

Tool Kit University

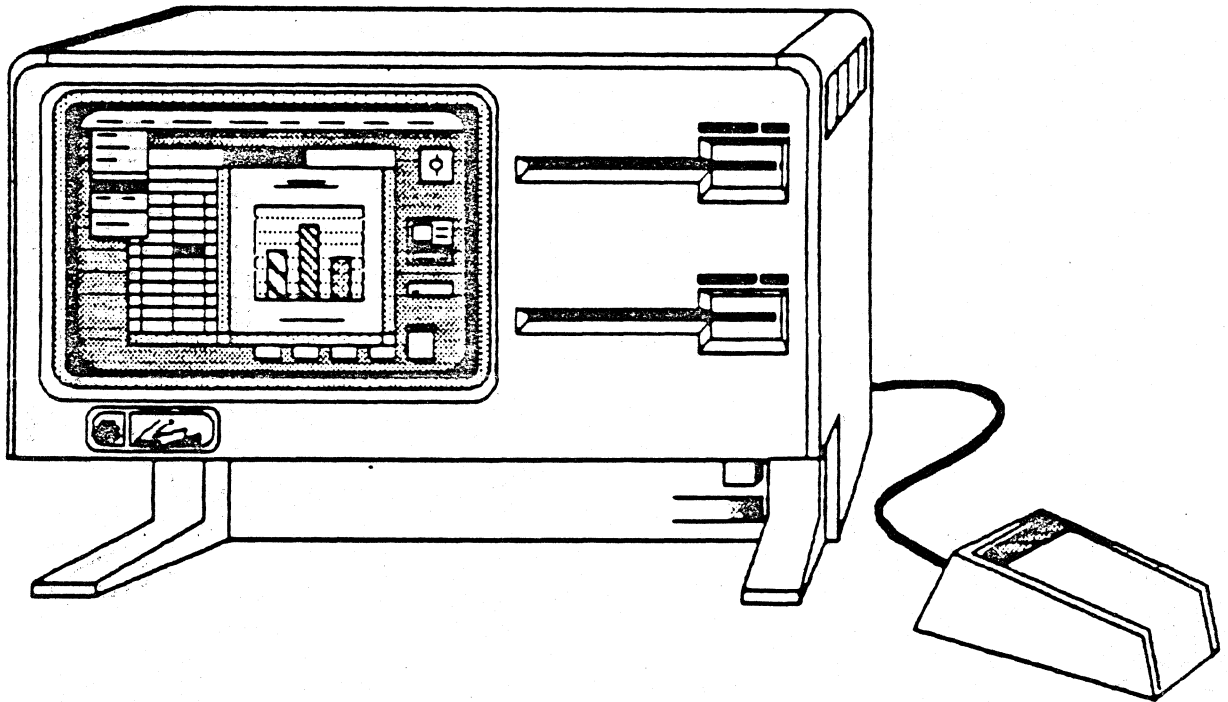
May Seminar, May 2-6

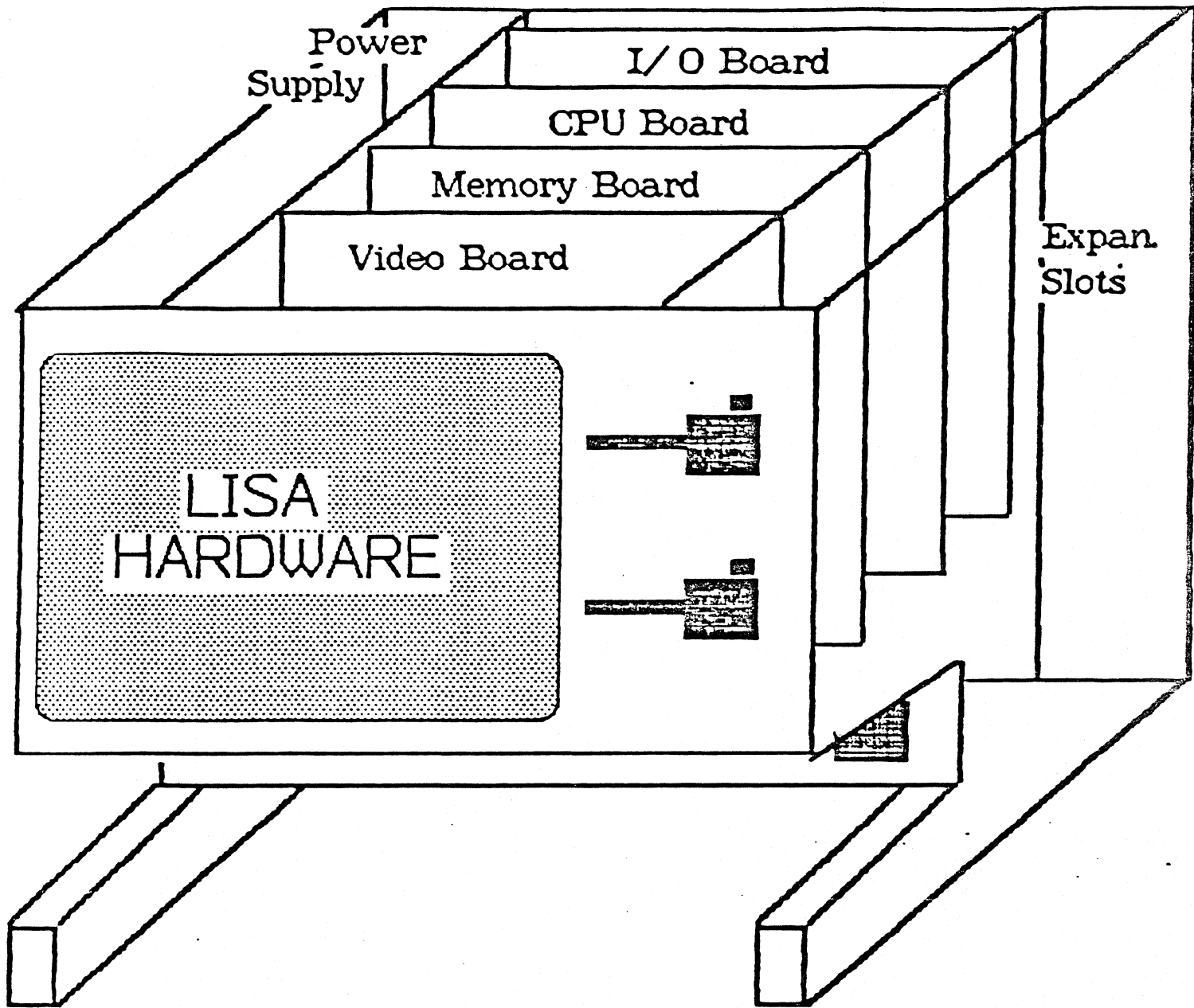
**We are looking forward to seeing you
Monday morning at 8:30 in the
Mariani Training Room
3rd Floor Mariani Building**

Architecture of the



Personal Office System





Peripherals, etc.

