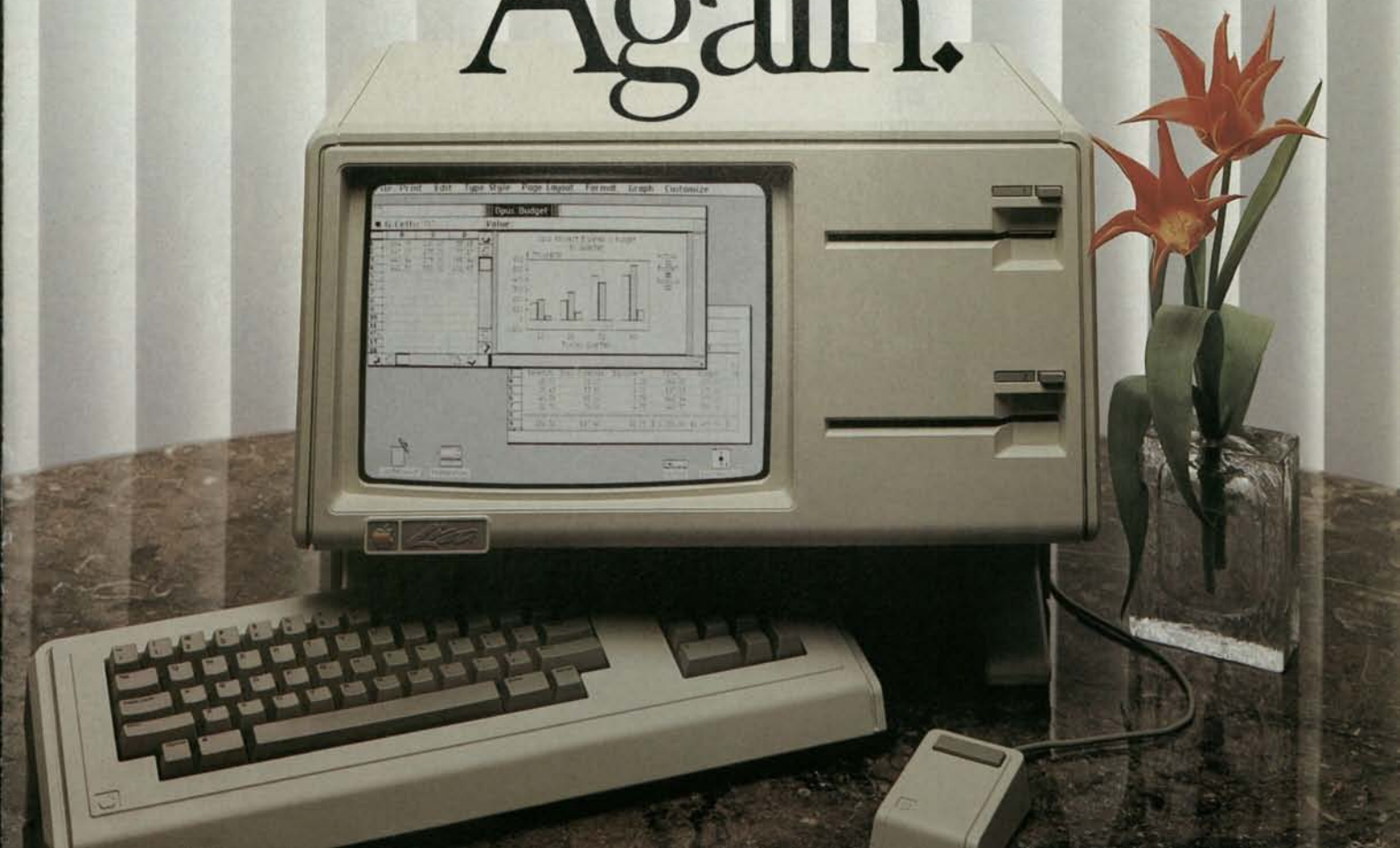
Apple invents the personal computer. Again.



Introducing Lisa.
The personal computer for the office.

The personal computer revolution began with easy-to-use computers and ready-to-use programs that made it possible for just about anyone to master personal computing in 20-40 hours.

Still, that's more time than many people can afford. Especially people who need personal computers most—executives, managers and small business owners.

But now there's Lisa™ by Apple.

Its hardware alone makes it the most powerful personal computer available:

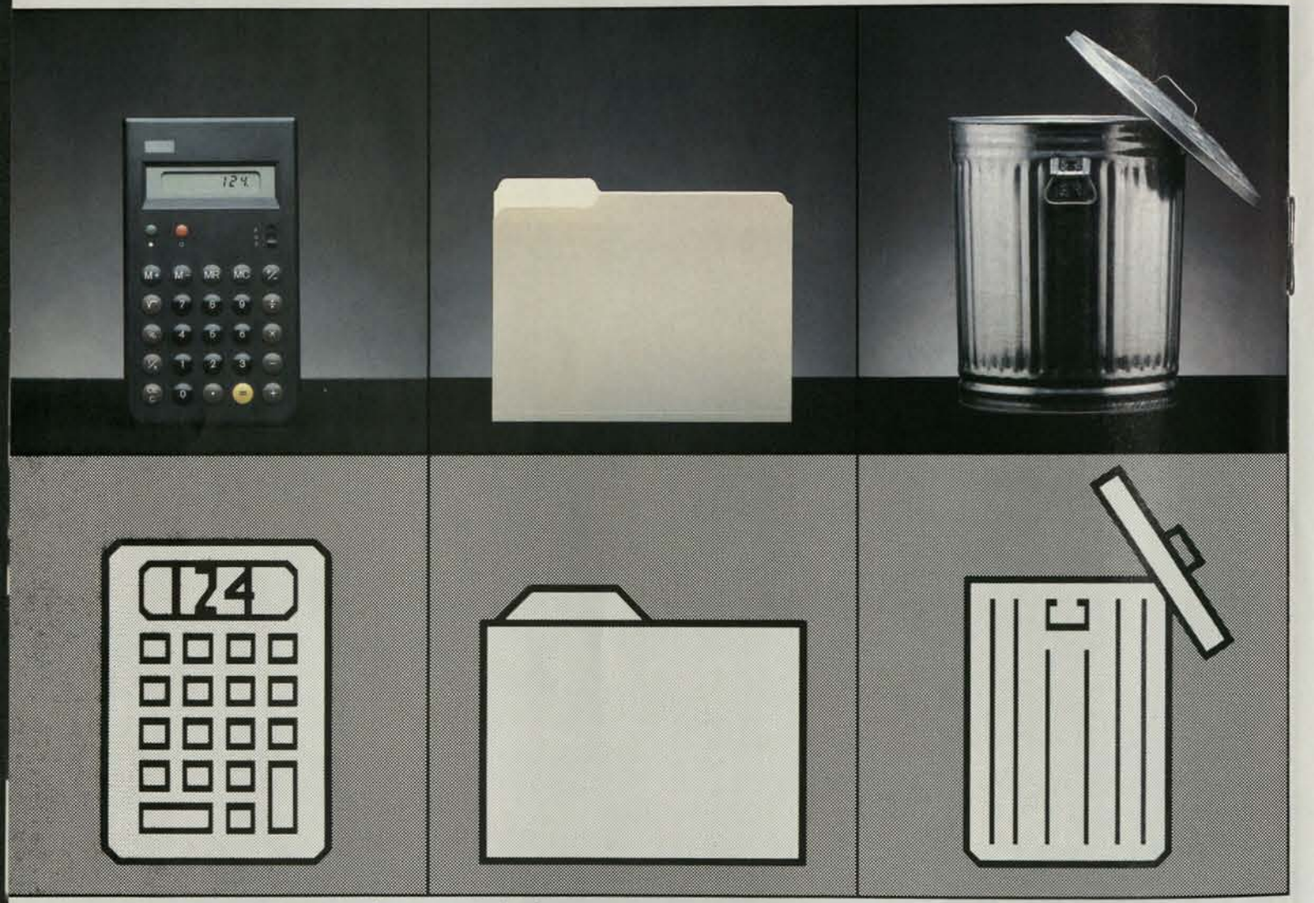
32/16-bit MC68000 microprocessor. 364 x 720 bit-map display. 1-Megabyte of internal memory. Dual 860-K disk drives plus a 5-Megabyte ProFile™ hard disk.

But the real story is the way Lisa puts all that power in your hands:

It's the first personal computer that's as easy to understand as your desktop.

Because that's precisely the way Lisa works.

So advanced, you already know how to use it.



To use a conventional personal computer, you first have to program yourself by studying the manual and learning a complex set of computer commands that vary widely from program to program.

Lisa replaces those commands with familiar pictures that work the same way from program to program. Files look like file folders. There's a calculator, stationery, even a wastebasket. So you can work with Lisa the same familiar way you work at your desk.

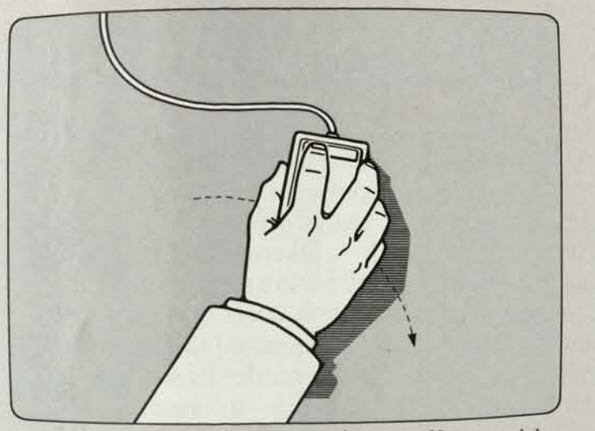
To tell Lisa what to do, all you have to do is point to the appropriate picture using a clever palm-sized device called a "mouse." As you move the mouse on your desk, the pointer moves on Lisa's screen.

Lisa's extraordinarily powerful software takes care of all the details. So you can work with the system intuitively, right from the start.

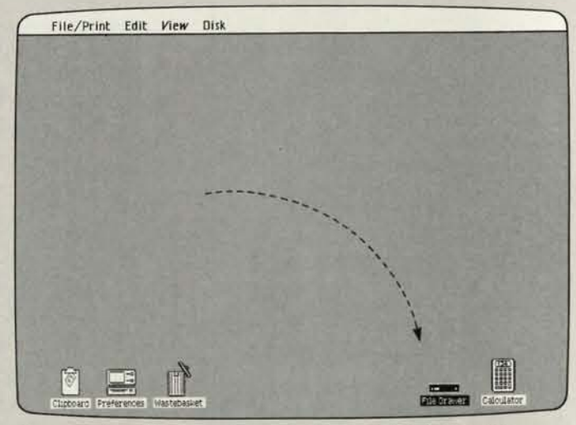
You can shape any kind of information you need — graphs, numbers, words, even pictures — and see it all side-by-side.

And you can transform that information in ways simply not possible with any other personal computer.

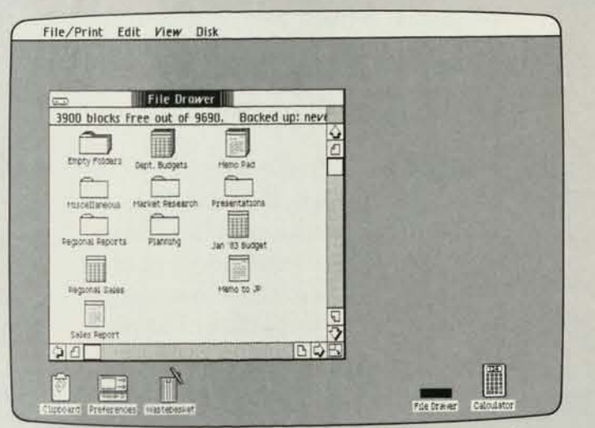
You concentrate your effort on what you want done — not on how to get the computer to do it.



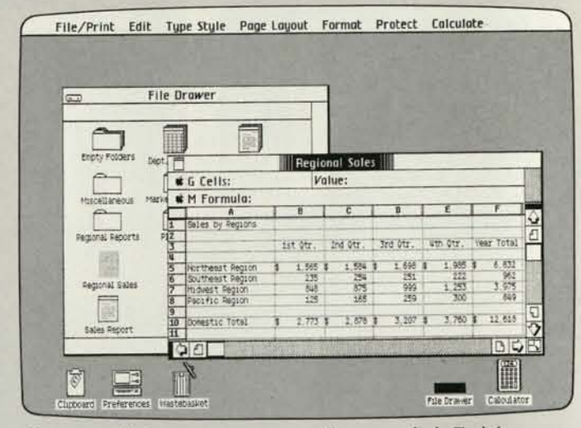
To tell Lisa what to do, all you have to do is point. You control the pointer on Lisa's screen by moving the "mouse" on your desktop.



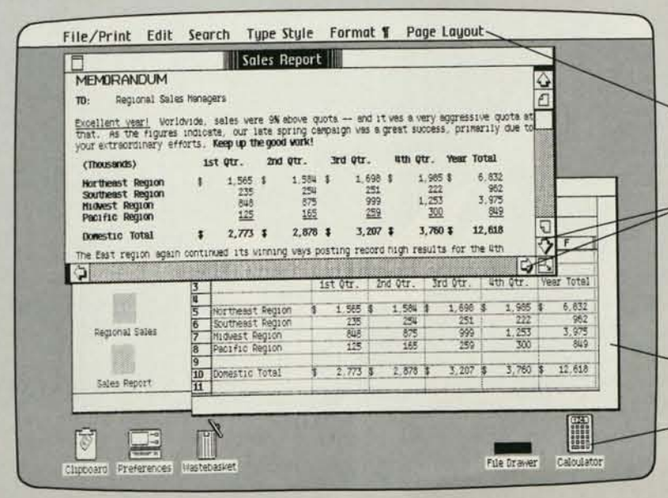
To open a Lisa "file drawer," you simply point to it by moving the mouse.



The "file drawer" opens and shows you all the documents inside. Now you can select one or more to work with.



You can stack documents as you would on your desk. Each becomes a "window" that lets you scan over a huge workspace.



All Lisa functions are selected with the pointer from pull-down menus in the Menu Bar, so you don't have to search through a manual.

By pointing to the arrows, you can scan left or right, up or down.

More than one document can be on the screen at once. In most cases, you can "cut" information from one and "paste" it into another.

Familiar symbols simulate the way you work at your desk.

It took 200 years to develop programs you can learn in 20 minutes.

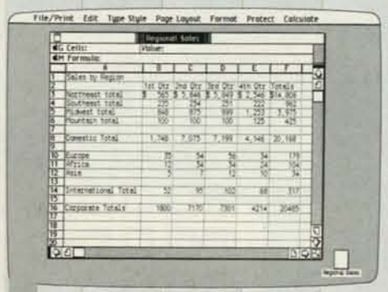
Lisa's software represents over 200 person-years of research, development and testing.

But the sole objective of all that effort was to make the most powerful office tools immediately accessible.

So you can begin producing useful work with a Lisa program in less than half an hour.

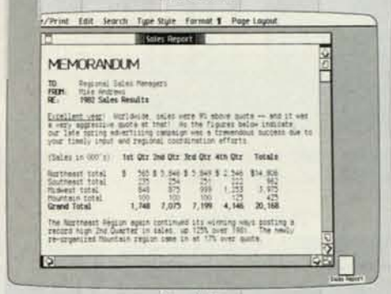
Lisa is available with six integrated software packages covering every major business application:

LisaCalc electronic spreadsheet, LisaList electronic personal database, LisaWrite executive word processing, LisaGraph business graphics, LisaDraw design graphics and LisaProject electronic project management.

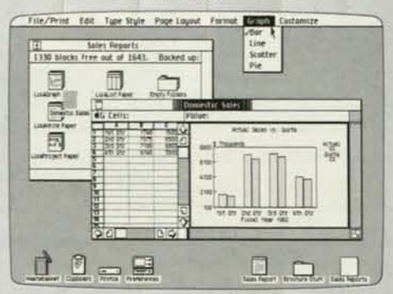


LisaCalc

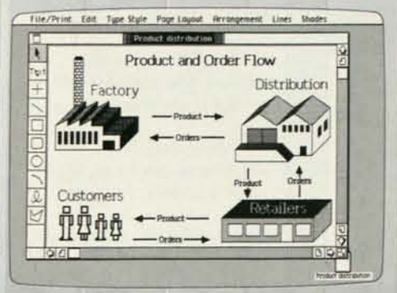
LisaList



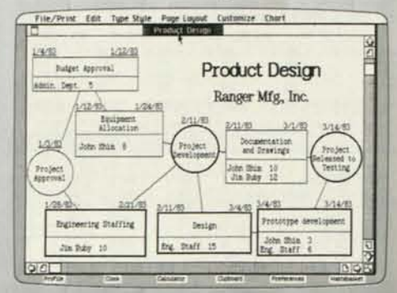
LisaWrite



LisaGraph



LisaDraw



LisaProject

Taken individually, each Lisa application is a powerful professional office tool.

Taken together, they allow you to do things that simply weren't possible before.

Because Lisa's applications work harder by working together—information can be "cut" from one and "pasted" directly into another. So you can effortlessly turn figures into graphs, paste spreadsheets into a report, and print it all out while you move on to another task.

In the near future, with Lisa's designed-in networking capabilities, you'll be able to create a powerful network of Lisa workstations that can grow from one department to your whole organization.

And you'll also be able to communicate with other computers with Lisa terminal applications, so you can access valuable commercial data libraries like Dow Jones News and Quotes™ or The Source,™ or link with your company's own mainframe computers.

Of course, the only way to appreciate everything Lisa can bring to your office is to experience Lisa for yourself.

So give an Apple Personal Office Systems Dealer half an hour of your time.

And he'll give you 200 years of ours.

Now that you know where the world's going, consider the advantages of getting there first.

For more information on Lisa, the personal computer for the office, write Apple Computer Inc., Dept. L, 20525 Mariani Avenue, Cupertino, California 95014.

Or, for the location of the authorized Apple Personal Office Systems dealer nearest you, or for information on our National Account Program, call 800-538-9696.

The most personal computer. apple®

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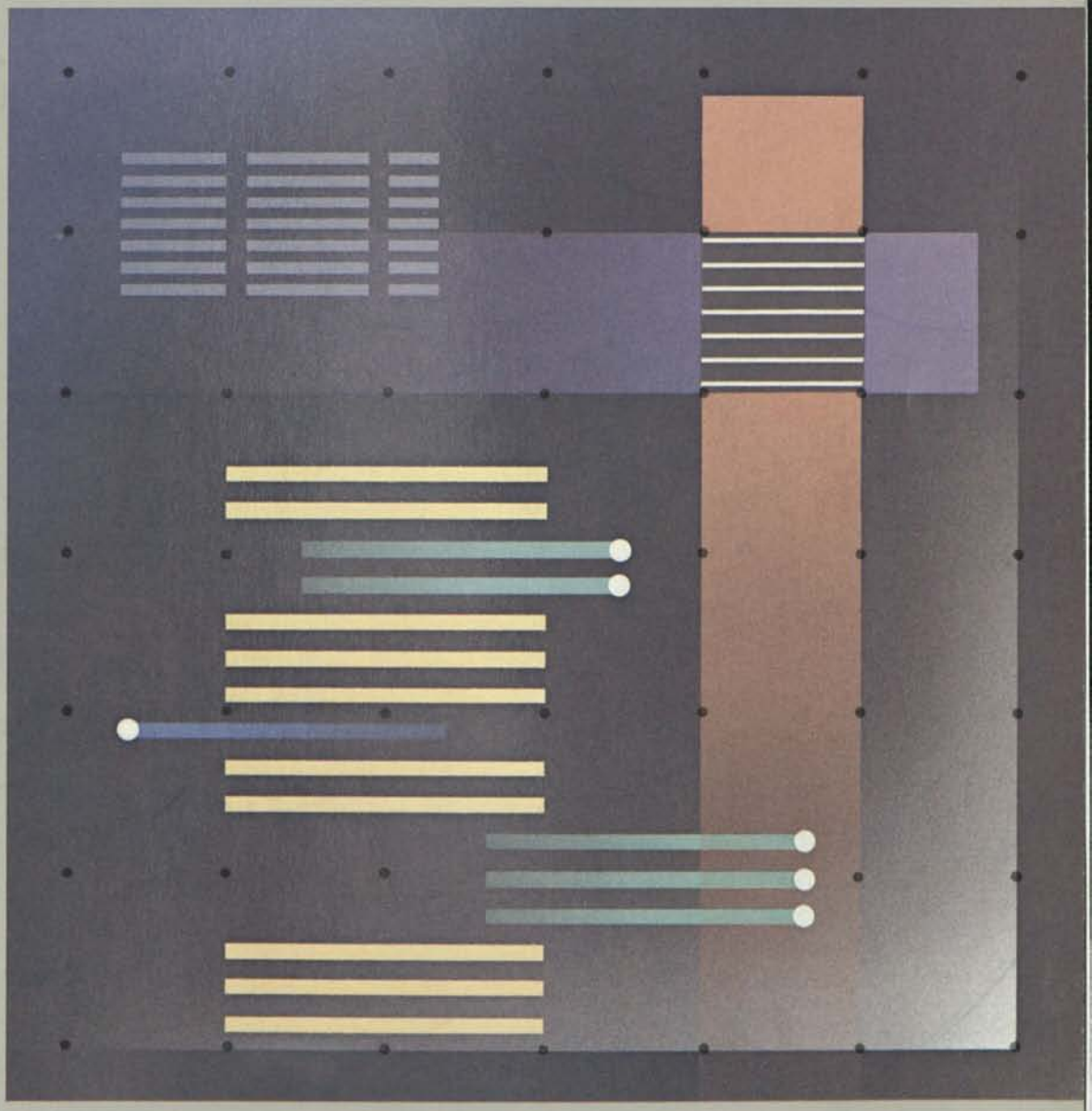
LisaList



LisaList helps you create and maintain all types of lists in a personal database. With it you can easily and quickly sort through even the most detailed lists—client histories, billing records, distribution lists—for exactly the data you need.

Manipulating this data is easy too, because there's no special command language to learn. And LisaList shows you exactly how your list will print.

In less than 30 minutes you'll be doing useful work with LisaList. Lisa's revolutionary Graphics Mouse Technology™ replaces confusing computer commands with simple graphic images.

Graphics, together with the mouse, a simple selecting device, let you create, revise, and print documents intuitively. And because basic operations work the same way in all Lisa™ applications, you'll learn other applications in even less time.

LisaList makes it easy to create and maintain even the most complex lists. Simple operations allow you to organize an existing list so you can quickly find the information you need.

Organize information for quick reference and easy handling.
- Data is entered directly into the list—there is no special command language to learn.
- Changes made to the list are automatically integrated into the format and instantly shown.

Customize lists for added impact.
- Lists may contain as many as 100 columns.
- Each column may be assigned one of eight data types, such as text, zip code, money, or telephone numbers.

Search and sort complex lists in seconds.
- Sort lists by information in one or more columns.
- Find all records that match certain criteria, such as people hired before 01/04/82.

Create many different reports from one master list.
- Display or print individual columns.
- Change the order in which columns appear on the report.
- Change the format, name, or typestyles of the report.

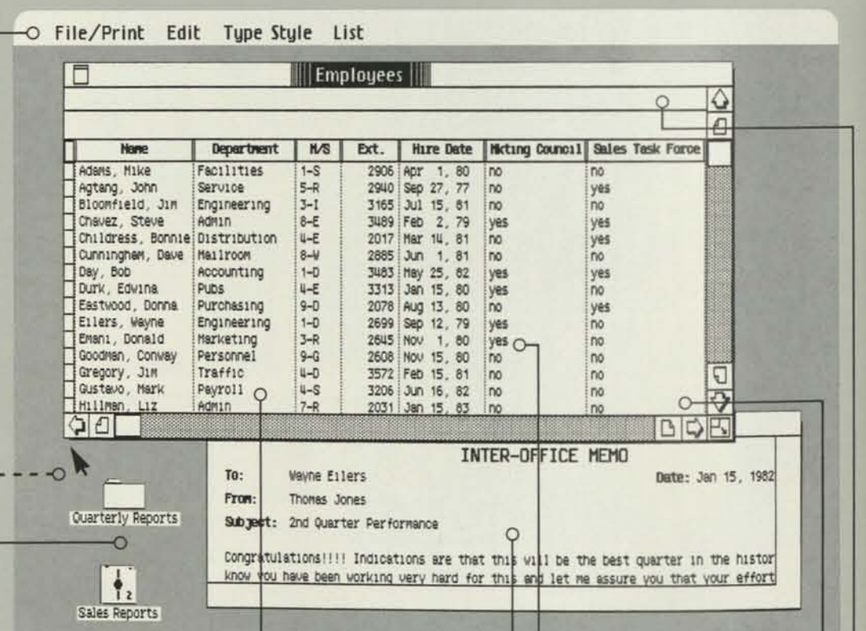
Modify lists easily to suit your specific needs.
- Add or remove columns at any time.
- Temporarily "hide" columns so they're not displayed.
- Change display formats without re-entering the data.

Preserve the integrity of your data.
- Upon entry, data is automatically checked against the chosen data type for consistency.
- Built-in file-recovery mechanisms protect data from power fluctuations and media failures.

What you see on the screen is exactly what you get on the printed page.
- Apple's high-resolution Dot Matrix and Daisy Wheel Printers both produce LisaList documents that are suitable for reports or for copying onto transparencies.

This is a typical **LisaList** worksheet. "Name" the appropriate columns, then enter your information into the columns and rows. You can revise or change the list's format with simple selections from the menu bar.

Menu Bar All LisaList functions are selected from the menu bar. To print a document, for example, just move the mouse and select PRINT from the menu. Once printing is under way, you may continue working with Lisa, either in the same document, or in another application.



Mouse/Pointer The mouse is a palm-size device that controls Lisa's pointer. It replaces all confusing special function keys and commands. The mouse is connected to Lisa by a thin cable. When you move the mouse, Lisa's pointer matches the movement on the screen.

Desktop Manager The Desktop Manager uses graphic symbols such as these to coordinate all the system's operations. For example, to work on a document, simply use the mouse to select an existing document or create a new one. When you're finished, use the mouse to put the document into a folder. The Desktop Manager also enables you to work with more than one document at a time.

Field A field is formed by the intersection of a row and a column. Data entered into a list appears in the specific field and in the status panel.

LisaWrite More than one Lisa document may be on the screen at one time. To move the contents of any individual field from LisaList to LisaWrite, for example, simply use the mouse to select COPY from the EDIT menu. When you're ready to transfer the information into another document, select PASTE and your data is transferred—you don't even have to touch the keyboard.

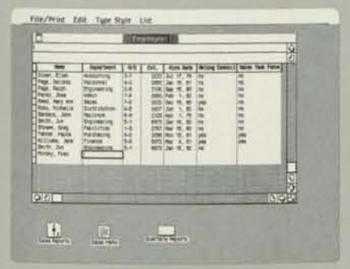
Columns and Rows Rows may contain as many as 990 characters (letters, numbers, spaces) and may be divided into 100 columns of varying width. A list may contain approximately 600,000 characters (e.g., 10,000 rows of 60 characters each, or 6,000 rows of 100 characters).

Status Panel Data that appears in a selected field also appears in the status panel. LisaList enables you to preset the column width to display only some of the data within a column. In that case, the status panel will show you the entire contents of the field to which the pointer points.

Scrolling To view another part of your LisaList document, vertically or horizontally, simply use the mouse to select the arrows or pages in the corners of the document. Similarly, to stretch or contract the document, use the mouse to move the box at the bottom right-hand corner.

LisaList protects you from inadvertently entering the wrong type of data into a particular column. Here, an "incorrect" month was entered into a column designated for dates.

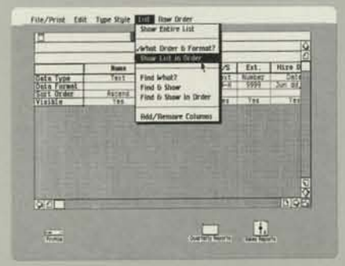
Built-in Quality Control
- You may designate any one of eight data types (text, number, date, time, zip code, phone number, social security number, and money) for each column.
- LisaList automatically checks data entered into a column for consistency with that column's data type—and warns of any inconsistencies.
- A built-in file-recovery mechanism helps LisaList retrieve lost portions of a list in the event of a power fluctuation or media failure.



From an existing master list, you can create many different reports, each one tailored to meet a different need.

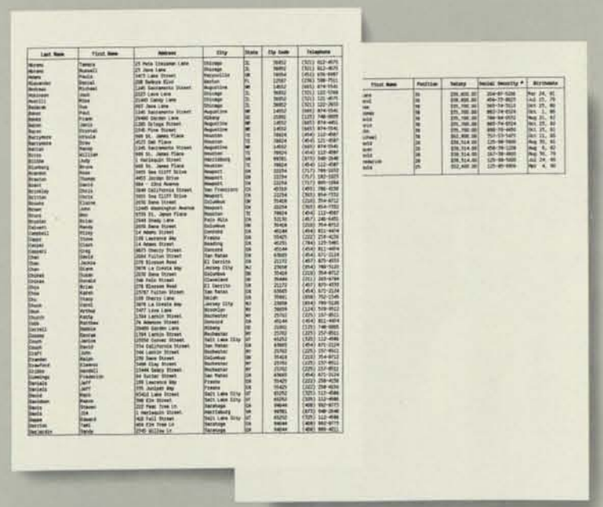
The width of each column is flexible so you can set it as wide as necessary. You can also change the column width at any time.

