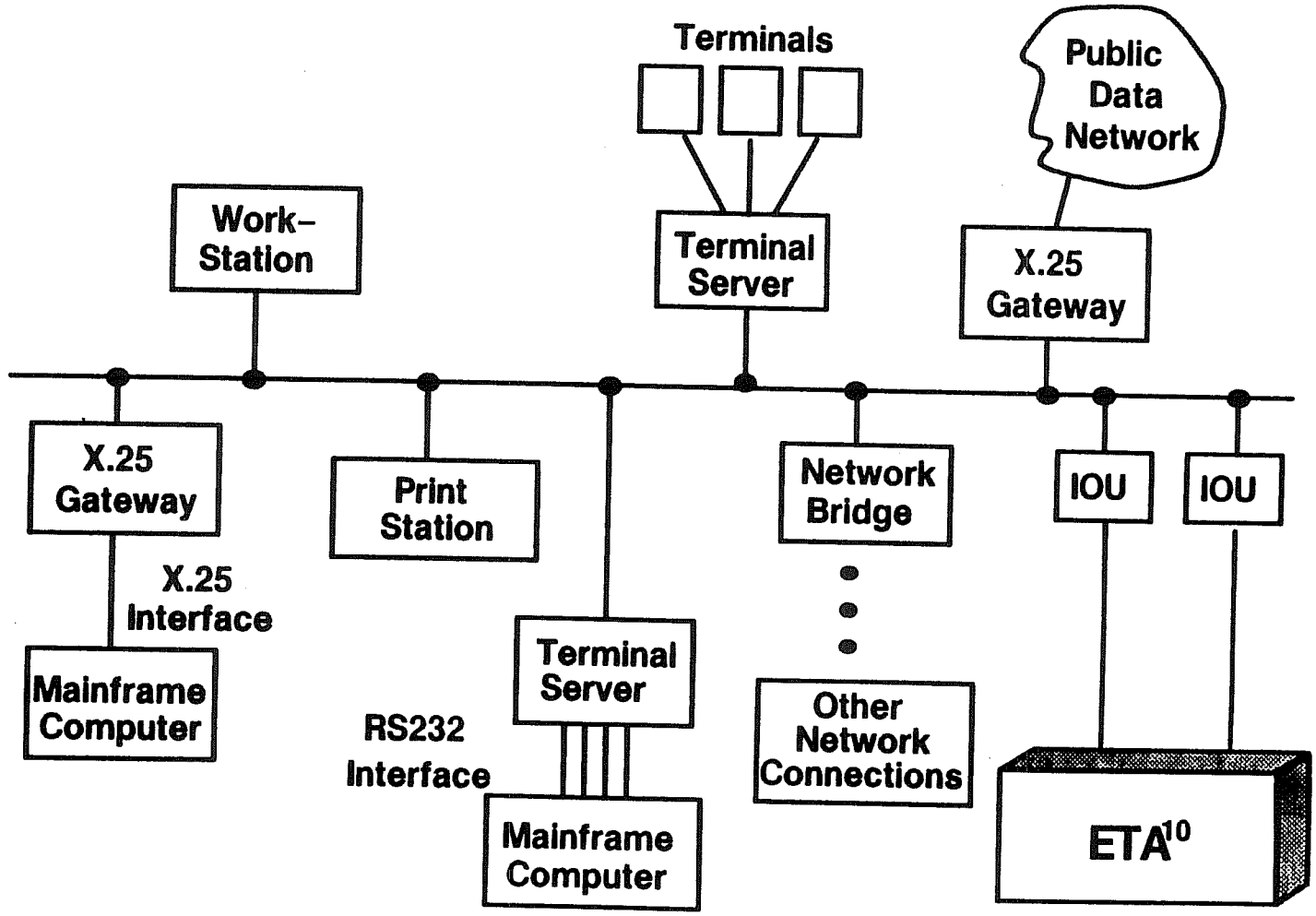
ETA SYSTEMS' STRATEGY FOR MULTIPROCESSING



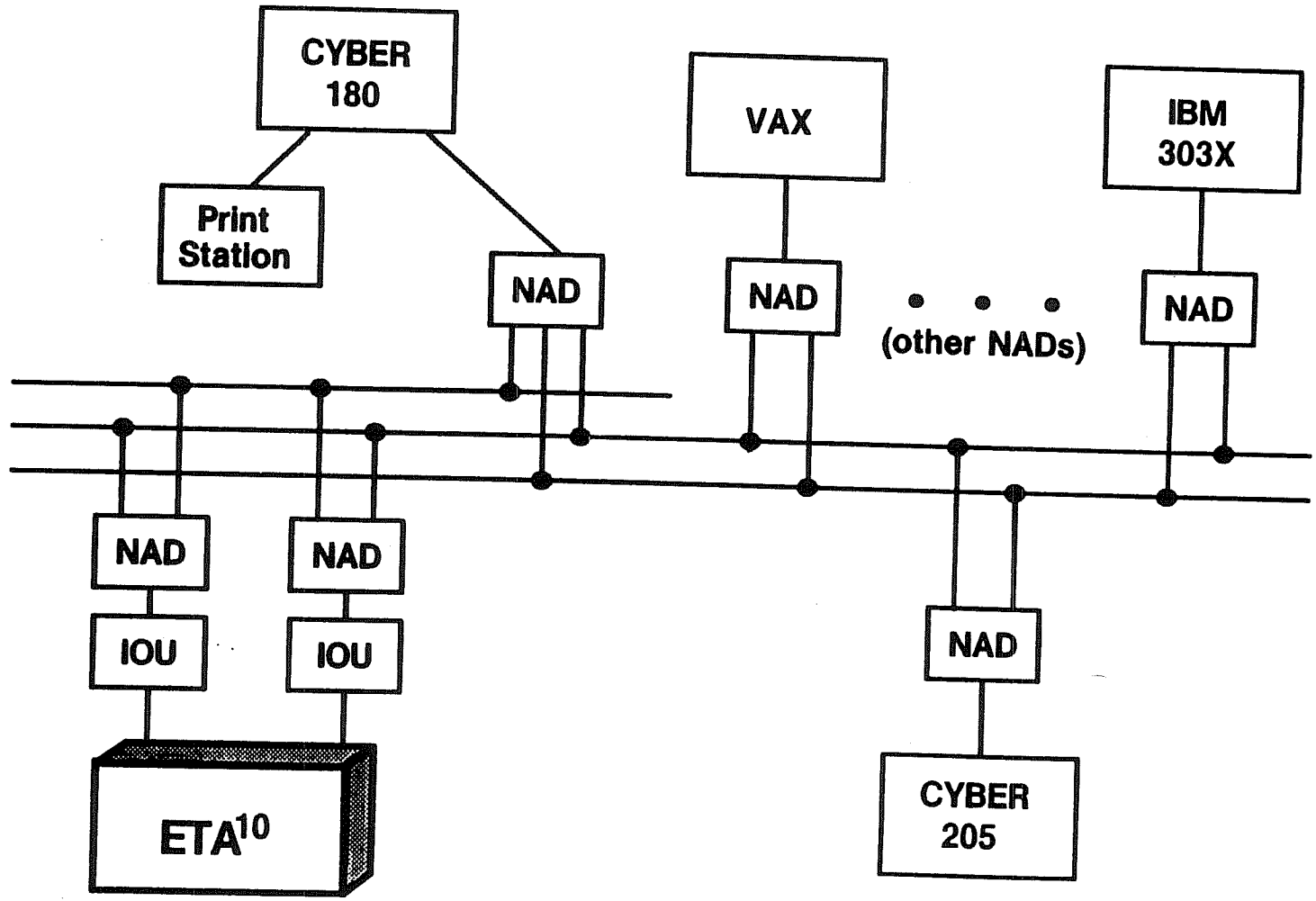

CB
CPU 1
CPU 8
SM
IOU 1
IOU 18
SU
KERNELS
USER ENVIRONMENTS
& APPLICATIONS


GENERAL
USER