- 2 serial (RS-232) ports
- 1 parallel port
- 3 expansion slots
- video output
- clock/calendar
- parameter memory
- speaker

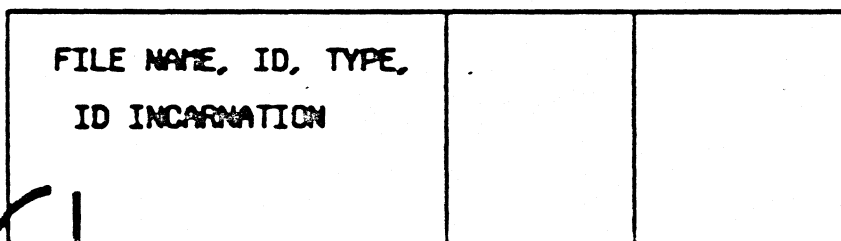
Operating System

- * Single-User
- * Multi-Tasking
- * Priority Scheduling
- * Interrupt-Driven
- * Byte-Stream I/O Model
- * Inter-Task Communication
 - Shared Files
 - Shared Data
 - Pipes
 - Event Channels
- * Demand Fetching Of Code
- * Automatic Stack Expansion
- * Redundant, Distributed Directory

FILE SYSTEM REDUNDANCY HELPS SCAVENGER RECONSTRUCT DIRECTORIES IN CASE OF POWER FAILURE

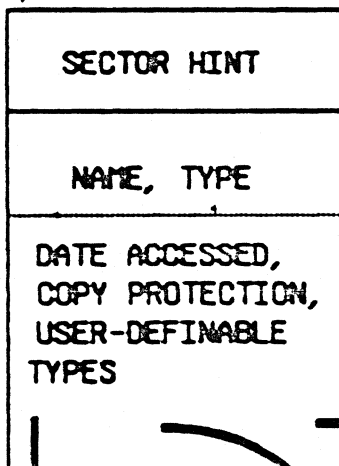
MASTER DIRECTORY

1 PER DISK

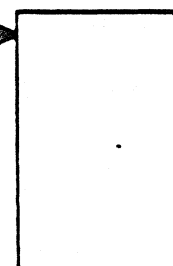
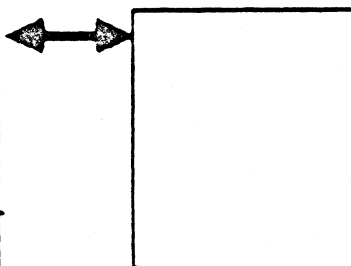
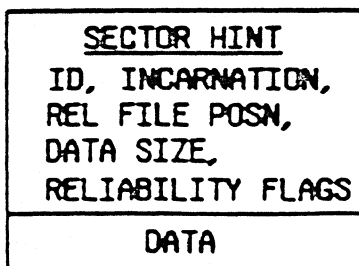


FILE HINT (SAVED WITH FILE)

1 PER FILE



1 PER
SECTOR



Lisa Workshop

- Used for ALL Software Development
- Keyboard-oriented Interface (currently)
- Includes:
 - Mouse-oriented Text Editor
 - Languages (Pascal, Basic, Cobol)
 - 68000 Assembler
 - Linker
 - Development Utilities
- Machine Language Debugger
 - Symbolic Procedure Names
 - Disassembler
- Environments Window

Lisa Pascal Language

* Desired Compatibilities

- Standard Pascal (Jensen & Wirth)
- UCSD Pascal (Apple II and III)
- ISO Standard Pascal
- Parametric Procedures

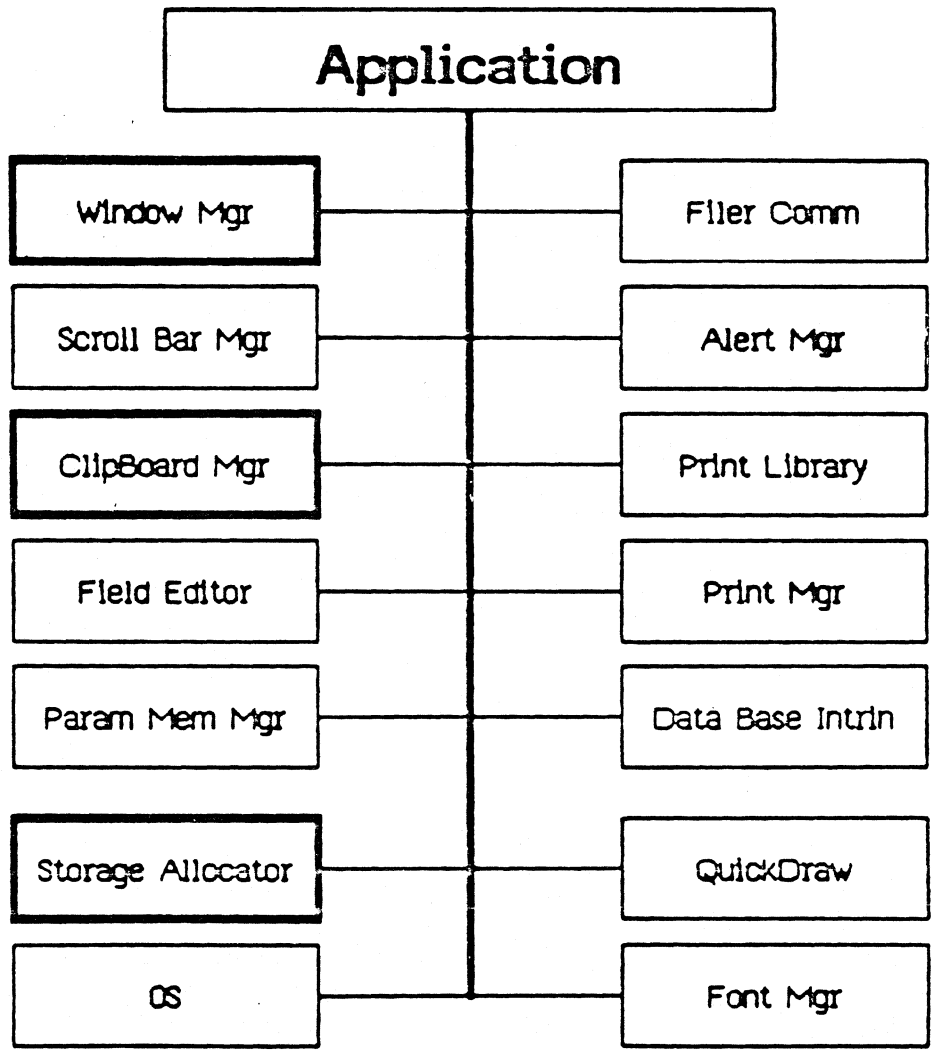
* Major Extensions

- 32 Bit Integers (LongInt Type)
- @ Operator (address of)
- Separate Compilations (UCSD Units)
- Control of Physical Segmentation
- Classes (e.g. Simula-67, Smalltalk)
- Debugging Aids