Create and Edit Lists Easily
- LisaList requires no special command language.
- All entries to a list are automatically formatted.
- The effect of any change you make to a list immediately appears on the screen.
- Lists may contain up to 100 columns, which can be added or removed at any time.
- Column width may be changed at any time.
- The name of a column may be up to 120 characters in length and may be changed at any time.
- Columns may be assigned one of eight data types.
- You may select one of several display formats for each data type and change the display format without reentering data.



Selecting ASCENDING from the ROW ORDER menu enables you to see an alphabetical listing of employees in the list. Choosing SHOW LIST IN ORDER from the LIST menu displays your newly sorted list.

Search and Sort Even the Most Complex Lists
- Search criteria are specified by simply filling in a table.
- Search criteria may be specified for one or more columns.
- Comparisons (e.g., before 11/1/81; more than $100) may be specified in the search criteria.
- Rows can be sorted or arranged in ascending or descending order by the contents of one or more columns.



Create Customized Reports
- Individual columns or rows may be specified for display or printing.
- Column order can be changed within the list.
- Lists may be printed in one of several typestyles and sizes.
- Lists are printed exactly as they are displayed.
- Columns can be temporarily "hidden" so they will not be displayed or printed.

LisaList Specifications

Basic learning time:
- Less than 30 minutes.

Maximum list size:
- Approximately 600,000 bytes (for example, 6,000 rows of 100 characters, or 10,000 rows of 60 characters). System chooses the optimum storage structure based on the data types chosen.

Maximum record (row) size:
- 990 bytes. Supports variable-length records.

Maximum number of fields (columns) per record (row):
- 100.

Data types supported:
- Text (the default data type).
- Number.
- Date.
- Money.
- Time.
- Social security number.
- Phone number.
- Zip code.

Entering/Formatting data:
- Data is automatically checked for consistency with the data type designated for the column.
- Data is automatically formatted according to a format created by the user, or a default format.
- Data formats may be changed at any time; previously entered data will automatically be reformatted. Note: The data type selected for a given column may not be changed once the list is created.
- Variable-width display format allows for entries larger than the column width established by the user.

Editing:
- At any time you may:
  - Add or delete columns.
  - Insert, update, and delete records (rows) with the same editing operations (cut, paste, copy, clear) of other Lisa applications.
  - Reorder columns.
  - Alter column width.
  - Temporarily "hide" columns you don't want in a particular report.
  - Rename any or all columns.

Sorting:
- Lists can be sorted in ascending or descending order.
- Complex data types, such as time and date, can be sorted (e.g., 11:00 A.M. comes before 4:00 P.M.).
- Multiple sort fields may be specified by filling in a simple table.

Searching:
- Search criteria may be specified by filling in a simple table.
- Search criteria may be specified for any number of fields.
- Search criteria include equal to, greater than, greater than or equal to, less than, less than or equal to, not equal to, between.
- Uses B* indexing.

Special features:
- UNDO function cancels effects of last operation.
- REVERT TO PREVIOUS VERSION undoes all changes made to the document since it was last saved.
- More than one list can be on the screen at the same time.
- Choose arrow keys or mouse for easy data entry.
- Numeric keypad.
- Built-in file-recovery mechanism to protect data from power fluctuations and media failures.

Printing:
- "What you see is exactly what you get" fidelity.
- Apple's high-resolution Dot Matrix Printer (160 x 144 dots per inch; 6.2 x 5.6 dots per mm).
- Apple's Daisy Wheel Printer.
- All or part of a list may be printed.
- Lists may be formatted for 8½ x 11 (215 x 279), 8½ x 14 (215 x 355), or 11 x 14 (279 x 355 mm) inches.
- Print one or multiple copies.
- Print in horizontal or vertical formats.
- A variety of typestyles are available including a small, 15-pitch size.

Documentation:
- Brief orientation guide to get you started in less than 30 minutes.
- Complete reference book.
- Extensive step-by-step tutorial.
- Handy reference card.

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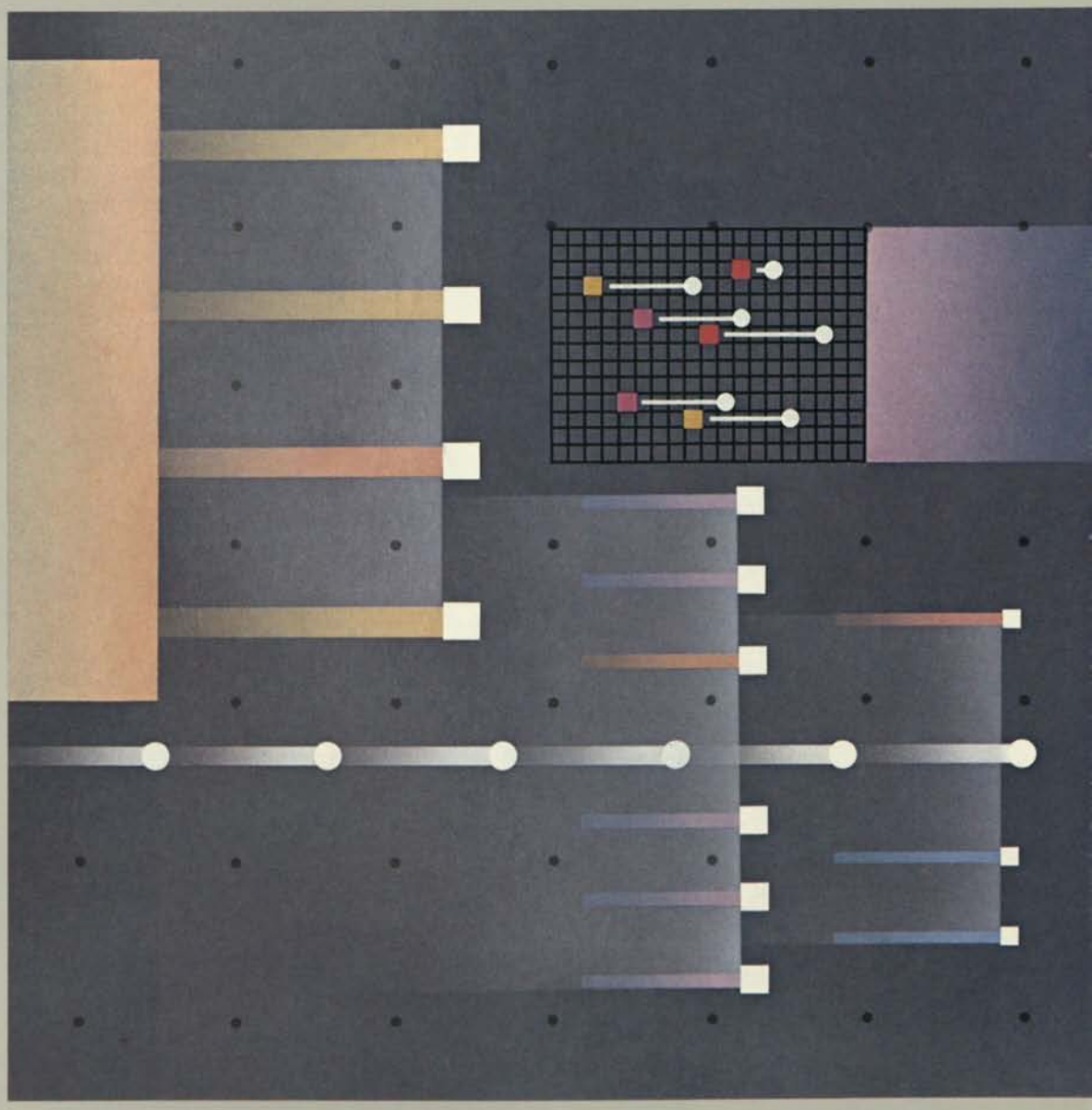
LisaProject



LisaProject is a visual project-management tool that helps you schedule and track complex projects. By dividing projects into a series of individual tasks, LisaProject helps you see the critical path, interdependencies, and the answers to "What if?" questions. And it's easy, because there's no special command language to learn.

LisaProject lets you plan and track schedules in Schedule, Resource, and Task charts. And you can transfer charts to LisaDraw to customize them further.

In less than 30 minutes you'll be doing useful work with LisaProject. Lisa's revolutionary Graphics Mouse Technology™ replaces confusing computer commands with simple graphic images. Graphics, together with the mouse, a simple selecting device, let you create, revise, and print documents intuitively. And because basic operations work the same way in all Lisa™ applications, you'll learn other applications in even less time.

LisaProject helps you plan and track complex projects easily and efficiently. You can graphically display interdependencies among tasks, identify a project's critical path, and use various types of charts to emphasize a particular aspect of a project.

Develop task and resource schedules to help you manage your projects better.
- No prior knowledge of project scheduling is required—select with the mouse, enter tasks and durations, and Lisa does the rest.
- Project and task dates are calculated as new tasks are entered.

Easily update a project to reflect its current status.
- Start and finish dates for tasks are entered directly into the Schedule chart.
- Critical path and project schedules are automatically revised to reflect updated start and finish dates.

Present information graphically for better understanding of projects.
- Critical path is highlighted to identify critical tasks and resources.
- Interdependencies are shown as lines between tasks.
- Resource charts illustrate resource utilization.

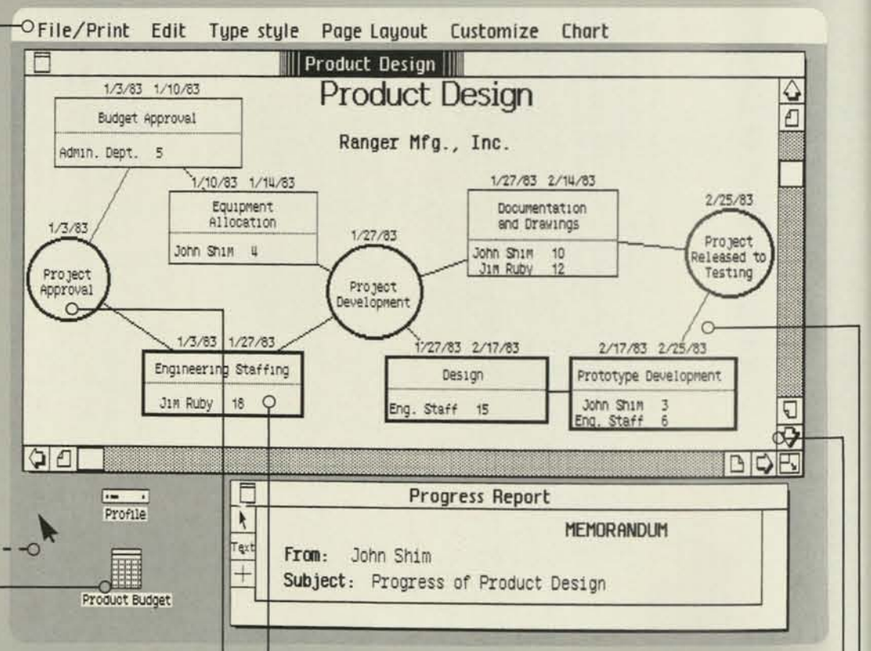
Test different project scheduling scenarios quickly and easily.
- Altering the Schedule chart is elementary—just select with the mouse to create and move tasks, or type new information.
- All information in the chart may be changed at any time—task names, dependencies, durations, and resource requirements.

Choose the type of project status chart that best fits your needs.
- Switch between Schedule, Resource, and Task charts instantly—use the mouse to select the chart you want from the menu.

Include LisaProject charts in your reports or presentations.
- What you see on the screen is exactly what you get on the printed page.
- Create presentation quality charts with the revolutionary print quality of Apple's high-resolution Dot Matrix and Daisy Wheel Printers.
- Print in a variety of typestyles, including typeset quality, presentation sizes.

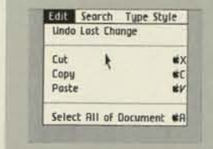
Drawing Schedule charts with Lisa is easier than drawing them on a scratch pad—just use the mouse to create and connect tasks while LisaProject does all the calculations.

Menu Bar All LisaProject functions are selected from the menu bar. To print a document, for example, just move the mouse and select PRINT from the menu. Once printing is under way, you may continue working with Lisa, either in the same document, or in another application.



Mouse/Pointer The mouse is a palm-size device that controls Lisa's pointer. It replaces all confusing special function keys and commands. The mouse is connected to Lisa by a thin cable. When you move the mouse, Lisa's pointer matches the movement on the screen.

Desktop Manager The Desktop Manager uses graphic symbols such as these to coordinate all the system's operations. For example, to work on a document, simply use the mouse to select an existing document or create a new one. When you're finished, use the mouse to put the document into a folder. The Desktop Manager also enables you to work with more than one document at a time.



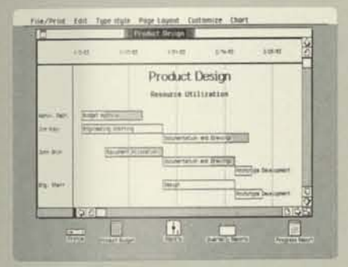
Task Boxes Tasks are displayed as boxes. They may contain the task ("Design"), resources (people), and the task's duration. When you enter this information, LisaProject automatically calculates task dates.

Milestones In LisaProject, milestones are represented by circles, thus differentiating them from tasks, which are always boxes.

LisaDraw More than one Lisa document may be on the screen at one time. To move a chart from LisaProject to LisaDraw, for example, simply use the mouse to select COPY from the EDIT menu. When you're ready to transfer the information into another document, select PASTE and your data is moved—you don't even have to touch the keyboard.

Scrolling To view another part of your LisaProject document, use the mouse to select the arrows or pages in the corners of the document. Similarly, to stretch or contract the document, use the mouse to move the box at the bottom right-hand corner.

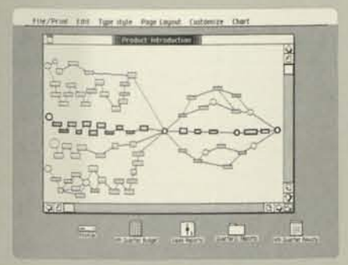
Task Dependency Lines After you create task boxes, use the mouse to draw lines showing interdependencies among tasks. Drawing a line from one box to another illustrates that the first task must be completed before the second may begin.



Resource charts illustrate resource management and utilization over time. Switching to a Resource chart from a Schedule chart makes it easy to visualize project status, resource allocation, and slack time among resources.

Task charts list the tasks in the order in which they will be performed, making it easy for you to see the progress of a project and the important dates associated with each individual task.

Create Comprehensive Schedules
- No special commands are required—just enter tasks and dates on the screen and LisaProject does the rest.
- Four task dates—early start, early finish, late start, and late finish—may also be displayed.
- As tasks are entered, task and project dates are calculated automatically.
- The project's critical path is highlighted.
- Scarce resources, such as a particular person, are always indicated.
- New tasks and milestones may be added at any time, anywhere in the Schedule chart.



Get an overview of complex projects by shrinking your chart. Schedule charts allow you to map out entire projects so they're easy to follow and manage. LisaProject shows the critical path, interdependencies among tasks, and the allocation of scarce resources that are associated with even the most complex schedules and timetables.

Alter Charts to Reflect a Project's Current Status
- Known start and finish dates for individual tasks may be entered directly into the Schedule chart.
- Task durations and resource requirements may be revised as needed.
- The project schedule and critical path are recalculated when new start and finish dates are entered or task durations change.
- New tasks, milestones, and resources may be entered as needed.

Graphic Charts Make Project Management Easy
- Critical tasks and resources are indicated with the critical path.
- Interdependencies among tasks are illustrated as lines between tasks.
- Project milestones are represented by circles on the chart to distinguish them from tasks.
- Charts can be moved into LisaDraw for further customization.

Test Various Scenarios
- Modifying charts is elementary—just use the mouse to draw tasks, move tasks, or enter new information.
- LisaProject information may be altered at any time; this includes task names, durations, and dependencies, as well as resource requirements and allocations.
- Project task dates and the critical path are updated as new information is entered.

Use Schedule, Resource, and Task Charts
- Switch between Schedule, Resource, and Task charts instantly.
- Schedule charts enable you to see the critical path, the complexity and scope of the project, interdependencies among tasks, task durations, resource allocations, and the overall project schedule.
- Resource charts show resource utilization over time.
- Task charts display project tasks in the order in which they will be performed.

Include LisaProject Charts in Reports or Presentations
- Unparalleled printing quality from Apple's high-resolution, Dot Matrix and Daisy Wheel Printers.
- Create overhead transparencies from printouts.
- Choose from a variety of typestyles, including large sizes for presentations.

LisaProject helps you plan and track complex projects easily and efficiently. You can graphically display interdependencies among tasks, identify a project's critical path, and use various types of charts to emphasize a particular aspect of a project.

Develop task and resource schedules to help you manage your projects better.
- No prior knowledge of project scheduling is required—select with the mouse, enter tasks and durations, and Lisa does the rest.
- Project and task dates are calculated as new tasks are entered.

Easily update a project to reflect its current status.
- Start and finish dates for tasks are entered directly into the Schedule chart.
- Critical path and project schedules are automatically revised to reflect updated start and finish dates.

Present information graphically for better understanding of projects.
- Critical path is highlighted to identify critical tasks and resources.
- Interdependencies are shown as lines between tasks.
- Resource charts illustrate resource utilization.

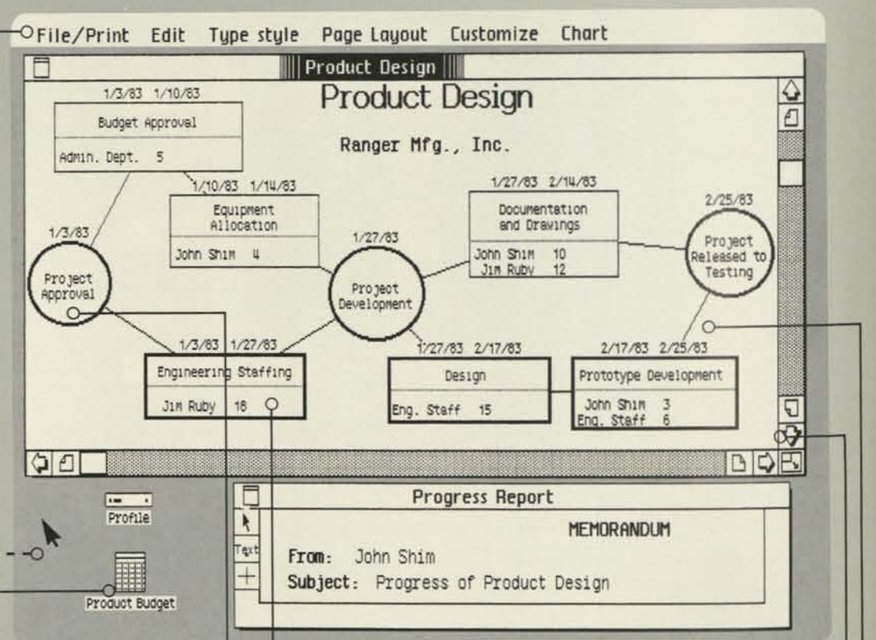
Test different project scheduling scenarios quickly and easily.
- Altering the Schedule chart is elementary—just select with the mouse to create and move tasks, or type new information.
- All information in the chart may be changed at any time—task names, dependencies, durations, and resource requirements.

Choose the type of project status chart that best fits your needs.
- Switch between Schedule, Resource, and Task charts instantly—use the mouse to select the chart you want from the menu.

Include LisaProject charts in your reports or presentations.
- What you see on the screen is exactly what you get on the printed page.
- Create presentation quality charts with the revolutionary print quality of Apple's high-resolution Dot Matrix and Daisy Wheel Printers.
- Print in a variety of typestyles, including typeset quality, presentation sizes.

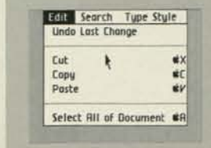
Drawing Schedule charts with Lisa is easier than drawing them on a scratch pad—just use the mouse to create and connect tasks while LisaProject does all the calculations.

Menu Bar All LisaProject functions are selected from the menu bar. To print a document, for example, just move the mouse and select PRINT from the menu. Once printing is under way, you may continue working with Lisa, either in the same document, or in another application.



Mouse/Pointer The mouse is a palm-size device that controls Lisa's pointer. It replaces all confusing special function keys and commands. The mouse is connected to Lisa by a thin cable. When you move the mouse, Lisa's pointer matches the movement on the screen.

Desktop Manager The Desktop Manager uses graphic symbols such as these to coordinate all the system's operations. For example, to work on a document, simply use the mouse to select an existing document or create a new one. When you're finished, use the mouse to put the document into a folder. The Desktop Manager also enables you to work with more than one document at a time.



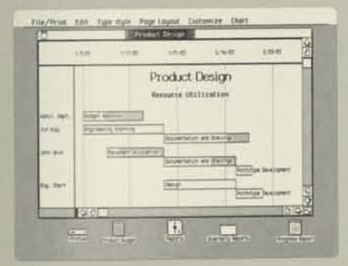
Task Boxes Tasks are displayed as boxes. They may contain the task ("Design"), resources (people), and the task's duration. When you enter this information, LisaProject automatically calculates task dates.

Milestones In LisaProject, milestones are represented by circles, thus differentiating them from tasks, which are always boxes.

LisaDraw More than one Lisa document may be on the screen at one time. To move a chart from LisaProject to LisaDraw, for example, simply use the mouse to select COPY from the EDIT menu. When you're ready to transfer the information into another document, select PASTE and your data is moved—you don't even have to touch the keyboard.

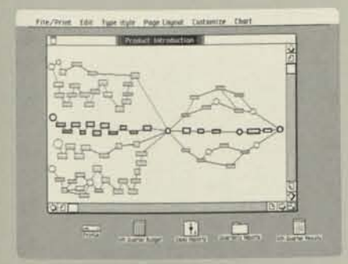
Scrolling To view another part of your LisaProject document, use the mouse to select the arrows or pages in the corners of the document. Similarly, to stretch or contract the document, use the mouse to move the box at the bottom right-hand corner.

Task Dependency Lines After you create task boxes, use the mouse to draw lines showing interdependencies among tasks. Drawing a line from one box to another illustrates that the first task must be completed before the second may begin.



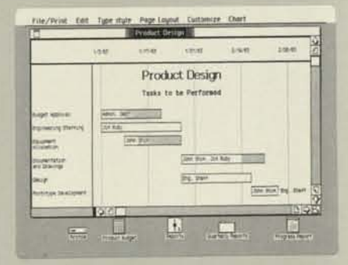
Resource charts illustrate resource management and utilization over time. Switching to a Resource chart from a Schedule chart makes it easy to visualize project status, resource allocation, and slack time among resources.

Create Comprehensive Schedules
- No special commands are required—just enter tasks and dates on the screen and LisaProject does the rest.
- Four task dates—early start, early finish, late start, and late finish—may also be displayed.
- As tasks are entered, task and project dates are calculated automatically.
- The project's critical path is highlighted.
- Scarce resources, such as a particular person, are always indicated.
- New tasks and milestones may be added at any time, anywhere in the Schedule chart.



Get an overview of complex projects by zooming your chart. Schedule charts allow you to map out large projects so they're easy to follow and manage. LisaProject shows the critical path, interdependencies among tasks, and the allocation of scarce resources that are associated with even the most complex schedules and timetables.

Alter Charts to Reflect a Project's Current Status
- Known start and finish dates for individual tasks may be entered directly into the Schedule chart.
- Task durations and resource requirements may be revised as needed.
- The project schedule and critical path are recalculated when new start and finish dates are entered or task durations change.
- New tasks, milestones, and resources may be entered as needed.



Task charts list the tasks in the order in which they will be performed, making it easy for you to see the progress of a project and the important dates associated with each individual task.

Graphic Charts Make Project Management Easy
- Critical tasks and resources are indicated with the critical path.
- Interdependencies among tasks are illustrated as lines between tasks.
- Project milestones are represented by circles on the chart to distinguish them from tasks.
- Charts can be moved into LisaDraw for further customization.

Test Various Scenarios
- Modifying charts is elementary—just use the mouse to draw tasks, move tasks, or enter new information.
- LisaProject information may be altered at any time; this includes task names, durations, and dependencies, as well as resource requirements and allocations.
- Project task dates and the critical path are updated as new information is entered.

Use Schedule, Resource, and Task Charts
- Switch between Schedule, Resource, and Task charts instantly.
- Schedule charts enable you to see the critical path, the complexity and scope of the project, interdependencies among tasks, task durations, resource allocations, and the overall project schedule.
- Resource charts show resource utilization over time.
- Task charts display project tasks in the order in which they will be performed.

Include LisaProject Charts in Reports or Presentations
- Unparalleled printing quality from Apple's high-resolution, Dot Matrix and Daisy Wheel Printers.
- Create overhead transparencies from printouts.
- Choose from a variety of typestyles, including large sizes for presentations.

LisaProject Specifications

Basic learning time:
- Less than 30 minutes.

Maximum drawing size:
- 32 square feet (2.9 square meters) (approximately 60 pages).

Date/calendar options:
- Display each task with early start, early finish, late start, and late finish dates.
- Specify up to 20 vacation days.
- Specify one to seven days to constitute a work week.
- Specify dates as month/day/year.

Editing:
- Editing is done the same way as in other Lisa applications.
- Copy, move, or delete any task, milestone, or line.
- Proportionally shrink or expand task boxes.
- Cut and paste, copy, move, replace, and delete.
- Expand or contract charts proportionally.
- Display titles in a variety of typestyles including large presentation sizes.
- Enter titles and subtitles directly on the chart.

Performance:
- Charts are immediately redrawn when data is entered or changed.
- Instantly see the impact of all functions, editing, and data and text entries.

Special features:
- Move a LisaProject chart into LisaDraw to customize it further.
- UNDO function cancels effects of last operation.
- View more than one document on the screen at once.
- Scroll either horizontally or vertically.
- REVERT TO PREVIOUS VERSION undoes all changes made to the document since it was last saved.

Printing:
- "What you see is exactly what you get" fidelity.
- Automatic page breaks.
- Apple's high-resolution Dot Matrix Printer (160 x 144 dots per inch; 6.2 x 5.6 dots per mm).
- Apple's Daisy Wheel Printer.
- Paper can be 8½ x 11 (215 x 279), 8½ x 14 (215 x 355), or 11 x 14 (279 x 355 mm) inches.
- Print one or multiple copies.
- Print whole document or selected pages.
- Print in horizontal or vertical formats.

Documentation:
- Brief orientation guide, to get you started in 30 minutes.
- Complete reference guide.
- Extensive step-by-step tutorial.
- Handy reference card.

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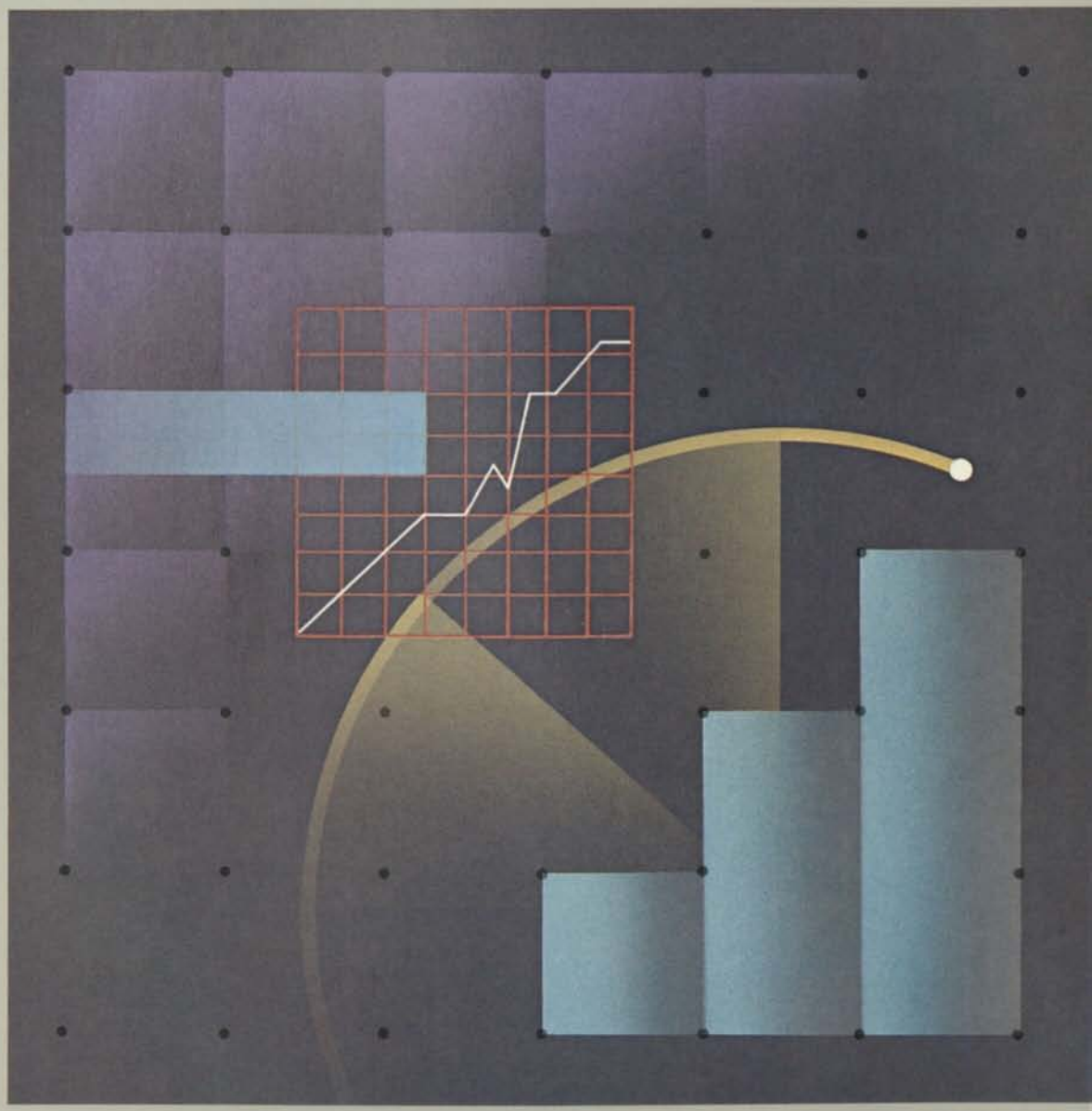
LisaGraph



LisaGraph makes clear, concise graphs from even the most complex data. Moreover, LisaGraph creates those graphs automatically. Enter data in LisaGraph's spreadsheet—alongside, a presentation quality graph appears instantly. And it's easy, because there's no need to learn a graphics language.