PERSPECTIVE
TRADITIONAL
SUPERCOMPUTER
USER
PERSPECTIVE
ETA
SYSTEM
STRATEGY

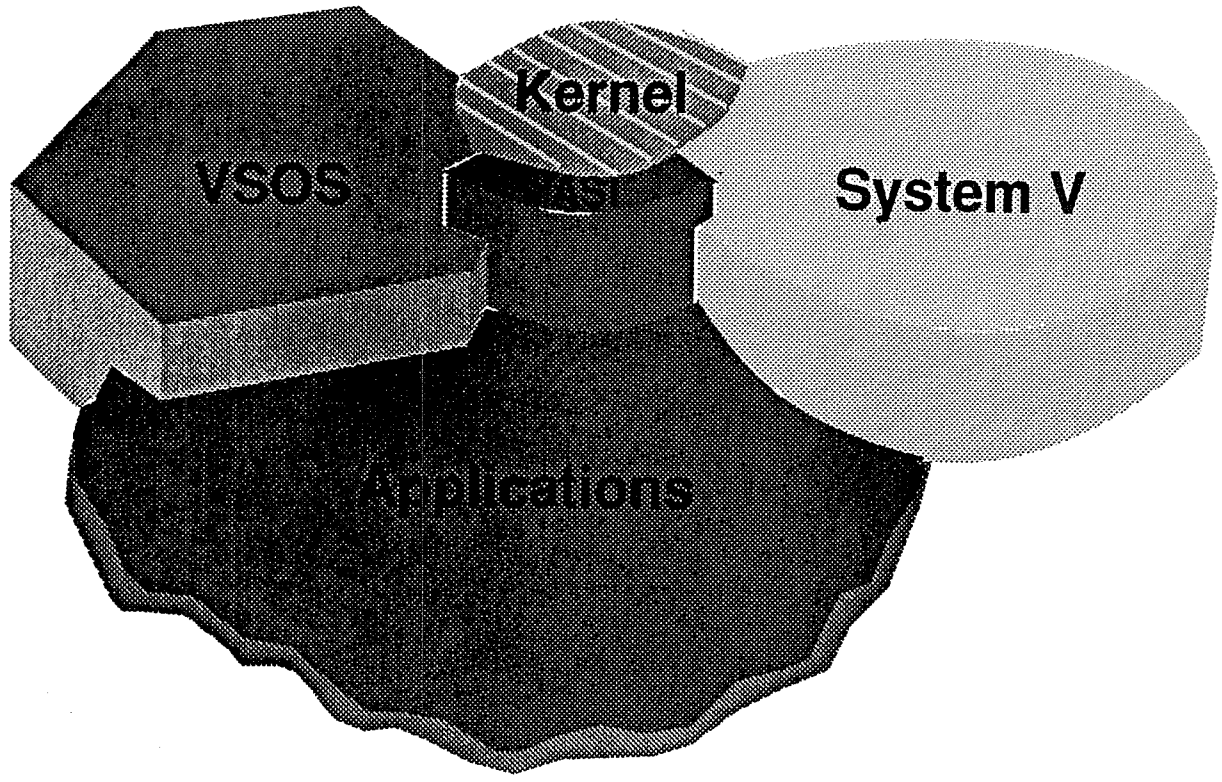
OPEN INTERCONNECTION NETWORK



LOOSELY COUPLED NETWORK



ETA SOFTWARE ARCHITECTURE



ETA SYSTEMS