* Quality of Code Generated

- 16 Bit Address Offsets
- "Hot" Variables in Registers

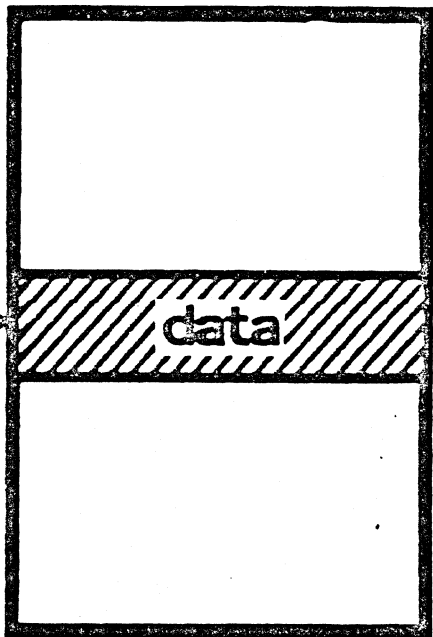
Libraries



Applications make calls to many different library units.

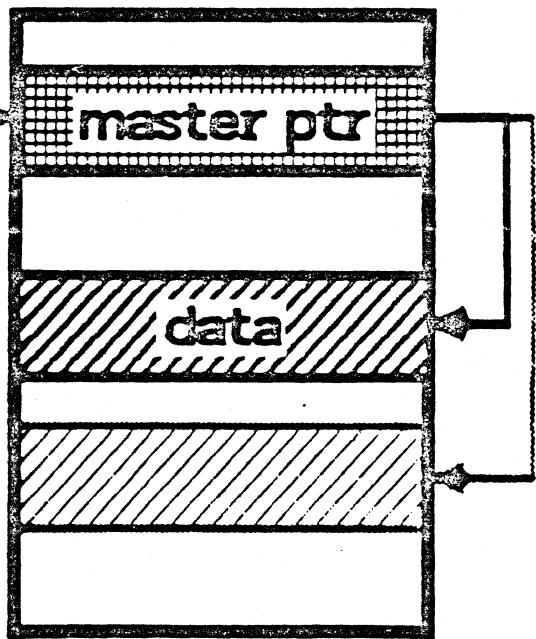
Storage Manager

pointer



non-relocatable block

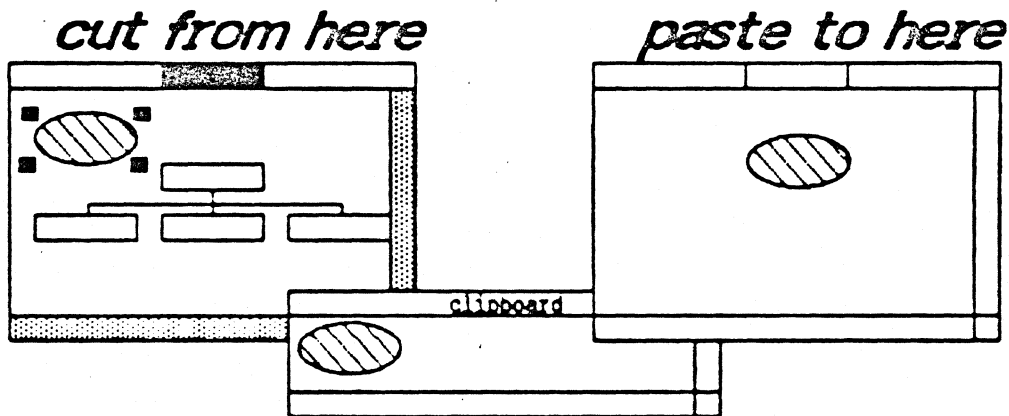
handle



relocatable block

ClipBoard

Used to share data, *cut & paste* notation



Clipboard consists of:

- Data Kind
- Data Segment
- Data Handle

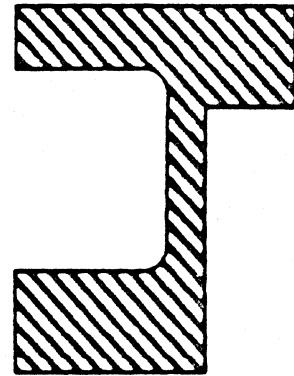
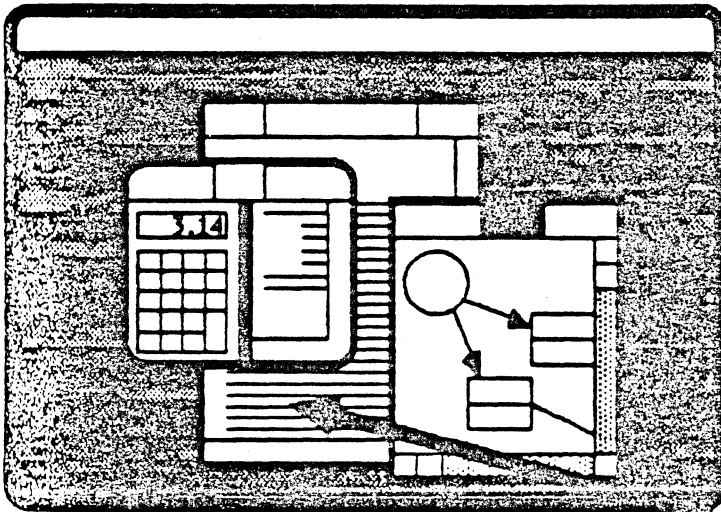
Kinds of Clipboard Data:

- Universal Text = text + formatting
- Universal Graphics = image + structure
- Application Specific