LisaGraph makes bar, line, pie and scatter graphs. You can transfer LisaGraph charts and graphs into LisaDraw for extensive customization and create graphs from LisaCalc tables.

In less than 30 minutes you'll be doing useful work with LisaGraph. Lisa's revolutionary Graphics Mouse Technology™ replaces confusing computer commands with simple graphic images. Graphics, together with the mouse, a simple selecting device, let you create, revise, and print documents intuitively. And because basic operations work the same way in all Lisa™ applications, you'll learn other applications in even less time.

LisaGraph simplifies complex data. Moreover, it simplifies computer graphing, which in turn simplifies your real work—making decisions and communicating those decisions to others.

Give your data strong, graphic impact.
- Data entered into the table is plotted automatically on a graph.
- Both data and graph are always visible on the screen.

Find the most effective graphic formats almost instantly.
- LisaGraph creates bar, line, mixed bar/line, pie, and scatter graphs.
- You can change graph types instantly without touching the keyboard. Just use the mouse to select the graph of your choice.

Examine "What if?" possibilities—and see the scenarios graphed automatically.
- Data changes are replotted immediately.
- Revising data is elementary. Select with the mouse, then retype.

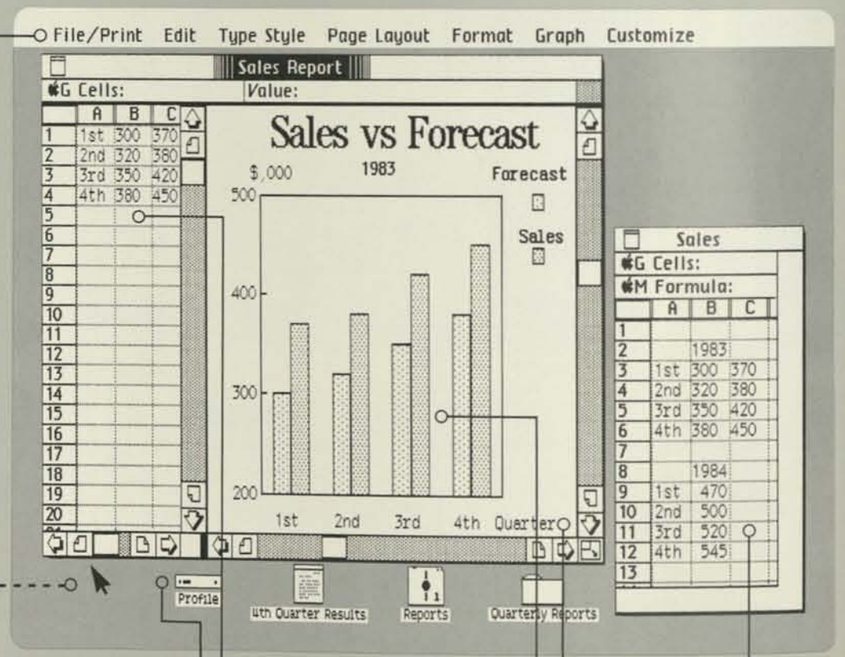
Easily edit and customize any graph's layout.
- Edit all elements of the worksheet—graph title, subtitle, axes labels, and footnotes.
- Add titles and annotations anywhere on the graph.
- Transfer your graph into LisaDraw to customize it further.

Include crisp, clear printouts in your reports or presentations.
- Quickly and easily bring in LisaCalc values for instant plotting—all without touching the keyboard. Move LisaGraph values into LisaCalc just as easily.
- A variety of typestyles, including large presentation-size styles, gives a typeset look.

What you see on the screen is exactly what you get on the printed page.
- Lisa's revolutionary visual fidelity is exactly reproduced by Apple's high-resolution Dot Matrix and Daisy Wheel Printers.

LisaGraph displays all your data on the screen. Everything is always visible—your data entries, the graph itself, and all program functions. Simply use the mouse to point to what you want, press the mouse button, and LisaGraph does the rest.

Menu Bar All LisaGraph functions are selected from the menu bar. To print a document, for example, just move the mouse and select PRINT from the menu. Once printing is under way, you may continue working with Lisa, either in the same document, or in another application.



Mouse/Pointer The mouse is a palm-size device that controls Lisa's pointer. It replaces all confusing special function keys and commands. The mouse is connected to Lisa by a thin cable. When you move the mouse, Lisa's pointer matches the movement on the screen.

Desktop Manager The Desktop Manager uses graphic symbols such as these to coordinate all the system's operations. For example, to work on a document, simply use the mouse to select an existing document or create a new one. When you're finished, use the mouse to put the document into a folder. The Desktop Manager also enables you to work with more than one document at a time.

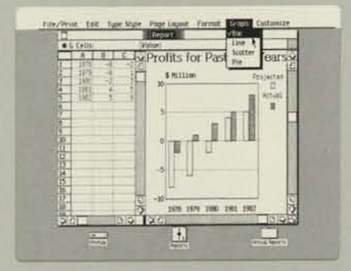
Data Table Graph data is entered directly into the data table, which is similar to a spreadsheet. Point to the table's cells with the mouse, then type.

LisaCalc More than one Lisa document may be on the screen at one time. To move information from LisaCalc to LisaGraph for example, simply use the mouse to select COPY from the EDIT menu. When you're ready to transfer the information into another document, select PASTE and your data is transferred—you don't even have to touch the keyboard.

Scrolling To view another part of your LisaGraph document, simply use the mouse to select the arrows or pages in the corners of the document. Similarly, to stretch or contract the document, use the mouse to move the box at the bottom right-hand corner.

Graph Area As soon as data is entered, LisaGraph automatically makes it into a bar graph. Data remains conveniently displayed next to the graph. The graph plots up to eight different sets of data and 2,000 data points.

Labels for the x and y axes are supplied automatically, from information you've provided in the data table. You can add a graph title, subtitles, floating legends, and footnotes—all in different typestyles, if desired.

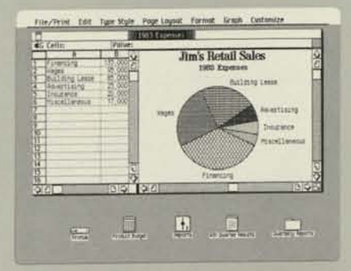


Change graph types by using the mouse to move the pointer along the menu bar. Stop the pointer on GRAPH; then press the mouse button. The GRAPH menu instantly appears.

Working With LisaGraph
- Changing data is elementary. Select with the mouse and retype.
- Graphs are replotted instantly when you change your data.
- A LisaCalc model can be displayed alongside your graph.
- Graph title, subtitle, axis labels, and footnotes can all be edited.
- Grid lines and legends can be added automatically.
- Lisa automatically sets axis labels; users may override them at any time.
- Free-floating titles and annotations can be added anywhere on the graph. Select with the mouse, then type.
- Titles can be bold, italic, or underlined, or any combination.
- Graphs can be easily moved into LisaDraw to customize them further.

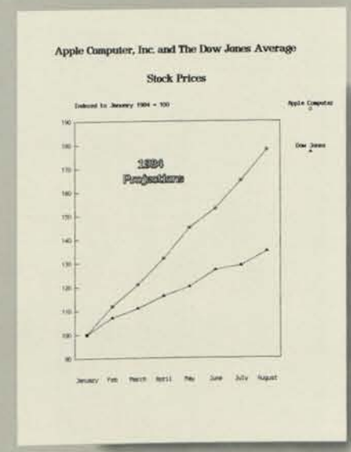
Some Important LisaGraph Advantages
- LisaGraph eliminates the need to learn a graphics language; data entered into the LisaGraph table is plotted automatically.
- There's no "data entry mode"; data is entered directly into the table—just select with the mouse and type.
- Both data and graph are always shown side by side on the screen.
- Information from LisaCalc models can be transferred directly into LisaGraph for immediate plotting as simply as you perform any basic editing. Use the mouse to COPY data from one LisaCalc model and PASTE it into LisaGraph.

Printing Your Results
- Graphs can be printed in four different sizes—¼ page, ⅓ page, ½ page, and full page.
- Apple's Dot Matrix and Daisy Wheel Printers both produce unparalleled graphics and text.
- The Apple Dot Matrix Printer produces quality copy for overhead transparencies.
- Large presentation-size typestyles give a professional typeset appearance.



Select a graph type by moving the cursor down the menu. Use the mouse button to select PIE; LisaGraph does the rest automatically.

Selecting A Graph
- Bar, line, mixed bar/line, pie, and scatter graphs are available.
- Graph type can be instantly changed without touching the keyboard. Use the mouse to select a new graph type from the menu—and the graph is instantly redrawn.



LisaGraph produces high-resolution printouts on either Apple's Dot Matrix or Daisy Wheel Printers. What you see on the LisaGraph screen is what you get on the page.

LisaGraph Specifications

Basic learning time:
- Less than 30 minutes.

Graph types:
- Bar, line, mixed bar/line, scatter, pie.

Maximum data points:
- More than 2,000.

Titles:
- Graph title, subtitle, x axis title, y axis title, footnotes, legends.
- Free-floating titles can be added anywhere on graph.

Data entry:
- Simple spreadsheet-type table for data entry.
- Entered data is graphed instantly.
- Table and graph appear simultaneously.
- Copy data from LisaCalc model to LisaGraph in three quick steps.

Editing:
- Editing is done the same way as in other Lisa applications.
- Intra-cell editing of data.
- Cut, paste, and copy.
- Edit titles in place on the graph.
- Insert new row or column in data table.
- Transfer a graph into LisaDraw to customize it further or include it in another drawing.

Formatting:
- Grid lines (on or off).
- Legends (on or off).
- Four graph sizes (¼, ⅓, ½, full page).
- Manual or automatic labeling of axes.
- For titles, choose from a variety of typestyles, including large presentation sizes.
- Titles can be bold, italic, underlined, or any combination.
- Table formatting features include variable width columns; left, right, or center alignments; integer, decimal, scientific, or money formats.

Performance:
- Graph replotted immediately (usually in less than one second) when data is entered or changed.
- Instant feedback on all operations, editing, data and text entry.

Special features:
- UNDO function cancels effects of last operation.
- REVERT TO PREVIOUS VERSION undoes all changes made to the graph since it was last saved.
- More than one document can be viewed on the screen at the same time.
- Enlarge or shrink viewing areas for graph or data-entry table.

Printing:
- "What you see is exactly what you get" fidelity.
- Apple's high-resolution Dot Matrix Printer (160 x 144 dots per inch; 6.2 x 5.6 dots per mm).
- Apple's Daisy Wheel Printer.
- Print graph and/or table of data.
- Print in horizontal or vertical formats.
- Paper can be 8½ x 11 (215 x 279), 8½ x 14 (215 x 355), or 11 x 14 (279 x 355 mm) inches.
- Print single or multiple copies.

Documentation:
- Brief orientation guide to get you started in 30 minutes.
- Complete reference guide.
- Extensive step-by-step tutorial.
- Handy reference card.

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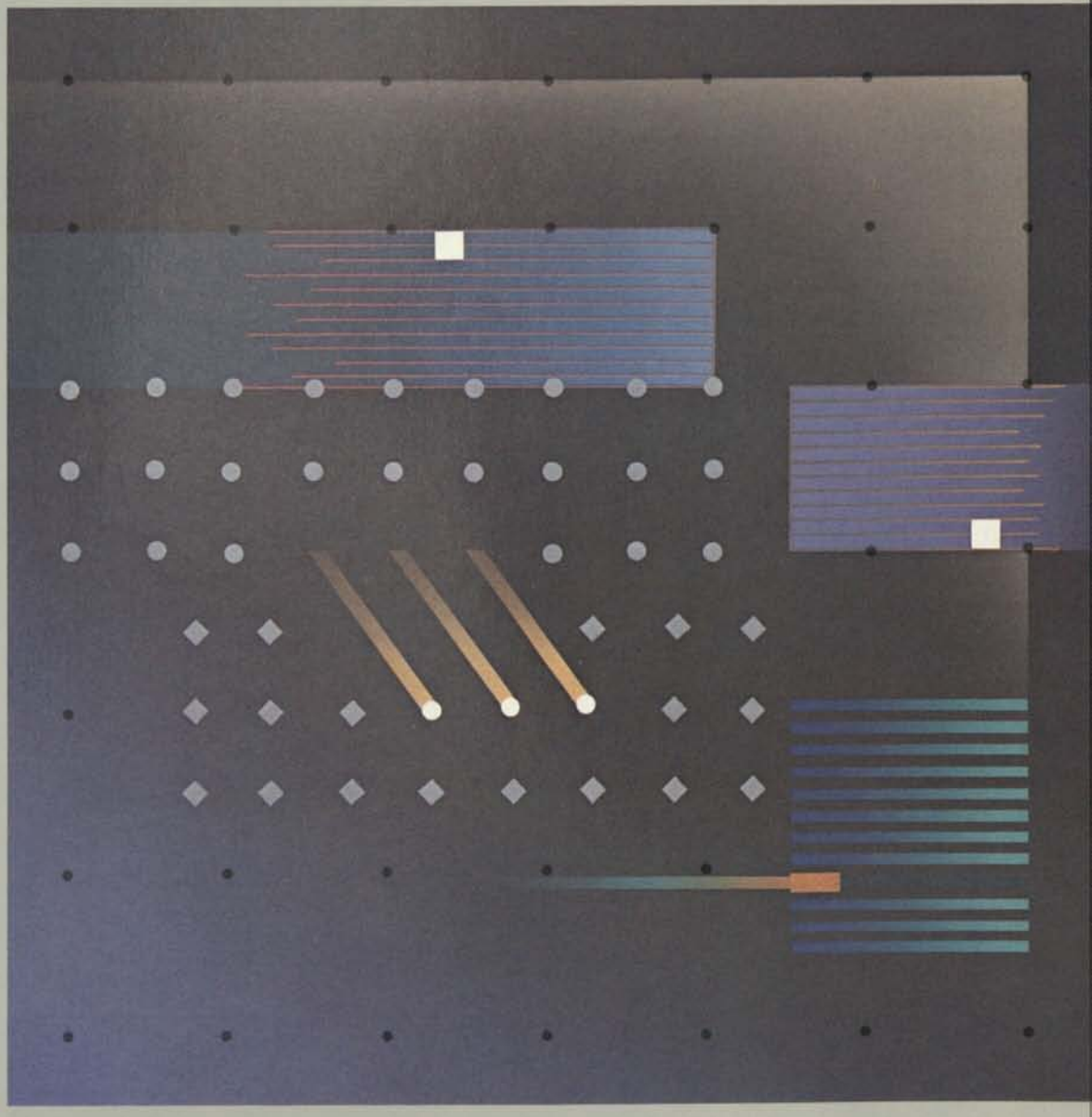
LisaWrite



LisaWrite is one of the most advanced word processors available for personal computers. With no complex commands to learn, you can easily create, revise, and print documents of any size.

Because LisaWrite lets you integrate LisaCalc models, LisaTerminal information, or other LisaWrite documents into your written document, you can compose reports and proposals quickly and efficiently.

In less than 30 minutes you'll be doing useful work with LisaWrite. Lisa's revolutionary Graphics Mouse Technology™ replaces confusing computer commands with simple graphic images. Graphics, together with the mouse, a simple selecting device, let you create, revise, and print documents intuitively. And because basic operations work the same way in all Lisa™ applications, you'll learn other applications in even less time.

LisaWrite combines advanced word processing technology with the power and flexibility of Lisa to help you prepare documents more quickly, more efficiently, and more easily. The result: better communication—both with your clients and within your organization.

Just about any format and length you need.
- Produce a professional looking document in almost no time at all. Use the mouse to create a blank document, then begin typing.
- Create formatted stationery customized to your needs—one for each type of document you write (such as memos, form letters, and reports).
- Produce documents up to hundreds of pages long (depending on your disk storage capacity).

Faster editing, fewer revisions—on other people's documents or your own.
- Powerful editing functions like cut, paste, and copy can be used on anything from a single character to an entire document.
- Revising documents is easy, even if you don't use LisaWrite often, because entering, selecting, and editing text works the same way as in other Lisa applications.
- Repetitive changes are simple and fast, thanks to LisaWrite's global search and replace capability.

Documents that look totally professional.
- A variety of typestyles provides the ultimate in flexibility and quality.
- Lines can be justified (left, right, or both margins) or centered.

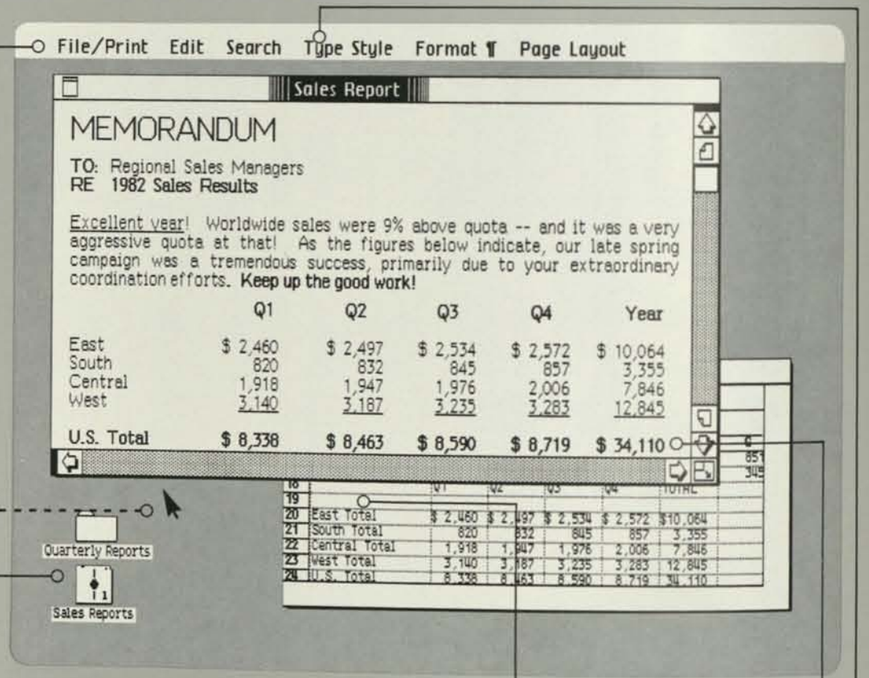
LisaCalc analyses can be included for more complete reports.
- Move a LisaCalc table into a LisaWrite document without ever touching the keyboard.
- Edit and format the LisaCalc table just as you would any other part of the document, and enhance it with LisaWrite typestyles.

Tables are easier to create and edit on Lisa than on a typewriter or other word processor.
- Choose from four different types of tab stops: normal, centered, decimal, and flush right.
- Move a tab stop by "pulling" it to the new location with the mouse.

One printout is all you need.
- What you see on the screen—including typestyles—is what you get on paper, so you know how your final document will look before you print it.
- Apple's high-resolution Dot Matrix and Daisy Wheel Printers both produce quality text suitable for reports and presentations.

The six **LisaWrite** menu functions appear across the top of the screen, above the name of the file you're editing. The text appears below—in exactly the same form that it will appear on paper.

Menu Bar All LisaWrite functions are selected from the menu bar. To print a document, for example, just move the mouse and select PRINT from the menu. Once printing is under way, you may continue working with Lisa, either in the same document, or in another application.



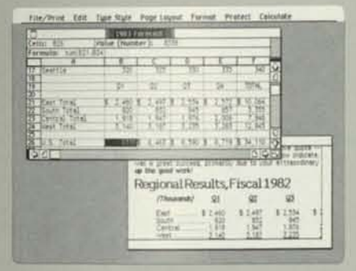
Mouse/Pointer The mouse is a palm-size device that controls Lisa's pointer. It replaces all confusing special function keys and commands. The mouse is connected to Lisa by a thin cable. When you move the mouse, Lisa's pointer matches the movement on the screen.

Desktop Manager The Desktop Manager uses graphic symbols such as these to coordinate all the system's operations. For example, to work on a document, simply use the mouse to select an existing document or create a new one. When you're finished, use the mouse to put the document into a folder. The Desktop Manager also enables you to work with more than one document at a time.

LisaCalc More than one Lisa document may be on the screen at one time. To move information from LisaCalc (or LisaTerminal) to LisaWrite, for example, simply use the mouse to select COPY from the EDIT menu. When you're ready to transfer the information into another document, select PASTE and your data is transferred—you don't even have to touch the keyboard.

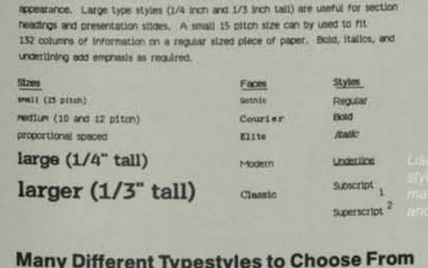
Scrolling To view another part of your LisaWrite document, simply use the mouse to select the arrows or pages in the corners of the document. Similarly, to stretch or contract the document, use the mouse to move the box at the bottom right-hand corner.

Typestyle Menu This menu offers you a variety of typestyles, including proportional spacing. Each is available in bold, italic, underlined, and any combination thereof.



Because LisaCalc tables can be made part of word processing documents, you can reformat them using all of LisaWrite's features.

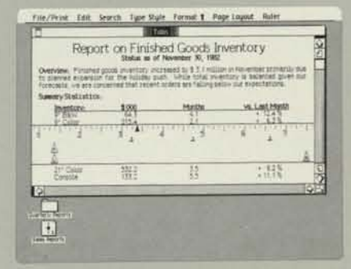
Customize LisaCalc Tables for Inclusion in Reports
- Use the horizontal ruler to adjust the placement of columns and to reset the margins. (You can have rulers marked in inches or centimeters.)
- Bold, italic, and underlined text can be used to emphasize important data.



LisaWrite gives you the typestyle options you need to make communications clear and dramatic.

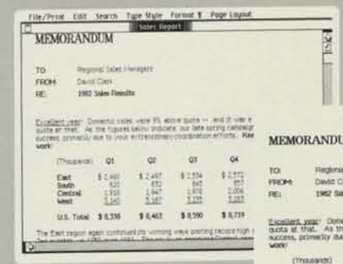
Many Different Typestyles to Choose From
- A variety of typestyles is available, including large presentation-style sizes and proportionally spaced styles.
- Each typestyle can also be made bold, italic, underlined, or a combination of one or more of these choices. (Bold, italic, and underlined styles are useful for emphasizing various parts of your document.)
- Subscripts and superscripts are easily included.

More Versatile and Powerful Than a Typewriter
- To set line spacing, just select from the appropriate menu. You can choose single, line and a half, double, or triple spacing.
- Because it's so easy to change the line spacing, you can experiment with your text until you get the look you want. You can also squeeze it—or expand it—to fit on a given number of pages.
- The spacing between paragraphs can be set independently of the spacing between lines.
- Headers and footers—with or without page numbers—are easy to specify. Once you request them, they're automatically inserted on every page.



With the horizontal ruler, you just point to where you want your tabs and margins, and they're automatically inserted.

Tabs and Margins Are Easy to Set
- To set margins and tabs, select the horizontal ruler, then use the mouse to insert them where you want them. There's no guessing, or counting.
- There's also a vertical ruler for precise positioning of headers, footers, and titles, and for adjusting the top and bottom margins.



Once your document looks the way you want it on the screen, simply select the PRINT function to get an identical version on paper.

What You See is What You Get
- Margins, line justification, line spacing, line breaks, page breaks, page numbers, headers, footers, bold, italic, and underlined text all appear on the screen just as they do on paper.

Justify Text Any Way You Want
- You can justify margins (left, right, or left and right) or center lines.
- You can try different justifications and centering with the same piece of text to see how it looks best. Just select what you want and LisaWrite automatically centers or rejustifies the text for you.

LisaWrite Specifications

Basic learning time:
- Less than 30 minutes.

Maximum document size:
- Dependent upon available disk space.
- Maximum width of text is 14 inches (355 mm).

Text viewing area:
- Dependent on typestyle chosen (e.g., 31 lines by 86 characters with 15-pitch style).

Editing:
- To insert text just select with the mouse and type.
- Edit any length text:
  - single characters, words, or paragraphs.
  - multiple characters, words, or paragraphs.
  - entire documents.
- Cut and paste.
- Copy, move, delete.
- Search and replace
  - global and selective.
  - "wildcards" can be used.
- Editing is done the same way as in other Lisa applications.

Formatting:
- All formatting appears on display screen exactly as it will appear on paper.
- Margin justification: left, right, left and right.
- Automatic centering.
- A variety of typestyles, including:
  - proportionally spaced.
  - two large presentation sizes.
  - bold, italic, and underlined, in any combination.
  - all styles available in subscripts and superscripts.
- Line spacing:
  - single, line and a half, double, or triple.
  - spacing between paragraphs can be varied independently.
- Tabs:
  - flush left, flush right, centered, decimal.
- Tab fill patterns: periods, dashes, underlines.
- Headers and footers:
  - can be multiple lines long.
  - can be placed anywhere on the page.
  - can include automatic page number.
- First-line margin for outdenting and indenting paragraphs.
- Page breaks: automatic or manual.
- "Conditional page" feature protects block of text or table from being broken across pages.

Special features:
- Move LisaCalc model into LisaWrite in three easy steps.
- UNDO function cancels effects of last operation.
- REVERT TO PREVIOUS VERSION undoes all changes made to the document since it was last saved.
- PREVIEW function:
  - quicky paginates document.
  - shows page breaks, page numbers, headers, and footers in place.
- Split-screen feature:
  - lets you split screen vertically or horizontally to let you see different parts of documents or cut and paste between documents.
  - view more than one document on the screen at once.
- Scrolling:
  - next line.
  - next screenful.
  - go directly to any part of document.

Printing:
- "What you see is exactly what you get" fidelity.
- Apple's high-resolution Dot Matrix Printer (160 x 144 dots per inch; 6.2 x 5.6 dots per mm).
- Apple's Daisy Wheel Printer.
- Paper can be:
  - 8½ x 11 (215 x 279), 8½ x 14 (215 x 355), or 11 x 14 (279 x 355 mm) inches.
- Print one or multiple copies.
- Print whole document or selected pages.
- Print in horizontal or vertical formats.
- Background printing enables you to print one document while working on another.

Documentation:
- Brief orientation guide to get you started in 30 minutes.
- Complete reference guide.
- Extensive step-by-step tutorial.
- Handy reference card.

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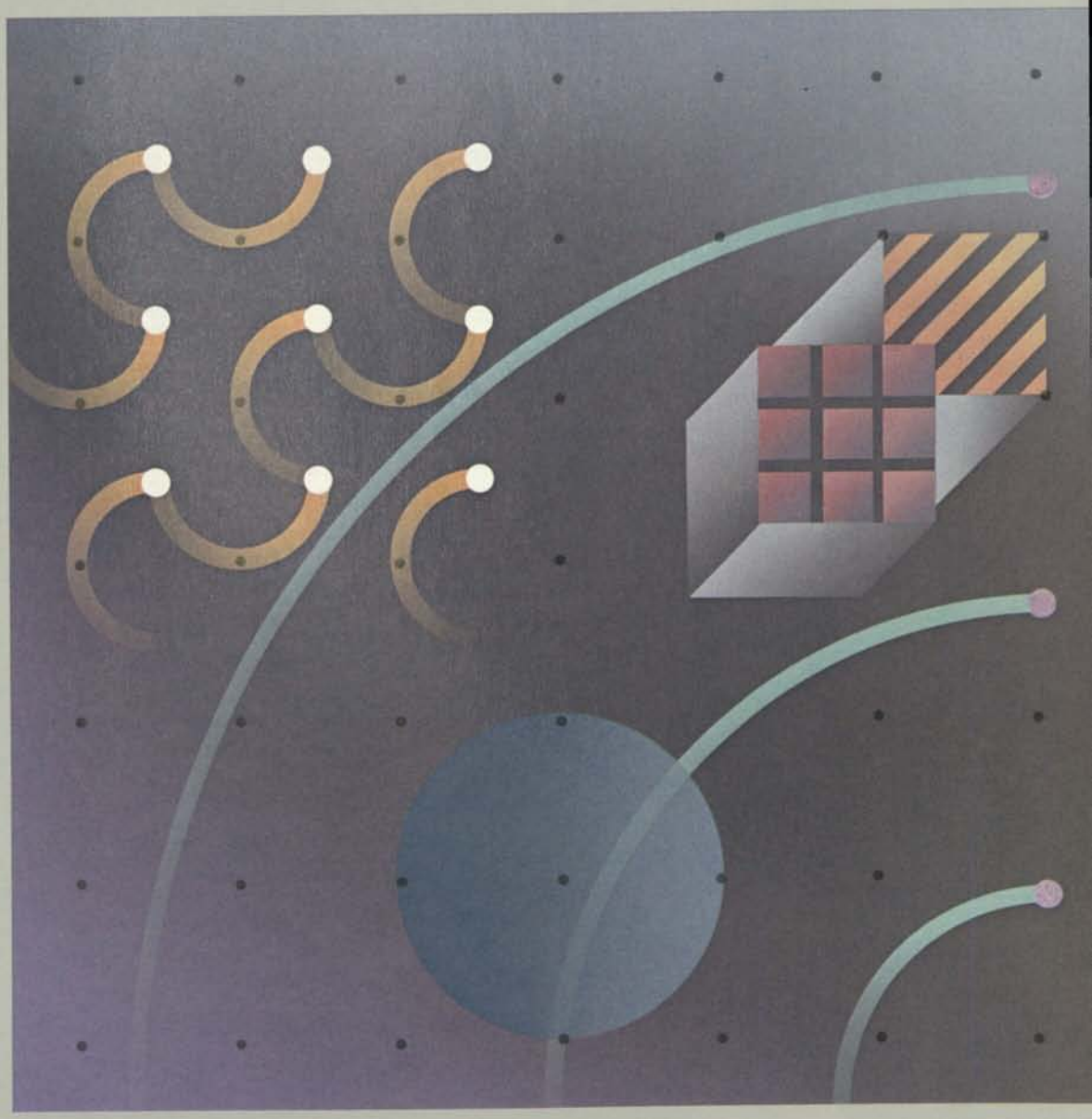
LisaDraw



LisaDraw is a unique graphics presentation tool that makes it easy to create flow charts, technical diagrams, maps, pictures, and symbols for reports and presentations. Creating lines, boxes, circles, and other geometrical shapes is as easy as moving the mouse along a tabletop. Combining these shapes lets you be as creative as you like. And adding text is elementary.

With LisaDraw you can save any creation for repeated use in other LisaDraw documents. Moreover, you can easily move LisaProject schedules and LisaGraph charts and graphs into LisaDraw for customization.

In less than 30 minutes you'll be doing useful work with LisaDraw. Lisa's revolutionary Graphics Mouse Technology™ replaces confusing computer commands with simple graphic images. Graphics, together with the mouse, a simple selecting device, let you create, revise, and print documents intuitively. And because basic operations work the same way in all Lisa™ applications, you'll learn other applications in even less time.

LisaDraw uses the power and flexibility of Lisa to give you capabilities far beyond those of virtually any other graphics program. With the ability to express your ideas visually—through high quality graphics—you'll communicate more easily and effectively.

A picture is worth a thousand words.
- LisaDraw's lines, boxes, and text let you illustrate complex aspects of your business with flow charts.
- Create and revise drawings for presentations, training manuals, reports, sales curves, sketches, and more.

Work with graphics as easily as with text.
- Drawing lines, boxes, circles, and other common shapes takes just two simple moves of the mouse.
- Changing lines and shapes, or moving them, is done with the mouse. There are no commands to remember.
- You get instant feedback on everything you do—there's no waiting to see the results. This makes it easy to create a picture or diagram that's just the size and shape you want.

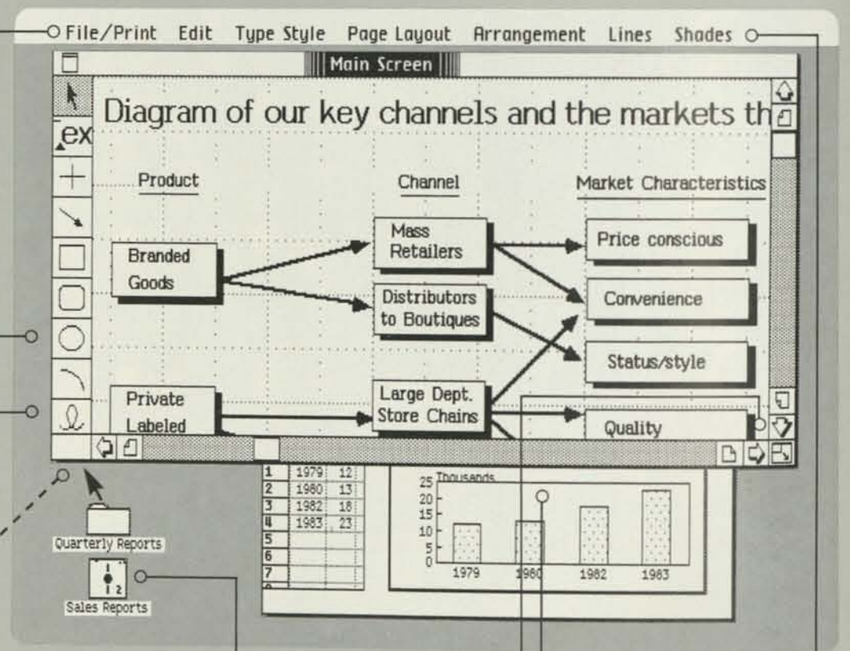
What you see on the screen is exactly what you get on the printed page.
- Choose from four different sizes and three styles of text, all of which can be displayed and printed in bold, italic, underlined, or shadow—or any combination.
- Apple's high-resolution Dot Matrix and Daisy Wheel Printers both produce unsurpassed graphics and text suitable for reports or for copying onto overhead transparencies.

The way a business works can be complex—LisaDraw helps you get a handle on it.
- Different shapes and shadings can represent kinds of activities, processes, or systems; and arrows show interdependencies.
- Organization charts and floor plans are easy; the optional grid helps you align objects perfectly.
- Add text anywhere, at any time.
- LisaDraw can accommodate illustrations up to 60 pages.

Use LisaDraw to customize charts and graphs from other applications.
- Moving a LisaGraph or LisaProject chart into LisaDraw is quick and easy.
- Revise any graph or chart. Change sizes, shapes, patterns, and locations of bars, pies, lines, and titles.

Except for generating text, everything created in **LisaDraw** is done with the mouse. Use it to select from the palette the shape you'd like to draw; the pointer then draws figures of that shape. To add text, simply select the TEXT box from the palette. As in other Lisa applications, you can also use the mouse to select items from the menu bar.

Menu Bar All LisaDraw functions are selected from the menu bar. To print a document, for example, just move the mouse and select PRINT from the menu. Once printing is under way, you may continue working with Lisa, either in the same document, or in another application.



Mouse/Pointer The mouse is a palm-size device that controls Lisa's pointer. It replaces all confusing special function keys and commands. The mouse is connected to Lisa by a thin cable. When you move the mouse, Lisa's pointer matches the movement on the screen.

Drawing Freestyle Use this option for freestyle drawings. Anywhere you move the cursor, the line follows. And you can even "smooth" it to take the kinks out.

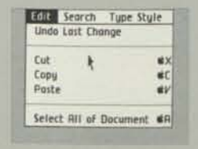
Drawing Circles To draw perfectly rounded circles, use the mouse to select the circle from the palette; moving the mouse will then draw circles on the screen.

Desktop Manager The Desktop Manager uses graphic symbols such as these to coordinate all the system's operations. For example, to work on a document, simply use the mouse to select an existing document or create a new one. When you're finished, use the mouse to put the document into a folder. The Desktop Manager also enables you to work with more than one document at a time.

Scrolling To view another part of your LisaDraw document, simply use the mouse to select the arrows or pages in the corners of the document. Similarly, to stretch or contract the document, use the mouse to move the box at the bottom right-hand corner.

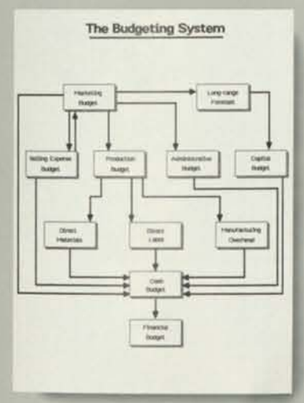
Shades Menu Once you have the shapes you want, fill them in with your choice of 36 different patterns.

LisaGraph More than one Lisa document may be on the screen at one time. To move information from LisaGraph to LisaDraw, for example, simply use the mouse to select COPY from the EDIT menu. When you're ready to transfer the information into another document, select PASTE and your data is transferred—you don't even have to touch the keyboard.

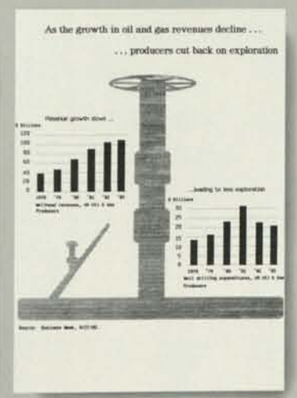


LisaDraw is a revolutionary tool. It enables you to draw lines, circles, boxes, and any other geometrical shapes. It also lets you add text to your drawings.

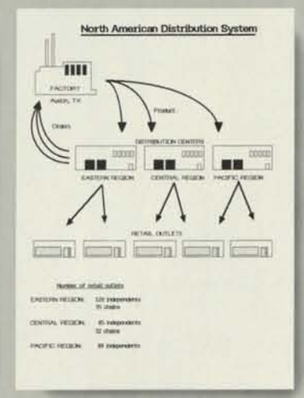
However, the real beauty of LisaDraw is using it to customize reports, memos, presentations—anything that you want to look good—with professional-quality graphics. And you can do it all at your desk, using only the mouse and the keyboard.



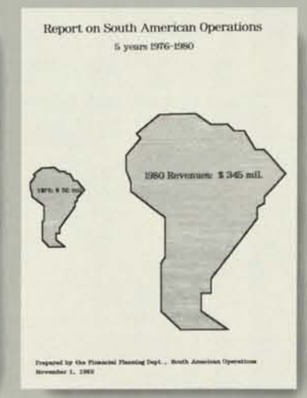
Create professional quality diagrams, which can then be made into transparencies for sales, marketing, and other presentations.



Add dramatic impact to your business charts or graphs.

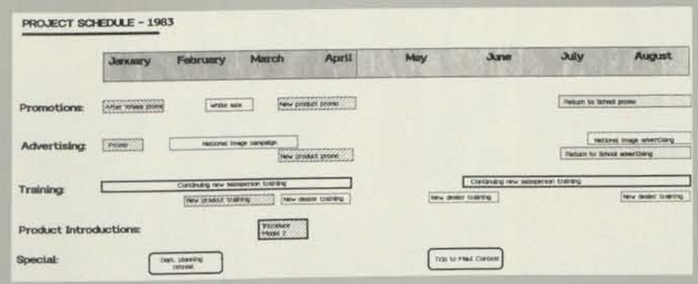


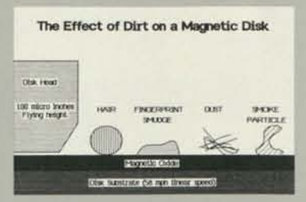
Illustrate interdependencies among jobs or projects, or draw schematic drawings.



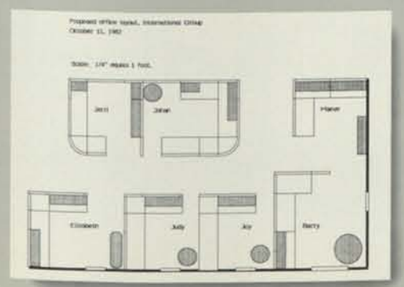
Illustrate important geographic information with maps or regional drawings.

Create large (96 x 48 inch, 2.44 x 1.22 m) drawings, such as timelines, to get the full picture.



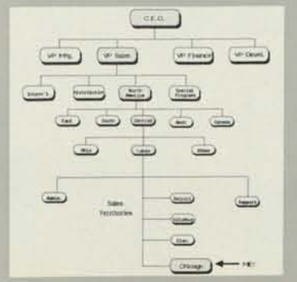


Create simple illustrations to help describe complex situations.



Draw floorplans or office diagrams to scale.

Create organization charts that can be saved and updated when the staff changes.



Create sketches and original artwork as you would by hand.

LisaDraw

Specifications

Basic learning time:
- Less than 30 minutes.

Maximum drawing size:
- 32 square feet (2.9 square meters) (about 60 pages).

Drawing:
- Palette selections:
  - lines.
  - squares and rectangles (with and without rounded corners).
  - circles and ellipses.
  - horizontal, vertical, and diagonal lines.
  - arcs.
  - polygons (including triangles).
  - freehand curves.
- 36 patterns for filling shapes.
- Four line thicknesses (fine, narrow, medium, wide).
- Three line shades (black, grey, white).
- Lines can have arrowheads at one or both ends.

Graphic editing:
- Combine more than one existing LisaDraw document.
- Move any object or shape.
- Place objects in front of or behind others.
- Shrink or expand any object yet maintain its shape.
- Reshape freehand curves, arcs, and polygons.
- Automatically smooth curves.
- Copy or delete any object.
- Change line thickness or line shade.
- Change pattern of shading inside a shape or object.
- Group shapes or objects to move, copy, or delete them together.

Text editing:
- Add text to any part of drawing
  - just point with mouse and type.
  - edit just as you would with LisaWrite.
- Functions available:
  - cut and paste.
  - copy and move.
  - delete.
  - change typestyles.

Alignment aids:
- Grids displayable on screen in various sizes.
- Rulers displayable on screen
  - horizontal and vertical.
  - marked in inches, centimeters, or in user-defined increments.
- Align edges of objects.
- Measure distance between two points and the size of objects.

Typestyles:
- A variety of typestyles, including large presentation sizes (¼ – ⅓-inch; 6.35 x 8.47 mm tall).
- Proportionally spaced styles.
- Type can be bold, italic, shadow, underlined, or any combination.

Special features:
- Move LisaGraph and LisaProject charts into LisaDraw for further customization quickly and easily, without touching the keyboard.
- LOCK allows you to protect creations from accidental editing.
- UNDO function cancels effects of last operation.
- REVERT TO PREVIOUS VERSION undoes all changes made to the document since it was last saved.
- Horizontal and vertical scrolling.

Printing:
- "What you see is exactly what you get" fidelity.
- Automatic page breaks.
- Apple's high-resolution Dot Matrix Printer (160 x 144 dots per inch; 6.2 x 5.6 dots per mm).
- Apple's Daisy Wheel Printer.
- Paper can be 8½ x 11 (215 x 279), 8½ x 14 (215 x 355), or 11 x 14 (279 x 355 mm) inches.
- Print one or multiple copies.
- Print whole drawing or selected pages.
- Print in horizontal or vertical formats.

Documentation:
- Brief orientation guide to get you started in less than 30 minutes.
- Complete reference guide.
- Extensive step-by-step tutorial.
- Handy reference card.

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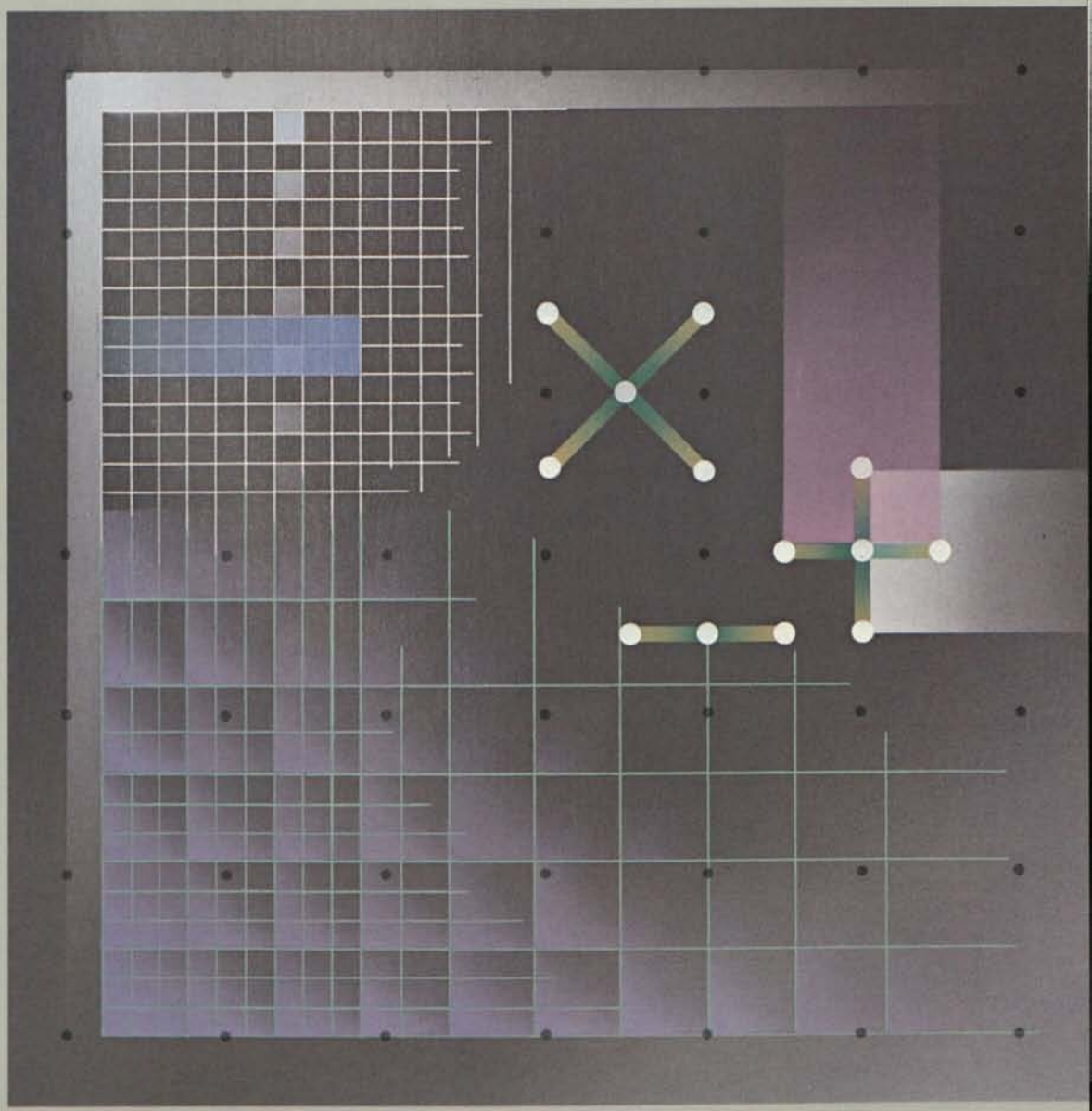
LisaCalc



LisaCalc is a powerful electronic spreadsheet and financial modeling tool that helps you grasp the impact of even the most complex financial scenario. Its huge worksheet (255 rows by 255 columns) lets you test every variable that affects your decisions. And it's easy, because LisaCalc eliminates the need to learn a modeling language.

Once you've created a spreadsheet, LisaCalc lets you transfer that information into other LisaCalc documents, into LisaGraph for graphing, or into LisaWrite for inclusion in a memo or report.

In less than 30 minutes you'll be doing useful work with LisaCalc. Lisa's revolutionary Graphics Mouse Technology™ replaces confusing computer commands with simple graphic images. Graphics, together with the mouse, a simple selecting device, let you create, revise, and print documents intuitively. And because basic operations work the same way in all Lisa™ applications, you'll learn other applications in even less time.

LisaCalc

Specifications

Basic learning time:
- Less than 30 minutes.

Maximum worksheet size:
- 255 rows by 255 columns.
- Maximum model size visible—13 columns (8 characters wide) by 28 rows.

Precision and accuracy:
- Standard IEEE numerics for calculations and formatting provide unsurpassed accuracy.
- 15 digits for high-precision calculations.

Editing:
- Editing is done the same way as in other Lisa applications.
- Intracell editing.
- Cut and paste, copy, move, replace, delete.
- Insert new rows or columns.
- Copy values or formulas into other models.

Formatting:
- Left and right justification, and centering.
- Fit as many as 132 columns on an 8½ × 11-inch (215 x 279 mm) page.
- Variable column widths (1 to 80 characters).
- Integer, decimal, and exponential numbers, with variable number of digits after decimal or exponent.
- Various money formats (commas, dollar signs, cents).
- Brackets for negative money values.
- Fill pattern format.

Functions:
- +, −, ×, ÷.
- =, <, >, ≥, ≤, <>, AND, OR, NOT.
- Integer division, remainder.
- Sum, average, minimum, maximum, count, exponent.
- If-then-else.
- NPV, compound interest factor, annuity factor.
- Absolute value, integer portion, round off.
- Log, natural log, square root, sum of squares.
- Lookup, NA, error.
- Sin, asin, cos, acos, tan, atan.

Date/calendar:
- Specify dates as mm/dd/yy.
- Specify date parts as a number of days, months, or years.
- Add, subtract, and compare dates or date parts.
- Many functions (above) work with dates or date parts.

Calculation features:
- Automatic and manual recalculation.
- Calculates until convergence is achieved.

Data exchange:
- Move data and models between LisaCalc documents.
- Move data and text into LisaGraph and LisaWrite.

Special features:
- "Protection" guards cells from being accidentally changed.
- CIRCLE MISSING VALUES highlights cells that are referenced in a formula but do not contain valid data.
- UNDO function cancels the effects of last operation.
- REVERT TO PREVIOUS VERSION undoes all changes made to the document since it was last saved.
- Up to 6 vertical or horizontal splits of the window.
- More than one worksheet on the screen at once.

Printing:
- "What you see is exactly what you get" fidelity.
- Automatic or manual page breaks.
- Print formulas or values.
- Apple's high-resolution Dot Matrix Printer (160 x 144 dots per inch; 6.2 x 5.6 dots per mm).
- Apple's Daisy Wheel Printer.
- Print one or multiple copies.
- Print whole model or selected pages.
- Print in horizontal or vertical formats.
- A variety of typestyles are available, including a small, 15-pitch size.
- Paper can be 8½ x 11 (215 x 279), 8½ x 14 (215 x 355), or 11 x 14 (279 x 355 mm) inches.

Documentation:
- Brief orientation guide to get you started in 30 minutes.
- Complete reference guide.
- Extensive step-by-step tutorial.
- Handy reference card.

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800-268-7637
TLX 06-986561

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Lisa

Lisa. It works the way you do.

This Is Lisa, From Apple.

You've never worked with a personal computer like it. Because Lisa™ works the way you do.

The system is so simple to use that you control it intuitively. Lisa has no conventional computer commands. Instead, you operate it by pointing to familiar pictures on the screen. You can actually learn to do useful work with Lisa in 20 to 30 minutes.

Lisa's radical simplicity is matched by its power. The system replaces conventional computer programs with a pool of powerful business tools. From it you spontaneously select what you need, exactly when you need it. Words, numbers, charts, graphs, pictures—Lisa lets you create and combine them naturally to produce clear answers to your questions and clear information for your organization.

The Lisa system. The only personal computer that's simpler and more powerful is your own mind.

The New Computing

Lisa at Work. You can do more using Lisa and one hand than you can using a conventional computer and both hands. That's because you control the entire Lisa system with a simple device called a mouse. The keyboard is just for typing.

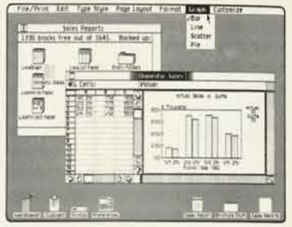
With the mouse, you control a pointer on the computer's screen. Point to the screen's graphic images, select what you want, and Lisa does the rest instantly. With incredible speed and simplicity—and without the usual thicket of computer commands—you handle every operation you need.

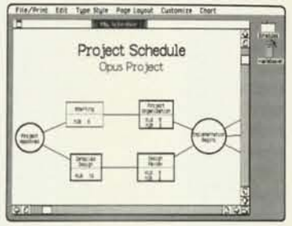
Using the mouse and Lisa's graphics, you can select and operate any business application; move information from one application (such as LisaCalc) to another (such as LisaWrite); create, examine, reorganize, and revise files; run modems, printers, and other peripheral devices; and communicate with central computers.

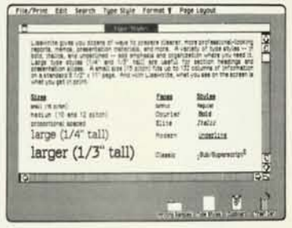
The mouse and the natural movement of your own hand. They're all you need to control Lisa. That makes it the one personal computer you already know how to use.

Learn Faster, Do More. Each of Lisa's six business applications is formidable. LisaCalc, LisaList, and LisaProject let you do modeling, list management, and project scheduling. LisaWrite handles everything you write. LisaGraph and LisaDraw help you create business graphs and virtually any other graphics that your work requires.

But what each application does is only the start. Working together, they do even more.







First, all of Lisa's applications are controlled in the same way, using the mouse. That lets you learn your first application fast and subsequent applications even faster. In fact, in less time than it takes to learn a typical personal computer program, you can learn to use *all* of Lisa's business applications.

Second, valuable data from one application can be made even more valuable by using it in another application. For example, you can cut important information from LisaCalc and paste it into a LisaWrite report. The possibilities are endless. They're also simple and spontaneous because cutting and pasting are done in seconds, using only the mouse.

A Picture Vs. A Thousand Words. Lisa also gives you the unparalleled advantage of using pictures as easily as words. That lets you communicate in radically simpler, more powerful ways. Graphs and charts are just the start. Lisa's remarkable software frees you to create precisely the illustrations your messages need—everything from quick sketches in memos to sophisticated materials for presentations.

And Lisa lets you print all of it exactly as it looks on the screen. Lisa's dot matrix printer reproduces *all* your work with a sharpness matched only by printers that cost much more. Lisa's daisy wheel printer can duplicate anything on the screen, too, including graphics.

Lisa's integrated software and extraordinary graphics let you multiply the power of all your information. That gives you a business advantage that no conventional personal computer can offer.

Technology That Means Business

Unmatched Hardware. On your desk, Lisa is quiet (no fan), convenient (advanced ergonomics), and streamlined (reduced footprint). It also has the speed and capacity to crunch every task you use it for. The system has a 32/16-bit central processor, and one megabyte of main memory. It uses ProFile,™ Apple's high-speed hard disk storage device, to keep all business applications and files instantly available. Two built-in floppy disk drives handle an additional 1.7 megabytes of usable information and let you quickly make backup files, do automatic system tests, and use additional data, languages, and programs. Lisa also handles extra tasks, such as printing, while you continue important work on the screen.

Lisa's keyboard is standard and simple—the mouse replaces special function keys. The 12-inch, bit-mapped, black-on-white screen lets you create extraordinary graphics and up to 132 columns and 40 rows of sharp, clear text.

At the back of the system, you can plug in printers, modems (including auto-dial/auto-answer), and more.

Supersoftware. Lisa's six comprehensive applications are prodigious office tools for the most important business functions. Its sophisticated spreadsheet, list management, word processing, and graphing applications do far more and are easier to use than any typical personal computer programs. And Lisa's project scheduling and graphics editing applications do fundamental management tasks that are simply not possible with conventional personal computers.

These six are just the start. Three languages—powerful versions of BASIC, Pascal, and COBOL—let you use as well as write additional business programs. And with the Lisa Applications Development Tool Kit, programmers will be able to create Lisa-style programs that extend the system's powers even further.

Lisa In Your Office Today. Lisa's effectiveness starts as soon as you plug it in. The system performs all the powerful functions you need with stunning simplicity. Surprisingly, it's priced like many conventional personal computers. Even if your department's budget is limited, you can put Lisa to work now.

And Tomorrow. Better still, you can keep Lisa working even when your department grows. That's because the Lisa system expands in amazing ways. You can use Lisa to search valuable commercial data bases such as MicroNet, Dow Jones News And Quotes, and The Source. You can use Lisa as a terminal for corporate mainframes, central minicomputers, or virtually any other large computer system. And you'll be able to link together any of your Lisa systems (and other Apple computers) with AppleNet,™ the fast, inexpensive, reliable network being developed by Apple. AppleNet can start small and grow to cover your whole organization.

All Kinds of Backup. Support and service for Lisa are as flexible and comprehensive as the system itself.

Lisa instruction, for example, is efficient in organizations of any size. With the system's innovative self-teaching materials, a single user can put Lisa to work in less than 30 minutes. Self-instruction for conventional personal computers takes about ten times as long. And if whole departments need to learn en masse, Apple can provide complete training programs—and even help your business develop its own specialized programs.

Service for Lisa is just as broad. You can get fast, economical service for any number of systems. You can even set up your own service department. Apple can provide all the training and supplies.

In a word, no matter how you put Lisa to work in your company, you'll have support and service that work the way you want.

The Lisa System. You Should Know More.

It's the only personal computer that works the way you do. To learn how you can put Lisa to work, call Apple at 800-662-9238. We'll give you the phone number of the national accounts office or authorized Lisa dealer in your area.

Specifications

Display:
- 12 inch screen (measured diagonally).
- Full-screen bit-mapped display
  - 364 lines by 720 dots.
  - up to 40 lines of 132 characters.
- 60 Hz refresh rate.
- Contrast level under software control.
- Contrast-enhancing screen.

Keyboard:
- Detached, standard typewriter-style.
- N-key rollover.
- Sculptured keytops
  - textured, nonslip, nonglare.
- Numerical keypad with raised dot on 5 key.
- Full ASCII character set, up to 77 keys.
- All keys programmable.
- Smart interface with control-oriented processor.

Mouse:
- Extremely fast, intuitive cursor positioning.
- Works well on any surface.
- Simple one-button design eliminates confusion and the need to learn commands.

Disk storage:
- 860K bytes (per drive) formatted storage.
- 1.4M bytes (per drive) unformatted capacity.
- 62.5 tracks/inch.
- 10,000 bits/inch.
- Automatic disk eject.
- Smart interface with 6504 processor.