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Window Manager

- Maintains "visRegion" of Window



visRegion of
this window

- Steers events to windows

- Kinds of Events:

buttonDown

activate

update

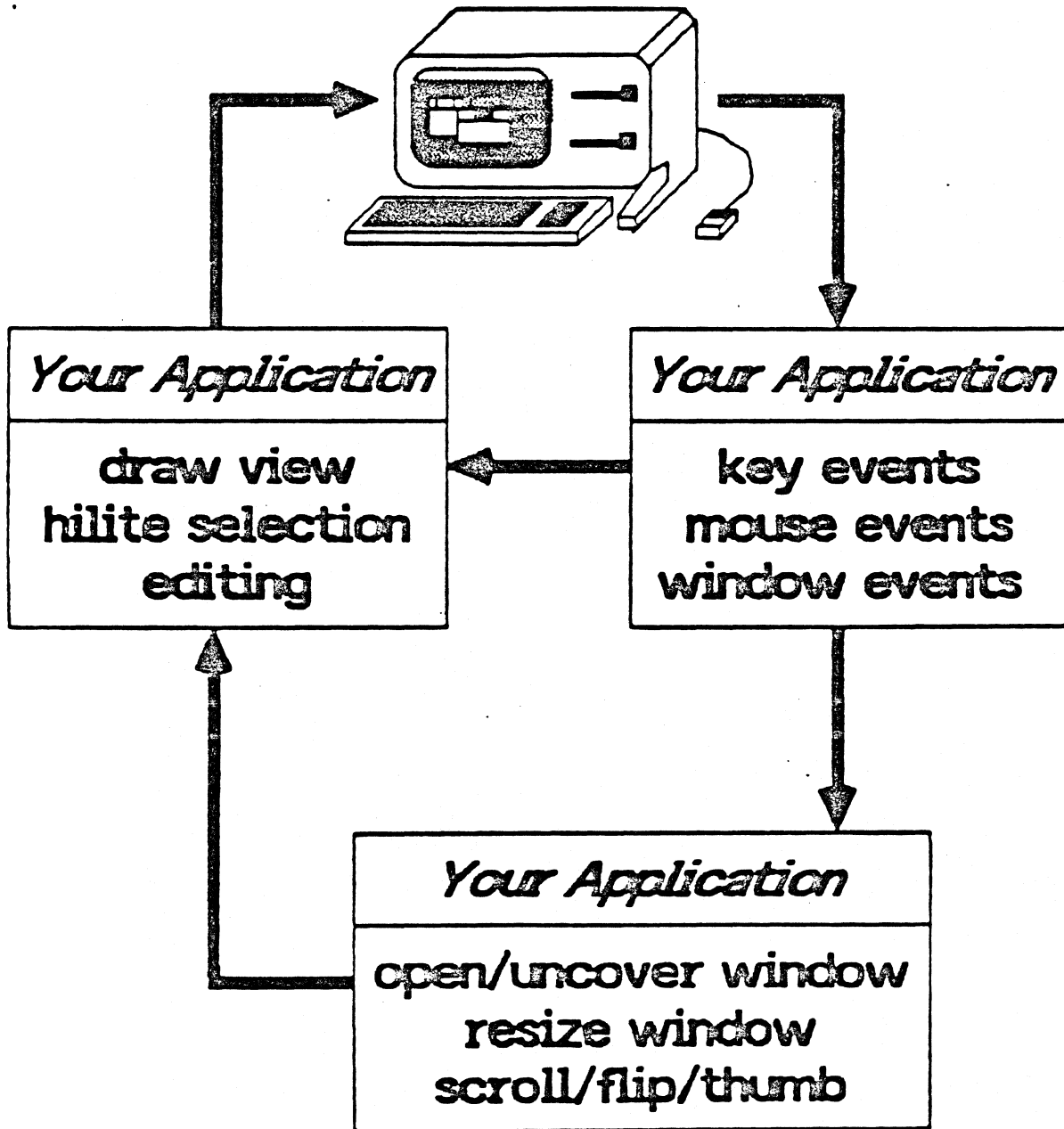
keyDown

deactivate

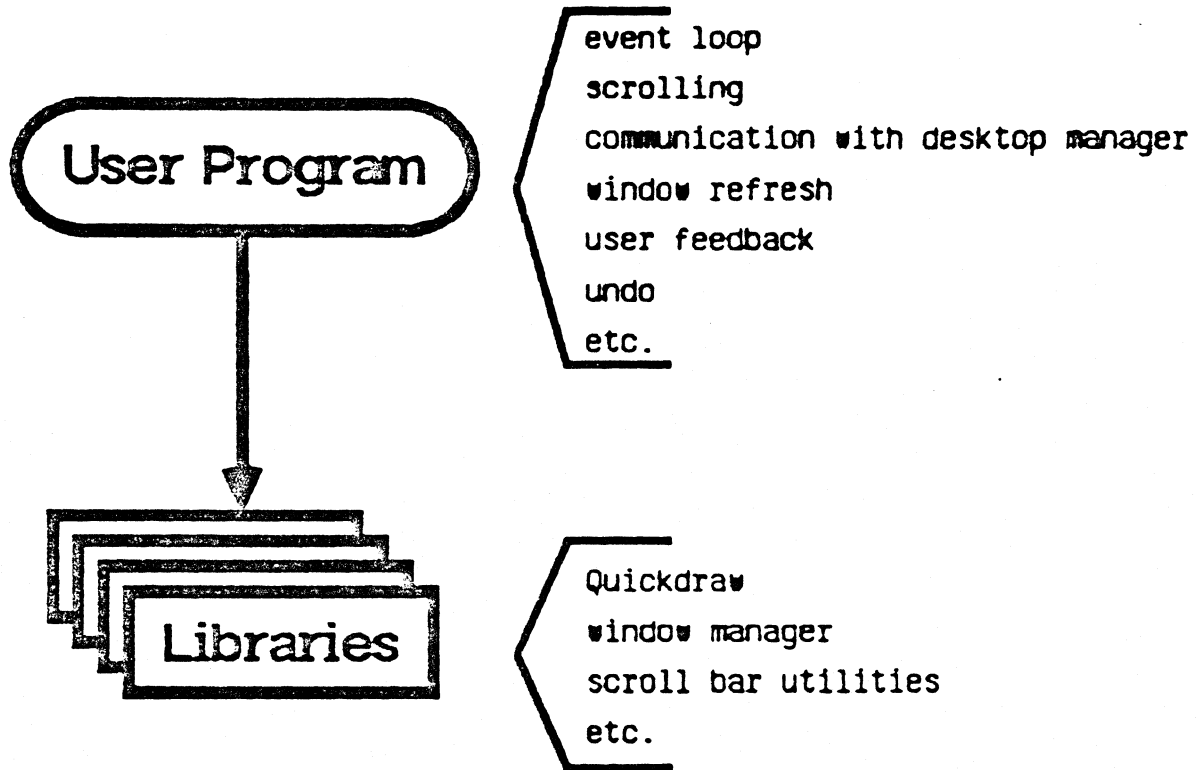
desktop mgr.