Main processor:
- MC68000 32/16-bit CPU
  - 32-bit internal architecture.
  - 16-bit external data path.
  - Seven levels of interrupts.

Real-time clock:
- Software system on-off control.
- Interval and event timing.
- COPS processor, battery backup.

Main memory:
- 16K bytes of boot ROM.
- Up to 1M bytes RAM.
- Parity error detection.

Memory management:
- Permits operating system to relocate segments in memory.
- Provides access controls for block memory.
- Segmentation into 128 variable-length blocks.

Communications interface:
- Two serial ports
  - SCC controller.
  - programmable.
  - full-function.
- RS-232 with full-duplex channels.
- Full modem control and ring indicator on one channel.
- Baud rates software-programmable.
- One parallel port
  - 8-bit bidirectional.
  - handshake control.

Audio output:
- Built-in speaker with software-controllable tone generator.

Expansion board slots:
- Three slots.
- Zero insertion-force connectors.
- Direct connection to system bus.
- DMA capability.
- Memory-mapped I/O.
- Vector interrupt capability.
- Direct connection of power supply:
  - digital ground.
  - +5V, −5V, +12V, −12V.
  - allows up to 10W total (maximum rating) for all three cards.
  - +5V standby (at 58 mA) per board.

Weight and dimensions:
- Computer console:
  - Weight: 48 lb. (22 kg).
  - Height: 13.8 in. (350 mm).
  - Width: 18.7 in. (475 mm).
  - Depth: 15.2 in. (388 mm) [16 in. (403 mm) with keyboard under front].
- Keyboard:
  - Weight: 4 lb. (1.8 kg).
  - Height: 2.7 in. (68 mm).
  - Width: 18.7 in. (475 mm).
  - Depth: 6.5 in. (165 mm).

Power requirements:
- 115 or 230 V. AC.
- 48 to 68 Hz.
- 270 W (maximum).

Environmental requirements:
- Ambient temperature: 40°–108° F (5°–42° C).
- Relative humidity: 15–80%, noncondensing.

Applications:
- LisaCalc (spreadsheet modeling), LisaList (list management), LisaProject (project scheduling), LisaWrite (word processing), LisaGraph (business graphics), LisaDraw (graphics editor), LisaTerminal (terminal emulation).

Languages and development environment:
- BASIC, Pascal, COBOL, Lisa Editor, Assembler, Linker, Debugger, and a wide range of utilities.

Communications:
- 3270 BSC.

System expansion:
- Apple Dot Matrix Printer, Apple Daisy Wheel Printer, Apple ProFile (5MB hard-disk storage device), Modem, 2-port parallel card, and AppleNet Local Area Network (Ethernet connections available for Apple products).

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TLX 842-630296

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300M-1/83

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Lisa

Lisa. It works the way you do.

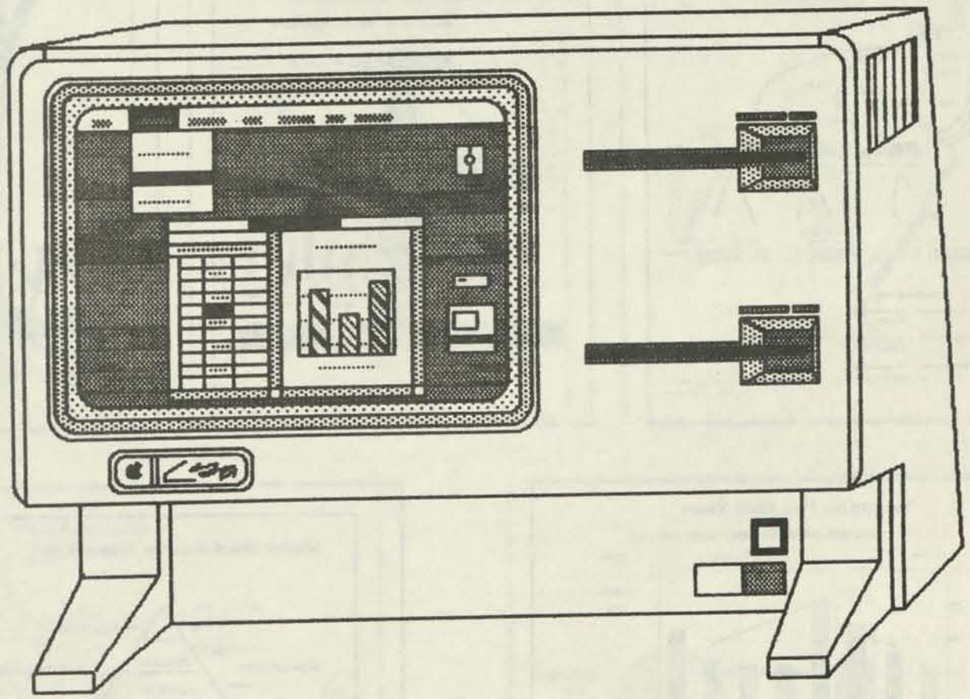
This is Lisa.™ It's the only personal system of its kind. It doesn't work like a conventional personal computer. It works the way you do.

Lisa follows your natural work habits. It replaces conventional computer commands with pictures, pictures that let you work with the entire Lisa system in the same familiar ways you've always worked at your own desk. You control Lisa by simply pointing to the images on the screen. From the start, you understand intuitively how Lisa operates.

Lisa follows your natural habits of mind, too. From a pool of powerful business tools, you spontaneously select what you need, exactly when you need it. The system lets you create and combine words, numbers, lists, graphs, and pictures to produce the clear information you see in your mind.

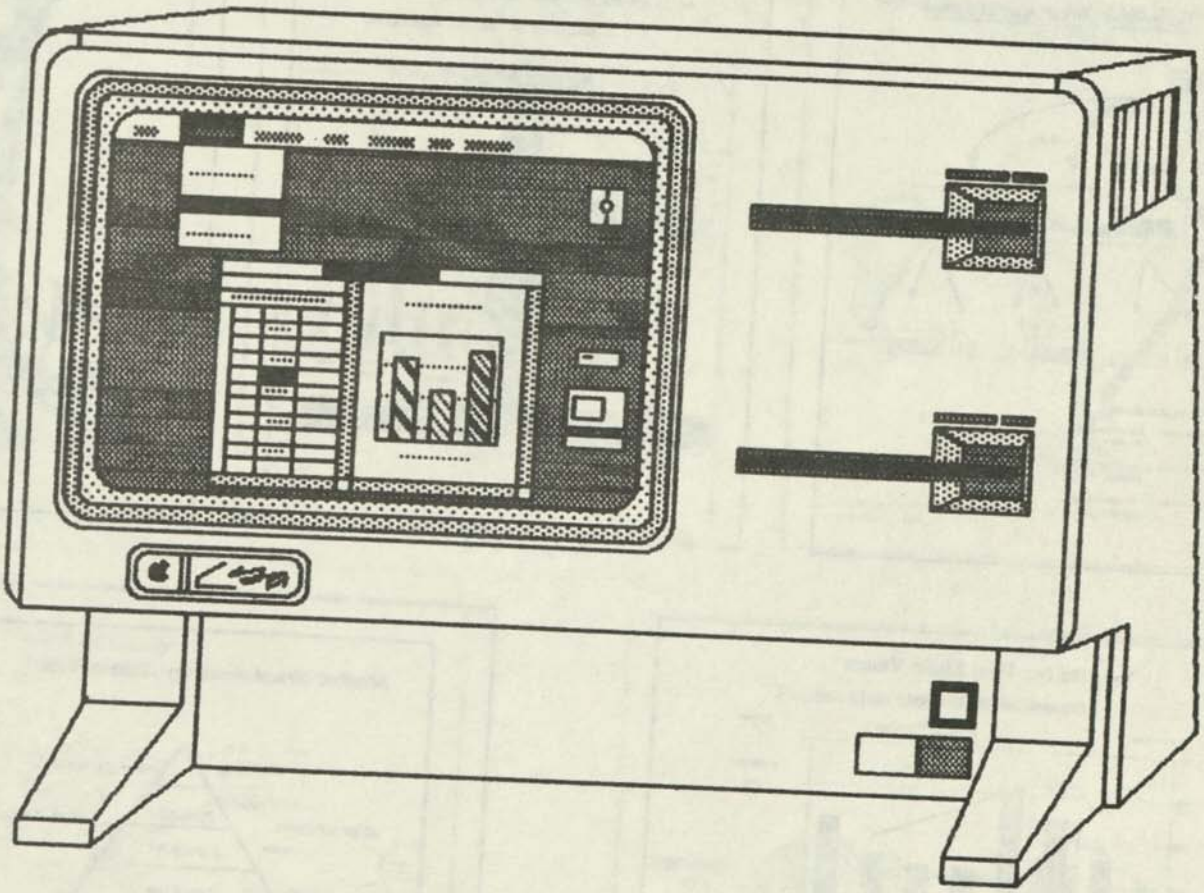
Lisa follows the way you actually work in the office. It's not another personal computer. It's a personal office system. And it's nothing short of a revolution.

Lisa



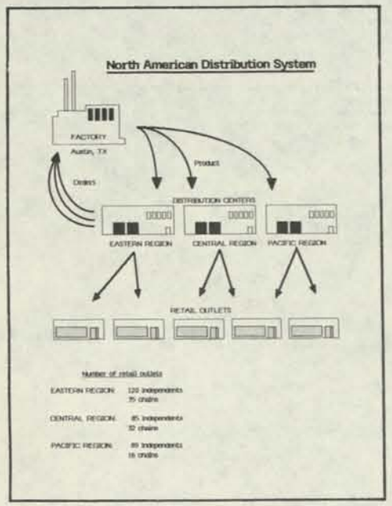
apple computer, inc.

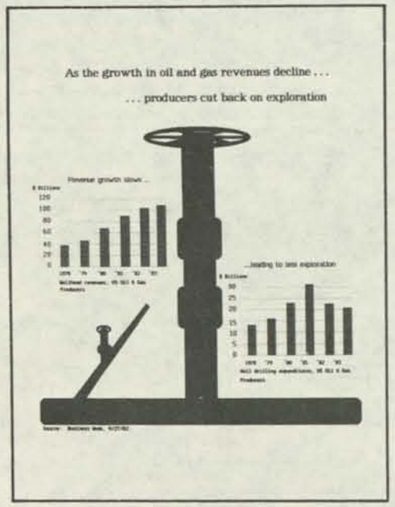
Lisa

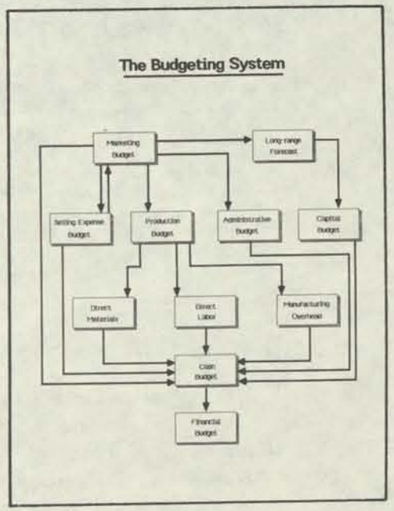


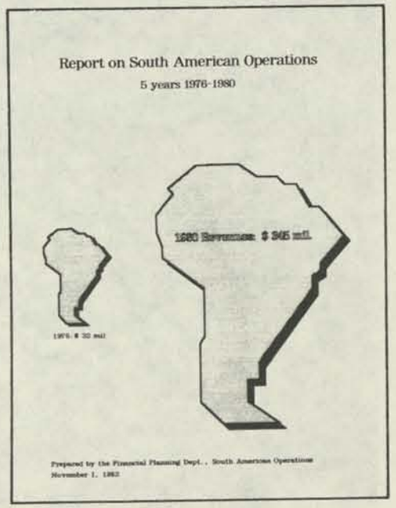
apple computer, inc.

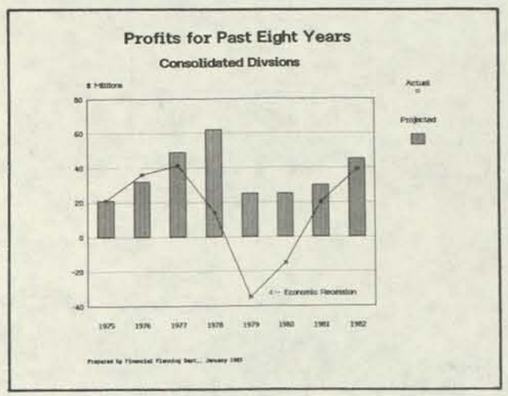
Lisa

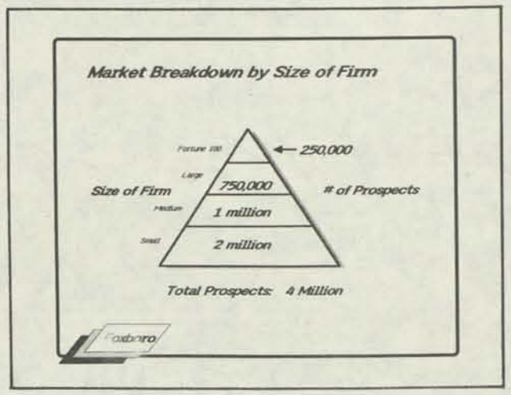

North American Distribution System
FACTORY
Austin, TX
Product
Orders
DISTRIBUTION CENTERS
EASTERN REGION
CENTRAL REGION
PACIFIC REGION
RETAIL OUTLETS
Number of retail outlets
EASTERN REGION 120 independents
75 chains
CENTRAL REGION 85 independents
32 chains
PACIFIC REGION 89 independents
16 chains

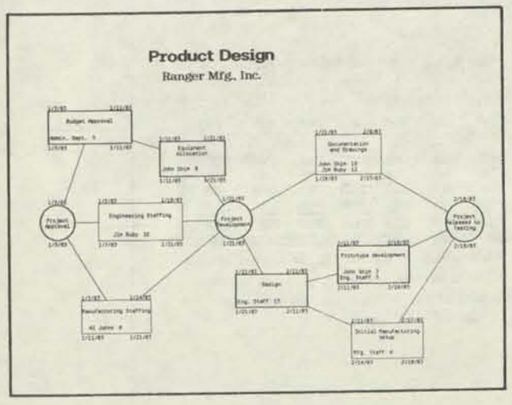

As the growth in oil and gas revenues decline . . .
. . . producers cut back on exploration
Revenue growth slows ...
...leading to less exploration

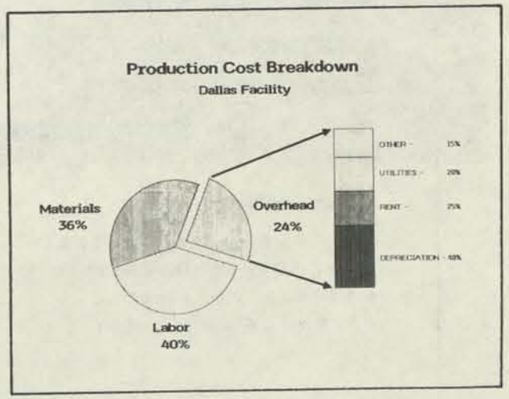

The Budgeting System
Marketing Budget
Long range Forecast
Selling Expense Budget
Production Budget
Administrative Budget
Capital Budget
Direct Materials
Direct Labor
Manufacturing Overhead
Cash Budget
Financial Budget


Report on South American Operations
5 years 1976-1980
1980 Revenues: $ 945 mil.
Prepared by the Financial Planning Dept., South American Operations
November 1, 1982


Profits for Past Eight Years
Consolidated Divisions
$ Millions
Actual
Projected
<-- Economic Recession
1975 1976 1977 1978 1979 1980 1981 1982
Prepared by Financial Planning Dept., January 1983


Market Breakdown by Size of Firm
Fortune 100
Large
Medium
Small
250,000
750,000
1 million
2 million
Size of Firm
# of Prospects
Total Prospects: 4 Million
Foxboro


Product Design
Ranger Mfg. Inc.


Production Cost Breakdown
Dallas Facility
Materials
36%
Overhead
24%
Labor
40%
OTHER - 15%
UTILITIES - 20%
RENT - 25%
DEPRECIATION - 40%

Lisa

TYPESTYLES FOR EVERY NEED !

Lisa gives you a typestyle for your every need. Moreover, the quality of your final documents from any Lisa application surpasses that of any personal computer.

11 Sizes and Faces

Gothic 15 pitch
Elite 12 pitch
Modern 12 pitch
Courier 10 pitch
Modern 10 pitch
Modern proportional spaced
Boldface proportional spaced
Classic 1/4" tall
Modern 1/4" tall
Classic 1/3" tall
Modern 1/3" tall

And Numerous Styles

Regular *Italic*
Underline Bold
Hollow **Shadow**
And *combine* **different** ***styles***

Foreign and special characters:

{ } | \ ` ~ Ä å Ä ä á à ã â Ç ç É é è ë ê
í ì î ï Ñ ñ Ö ö ó ò õ ô Ü ü ú ù û ¡ ™ £ ¢
∞ § ¶ ª º ± ≠ ' ∑ ® † ¥ Ø ø ∏ π µ « »
ß ð ƒ © Δ ¬ … Æ æ Ω ≈ ∫ ∫ ≤ ≥ ¿ •

So what does it buy you ?

Create more professional-looking reports:

Executive Summary

Results for the quarter were excellent! But we need to look at the following areas:
- South-central area - *sales down 23%*
- Ratio of headcount to sales expenses up
- Should we revise the Q3 forecast ?

Generate overhead slides for presentations

NATIONAL SALES MEETING
Agenda
- Introduction - R. Duncan, VP Sales
- Eastern Area - T. Phillips, Eastern GM
- Western Area - C. Queen, West GM

Fit more data into your models or lists:

ACE SPORTS, INC. 1985 FORECAST

	JAN	FEB	MAR	Q1	APR	MAY	JUN
Part No.							
001-231	4400	3200	3400	11000	3200	3300	3750
001-232	340	350	310	1000	360	360	360
001-233	600	600	600	1800	650	650	650
001-234	1240	1275	1325	3840	1400	1350	1350
Subtotal	6580	5425	5635	17640	5610	5660	6110

With the 15 pitch typestyle, you can fit 132 columns of data on a normal 8 1/2" x 11" page. No other personal computer can offer this kind of flexibility. You can even print on 8 1/2" x 14" and 14" x 11" paper.

This is Lisa at work. You use the system in the same spontaneous way you handle office work at your desk.

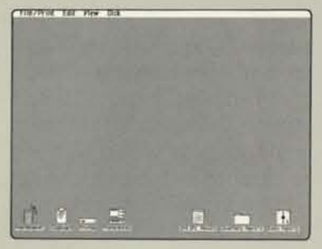
You control the entire system instinctively with a clever device called a mouse. Use it to point to the graphics and words on the screen. When you select what you want, Lisa responds instantly.

The system lets you work with different kinds of business applications and information simultaneously (shown here are LisaGraph, LisaCalc, and LisaWrite). The system also lets you move information between documents, cutting it from one and pasting it into another. You do it all with just a few moves of the mouse.

You can do more by moving the graphic symbols themselves. To store a document, for example, use the mouse to move the document symbol onto a folder symbol. To throw out a document, move its symbol onto the wastebasket. The combinations are instinctive and fast.

Your eye, your hand, and your natural way of doing things. Lisa follows them all. That makes Lisa the one personal system you already know how to use.

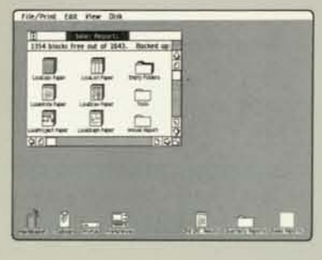
When you use the Lisa system, you work with a remarkable combination of features that no conventional personal computer has. Because they work together so naturally, however, you may not notice them all. What you certainly will notice is the system's simplicity and power.



The Desktop Manager

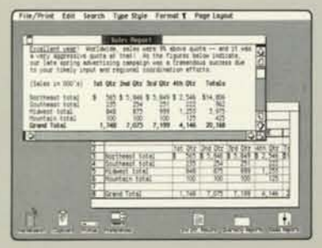
1. At the heart of the system, the Desktop Manager automatically coordinates all operations. It organizes the system's functions with these graphic symbols and, at the top of the screen, the menu bar.

Using the mouse and the symbols, you can select any file folder stored on disk, select any application, throw out old information, or cut material from one document and paste it into another.

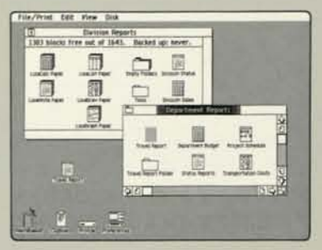


2. With Lisa, you literally see what's saved on any disk. Select a disk symbol with the mouse and a "window" expands to show the disk's contents. Selecting these newly revealed symbols, in turn, lets you start new work, revise work in progress, or put documents in file folders.

3. The most natural way to work with figures is to find a pad of paper, tear off a sheet, put it on your desk, and begin. The Desktop Manager lets you use Lisa the same natural way. Select the LisaCalc paper symbol and a single sheet is automatically detached. Prepare the sheet for work by labeling it ("Regional Sales," in this example) and then select it with the mouse. A window expands as in 2. The menu bar automatically changes to show LisaCalc operations. Everything is ready for work.



4. The Desktop Manager lets you work with different kinds *of documents simultaneously. Using only the mouse, in seconds you can cut material from one document and paste it into another.*



5. You can reorganize all stored information by rearranging the symbols with the mouse. When documents and folders are grouped the way you want them, press the mouse button and the Desktop Manager automatically does the rest.

The Mouse

This simple device is used for almost all operations. The keyboard is just for typing.

The mouse controls a pointer on the computer's screen. You move the mouse with one hand — on the screen, the pointer matches the mouse's movements.

Using the mouse, you can instinctively point to any image on the screen. To select any operation, just point to the image — symbols, menus, and so forth — and push the mouse button. Instantly, that operation begins.

The mouse and the natural movement of your own hand. They're all you need to control Lisa.

The Learning Advantage

Each of Lisa's applications has a menu bar at the top of the screen. Many items in the menu bars are common to all — File/Print, Edit, and Typestyle, for example — and always work the same way. That means learning to use one application teaches you how to proceed with another. And another and another.

The menu bar lets you actually learn to do useful work with an application in 20 to 30 minutes. In less time than it takes to learn a typical personal computer program, you can learn to use *all* of Lisa's business tools.

Integrated Software

Lisa coordinates its six business applications — LisaCalc, LisaList, LisaProject, LisaWrite, LisaGraph, and LisaDraw — in a way no personal computer can match. Lisa lets them share information. In seconds, you can examine data in all kinds of ways by transferring it from one document to another.

When you use LisaWrite to write an important cost analysis report, for example, you can also include any LisaCalc spreadsheet that proves your point — on the page you want, in the paragraph you want. Using LisaGraph, you can show the same figures in graph form, too, to make your point even clearer.

Lisa makes this kind of effective communicating practical because Lisa makes it radically simpler and faster to move information from document to document. Cutting financial data from a LisaCalc table, for example, and pasting it into a LisaWrite report can be done in seconds with the mouse.

No conventional personal computer can begin to approach such simplicity and power.

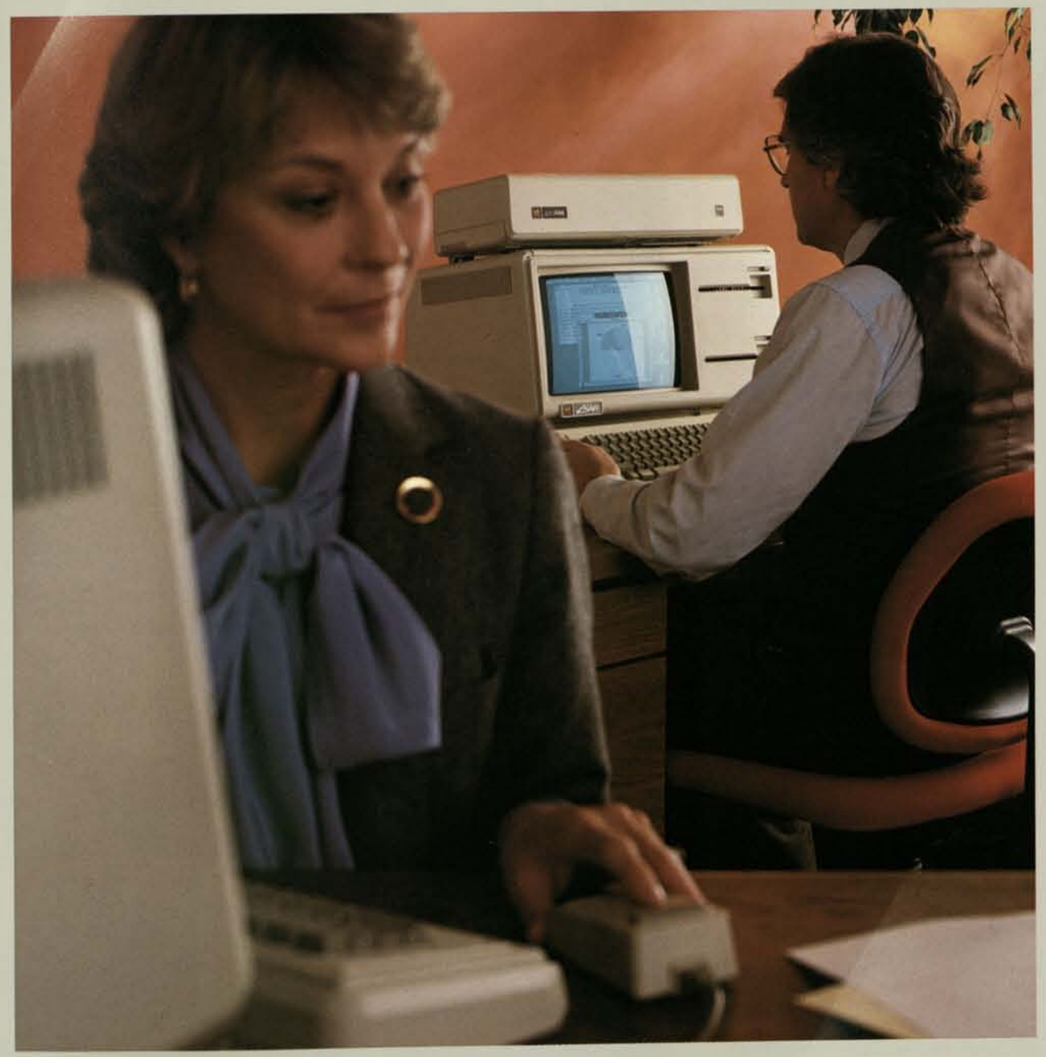
Lisa follows the way you work. And it follows the way your entire company works, too. In small firms, large firms, even rapidly growing firms, Lisa has the power and flexibility to go to work right now.

At your desk, the powerful Lisa system is remarkably easy to use. Yet it accommodates even the largest individual projects. You can add printers, more storage, and data communication, whenever it suits your plans. And if your plans are big, Lisa will expand into an advanced, cost-effective network. One that can cover your entire organization.

Lisa can follow your need for software, too. Six comprehensive applications handle the most important business functions —spreadsheet modeling, list management, project management, word processing, business graphics, and presentation graphics. And they're just the start. When you need to develop your own programs, Lisa's languages and advanced development tools help you put together all the software you need. And every day, more software and hardware are being developed to increase Lisa's power and flexibility.

Service is flexible, too. Lisa is backed by service and support that keep you running smoothly, day and night, no matter how your needs change.

All this makes Lisa perhaps the most comprehensive, cost-effective personal computer you can own—now, and years from now.

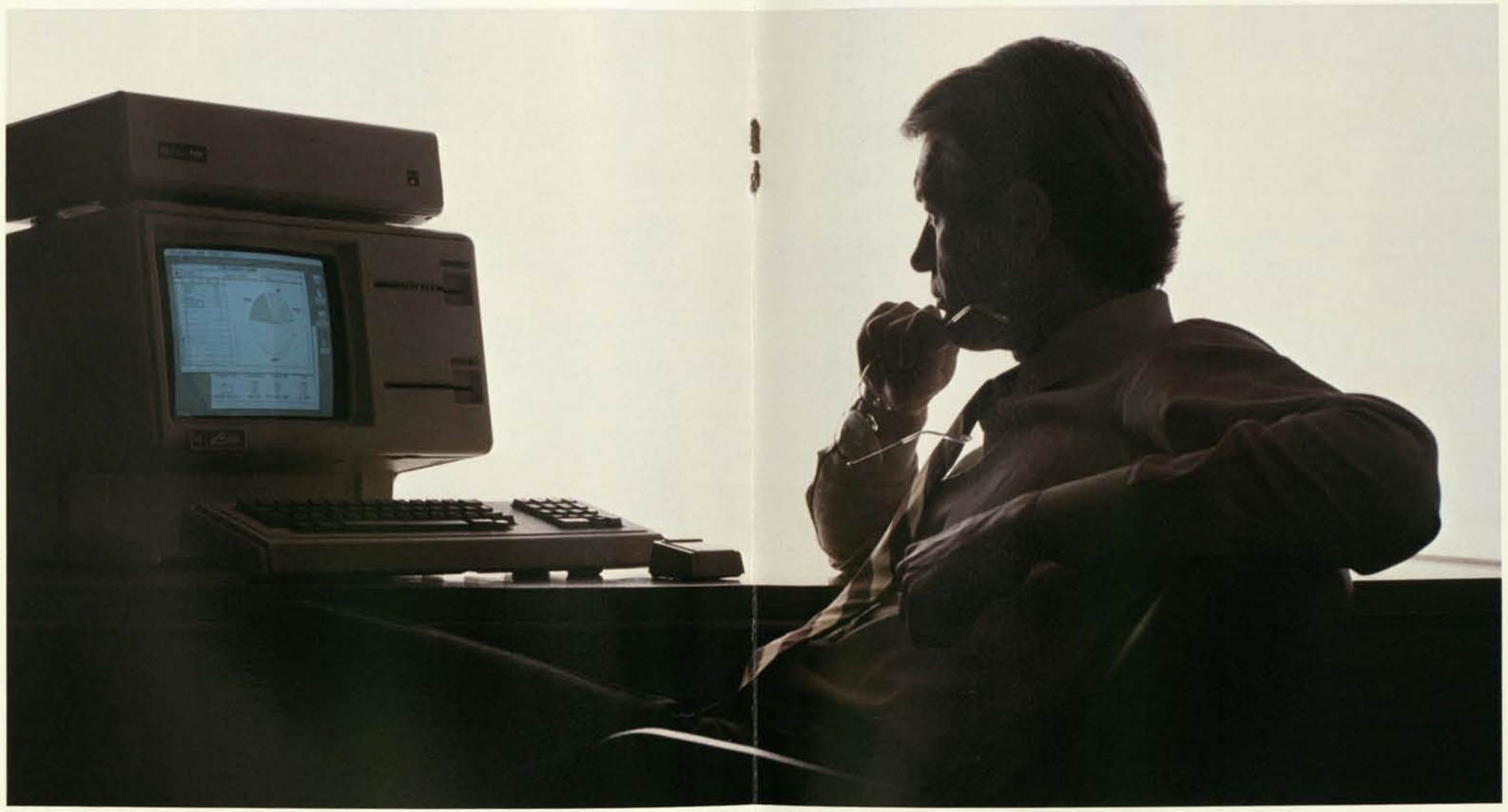


Measured by the standards of technology and the demands of business, the Lisa system is formidable. The main processor is among the most advanced available. Main memory holds a million characters. Built-in and plug-in disk drives store millions more. And the entire system can be expanded in extraordinary ways.

At the same time, Lisa's technical strength serves one straightforward business demand—the demand for an affordable, simpler, far more effective personal computer.

It's for business reasons, for example, that Lisa's main circuit boards and disk drives are plug-in modules. That makes repairs fast and inexpensive. Lisa also automatically dims the screen when your work is interrupted. That prolongs screen life. And when you turn the system off, it automatically stores your work before it shuts down. That protects your irreplaceable business information. When you next turn the system on, your work reappears *exactly* as you left it.

The Lisa system is high technology made simple. And that makes it effective.



The Screen
Lisa's 12-inch, bit-mapped, black-on-white screen displays 364 lines of 720 dots each. That lets you create extraordinary graphics and up to 132 columns and 40 rows of sharp, clear text.

Most important, the screen makes it easy to produce office work that communicates. What you create on the screen—text in a wide range of sizes and typestyles, proportional spacing, even elaborate graphics—is precisely what you'll see in print.

Storage
All business applications and information files are instantly available because they're stored on ProFile,™ Apple's five-megabyte high-speed hard disk. Two built-in 5¼-inch double-sided floppy disk drives handle an additional 1.7 megabytes of data and let you quickly copy new information into ProFile, make backup copies of files, perform automatic system tests, and use additional languages and programs.

The Keyboard
It's standard and simple—the mouse replaces the confusing special function keys that crowd other computer keyboards. Lisa's keyboard also has a numeric keypad and many advanced ergonomic features.

Powerful Plug-ins
At the back of the system are three outlets for plugging in printers, modems (including auto-dial/auto-answer), and hard-disk storage. There's also a composite video jack for special equipment like external monitors.

Three internal expansion slots let you add specialized equipment. They'll also let you plug Lisa into AppleNet,™ the cost-effective Apple network.

System Growth
A Lisa system grows to fill increasing demands—including those of large organizations. Lisa is designed to grow into a complete network of systems sharing storage, printing, and critical information throughout your entire company.

Simple Service
Inside the system, components are organized into simple plug-in modules—five basic circuit boards and two disk drives. Using Lisa's self-diagnostics software, defective modules can be identified, unplugged, and replaced in seconds.

Advanced Design

Lisa is self-contained, has no fan, and uses less desk space than most conventional personal computers. The mouse and keyboard are both separate from the console, so you can position them comfortably. The mouse controls the entire system. The keyboard is just for typing.

The system's 32/16-bit central processor (the MC68000) has the capacity to handle even large office projects fast. Three additional processors—for the keyboard and disk drives—make the whole system extremely responsive.

Lisa's one-megabyte main memory easily accommodates even the heaviest work loads—major reports, exhaustive lists, huge spreadsheet tasks, and more.

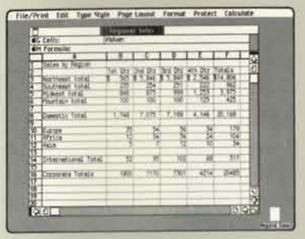
When you do office work, you do several things at once. Lisa is made to do the same. Its multitasking design lets you print a report, for example, while doing other important work on the screen.

Lisa's business applications are prodigious office tools that streamline all your work—from forecasting and project management to report writing and presentations.

But Lisa's software does much more. Unlike conventional programs, Lisa's applications work harder by working together—information can be cut from one and pasted directly into another. For example, you can instantly clarify complex LisaCalc data by pasting it into LisaGraph. You can also insert the data into reports, right where you need it. The possibilities are endless. Cutting and pasting are done simply, in seconds, using only the mouse.

All of Lisa's applications work the same way. Learn one program and you'll learn the next even faster.

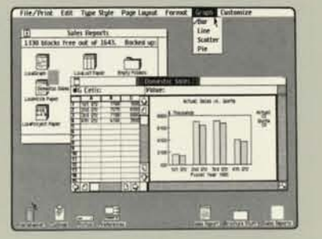
Lisa's integrated business tools make a whole that's greater than the sum of its parts. That gives you a business advantage that no conventional personal computer offers.



LisaCalc

From budgets to forecasts to technical models, LisaCalc helps you with all kinds of calculations and analyses. Put your numbers and formulas in the displayed columns-and-rows spreadsheet and LisaCalc does the rest. You can calculate—and instantly recalculate—intricate problems to quickly find answers you need.

LisaCalc's spreadsheet format is big enough to handle the largest projects—255 columns by 255 rows. At the same time, LisaCalc calculates to 15 digits to provide the most precise data. Any column can display data in 10 different formats and be quickly expanded, contracted, and repositioned.

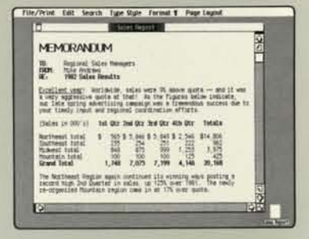


LisaGraph

LisaGraph turns complex data into easy-to-understand graphs.

Unlike other graphics programs, LisaGraph lets you see both graph and data at the same time. On the screen, a spreadsheet is displayed next to the graph. When you enter numbers in the spreadsheet, LisaGraph plots them automatically. LisaGraph makes five kinds of graphs—bar, line, mixed bar/line, pie, and scatter. It also plots up to seven data sets on a single graph.

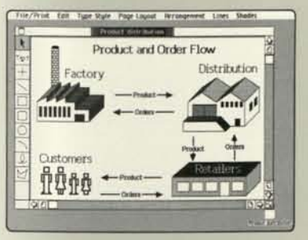
LisaGraph automatically plots whole blocks of data when you cut and paste numbers from LisaCalc. In turn, graphs can be cut and pasted into LisaDraw for extensive graphic customization.



LisaWrite

LisaWrite gives you responsive, personal word processing for everything from the shortest memos to the longest reports. With the preview feature, you can review final line spacing, page breaks, headers and footers, and more before you print a document. Perfect final drafts are routine because what you see on the screen is exactly what you get on paper.

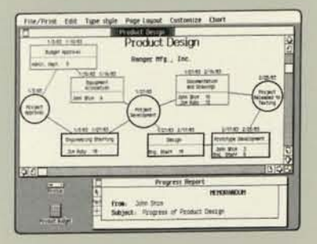
Editing is extremely fast and easy and can be done with the mouse or the keyboard. Special features are easy to use, too. Using the mouse, you can create bold, italic, and underlined text in a wide variety of sizes and typestyles.



LisaDraw

With the right pictures, reports and presentations become shorter, clearer, easier to prepare, and far easier to understand. LisaDraw helps you do all that. And it's easier to use than a pencil and paper.

LisaDraw actually lets you draw perfect flow charts, technical diagrams, designs, maps—almost any illustration your work requires. LisaDraw lets you use the mouse to assemble lines, rectangles, circles, and much more, in any size and combination. You can even draw freehand.



LisaProject

At last there's a tool that helps you manage complex project schedules and ask important "what if" questions about time and resources.

Modeled on the PERT project management technique, LisaProject automatically keeps track of the complicated interdependencies within large projects.

LisaProject lets you use the mouse to chart a project's critical path. When you change deadlines and resources, LisaProject automatically recalculates the entire project. You see immediately what effects those changes will make.

LisaList

Client lists, competitive product information, job candidate data, and other records are packed with useful information—if you can extract it. With LisaList, you can.

Using LisaList, you can instantly search and sort any list for the information you need. LisaList makes it simple, too, because it's all done with the mouse. Columns can be added or deleted, expanded or narrowed, repositioned and even displayed or hidden at any time without re-entering data.

What a single Lisa system does is impressive. But what many Lisas can do together is nothing short of amazing.

Your own Lisa system gives you powerful, spontaneous help for every personal office task, from writing brief memos to making large financial models.

The same system can bring massive amounts of valuable information to your desk by giving you access to mainframe data libraries almost anywhere. Lisa makes it easy, too. As always, you use the mouse.

And when your system works with other Lisa systems, the benefits expand dramatically. Lisa systems can be linked together with AppleNet, the Apple network. Immediately, an entire department can work together as never before, spontaneously sharing and combining information in powerful new ways. When several departments are linked to several more departments, the effect is multiplied. The larger the company, the greater the effect.

The Personal Lisa

Lisa's effectiveness starts as soon as you plug it in. The system performs all the powerful functions you need with stunning simplicity. Surprisingly, it's priced like many conventional personal computers. Even if your department's budget is limited, you can put Lisa to work in your office now.

More Storage

Adding even more storage is simple—just plug in more ProFiles. You can attach several, adding them one at a time as you need them.

Languages

Lisa runs powerful versions of Pascal, BASIC, and COBOL, so you can run as well as write business programs in those languages. Using the Lisa Applications Development Tool Kit, programmers will be able to create Lisa-style programs and extend Lisa's powers even further.

Printer Breakthrough

With its dot matrix and daisy wheel printers, Lisa produces printed materials that no similarly priced system can begin to match.

Lisa's dot matrix printer reproduces everything—manuscripts, charts, graphic designs—exactly as you see it on the screen. Its sharpness matches that of printers costing much more.

In high-resolution mode (160 x 144 dots per inch), this printer does presentation-quality work, with proportional spacing, bold, italic, and underlined type in 11 different sizes and styles. Draft mode prints lists and reports at 120 characters per second. All work can be done in vertical or horizontal formats.

Lisa's daisy wheel printer does more, too. Like the dot matrix printer, it produces exactly what you see on the screen—including graphics that are far beyond the ability of any other daisy wheel printer. New multipitch and multifont printwheels, plus a unique wheel that generates 168 characters, give you more printing convenience and flexibility because they last longer and do more than conventional wheels. Lisa's daisy wheel printer prints 45 characters per second.

Both printers are ready to run when they're plugged in. Both handle cut sheet and continuous form paper. And both are simple to configure, using the mouse.

Data Communication

Lisa can share information with a broad range of sources. Through a plug-in modem, Lisa communicates with commercial databases, such as Dow Jones News and Quotes and MicroNet, and with other microcomputers.

With characteristic simplicity, Lisa also acts as a terminal for corporate mainframes, central minicomputers, or virtually any other large computer system.

Using the LisaTerminal program, Lisa does the work of VT100, VT52, or TTY terminals. LisaTerminal works simply, like all Lisa applications. Use the mouse to point to operations on the familiar pull-down menus. If you want, you can cut-and-paste mainframe information into LisaWrite and vice versa.

With the 3270BSC protocol and, later, with Lisa 3270SNA, you'll be able to communicate with virtually any other computer, including systems from IBM.

AppleNet

Any Lisa system can become part of a powerful Lisa network through AppleNet.

AppleNet, the Apple network now in development, will link together Lisas and other Apple systems. With AppleNet, the right information gets to the right people instantly. AppleNet can start small and, as the need arises, expand to cover an entire corporation. And AppleNet is designed to be flexible, fast, inexpensive, easy to install, and reliable.

More to Come

New software and hardware will continually expand the Lisa system's effectiveness.

Apple has planned an entire family of system, data communication, and network devices. Other developers are already at work on Lisa's future as well. The advanced Lisa Applications Development Tool Kit, created to make extensive software development easy, is also on the way.

Support and service for Lisa are as flexible and comprehensive as the system itself.

Lisa instruction, for example, is efficient in organizations of any size. With the system's innovative self-teaching materials, a single user can put Lisa to work in less than 30 minutes. Conventional self-instruction takes about ten times as long. And if whole departments need to learn en masse, Apple can provide complete training programs—and even help your business develop its own specialized programs.

Service for Lisa is just as broad. You can get fast, economical service for a single system or a corporation's entire network. You can even set up your own service department. Apple will provide all the training and supplies.

In a word, no matter how you put Lisa to work in your company, you'll have support and service that work the way you want.

Learning Time— Yet Another Breakthrough

Lisa's training materials are as simple and intuitive to use as Lisa itself. By loading a single training disk into the system, you try Lisa immediately and, at the same time, learn to use the Desktop Manager. Then you start learning business applications. Each application's brief pictorial guide, called "Getting Started," teaches you to do useful work with that application in 20 to 30 minutes. Less than a half-hour. There's nothing like it for conventional computers.

When you want additional instruction, other self-teaching materials provide more information and quick, clear answers to a host of specific questions.

Corporate Training

Apple can give self-paced, self-testing courses to an entire organization. Or Apple can help your company set up its own specialized training program.

Carry-in Dealer Service

You can get fast, low-cost service for any Lisa system by simply taking it to an authorized Lisa dealer. Usually, your dealer services your system while you wait.

Service and Support by the Numbers

When you need help, it's available through the toll-free Lisa phone number.

Call when you need answers about any part of the system. You'll reach a Lisa specialist immediately.

Call when you need on-site repairs. Complete Lisa service can be there in four hours or less. Any hour, seven days a week, if need be.

Call when you want to stop calling altogether—Apple can help your company set up its own Lisa service and support department.

The Lisa System. You Should Know More.

It's the only personal computer that works the way you do. To learn how you can put Lisa to work in your office, call Apple at 800-662-9238. We'll give you the phone number of the national accounts office or authorized Lisa dealer in your area.

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Specifications

Display:
- 12-inch screen (measured diagonally).
- Full-screen bit-mapped display:
  - 364 lines by 720 dots.
  - up to 45 lines of 144 characters.
- 60 Hz refresh rate.
- 64 levels of contrast under software control.
- Glare-reducing screen (enhances contrast).

Keyboard:
- Detached, IBM Selectric® type with N-key rollover.
- Sculptured keytops (textured, non-slip, non-glare).
- Numeric keypad with raised dot on 5 key for quick positioning.
- Full ASCII character set with up to 76 keys.
- All keys programmable for special characters or functions.
- Smart interface with control-oriented processor.

Mouse:
- Extremely fast, intuitive cursor positioning.
- Works well on any surface.
- Simple one-button design eliminates confusion and the need to learn commands.

Disk storage:
- 860K bytes (per drive) formatted storage (1.4 megabytes unformatted).
- 62.5 tracks (10,000 bits) per inch.
- Automatic head loading.
- Automatic disk eject under software control.
- Smart interface with 6504 processor.

Main processor:
- MC68000 32/16-bit CPU:
  - 32-bit internal architecture.
  - 16-bit external data path.
  - 7 levels of interrupts.

Real-time clock:
- Software on-off control.
- Interval and event timing.

Main memory:
- 16K bytes of boot ROM.
- One megabyte of RAM.
- Parity error detection.

Memory management:
- Permits operating system to relocate segments in memory.
- Provides access controls for blocks of memory.
- Segmentation into 128 variable-length blocks dynamically controlled by memory map table.

Communications interface:
- Two serial ports:
  - —Intelligent controller:
    - —full-function, programmable (asynch, bisynch, SDLC, HDLC).
- RS-232C with half- or full-duplex channels.
- Full modem control and ring indicator on one channel.
- Software-programmable Baud Rates.
- One parallel port:
  - —6522 interface adapter.
  - —8-bit bidirectional with handshake control.

Audio output:
- Built-in speaker with software-controllable tone generator.

Expansion board slots:
- Three slots.
- Zero-insertion-force connectors.
- Direct connection to system bus.
- DMA capability.
- Memory-mapped I/O.
- Vector interrupt capability.
- Direct connection of power supply:
  - digital ground.
  - +5 V, +12 V, −12 V, −5 V (100 mA max).
  - allows up to 15 W total (maximum rating) for all three cards.
  - +5 V standby (at 50 mA) per board.

Weight and dimensions:
- Computer console:
  - Weight: 48 lb. (22 kg).
  - Height: 13.8 in. (350 mm).
  - Width: 18.7 in. (475 mm).
  - Depth: 15.2 in. (388 mm) [16 in. (403 mm) with keyboard under front].
- Keyboard:
  - Weight: 4 lb. (1.8 kg).
  - Height: 2.7 in. (68 mm).
  - Width: 18.7 in. (475 mm).
  - Depth: 6.5 in. (165 mm).

Power requirements:
- 115 or 230 V AC.
- 48 to 68 Hz.
- 270 W (maximum).

Environmental requirements:
- Ambient temperature: 40°–108° F (5°–42° C).
- Relative humidity: 15–80%, noncondensing.

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APPLE COMPUTER

professionally speaking

An Information Service For The Professional

Volume 2 No. 1

Introducing LISA—Apple's Personal Computer for the Office

By Linda Goffen

For most of us who work in offices, the term "automated office" is a little like space travel. We're not really sure how it all works, but we think it would be exciting to participate—to become a super-person with the help of technology. It's a little frightening to think about because it means changing the way we work, but it really hasn't touched our lives yet.

Now Lisa, Apple's revolutionary new personal computer for the office, is going to make the automated office as familiar and comfortable a reality as our own automobiles.

Lisa is dramatically easier to learn than any other system. Its functions cover the full spectrum of office applications, from word processing to project scheduling, but—here's the best part—we don't have to change the way we work because Lisa works the way we do.

Lisa is Apple's new 32/16-bit personal office system. Its design is based on a completely different relationship between the user and the machine. You don't have to learn rigid computer commands and procedures: Lisa's hand-size device (called the "mouse") that controls Lisa's pointer (cursor), together with images on the screen of familiar desktop objects, are all you need to control the system. The mouse is connected to Lisa by a thin cable. When you move the mouse, you move the pointer on the screen as well. You simply use the mouse to move the pointer to the image you want to choose or "select" on the screen. Then just press the mouse button to select the object or function you want. The keyboard is just for typing. In less than 30 minutes, you can be doing useful work.

Lisa's radical simplicity is matched by its power. A range of comprehensive business tools covering the tasks performed by office professionals are available on the system. Each application is part of a "Local Integrated Software Architecture." (Put the initials together to see how Lisa got its name.) It means, simply, that the applications can "talk" to each other and trade information. Just as you work on several projects at a time at your own desk, Lisa accommodates multiple projects on the screen and allows you to move information among them easily and instantaneously.

Unmatched Hardware

At the heart of Lisa is its main processor, the MC68000, the most highly acclaimed chip of recent years. It combines software, display, keyboard, mouse, and peripherals into the most versatile, easy-to-use system yet devised. Lisa is configured with one megabyte of memory. The two built-in floppy-disk drives provide 1.7 megabytes of formatted storage capacity. These are supplemented by ProFile, Apple's 5-megabyte hard disk. Further hard disk capacity can be added.

On your desk, Lisa is quiet and unobtrusive. Advanced human engineering makes Lisa superior to existing machines in numerous ways. Its operation is silent because it's cooled by convection. It has a standard type-

(continued page 2)

In This Issue:

Introducing Lisa—Apple's PC for the Office

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Using the Microcomputer at Coopers & Lybrand

Arthur Young Model Enhances Law Firm Planning

Can Managers Be Taught to Plan and Make Effective Business Decisions?

Software Partners for Accountants and Professionals

MiniMax Helps Hospitals

Getting to the Core of Personal Computing

Industry Bulletin—Is Your Programmer an Employee or Independent Contractor

Resource Section

New Products Section—New Printers and Apple *IIe*.

Letter from the Editor

SeaCas: A Microcomputer Tool for Audit Automation

By Richard D. Webb

The availability of software has been the driving force in the microcomputing revolution. *VisiCalc*—credited with bringing the power of computers to desktops—and other accounting and inventory-control programs stimulated use of the microcomputer in the office environment. But there has been a general lack of software specifically designed for auditors.

There are numerous application programs available to the business user for processing accounting information and summarizing accounting records. Effective programs have not been available, however, to assist the auditor with the audit of those records and the analysis of client information.

(continued page 3)

writer keyboard—the mouse replaces special function keys—though all keys are programmable, should you need them. The 12-inch, bit-mapped, black-on-white screen lets you create extraordinary, high-resolution graphics and up to 132 columns and 40 rows of sharp, clear text.

With three interface ports—two serial and one parallel—Lisa can fill a multitude of roles. Simply plug in printers, modems (including auto-dial/auto-answer), and more. Apple offers software that enables Lisa to emulate a DEC VT100 or VT52 terminal, an IBM-compatible terminal, or a teletype terminal. And, when linked to AppleNet—Apple's local-area network system—Lisa makes it possible for users to share peripherals, information, and ideas.

Super Software

The real story behind Lisa, however, is its software. Apple invested more than 200-person-years of programming development to create a product that new users could learn to operate in 20 minutes. The idea behind Lisa is to make office computing easy to learn and to enable users to combine Lisa's results in a variety of forms and attractive formats.

On Lisa's screen are pictures of familiar office objects, like file folders and memo pads—even a wastebasket. Using the mouse, you simply point to the image you want on the screen and press the mouse button to "select." Lisa does the rest. With incredible speed and simplicity—without the usual computer gobbledygook—you handle every operation you need.

Other personal computers handle one task at a time. One application's commands and procedures often bear little resemblance to those of another. It is difficult and time consuming to transfer information from one application to another, if it is possible at all. When such a conventional system is introduced into your office, you are the one who must change your work habits and methods to fit the system.

Lisa, on the other hand, is designed to mirror the way you work—doing several tasks at once, looking at results side by side, moving information from one document or folder to another—and do it fluidly and instantaneously. Using the mouse and Lisa's graphics, you can do all of the following:

- Select and operate any of six powerful office applications,
- Move information from one application, such as LisaCalc, to another, such as LisaWrite,
- Examine, reorganize, and revise the contents of any file,
- Run modems, printers, and other peripheral devices,
- Emulate mainframe and minicomputer terminals,and
- Make use of Lisa networks.

Six Standard Applications

Lisa's six core applications cover the major tasks you perform in your office. Time spent learning one application means less time learning another because basic functions (such as editing, moving, and copying) work the same way in all applications. Once you become familiar with one, you learn succeeding applications quickly and easily.

LisaCalc, a spreadsheet application, can be used for budgets, forecasts, and technical models. Even sheets as large as 255 columns by 255 rows, can be created. Calculations can produce numbers up to 15 digits long.

Long reports and documents, or short letters and memos are prepared with the aid of LisaWrite. It supports bold, italic, and underlined type styles, as well as a large combination of type fonts, or faces. Before printing a document, you can preview it on the screen. Line spacing, page breaks, headers, and type faces are all displayed exactly as they will appear on your printed document. With Lisa, what you see on the screen is exactly what you get on paper.

LisaGraph makes short work of turning complex data into easily interpreted, vivid graphs. An important feature is Lisa's display of both graph and data together on the same screen. Pie, bar, line, mixed bar/line, and scatter graphs are created automatically and are instantly updated as you enter and modify data in the spreadsheet. You can even take spreadsheet models out of LisaCalc and transfer them to LisaGraph to graph critical information and make it immediately understandable.

Pictures and diagrams add depth to documents and are the basis of presentations to your colleagues and customers. LisaDraw allows you to create flowcharts, diagrams, schematics, organization charts—even freehand drawings—as easily and quickly as you now write a memo. Lines, rectangles, circles, and other graphic elements can be combined, duplicated, moved, reduced, and expanded automatically. Even if you are one of those who "cannot draw a straight line," Lisa will make your graphics look terrific—it's like having your own private commercial artist available whenever you need one.

LisaList creates files with fast, easy access and powerful data reduction. Vast lists of information (employee records, customer information, sales statistics, manufacturing data—you name it) can easily be created, searched, and sorted. Columns can be added or deleted, expanded or reduced, without having to reenter the data. LisaList imposes access security, too, to protect sensitive files from anyone without proper authorization.

LisaProject, modeled after the PERT project management technique, helps you divide projects into small tasks and keep track of the overall schedule. It also helps you keep track of complicated interdependencies—even within large projects. With simple point-and-select procedures, you insert tasks, their timeframes, and resources (people's names). Then LisaProject assigns relative dates and establishes the critical path. If you change deadlines, resources, or dates, LisaProject recalculates the entire project schedule and updates it. Thus, you can see immediately what effect the changes will have. And for those of you who want to see project information in different formats, a single command in LisaProject converts your Schedule (PERT) chart to a Resource (Gantt) chart or Task chart.

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High-Level Programming Languages

Lisa also runs high-level versions of BASIC, Pascal, and COBOL. This allows you to augment Lisa's repertoire of applications with existing programs and with programs you write yourself, and lets you tailor software to meet your individual needs. A Lisa Applications Development Toolkit helps you render your applications with Lisa's unique graphics/mouse interface.

System Expansion, Support, and Service

While Lisa performs all its powerful office functions with stunning simplicity, it is priced like many conventional personal computers. And the system can expand to meet the growth requirements of virtually any size company. You'll be able to link Lisa to commercial data bases, such as the Dow Jones News/Retrieval Service, as well as to corporate mainframes, central minicomputers, and virtually any other large computer system. And soon you'll be able to link Lisas together and to other Apple systems, using AppleNet, the fast and reliable network from Apple.

Lisa's innovative self-teaching materials enable new users to put the system to work in less than 30 minutes. Self-instruction for conventional personal computers takes about ten times longer. An easy-to-follow reference manual and a self-paced, computer-based tutorial program dramatically shortens the time it takes to become thoroughly familiar with all of Lisa's capabilities.

While space travel may still be a few years off for most of us, the real potential of office automation can be realized today with Lisa. The only system that's more powerful is your own mind.

SeaCas (continued)

At Peat Marwick, we observed the use of microcomputers on audit engagements both within and outside the Firm. These observations and other research led us to develop *SeaCas* (Systems Evaluation Approach-Computerized Audit Support) to meet the needs of our audit professionals.

Prior to the implementation of SeaCas, the use of microcomputers on audit engagements within Peat Marwick was ad hoc. Each of our offices determined which equipment and software it would use and how various applications would be implemented. While this quickly resulted in a wide and growing use of microcomputers, software, and talent throughout the Firm, it also caused duplication of effort. With SeaCas, we standardized hardware and software and established guidelines for our auditors that focus our efforts on common, audit-oriented objectives.

We standardized on the Apple *III* equipment and we developed, for use within the Firm, the first of several proprietary software programs that meet the specific needs of our audit professionals.

Many of the manual functions that auditors perform are being computerized with the introduction of SeaCas.

SeaCas is directed toward automating the many manual tasks presently performed by the auditor. In addition, our computer audit software—System 2190—provides our auditors with an excellent facility to access client EDP records. We intend to continue to use System 2190 for that purpose. In other words, System 2190 is used to audit automation, while SeaCas automates the audit.

SeaCas Applications

The current and planned uses of SeaCas are many. They include:

Trial Balance And Financial Statement Processing

SeaCas permits more efficient, more reliable preparation and processing of audit trial balances (including posting audit adjustments and reclassifications) and drafting of financial statements with the use of software that we call the SeaCas Financial Statement Subsystem (FSS). On client engagements where trial balances have been prepared manually, implementing FSS reduces preparation

(continued page 4)

Letter from the Editor

Welcome to our anniversary issue! We are now celebrating our second year in publication. When we first began *Professionally Speaking*, we focused on the major accounting and consulting firms, and many of our contributing writers were partners from these firms. With increased circulation, however, and with subscriptions flooding in, our readers are now quite diversified, with professionals from all walks of life.

Apple's marketing department has expanded significantly in the last year and added a Small Business Development group which will address the hardware and software needs of the small business market. We hope this issue will be of particular interest to this market. If you have any questions about the group, please contact the manager of small business development Andy Paul at (408) 973-3246.

In addition, our Executive Programs group, which started with Professional Development Seminars for the major accounting and consulting firms, has increased its staff and is now expanding its scope to include the Fortune 1500 companies as well as major financial and government organizations.

To accommodate our many new readers, we have changed the newsletter's focus to be an "INFORMATION SERVICE FOR THE PROFESSIONAL," and we will welcome and encourage articles on applications from your individual professions.