Application Structure

- Event Driven & Modeless



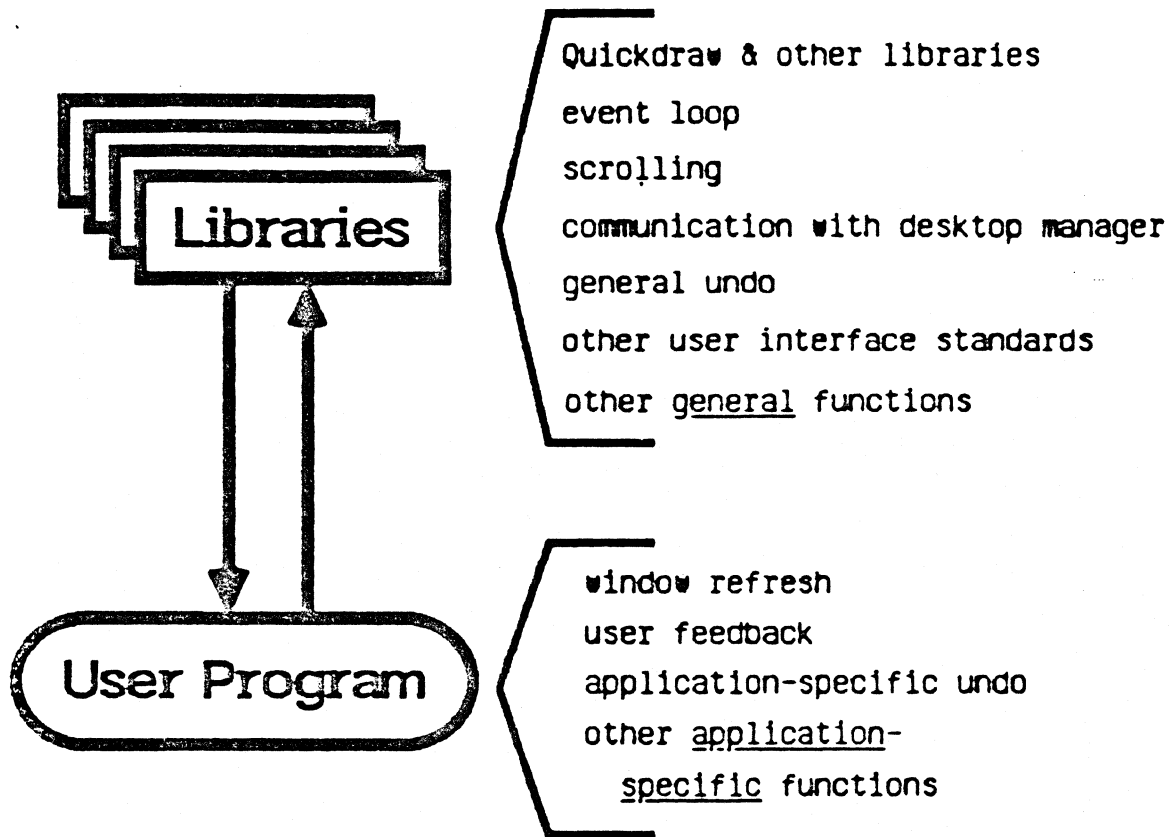
Traditional Program Structure



User Program implements application control structure, and calls Library utilities. to respond to events.

Each application must duplicate standard code for event loop, scrolling, etc.

Desired Program Structure



Library implements application controls structure, processes standard events, and calls User Program for application-specific tasks.

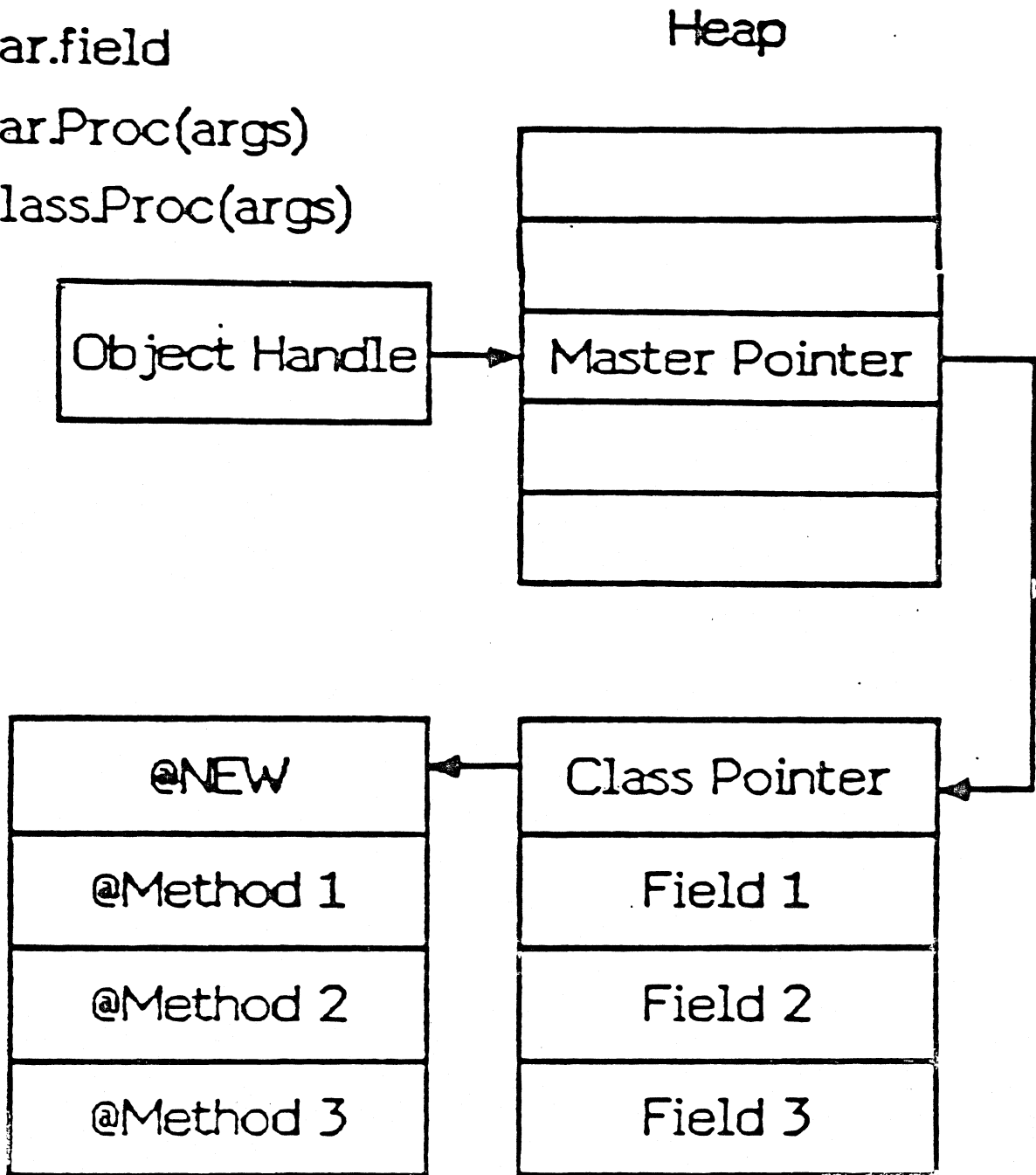
User Program calls Libraries for drawing, etc.

Classical Implementation

var.field

var.Proc(args)

class.Proc(args)



TYPE c = SUBCLASS OF OBJECT

field1: t1; field2: t2; _

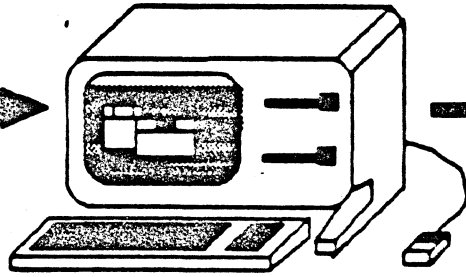
PROCEDURE Method1(args); _

END;

Clascal

- The Generic Application
 - Specifies Standard Behavior
 - Defines Superclasses
- Specific Applications
 - Specify Differences from Standard
 - Define Subclasses

Toolkit Application Structure



Your Application

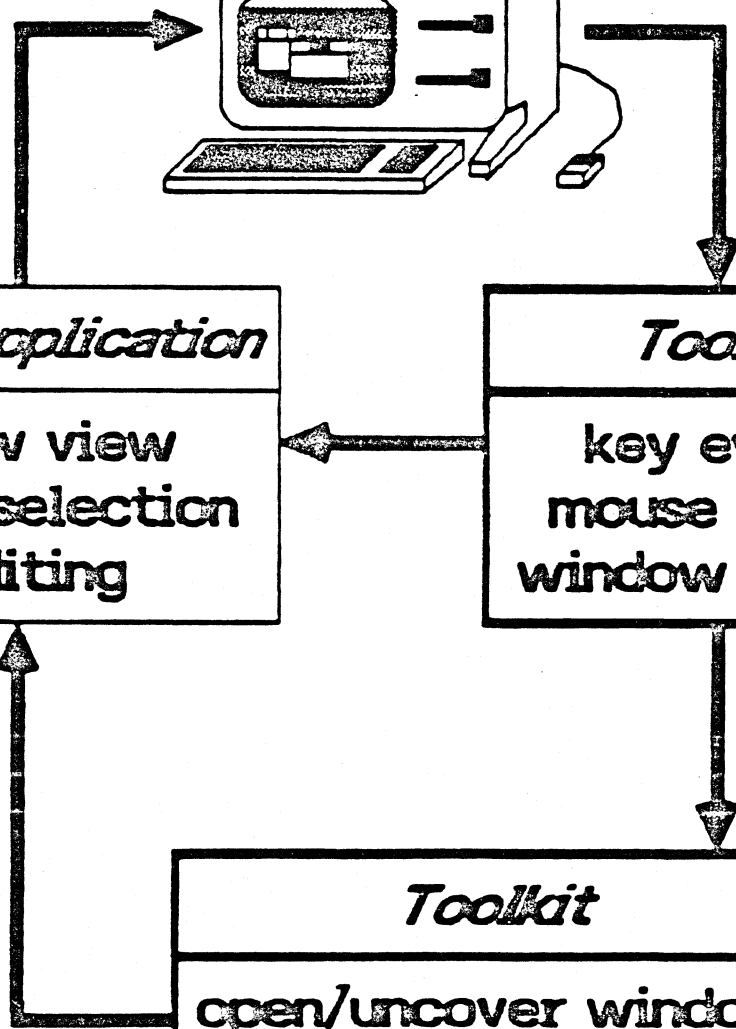
draw view
hilite selection
editing

Toolkit

key events
mouse events
window events

Toolkit

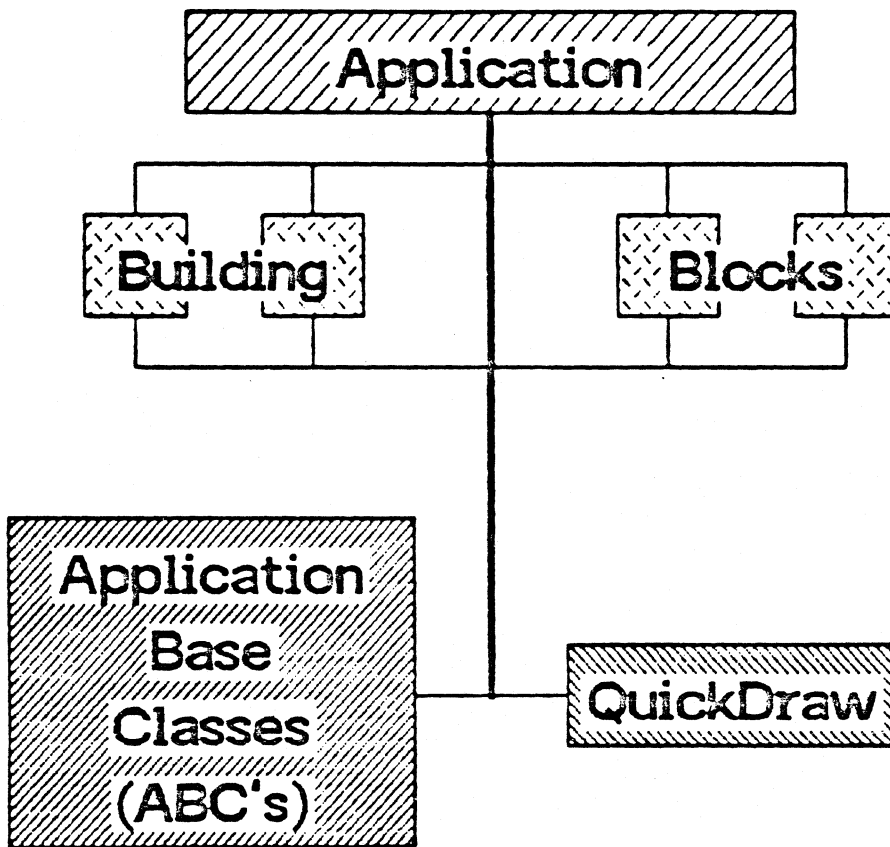
open/uncover window
resize window
scroll/flip/thumb