If you are interested in contributing to this newsletter or if you have a specific resource which would be of interest to our subscribers, please take the time to fill out the enclosed subscription card.

Barbara Blumenthal
Manager, Executive Programs

time; in succeeding years, the trial balance, including accounts and prior period adjusted amounts, will already be in place.

FSS also permits quick and accurate updating of the trial balance and financial statements. When done manually, merely adding an adjusting entry to a completed trial balance can result in many hours of changing entries, crosschecking, and refooting. With FSS, adjustments can be made at any time and new, final, trial balances and financial statements can be prepared in minutes. FSS also produces lead-sheet workpapers for each financial-report caption, and prepares a financial-statement workpaper for purposes of analytical review.

Documenting and Evaluating Client Accounting Controls

(This is a significant audit feature.) By automating SEADOC, the Firm's unique approach to internal-control documentation and evaluation, our auditors will be able to complete this function more efficiently and with even more reliability.

Audit Programming

SeaCas will assist our professionals in designing for each client an efficient and complete audit program that takes into consideration all relevant factors. Through the integration of a variety of audit information, SeaCas will be able to consolidate and analyze data developed from such diverse sources as the trial balance, various other client files, SEADOC, detail workpapers, and public data bases.

Detailed Workpapers

Auditors have traditionally spent considerable time preparing detailed spreadsheet analyses. SeaCas assists in this preparation by providing automated mechanisms to handle detailed clerical functions. With an automated spreadsheet, auditors can improve the reliability of such workpapers and reduce preparation time.

Audit Confirmations

Confirmation preparation and control represent a time-consuming audit task that is assisted by computerization with SeaCas. Statistics regarding confirmations that have been mailed, received, or are still outstanding can be analyzed quickly, and additional information reports can be generated as needed.

Statistical Sampling

The Firm's statistical sampling capabilities, previously available only from a time-sharing network or produced manually, can be applied by auditors using SeaCas to provide timely and accurate information needed to prepare audit samples, analyze results, and complete audit test work.

Database Retrieval

Data related to the client's industry, including financial or product news and other relevant information, can be obtained quickly and efficiently by using SeaCas to draw directly upon public databases. This capability assists auditors in pricing client investment portfolios, comparing client and industry data, and preparing background information for client reports.

Financial Modeling And Analytical Review

Access to large industry and financial databases, coupled with the ability to recast financial data with "What if?" analyses are important for financial modeling and automated analytical reviews. SeaCas will facilitate meeting both of these requirements through its spreadsheet analyses and database access programs.

Electronic Mail and News Service

Utilizing electronic mail, SeaCas will instantaneously move information to where it is needed, across town or across the country. This capability will enable our auditors to communicate directly and efficiently with other offices involved in engagements, and eventually with outside parties, to achieve audit results faster. This system will also be used to communicate technical information and other background material to all Peat Marwick personnel.

Engagement Management

Audit administration will also benefit from SeaCas. Through access to operating office-scheduling and time-gathering databases, audit managers will have tools available for better execution of their engagement responsibilities.

Word Processing

SeaCas word processing is used by auditors to prepare audit and client memoranda, correspondence, and reports more efficiently. By combining word processing with other SeaCas capabilities, information from various workpaper and audit sources can be combined quickly and easily.

Accessing Client Computers

Peat Marwick's System 2190 computer audit software is an essential tool for computer auditing and will continue to be used extensively. However, as main-frame computers become more compatible with microcomputers, requiring less dependence on relatively slow communication lines, SeaCas will eventually incorporate System 2190 to access information directly from clients' EDP systems.

Major SeaCas Objectives

A major objective of SeaCas is that it be "auditor friendly." If the auditor already knows how to perform a task or process manually, it will be easy for that auditor to do it electronically with SeaCas because SeaCas uses familiar terminology and methods to guide the auditor through the processing. This concept is necessary if software designed for noncomputer users is to be quickly and successfully implemented.

Another objective of SeaCas is that it be self-documenting and require limited user reference materials. To achieve this goal, SeaCas includes three levels of instruction in the software: HELP, which is verbal and generally replaces a user guide; MENU, which prompts the user for commands; and COMMAND, which allows the experienced user to proceed directly to the designated work area of the program.

Since SeaCas is used in our audit practice, it must have effective controls. To accomplish this, the System provides appropriate totals, references, and instructions to the auditor. The auditor is instructed to label diskettes in a specific manner to permit backup and recovery if a diskette is damaged. SeaCas is also structured so the auditor would lose no more than fifteen minutes work if a sudden power loss were to occur. When the System is restarted, it guides the auditor back to the processing step being performed when power was lost.

Portability is also an objective of the SeaCas system since auditors will use it at client locations. Currently portability is achieved with the Apple *III*.

Commercial Software for Use With SeaCas

As previously mentioned, commercially available software packages are an integral part of SeaCas. We're providing our professionals with applications that use commercial software, including templates, forms, and programs that have direct audit applicability. These applications will be incorporated into the programs developed by Peat Marwick and presented to our auditors in the auditor friendly packages described above. The commercial software presently recommended for use with SeaCas includes programs in five areas:

- spreadsheet or modeling,
- data management and retrieval,
- communications,
- word processing, and
- business graphics.

We are using *VisiCalc III* and *Advanced VisiCalc* to prepare detailed workpapers and analyses of client accounts. *Quickfile III* is used for data management and retrieval in applications such as preparing and controlling client confirmations. We access public databases with the Micro/Terminal communications program for retrieving various types of audit information, including market quotations, industry data, and business news and information. With word processing, we prepare audit correspondence, such as workpaper memoranda and documentation, client correspondence, and reports. We currently use *Apple Writer III* and *Word Juggler* for this purpose.

Business graphics are used for client presentations, audit documentation, and special reports. At present, we use *Apple Business Graphics* and *Executive Briefing System*™. In addition, we are continually evaluating new software products in these areas.

SeaCas enables our auditors to complete more quickly and efficiently many time consuming functions that have been performed manually. This will greatly improve the quality of our service by allowing our professionals to devote more time to the substantive areas of service to clients. These include solving complex auditing and accounting problems, analyzing financial data, and offering advice on how to improve financial accounting and reporting systems. In addition, microcomputerization now enables us to perform more in-depth analyses and to access information not readily available to auditors in the past.

SeaCas has been under development for the last two years and is available in all of Peat Marwick's 100 offices. Over the next five years we expect to spend an additional $30 million on hardware and software to fully implement the system.

The enthusiasm with which SeaCas has been received within Peat Marwick is very encouraging. Numerous training sessions, demonstrations, and presentations suggest that the concept that we originally thought would take some time to be accepted has been subscribed to quite readily. Although the total system will be phased in over a period of time, we estimate that within 18 months, all of our auditors will be trained to use a microcomputer to perform audit functions.

Peat Marwick is committed to automating the audit process. Fulfilling this objective will be an ongoing effort. Accordingly, using the latest microcomputer technology, we intend to keep SeaCas on the leading edge of computer and audit technology by offering new software as it is developed.

SeaCas is a logical step in our long-range plan to increase quality and productivity through computerization. We know that in the 1980's we have to provide our professionals with the tools of efficiency—tools that enable us to perform detailed analyses of client systems and assure our clients of the highest quality service while meeting all professional and regulatory requirements in the most economical way.

™Executive Briefing System is a trademark of Lotus Development Corporation

About the author:
Richard D. Webb is an audit partner and senior computer audit specialist in the executive office of Peat, Marwick, where he is responsible for development and implementation of SeaCas. He is currently the Vice-President/Certification and trustee for the EDP Auditors Association and Foundation, and member of the American Institute of CPAs.

Evolution of Apple Microcomputer Applications at Coopers & Lybrand

By Gerald R. Broucek

The first Apple II microcomputer acquired by Coopers & Lybrand for use on client engagements was purchased by our Health Care Consulting Group in Los Angeles, in January, 1980. This was shortly after the first version of *VisiCalc* was introduced.

Prior to acquiring the Apple II, we had been using various time-sharing services (in conjunction with our own software developed in-house) to build and run financial forecasting models for all hospital financial feasibility studies. Although this approach worked reasonably well, the complexities of dealing with the software and the time-sharing mode required a significant investment in training for staff personnel. In addition, the cost of building the models and running forecasts using alternative assumptions was averaging $3,000 to $5,000 for each engagement.

Justification for purchasing the initial microcomputer system was based on three assumptions:

1. Using *VisiCalc*, we could build and run hospital financial forecasting models on the Apple II which would be as good, or better than, the models we had been building with timesharing.
2. On the microcomputer we could train everyone on our staff to design and run financial models on an on-the-job basis without losing billable time because of the training time required.
3. We could pay for the hardware and software on one engagement. The dynamic technological advancements in hardware and software available for the Apple II over the next three years proved each of these assumptions to be not only valid, but highly conservative.

By the end of the first year, we had accomplished the following:

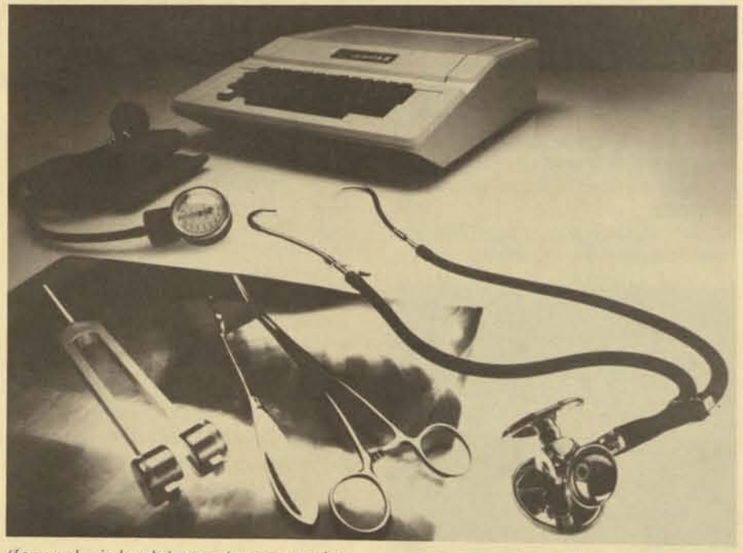
- Trained more than 20 staff personnel to use *VisiCalc* to build sophisticated forecasting models.
- Purchased data base management software, and trained our consultants in the use of data base techniques to solve client problems.

(continued page 6)

Coopers & Lybrand (continued)

- Used the system on various client engagements totaling in excess of $1,000,000 in gross fees.
- Exported the technology to 30 other Coopers & Lybrand offices.

By the early part of 1981, we had acquired a second system, and were training our audit and administrative staff to use both systems. The audit staff used the systems to build large data bases of historical transactions



(for analysis by date, customer, vendor, and other factors) on assignments involving litigation. They also used the systems for general financial forecasting in extremely complex, new business start-up situations—including forecasts for a proposed new airline and an oil exploration syndicate.

Our administrative staff built a data base containing the name, title, location, telephone extension, and discipline for every person in our building. Our central switchboard operators use this data base in handling incoming calls. It also contains information—including their new location—on persons who have left the company or have been transferred.

By the spring of 1981, our financial forecasting models for hospitals had matured to the point where we had developed a master set of models which could quickly be modified and tailored to any specific client engagement by anyone on the staff. Our health care planning consultants had also developed master models and data base programs for demographic demand analysis, space program analysis, and more.

With all this usage, we were having difficulty handling the workload, so we acquired another system in the fall of that year.

Another application developed during this period was a hospital rate setting analysis package. Originally designed to be used on consulting engagements to assist clients in revising rates, it was later sold to various hospitals for internal use.

Two years of experience, coupled with some major hardware and software enhancements, permitted us to develop and market a whole series of new products during 1982. The ability to increase the size of the *VisiCalc* worksheets to 177K, combined with the added power and flexibility of the new versions of *VisiCalc*, allowed us to develop application software such as the 2552 Hospital Cost Report Simulator, the Certificate of Need Analysis Model, and other products previously available only on large computer systems.

In 1982 we also began to experiment with moving data to and/or from a host of other computer systems. We have now developed software packages that enable us to reformat data files created on the Apple II. As we move forward with the development of systems, as opposed to applications, we will have a need to access files and data bases on large systems to obtain data needed by the microcomputer software.

The proliferation of hardware that enhances the power and capability of the Apple II has provided both challenges and frustrations. The challenges include:

- keeping up to date on new devices as they become available,
- finding a way to test the impact of a device on existing software and the operational environment before purchasing the device for multiple systems, and
- recognizing the opportunities for enhancement of existing software (or development of new software) which could result from application of the technology.

The frustrations are caused by the dynamic nature of the technological advancements which often result in an approach becoming obsolete within a few months after a new technology is implemented. These frustrations carry a price tag, but it is the price paid for maintaining a leadership position in the application of new technology.

To continue to maintain a high level of technical expertise and develop products which take full advantage of state-of-the-art technology, we have found it necessary to continue to modify and enhance our systems as new hardware products become available. Our approach has been as follows:

- We attempt to maintain an up-to-the-minute knowledge of new hardware and software products as they are introduced. We do this by attending trade shows or microcomputer seminars, maintaining contacts with vendors, and subscribing to micrcomputer publications, such as *Nibble, Call-Apple*, and others.
- If a new peripheral device seems to offer major opportunities for enhancement of the operational environment, or for software development and enhancement, we purchase the device and incorporate it in one of our systems. This allows us to expose our staff to the new technology and test the improvement in system performance on current engagements before converting all of our systems or recommending the approach to clients. On some occasions, this has resulted in internal staff feuds over use of the enhanced system, which is simply further justification for modifying all of our systems. The final decision to purchase the new device for all systems is based on the answers to two key questions:
  1. Will the enhanced systems allow for major improvements in existing internal software and/or in software products sold to clients?
  2. Will the enhanced systems allow us to reduce significantly the time required to run an application program?
- If we decide to move forward with a new peripheral, we have usually found it essential to modify all existing systems in order to maintain configuration uniformity. This permits us to run any existing or new application on any of our systems. It also avoids the staff confusion which results from differing operational environments as staff members move from one system to another.

As a result of this approach, we have acquired some peripheral devices which were later removed and discarded as they became obsolete, and others which did not warrant or require reconfiguring all of our systems. Products such as 80 column cards, micromodems, and hard disk drives, have been acquired essentially for new product development and to enhance staff knowledge.

The next few years promise to be exciting and challenging as more of our staff and clients learn to use the microcomputer to solve complex business problems. The Apple II has provided us with a tool for enhancing staff performance and capability, and this has enabled us to improve the quality of our work and reduce the time required to complete assignments. We believe that the knowledge we've gained over the past three years will enable us to deal very effectively with the new technologies as they continue to emerge.

About the author:
Gerald R. Broucek, C.P.A., is a partner in the Los Angeles Office of Coopers & Lybrand. He has over 20 years experience in the consulting field, including responsibility for financial-planning and budgeting projects, feasibility studies, and design and implementation of data processing systems. During the past three years he has been heavily involved in the application of microcomputers on consulting engagements, and in the development of microcomputer software for internal use and for sale to clients.

Arthur Young Model Enhances Law Firm Planning

By Jeff Morrison

Arthur Young has been a heavy user of Apple personal computers in many areas of our accounting, tax, and management consulting business.

Recently we used an Apple *III* in our San Francisco office to develop the AY/Law Firm Profit Planning Model™. It's a model used by our consultants in planning, budgeting, and profit-improvement projects with law firms. It utilizes an Apple *III* and is available with a detailed user manual and on-site training.

We developed the model because our work with law firms convinced us of the need for an easy-to-use, microcomputer-based planning tool. The model received such a positive response from our clients and other law firms that we now sell it on a nationwide basis.

The model, which can be adapted to the unique requirements of each law firm, has the following basic features:

- The ability to input and change monthly revenue generating assumptions such as headcounts, chargeable hours, and billing rates for each attorney and legal-assistant level. (Escalation assumptions can be incorporated into each of these variables.)
- A cash-basis profit and loss statement. (The model can vary assumptions regarding billing schedules and collection periods.)
- An accrual-basis profit and loss statement which includes the ability to itemize a variety of personnel and operational expenses by month. (The model also allows inclusion of fee write-ups or write-offs.)
- A cash flow statement which includes cash from operations, capital expenditures, debt acquisition and/or retirement, minimum cash requirements, and distributions to partners.
- Accrual basis balance sheet.
- Key statistics including cash income and distribution per partner, cash distribution per share, and key operating ratios.

Interest in our model has been boosted by three facts. First, attorneys, like accountants, recognize that many tasks, such as profit planning and budgeting, can be performed more quickly and more comprehensively with microcomputers than with manual processes, and this allows more time for analysis and evaluation. Second, the marketplace for legal services is changing dramatically and attorneys need to evaluate alternative business strategies and monitor results. And finally, the Apple personal computer and *VisiCalc* have gained immense respect as an effective productivity tool.

The AY/Law Firm Profit Planning Model™ is just one way we use our Apples to help our clients improve their business. If you would like more information on the model please contact Jeffrey Morrison, Arthur Young, 1 Post Street, San Francisco, California 94104, (415) 393-2826.

About the author:
Jeff Morrison is a consultant in the management services department of Arthur Young's San Francisco office. He has extensive experience in financial modeling with Apple microcomputers. Prior to joining Arthur Young, he was employed by a large law firm. He consults with law firms in the areas of profit planning, budgeting, systems, and operations.

Can Managers Be Taught to Plan and Make Effective Business Decisions?

Yes, with the aid of the *Business Management Simulation* designed and programmed for the Apple II. It simulates running a business and making decisions under conditions of competition and environmental and technological uncertainty. Several teams of players manage competing companies

(continued page 8)

Can Managers Be Taught (continued)

in the same marketplace for the purpose of manufacturing and marketing a product.

At the start of the management simulation, each competing team meets to organize its company, establish objectives, and develop strategies. It forecasts sales and makes projections (profit and loss, cash flow, and return on investment). Typical management decisions are then made at quarterly intervals in the simulation, and various computer reports are generated based on these decisions.

The simulation was designed and developed by Don Porter Associates, professional management educators and business planning consultants, over a two year period. Field tested with a number of companies in the United States and Europe, the simulation has been used to give managers:

- The ability to plan and make effective business decisions.
- An appreciation of participative management and a "team" approach to management.
- A better understanding of how important it is for parts of a business to function in an integrated manner in order for a business to meet its objectives and be successful.
- A better understanding of the impact strategic planning has on business success.

The simulation is designed and programmed to be very "friendly" or "computer interactive". Once the simulation administrator turns the computer on, the computer to a large extent tells him or her what to do next. The simulation administrator can design different scenarios to resemble different business, industrial, technological, and economic environments (A scenario consists of the interrelationships of several hundred variables). Several programs then permit further activity:

- A Changer Program permits the Simulation Administrator to change several hundred simulation variables prior to and during the simulation.
- A Forecaster Program permits the teams to project profit and loss and cash flow statements both prior to and during the simulation.
- A Newsletter Program permits the Simulation Administrator to use prewritten newsletters and add to them or to create new newsletters during the simulation.

The simulation features nine team reports and eight consolidated simulation administrator's reports each quarter. Two manuals come with the simulation. The participant's manual serves as a workbook during the simulation and a management tool after the simulation. The simulation administrator's manual shows the simulation administrator how to manage the simulation step by step.

For additional information concerning the *Business Management Simulation*, contact: Don Porter Associates at 2185 S. Dixie, Dayton, Ohio 45409.

Software Partners For Accountants And Professionals

Have you ever found yourself thinking, "There's not enough time in the day for me to keep track of my hours?" Then it may be time you took on a partner—not a person, but a software package, such as PROpartner or CPApartner from Starsoft, Inc.

With their own public accounting and consulting experiences in mind, Starsoft founders Steve Cherry and Marian Wilkinson created a timekeeping and billing package and a client write-up package.

Completely menu-driven, PROpartner and CPApartner meet the timekeeping and billing requirements of professional firms with up to 30 employees and 500 clients. They are tailor-made for CPAs and professionals in service-oriented businesses. Each package produces client statements in summary or detail format, and each can generate billing-detail, charge-date, and statement notes. Work in progress may be tracked and held for future billing. Write-ups and write-downs of all client charges may be tracked. They can even generate mailing lists and label sets. Also, the packages provide billing and revenue analysis in both month-to-date and year-to-date format by client, employee, or billing code.

In addition, CPApartner provides public accountants with a complete write-up system, capable of handling up to 3000 monthly journal entries per client. If the computer system includes an internal clock card, the program automatically tracks time spent updating each client's books and charges

the proper amount.

"Professionals are always adjusting their invoices," claims Starsoft cofounder Steve Cherry. "Some clients want a detailed breakdown of services, charges, and rates. Others are satisfied with a simple monthly statement. Billing rates are often discounted or marked up. 'Partner' software allows them to make all these changes, and then shows them the results in billing and revenue-analysis reports."

On an Apple II system with standard floppy drives, PROpartner and CPApartner can cover the timekeeping and billing needs of most professionals. The programs also are capable of supporting a hard disk, which speeds up the billing process.

In addition to professional products, Starsoft offers a toll free number (800-882-8000) for telephone consultation; in-house CPAs and accountants will answer financial and technical questions.

To find out more about PROpartner and CPApartner, contact Steve Cherry at 4984 El Camino Real, Suite #125, Los Altos, CA 94022, (415) 956-8000.

MiniMax Helps Hospitals

By Carol Kramer

The advent of microcomputers is changing the way hospitals, large and small, will deal with the financial and reimbursement issues of coming years. So claims Glen Kazahaya, administrative director of financial planning for HealthWest, a nonprofit health-services network, that owns and operates four hospitals in Southern California and provides consulting services to approximately twelve other facilities.

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This manual preparation was eliminated, for the most part, when accounting firms began offering their computer services to the health-care industry on a fee-for-service basis. Most medical facilities jumped at the chance to cut report-preparation time and were willing to pay the time-sharing fees to do so.

However, as computer utilization expanded, hospitals faced ever increasing time-sharing costs. Some facilities spend $5,000 to $6,000 annually in time-sharing services; others may spend as much as $2,000 a month. And these costs are in addition to associated costs, such as on-line computer-terminal rental or purchase, and telephone connections.

"Time-sharing expenses in 1980 for two of HealthWest's hospitals were about $17,000", Kazahaya estimates. "Such high costs prevent many facilities from exploring "What If?" questions with the computer," he explains.

Some of these "What If?" questions analyze:

- Potential dollar impact of setting up each proposed Medicare audit adjustment.
- Potential impact of setting up non-reimbursable cost centers versus offsetting revenue.
- Alternate statistical bases or variations for each overhead department (especially critical for providers with Routine Cost Limitation problems).

"This places the facility at the 'back of the pack' when it comes to issues relating to cost reimbursement and financial planning for the future."

A microcomputer and HealthWest's MiniMax program can change all that, according to McLennan. For an initial investment of $5,500 to $7,500, a party impact; continuing support and development of new management tools; an instruction manual; and, when Medicare regulations change, training from HealthWest staff, manual revisions, and updated programs.

"The program unravels and demystifies federal regulations," Kazahaya says. Additional modeling capabilities include matrix programs for Medicare and/or Medicaid logs, interim reimbursement computations, contractual allowance computation on a departmental basis, and a MiniMax rate-setting module. "Because computer turnaround is no longer a factor, corrections, additions, and modifications to the cost report can be made immediately, along with a determination of the dollar impact on settlement," McLennan explains.

The MiniMax program is working for one of the "Big Eight" accounting firms. The firm has been using MiniMax as an internal management tool to assist in providing reimbursement and related consulting services to health-care providers around the nation. Many of the company's offices throughout the country use the program, and HealthWest has conducted three training seminars for the firm's managers.

"Cost reimbursement is the lifeblood of the typical health care provider," Kazahaya concludes. "In an era where 40 to 50 percent or more of a hospital's total revenue is attributed to third-party reimbursers, the way reimbursement is handled is critical to the income, cash flow, and overall financial well-being of an institution."

structure of society and the work ethic.

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(continued page 10)

Can Managers Be Taught (continued)

in the same marketplace for the purpose of manufacturing and marketing a product.

At the start of the management simulation, each competing team meets to organize its company, establish objectives, and develop strategies. It forecasts sales and makes projections (profit and loss, cash flow, and return on investment). Typical management decisions are then made at quarterly intervals in the simulation, and various computer reports are generated based on these decisions.

The simulation was designed and developed by Don Porter Associates, professional management educators and business planning consultants, over a two year period. Field tested with a number of companies in the United States and Europe, the simulation has been used to give managers:

- The ability to plan and make effective business decisions.
- An appreciation of participative management and a "team" approach to management.
- A better understanding of how important it is for parts of a business to function in an integrated manner in order for a business to meet its objectives and be successful.
- A better understanding of the impact strategic planning has on business success.

The simulation is designed and programmed to be very "friendly" or "computer interactive". Once the simulation administrator turns the computer on, the computer to a large extent tells him or her what to do next. The simulation administrator can design different scenarios to resemble different business, industrial, technological, and economic environments (A scenario consists of the interrelationships of several hundred variables). Several programs then permit further activity:

- A Changer Program permits the Simulation Administrator to change several hundred simulation variables prior to and during the simulation.
- A Forecaster Program permits the teams to project profit and loss and cash flow statements both prior to and during the simulation.
- A Newsletter Program permits the Simulation Administrator to use prewritten newsletters and add to them or to create new newsletters during the simulation.

The simulation features nine team reports and eight consolidated simulation administrator's reports each quarter. Two manuals come with the simulation. The participant's manual serves as a workbook during the simulation and a management tool after the simulation. The simulation administrator's manual shows the simulation administrator how to manage the simulation step by step.

For additional information concerning the *Business Management Simulation*, contact: Don Porter Associates at 2185 S. Dixie, Dayton, Ohio 45409.

Software Partners For Accountants And Professionals

Have you ever found yourself thinking, "There's not enough time in the day for me to keep track of my hours?" Then it may be time you took on a partner—not a person, but a software package, such as PROpartner or CPApartner from Starsoft, Inc.

With their own public accounting and consulting experiences in mind, Starsoft founders Steve Cherry and Marian Wilkinson created a timekeeping and billing package and a client write-up package.

Completely menu-driven, PROpartner and CPApartner meet the timekeeping and billing requirements of professional firms with up to 30 employees and 500 clients. They are tailor-made for CPAs and professionals in service-oriented businesses. Each package produces client statements in summary or detail format, and each can generate billing-detail, charge-date, and statement notes. Work in progress may be tracked and held for future billing. Write-ups and write-downs of all client charges may be tracked. They can even generate mailing lists and label sets. Also, the packages provide billing and revenue analysis in both month-to-date and year-to-date format by client, employee, or billing code.

In addition, CPApartner provides public accountants with a complete write-up system, capable of handling up to 3000 monthly journal entries per client. If the computer system includes an internal clock card, the program automatically tracks time spent updating each client's books and charges their invoices," claims Starsoft co-founder Steve Cherry. "Some clients want a detailed breakdown of services, charges, and rates. Others are satisfied with a simple monthly statement. Billing rates are often discounted or marked up. 'Partner' software allows them to make all these changes, and then shows them the results in billing and revenue-analysis reports."

On an Apple II system with standard floppy drives, PROpartner and CPApartner can cover the timekeeping and billing needs of most professionals. The programs also are capable of supporting a hard disk, which speeds up the billing process.

In addition to professional products, Starsoft offers a toll free number (800-882-8000) for telephone consultation; in-house CPAs and accountants will answer financial and technical questions.

To find out more about PROpartner and CPApartner, contact Steve Cherry at 4984 El Camino Real, Suite #125, Los Altos, CA 94022, (415) 956-8000.

MiniMax Helps Hospitals

By Carol Kramer

The advent of microcomputers is changing the way hospitals, large and small, will deal with the financial and reimbursement issues of coming years. So claims Glen Kazahaya, administrative director of financial planning for HealthWest, a nonprofit health-services network, that owns and operates four hospitals in Southern California and provides consulting services to approximately twelve other facilities.

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This manual preparation was eliminated, for the most part, when accounting firms began offering their computer services to the health-care industry on a fee-for-service basis. Most medical facilities jumped at the chance to cut report-preparation time and were willing to pay the time-sharing fees to do so.

However, as computer utilization expanded, hospitals faced ever increasing time-sharing costs. Some facilities spend $5,000 to $6,000 annually in time-sharing services; others may spend as much as $2,000 a month. And these costs are in addition to associated costs, such as on-line computer-terminal rental or purchase, and telephone connections.

"Time-sharing expenses in 1980 for two of HealthWest's hospitals were about $17,000", Kazahaya estimates. "Such high costs prevent many facilities from exploring "What If?" questions with the computer," he explains.

Some of these "What If?" questions analyze:

- Potential dollar impact of setting up each proposed Medicare audit adjustment.
- Potential impact of setting up non-reimbursable cost centers versus offsetting revenue.
- Alternate statistical bases or variations for each overhead department (especially critical for providers with Routine Cost Limitation problems).

"This places the facility at the 'back of the pack' when it comes to issues relating to cost reimbursement and financial planning for the future."

A microcomputer and HealthWest's MiniMax program can change all that, according to McLennan. For an initial investment of $5,500 to $7,500, a party impact; continuing support and development of new management tools; an instruction manual; and, when Medicare regulations change, training from HealthWest staff, manual revisions, and updated programs.