Some Things The Tool Kit Does for You

- Library and Process Initialization
- Process Termination (Normal and Exception)
- Desktop Manager Communication
- Clipboard Communication (Cut and Paste)
- Saving/Restoring Window State on Suspend Files
- Multiple Panels
- Multiple Views of A Document
- Split Views (Panels)
- Dispatching User Events to Your Procedures
- Handling of Mousing in Resize Icon & Scroll Bars
- Handling Activation and Deactivation
- Calling Idle Routines (e.g., Track Cursor, Blink)
- Memory Management Policies
- Print Fidelity Policies
- User Interface Policies
- Simplified OS File Interface
- Simplified Use of Relocatable Dynamic Storage
- GrafPort Coordinate-system Management
- Multiple Document Windows per Process

Toolkit



Tool Kit

Building Blocks

Paragraph Editing (ala LisaWrite)

Structured Graphics (ala LisaDraw)

Bit Map Graphics (fonts and icons)

Network & Telecommunication

Tutor (ala LisaGuide)

International Data Entry and Formatting

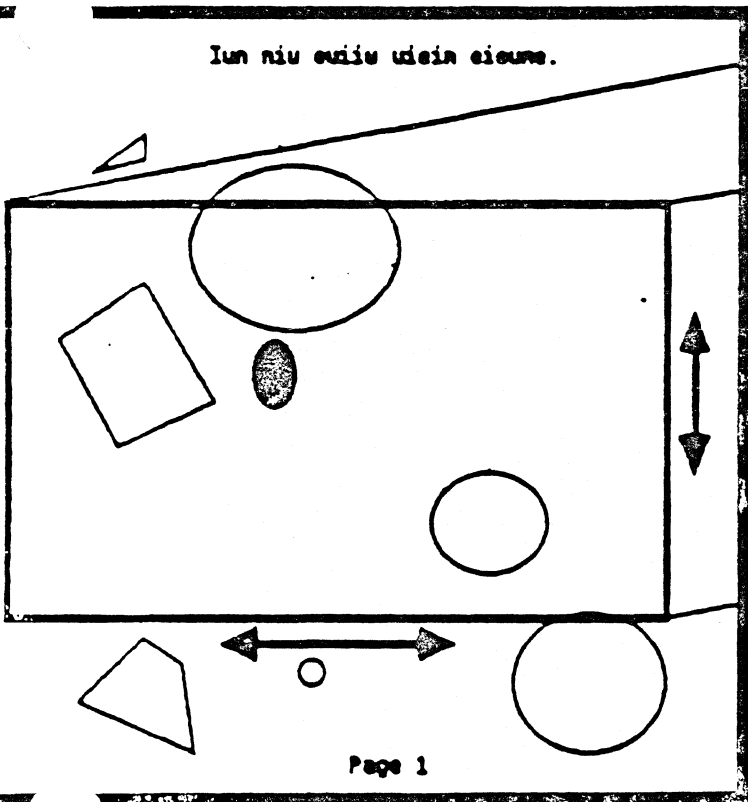
Dialog/Form (check boxes, buttons, fields)

A Window Displays a View of a Document

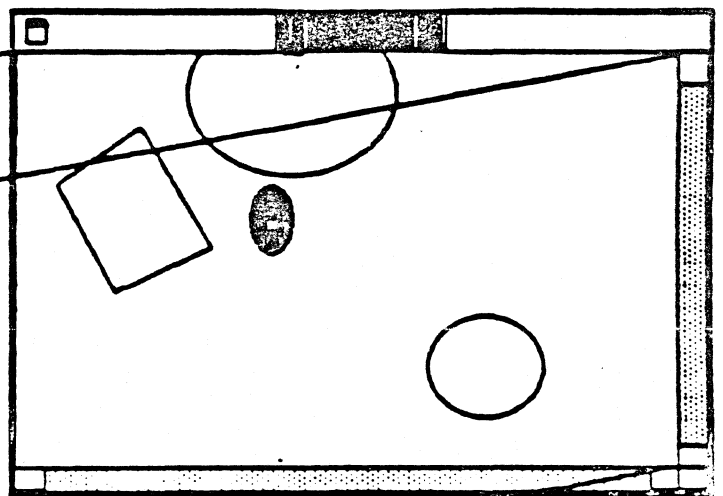
The Window can Scroll over the View

View

Iun niu exiis uieia eioms.



Window



G Cells:		Value:
	A	B
1	1975	2.1
2	1976	3.6
3	1977	4.1
4	1978	1.4
5	1979	-3.5
6	1980	-2.8
7	1981	-.8
8	1982	1.9
9		
10		
11		
12		
13		
14		
15		
16		

Profits for Past Eight Years

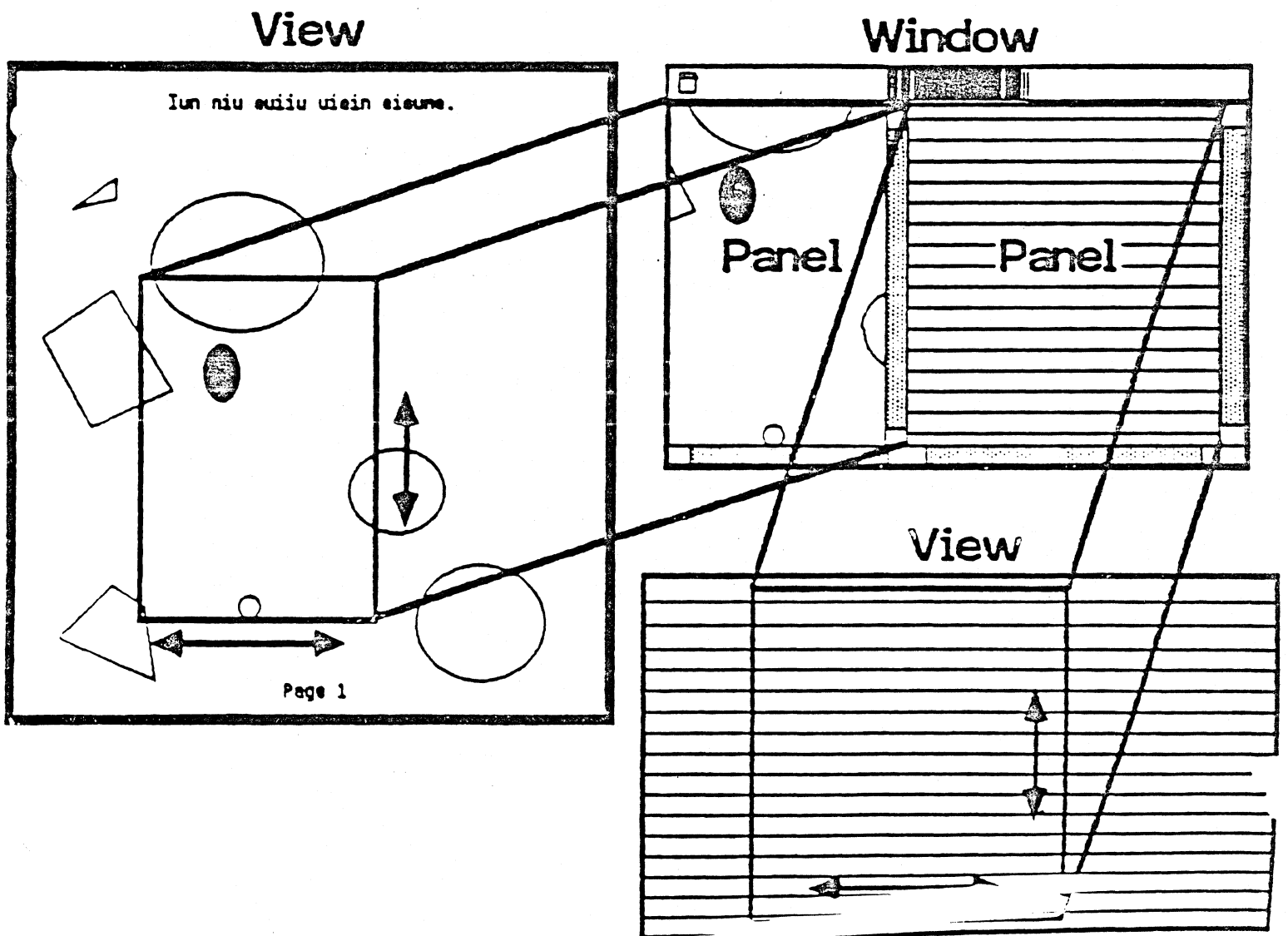
\$ Hundred Thousand

Year	Actual	Projected
1975	2.1	2.1
1976	3.6	3.6
1977	4.1	4.1
1978	1.4	1.4
1979	-3.5	-3.5
1980	-2.8	-2.8
1981	-.8	-.8
1982	1.9	1.9

Dates Sampled
Management Changes in 1979 and 1981

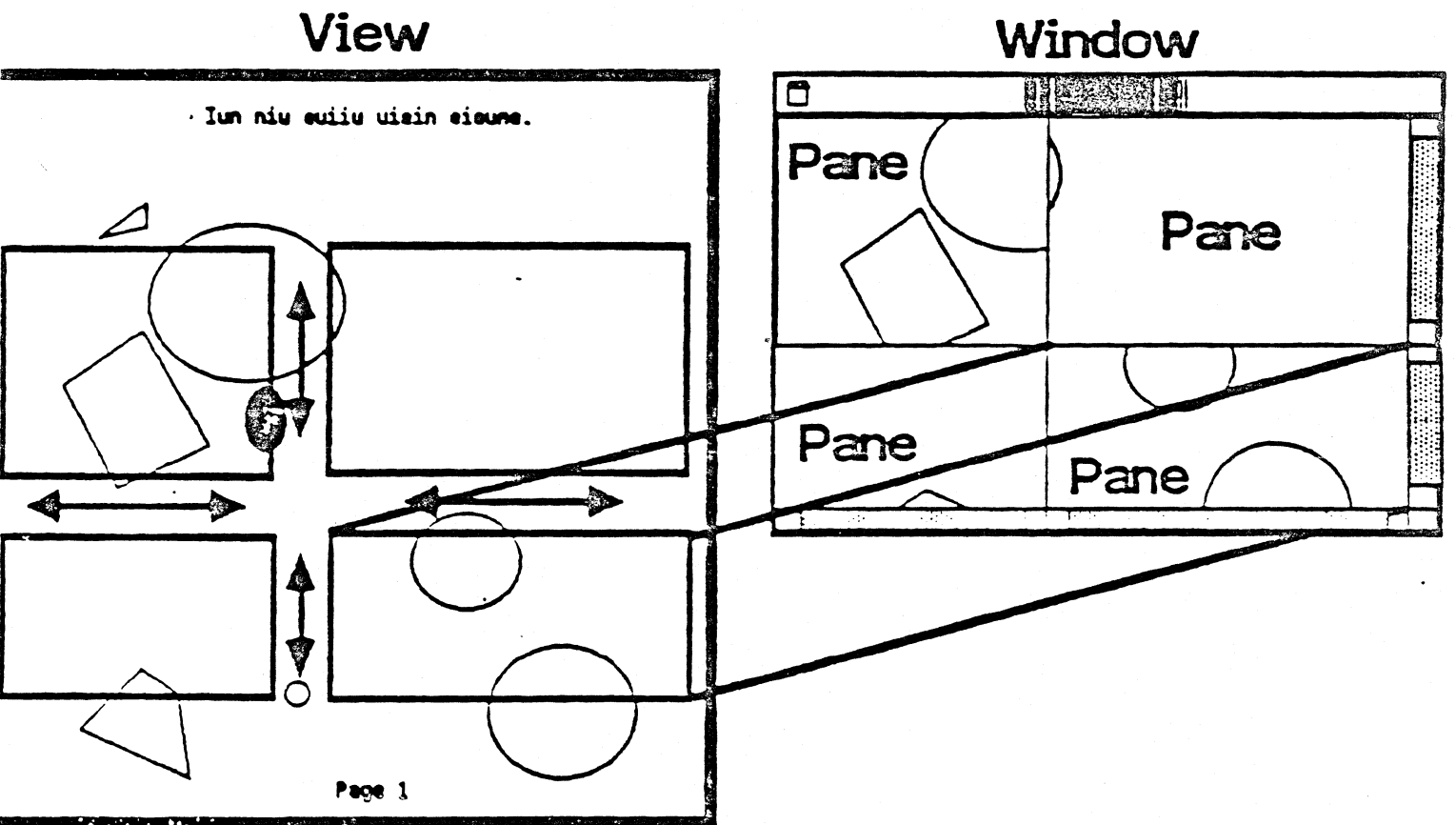
A Window Can Have Several Panels

Each Panel Shows a Different View of the Document



A Window can be split into Panes

Each Pane Shows a Different Area of the View



Relationships Among Tool Kit Objects