"The program unravels and demystifies federal regulations," Kazahaya says. Additional modeling capabilities include matrix programs for Medicare and/or Medicaid logs, interim reimbursement computations, contractual allowance computation on a departmental basis, and a MiniMax rate-setting module. "Because computer turnaround is no longer a factor, corrections, additions, and modifications to the cost report can be made immediately, along with a determination of the dollar impact on settlement," McLennan explains.

The MiniMax program is working for one of the "Big Eight" accounting firms. The firm has been using MiniMax as an internal management tool to assist in providing reimbursement and related consulting services to health-care providers around the nation. Many of the company's offices throughout the country use the program, and HealthWest has conducted three training seminars for the firm's managers.

"Cost reimbursement is the lifeblood of the typical health care provider," Kazahaya concludes. "In an era where 40 to 50 percent or more of a hospital's total revenue is attributed to third-party reimbursers, the way reimbursement is handled is critical to the income, cash flow, and overall financial well-being of an institution."

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(continued page 10)

The Editor
Professionally Speaking
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With *VisiCalc* and an Apple *III* computer, a financial expert with no prior computer-programming experience, developed MiniMax, a microcomputer-based cost-reimbursement system for HealthWest. Don McLennan, MiniMax division director, claims that the program "MINImizes costs while MAXimizing benefits, and is adaptable to healthcare institutions of all sizes." MiniMax offers the healthcare industry an alternative to costly timesharing. Prior to timesharing, cost-reimbursement specialists—either hospital employees or hired consultants—spent 16 to 20 hours with calculator, pencil, and paper manually preparing the government-required Medicare/Medicaid cost reports.

This manual preparation was eliminated, for the most part, when accounting firms began offering their computer services to the health-care industry on a fee-for-service basis. Most medical facilities jumped at the chance to cut report-preparation time and were willing to pay the time-sharing fees to do so.

However, as computer utilization expanded, hospitals faced ever increasing time-sharing costs. Some facilities spend $5,000 to $6,000 annually in time-sharing services; others may spend as much as $2,000 a month. And these costs are in addition to associated costs, such as on-line computer-terminal rental or purchase, and telephone connections.

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Some of these "What If?" questions analyze:

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"This places the facility at the 'back of the pack' when it comes to issues relating to cost reimbursement and financial planning for the future."

A microcomputer and HealthWest's MiniMax program can change all that, according to McLennan. For an initial investment of $5,500 to $7,500, a microcomputer system (computer, console, monitor, and printer) can reduce actual expenses as well as costs associated with time. Although its capability and data storage are limited, a microcomputer can easily handle programs such as cost reimbursement, which doesn't require a large data base. Nearly eliminating time-sharing costs, the microcomputer and MiniMax paid for themselves at HealthWest within a short time.

HealthWest is now offering the MiniMax program to nonaffiliated institutions for a $5,200 investment, which includes health care financial-modeling, simulation, and analysis capabilities; maximization of "What If?" analysis projecting the relative third-party impact; continuing support and development of new management tools; an instruction manual; and, when Medicare regulations change, training from HealthWest staff, manual revisions, and updated programs.

"The program unravels and demystifies federal regulations," Kazahaya says. Additional modeling capabilities include matrix programs for Medicare and/or Medicaid logs, interim reimbursement computations, contractual allowance computation on a departmental basis, and a MiniMax rate-setting module. "Because computer turnaround is no longer a factor, corrections, additions, and modifications to the cost report can be made immediately, along with a determination of the dollar impact on settlement," McLennan explains.

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Getting to the Core Of Personal Computing

By David C. Goodyear

Ten years ago an "apple" was something to peel, slice, and enjoy; the Apple personal computer wasn't even a dream. Today, "apple" means personal computing.

Even as you read this article the microcomputer field is changing. We are all witnessing an information explosion and technical revolution unparalleled in history. Parralleling these changes we may also be witnessing a transformation in the basic structure of society and the work ethic.

Implications for the Office Environment

What is so different about an office with micros? The primary difference is storage capability that permits you to reuse all or portions of data previously entered. By efficiently using this capability, you can significantly improve your productivity. A second difference is the capability of performing mathematical and other related functions in a fraction of the time it used to take.

These capabilities can produce both increased production and managerial problems. If you're understaffed, the result will probably be favorable, and you won't have to worry about excess clerical time. Depending on the type of work being done in your office, micros and word processors can multiply the output of a clerical employee by as much as three or four times.

Let's assume, for example,that most of your employees need to calculate certain ratios which are fairly standard. Current practice is to use a hand-held calculator to perform the necessary mathematical calculations. Substantial amounts of time can be saved by developing a template (model) using a program such as *VisiCalc*. The standard formulas would be input once and saved on a disk. Copies of the disk could be distributed to each user who would input only the data to be used in their calculations.

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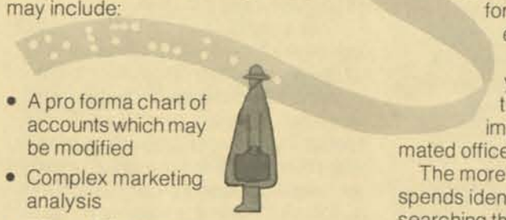
(continued page 10)

Additional differences in the automated office are caused by the devices and methods used to record, store, and retrieve information. The huge spaces required to store volumes of data will become a thing of the past. And you can retain historical financial data for years on magnetic media. The space occupied by that data, as well as program libraries, and the time necessary to locate desired data, are substantially reduced.

Implications for the Professional

Maintaining reams of paperwork probably consumes a substantial portion of your time, but the micro can significantly modify this situation. As a result, micros should provide you with much more "think" time, which in turn will enable you to provide better results. You have at your fingertips not only the complete power of a computer but a host of programs designed to aid clerical and analytical functions. Initially, these may include:



- A pro forma chart of accounts which may be modified
- Complex marketing analysis
- "What if?" capability
- Some form of analytical review
- Schedule preparation which requires only data input
- Ability to produce a financial statement
- Data in machine-readable form which can be sent to word processing for final printing with no further effort required
- Long-range-planning capability

In addition, since most micros support teleprocessing, access to existing data bases on commercial networks will be available. The additional equipment needed to accommodate this feature is quite small and inexpensive (approximately $200). A telephone placed next to the micro provides a path for signals transmitted from the micro to the network computer through a phone line.

There are many commercial networks available, any one of which can be looked up in a directory and called upon to do a specific job or provide information needed to do a job. An example is the Dow Jones News/Retrieval Service which provides such information as *Wall Street Journal* Highlights, transcripts of "Wall $treet Week," stock quotes (past and current), and brief histories of companies. Another service, The Source™, provides a variety of items, including air line schedules. A person familiar with such a service can use it to determine what flights are available between two cities during a specified time period.

Acquistion of hardware and software are important decisions that require skills different from those you've used before. Determining how the need for hardware and software expertise will be filled is another important decison you'll have to make—one that's critical for successful implementation of the automated office.

The more time an organization spends identifying its needs and researching the market to determine which micros fit best, the greater its chance of success. Management should and can take an active part in the entire process.

Responsibility for Acquisition and Control

In the past, data processing was managed by a few technical wizards. Organizations had very formal approaches to the approval and acquisition of hardware and software. Now, the tendency is to allow each manager to acquire micros and software somewhat informally, because the dollar amounts spent on an individual basis are relatively small and don't attract much attention from top management. As a result, management may not focus on the overall expenditures for computer power, and these expenditures may exceed what is necessary.

The key is to establish a procedure for monitoring the purchase of both software and hardware to avoid duplication of effort and resources.

Where the purchase of micros occurs on a departmental basis without consultation, the result can be a group of machines that don't match. This can be costly. Programs developed on a micro in one department may not be compatible with micros in other departments, resulting in programs that can't be shared and costs that are unnecessarily high. Supplies for one micro may not work on another, requiring a duplication of supplies. The final and most important consideration is that you won't have any backup if one or more of your micros ceases to function. When there's a problem with your micro, its extremely helpful to be able to use one of the others in your organization.

Many organizations have no current record of their micros. They often overlook the tax credits and depreciation involved. Keeping track of these matters is a very important task which should be assigned to a person familiar with systems concepts. Failure to take positive steps to deal with micros on a coordinated basis may result in excessive cost for the initial acquisition of equipment and considerable duplication of effort, if not equipment.

Responsibility for Data Control

Without adequate procedures and controls, data used within departments may be suspect because micros allow people to build their own data bases of information which may be different from the official data maintained on the corporate data base. In fact, it has even been speculated that certain important data sent to top management might be manipulated in order to show more favorable results. Unless there are safeguards built into the system there is no way to detect such activity.

Also, some of the old myths (such as "the computer did it, it must be right") are still very much with us. All too often, no one checks the results of computer processing to determine its accuracy. The result could be disastrous if a major business decision is based on erroneous programming or data. Since most managers have little experience with computer systems, it may be necessary to seek assistance.

The data processing department is usually very willing to help establish procedures for verifying the accuracy

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industry bulletin

Is Your Programmer an Employee or an Independent Contractor—for Tax Purposes!

By Barbara Blumenthal

When businesses have a need for application software or systems development, and need additional help, often the solution is to hire independent contractors from outside the company. Before retaining free-lance programmers or systems analysts, however, DP managers should make sure that the relationship is a true customer/independent contractor relationship.

The basic criterion is how much control the hirer has over the way those providing service perform their tasks. The following questions help to distinguish employer/employee relationships from customer/independent contractor relationships.

- Are the individuals who provide the services required to comply with company instructions as to when, where, and how the work is to be performed. For example, who directs the sequence in which the work must be done?
- Are they given training to enable them to perform jobs in a particular fashion?
- Are their services integrated into the operations of the business?
- Must they render the services personally?
- Does the business hire, pay, or supervise assistants to help the "independent contractors" perform the services?
- Is the relationship between the "contractor" and the business a continuing relationship?
- Who sets the work hours?
- Is work performed at the employer's place of business?
- Are the "contractors" required to devote full time to the project, ie., can they work for other firms at the same time?
- What is the basis for payment—hourly, weekly, on commission or by the job?
- Can they realize both a profit and a loss?
- Who furnishes the materials used in providing the service?
- Can the consultant terminate the relationship without incurring a liability for failure to complete the job?

Drawing the line between independent contractors and employees has long been an ongoing issue between employers and the IRS. Although an independent contractor relationship offers several advantages to the employer (such as not having to pay Social Security or fringe benefits), if the IRS holds that the contractor is in fact an employee, the firm may end up paying these "benefits" and being assessed a penalty for failing to withhold them.

If the contractor is determined to be subject to the will and control of the employer, not only as to what shall be done but how it shall be done, the employer could be assessed for state and federal unemployment taxes, withholding taxes, and workmen's compensation.

In addition, if employers pay for employee health-care plans, retirement plans or other tax-deductible benefits, they would also have to pay them for free-lancers, since the IRS would deny tax deductions for these costs if all employees were not treated equally.

Data-processing executives should discuss these issues with their accountants and/or lawyers and consider getting a written agreement establishing a true customer/independent contractor relationship with free-lancers.

of programs developed internally or purchased from outside. Once developed and agreed upon, the procedures should be documented and someone in the organization should be designated to be responsible for reinforcing them. This will require some initial effort, but it will save much anguish later. (If the data processing department can't assist, there are outside consultants who can.)

If you have the services of a data-processing department, you probably have little or no worry about data retention or hardware backup. As a user or manager responsible for a group of micro users, your major concerns will be data protection and the ability to continue operations if something happens to one or more of your micros. The data processed by your group is an asset that has a definite value; data loss or destruction could be very damaging and could eliminate all those savings mentioned previously.

It won't take you long to discover that there are very few safeguards built into the micro world. One incorrect key stroke could eliminate hours of data entry. A good approach to this problem is to establish a procedure for copying important disks at specified intervals. The more important the data, the more often it should be copied to a back-up disk.

If you identify a data control problem in your company, remember that it's not a micro problem but one of inadequate management control. One method of establishing data control is to identify authorized sources of data and define procedures to be followed when data is used. It is important, however, to balance the need for controls and levels of security against the need for easy access to certain data.

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apple resources

By Linda A. Merrill, Staff Writer

▫ The *Asset Manager* is an asset management system for depreciable assets for income tax purposes. The program ensures accurate record keeping and application of the tax laws in the taxpayer's best financial interest. It will handle up to 999 assets for any one taxpayer. It can accommodate up to 10 businesses, farms, rental properties, and/or employee businesses for an individual taxpayer filing an IRS Form 1040. The program will also accommodate partnerships using Form 1065 and corporations using Form 1120. The *Asset Manager* is sophisticated enough to calculate bonus depreciation, the gain or loss upon retirement of an asset, and the amount of investment tax credit to be taken. Published by Micro Lab Inc., the program can be purchased for approximately $200.

▫ A large scale investment database covering 1400 publicly held companies and 88 industries is now available on diskette from ISYS Corporation in Cambridge, Mass. ISYS has also created a powerful program called *Micro/Scan* to screen, sort, and rank companies in this database and to print out various investment and portfolio analysis reports. Using *Micro/Scan* on either an Apple II Plus or an Apple *III*, investors, pension fund executives, stockbrokers, and merger/acquisition analysts can instantly screen 1400 stocks and 88 industries using any combination of the 26 financial variables in the database to look for good "buy" and "sell" ideas, perform stock valuation studies on industries or on portfolios, and play "What if?" games with investment criteria. *Micro/Scan* users can produce an unlimited number of stock analysis or portfolio reports with no variable cost per report or per screen. Portfolios can be entered and immediately generate a customized report, sorted or ranked by any variable. Call Walter Campbell at ISYS Corp. (617) 491-6221 to request a free sample report. For a live test of the system, a demo disk with complete user documentation is available for $25.

▫ The *Market Analyzer* is an interactive graphics program for analyzing financial and market data. It works with any uniform time series, such as stock, bond, and futures data. For analyst investors, *Market Analyzer* helps you look at indicators more closely, more often, and with less work. The program comes with two disks—one contains the program with various utilities and routines and one is a complete database that can be updated. The database is a series of readings taken for every market indicator that you can think of. With *Market Analyzer*, you can load any two to four sets of readings—taken over weeks, months, or years—then graph them and compare plots. You can also manipulate graphs using a constant; manipulate graphs against each other; smooth, detrend, and set momentum; perform trigonometric functions; and devise your own statistical hoops. For more information, write N^2 Computing, 5318 Forest Ridge Rd., Silverton, OR 97381.

▫ The Apple *III* Accounting Series by Peachtree Software Inc. is a comprehensive system of six linked packages—General Ledger, Accounts Payable, Accounts Receivable, Sales Invoicing, Inventory, and PeachPay (payroll). Used together, they provide the manager with complete control over his accounting functions. The packages supply the manager with vital financial data on time, in order, and organized into a wealth of special reports to keep the manager on top of business. All of the Accounting Series applications except Sales Invoicing can be used as independent applications. (Sales Invoicing is used with Accounts Receivable and Inventory to simultaneously access and update files in those two packages.) Two password levels are provided, one for the controller and one for the operator. For more details, call (404) 325-8533.

▫ The *CPT Target Planner/Interchange* business planning and modeling tool can handle cash flow analysis and projections, budget planning, job costing, investment portfolio and payback analysis, tax calculations, and loan and break-even analysis. For more information, contact CPT Corp. in Minneapolis, Minn.

▫ Charles Mann and Associates has developed a construction accounting system for the Apple II, Apple II Plus, and Apple *III*. An integrated accounting system designed for the general contractor or subcontractor, it includes a general ledger module, job cost and project management modules, a payroll module which maintains records of workmen's compensation data, a document processor for proposals and bids, and a subsystem for use in subcontract management. The system sells for $359.95. For more information call (714) 365-9718.

▫ *Creative Financing* is a sophisticated program for making intelligent investment decisions using borrowed money. The program produces monthly interest and payment schedules for complex loan packages; annual depreciation schedules for complex component depreciation; tabular projections of year-end, on-sale profits; and tabular projections of cash flows. *Creative Financing* is published by Howard Software Services and sells for approximately $150.

▫ *Bond Yielder* calculates fixed income investments. The program provides calculations of yield, equivalent taxable return, basis price, accrued interest and the total due per $1000 face value. And if you provide the yield, it tells you what the effect rates are. *Bond Yielder* uses whatever capital gains tax rate you want without regard to holding period. For further details contact CE Software, 801 73rd St., Des Moines, IA 50312.

▫ CCS Inc. of San Antonio, Texas, has introduced the Sofsearch software locator service. Designed to meet the specific informational needs of computer users, Sofsearch subscribers have access to information about thousands of software products of all types. For $125, Sofsearch identifies and provides *custom* reports on all software products that meet up to five sets of user-specified selection criteria. Each report provides the product name, supplier address, contact information, and a general product description including price. For more information contact CCS Inc., P.O. Box 5276, San Antonio, TX 78201.

▫ Compuserve of Columbus, Ohio, offers time-sharing computer services to the business community. Through this service, a company of any size can hook up to Compuserve's computers via regular telephone lines and use large-computer power to do accounting, payroll, and other tasks. The service also offers access to:

- ten national newspapers plus AP news wire;
- Standard and Poor's *Daily News;*
- electronic mail; and
- entertainment, home, and education information.

Compuserve uses a menu-driven system which gives you a list of numbered choices. All you need to do is type in the number to access your choice. Compuserve is available from 6 P.M. to 5 A.M. local time on weekdays, and all day Saturday and Sunday. For additional information, call (614) 457-8600.

▫ Visual Horizons has introduced Computer Slide Express, a unique method that allows Apple users to convert computerized charts, graphs, graphics, and designs to 35 mm color slides, prints and overhead transparencies. With the service, Apple owners can push a button to dial Visual Horizons, transmit the information over the telephone lines, and receive color slides for as little as $6.00 each. Computer Slide Express can be dialed 24 hours a day, but material can also be sent to Visual Horizons by mail. For more details, call (716) 424-5300.

▫ Apple Computer, Inc. has published two new guidebooks specifically designed to meet the needs of computer users. *The Personal Guide to Personal Computers* (50 pages, $2.50), by Peter Lundstrom, introduces personal computers for home use. It cuts through jargon to explain, in easy-to-understand terms, how personal computers are used, how they work, and how to shop for one. *Personal Computers in Business* (50 pages, $2.95), by Barbara Gibson, introduces managers, professionals, and small business owners to the personal computer as a business tool. It is filled with straightforward, helpful information that explains how personal computers are used in both large and small offices, how they work, how to plan for them, how to evaluate different systems, where to shop for products and services, and how to estimate costs. There's also a section explaining tax benefits offered to business users of personal computers. Both books are available through authorized Apple dealers in the U.S. and Canada and B. Dalton Booksellers.

▫ A guide to free and almost free software, publications, and services for Apple users is now available from American Software Publishing Company. Called *Apple Freeloader*, the guide is a fully-indexed directory of public domain software, free catalogs, and community services. For more information, call (202) 887-5834.

▫ A video-based training program called *How to Use the* VisiCalc *Software Package* is now available. Designed with the first-time computer user in mind, it actually demonstrates how to use *VisiCalc*. It can be used by individuals for self-paced individualized instruction or by groups. The program introduces you to the commands you will need to know in order to create and use *VisiCalc* models. The course uses an income statement and a mortgage amortization schedule for illustrative purposes. Ideal for businesspeople and accountants, the program includes two video cassettes (with more than 90 minutes of instruction), a workbook, a student diskette with illustrative models, and a reference guide of all the common *VisiCalc* commands. For more information, write Leigh Morris, Clarkson Gordon, P.O. Box 251, Royal Trust Tower, Toronto-Dominion Centre, Toronto, Ontario M5K 1J7.

▫ For $35, you can rent an instructional video-cassette recording titled "The Microcomputer: What It Can Do" and "The Power of *VisiCalc*," Volume III of the Powersharing Series by Barbara and John McMullen. For further details, write Martha Stuart Communications Inc., P.O. Box 246, Hillsdale, NY 12529.

▫ Three utility programs that enhance the *VisiCalc* program are now available on diskette. *Reflexive VC* from Arrow Micro Software in Ontario, Canada allows two Apple II's to run a *VisiCalc* program simultaneously over the telephone. Micro Lab Inc. in Highland Park, Illinois, has developed *Visiblend*, a program that allows you to merge *VisiCalc* files by either adding or averaging numbers. *The Consolidator* from Omega Microware in Chicago makes it easy to merge *VisiCalc* files by automating data exchange.

▫ Nestar Systems has announced *Multi-Calc*, a new binary program that enables users of a Cluster/One system to exchange *VisiCalc* worksheets with those of other network users. *Multi-Calc* makes all the standard services of the Nestar network available to *VisiCalc* users, including spooled printing, large-capacity disk storage, electronic mail, and local or remote transferring of files. The program requires *VisiCalc* and an Apple II. For more information, call (415) 493-2223.

(continued page 14)

▫ VisiCorp of San Jose, California, has made *VisiSchedule* available for the Apple *III*. The program is an interactive project management package. A calendar representation of start and stop dates, slack time, holidays, and deadlines for up to 300 different tasks can be displayed and automatically printed out. With *VisiSchedule*, such information as critical path, project milestones, and cost estimates are revealed.

▫ Professional Calculations of Eugene, Oregon, has announced *ProCalc* for the Apple *III*. The program allows comparative calculations for different assumptions to be presented side by side. All formulas and data entries are immediately available for review. A built-in checking mode ensures the integrity of calculation procedures. *ProCalc* enables the *VisiCalc III* user to improve and simplify technical applications. For more details write Professional Calculations,Inc., 4895 Futura St., Eugene, OR 97404.

▫ *Professional Time and Billing* (PTB) has 120 user-defined rate codes of time expenses or fixed fees. It records payments from clients and other receipts you want to record, as well as work that isn't billable or time related. PTB will correlate the information, assemble an internal report, and generate statements for services rendered. It requires an Apple II or Apple II Plus with 48K bytes of memory, a serial or parallel printer, and two disk drives. For additional information, write Software Technology for Computers, P.O. Box 428, Belmont, MA 02178.

▫ Double-Gold Software in Saratoga, CA is now offering menu driven copy-protection and duplication utilities for the Apple II and Apple II Plus computers. Called Lock-It-Up, the system features several levels of protection which make standard diskettes uncopyable by sophisticated locksmith programs. Master diskettes created with the system contain an I.D. stamp that you select. The I.D. stamp must be correctly specified before any diskettes can be duplicated. This prevents other Lock-It-Up owners from copying your diskettes. Call (408) 257-2247 for more information.

(continued page 15)

new products

Apple Produces Headlines With Two New Printers

As the personal computer market has grown and personal computers are used for new applications, there is an ever increasing demand for more sophisticated supporting products, especially printers. As one software engineer at Apple put it, "Nowadays, a lot of people have *VisiCalc* and a word-processing program. They want hard copies of their work."

Apple's new Dot Matrix Printer is a fast, high-contrast printer for graphics and many correspondence-quality applications. The Apple Letter Quality Printer, a daisy wheel printer with graphics capability, is designed for high-quality print applications.

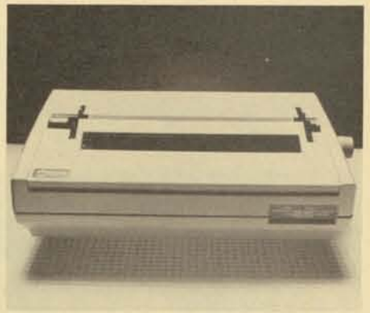
Both printers fully utilize features of the Apple II and Apple *III* personal computers and the majority of software packages available for them. They are engineered to make installation trouble-free, and their boards and cables are clearly marked for use with Apple II, Apple II Plus, Apple *IIe* or Apple *III*.

The Apple Dot Matrix Printer, which uses a parallel interface, has a print-head life of over 100 million characters, in contrast to 25 million characters for most other dot matrix printers. It also features a heavy-duty stepper motor and casting.

In addition to these features, the Dot Matrix Printer offers high-resolution

graphics output (144 x 160 dots per square inch) and a bidirectional print speed (120 characters per second). It permits multiple-pitch and proportional spacing, mixes fonts during a single pass, utilizes pin-addressable graphics, and handles cut sheets or tractor-fed paper (roll or fan-fold).

The Apple Letter Quality Printer, which uses a serial interface, prints bi-directionally at 40 characters per second on individual sheets or continuous forms. The snap-in, multistrike ribbon cartridge has four times the ribbon life of conventional ribbons. A full complement of print wheels, including six foreign language character sets, will be available.



Unlike many print wheels that have two characters on each spoke, Apple's print wheels have only one character per spoke. This eliminates shifting the carriage up and down—a major cause of character misregistration—which results in poor print quality.

The Apple Letter Quality Printer is more reliable because it utilizes a single circuit board and has 30 percent fewer moving parts than other office-quality printers. It sells for under $2200. The Apple Dot Matrix Printer sells for under $700.

You Asked for It, You Got It...The Apple *IIe* Personal Computer

After more than a year on the drawing board, the Apple *IIe* personal computer is making its debut. The challenge in creating an "enhanced" version of the most popular personal computer started with the product team talking to owners, dealers, sales representatives, and industry competitors. The recurring suggestions included: make the system easier to service, improve the keyboard, expand its video display, make the documentation friendlier and increase its standard user memory. And if that wasn't enough, the field also wanted a redesigned back panel and an integrated peripheral product design.

Now Apple has integrated all of these suggestions into the newest member of the Apple II family...the Apple *IIe*. The finished product is faithful to the Apple II design, but the improvements become obvious immediately. On the Apple *IIe*, 64K bytes of memory is standard (expandable to 128k), so is upper and lower case, and a sculptured typewriter-style keyboard with special keys for easy cursor movement, tab functions, caps lock, and more.

Other enhancements, designed to meet broadening expectations about personal computers, include improved peripheral ports to make connecting cables to peripheral cards easier, a low-cost 80-column card developed especially for the *IIe*, and an optional locking lid to keep prying little fingers away from the motherboard.

Using LST technology, Apple has streamlined the motherboard, giving the Apple *IIe* an even more reliable product design. The number of components on the motherboard has been drastically reduced.

Apple is offering Apple *IIe* hardware bundles including the Apple *IIe*, a Disk II, a *IIe* 80-column text card, a monitor *III*, a monitor *III* stand, Apple Writer II, and Quick File II software.

Authorized Apple dealers have complete listings of new software designed to take advantage of the Apple *IIe*'s improved features. Along with new software especially designed to take advantage of the system's new features, well over 95 percent of the Apple II Plus software and hardware operates on the Apple *IIe*.

▫ With *Catalyst*, you can now boot from your ProFile and keep practically all your programs on your large disk. Once you have used *Catalyst* to set up your big disk, you will never need to shuffle diskettes again. Simply boot the *Catalyst* diskette whenever you turn on your Apple *III*. *Catalyst* will display a menu of available programs. After selection, programs are loaded from the large disk. If you want to select a different program, a simple key sequence will return you to the *Catalyst* menu. For more details, call Quark Engineering at (303) 399-1096.

▫ Apple Computer, Inc. has announced *Record Processing Services* (*RPS*) for the Apple *III*. Designed for Apple *III* Pascal software developers, the program provides file-management services for handling large quantities of data. The multi-key file-access method allows files to be readily interchanged between programs that use *RPS*. *RPS* saves software development time and provides compatibility with different applications and their data files.

Automating an office requires a great deal of planning and supervision to make it happen successfully. When you're asking people to change the way they've been doing things, your understanding and direct involvement are necessary to ensure a positive result—it won't happen by itself.

About the author:
David C.Goodyear is a partner in the international accounting firm of Main Hurdman/KMG. The national director of computer auditing for MH, he is responsible for EDP standards, audit software development, and computer audit training. He is also a member of the New York chapter of the EDP Auditors Association

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apple computer

The Personal Computer

Lisa

New Information

January 17, 1983

Dear Lisa Information Center:

Congratulations on having been chosen to be an Apple Lisa Information Center. Apple Personal Office System Dealers will soon be selected from among Lisa Information Centers. Dealer selection awaits final review and approval of your submitted business plan.

Lisa, together with the Apple //e, is being announced on **January 19** at Apple's annual shareholders' meeting and at press events held that day.

Accompanying this letter you'll find the first installment of Lisa product and sales information; this installment is called the Lisa Starter Kit - Part 1 (four parts total). A complete listing of the contents of the Starter Kit - Part 1 appears at the end of this letter; please check the materials you've received against the list. Contact your Apple Manufacturer Rep is there's any missing material that we need to supply.

Lisa Information Centers can each order a Lisa Demo System immediately, with expected delivery in late February (subject to your selection as a Personal Office System Dealer). This System is listed on the enclosed Personal Office System Dealer Price List. Dealer cost is $5,995 and includes:

1 Lisa with 1 Megabyte of memory;
2 built-in Apple 871 Disk Drives with 860 K bytes formatted storage per drive;
1 ProFile;
1 Apple Dot Matrix Printer;
1 Parallel Card;
7 Lisa software applications:
- LisaCalc; LisaList; LisaWrite; LisaGraph; LisaDraw; LisaProject; LisaTerminal

Customer orders for the Lisa Office System may be taken beginning **January 19**, with final acceptance of orders subject to your selection as an Apple Personal Office System Dealer. Shipment will commence by late spring 1983.

One salesperson for every Apple Personal Office System Dealership is to attend a

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apple computer inc.

APPLE CONFIDENTIAL

LISA INTRODUCTION CALENDAR

FOR: APPLE SALES OFFICES

APPLE MANUFACTURER REPS

APPLE NATIONAL ACCOUNT EXECUTIVES

Lisa

New Information

January 17, 1983

Dear Lisa Information Center:

Congratulations on having been chosen to be an Apple Lisa Information Center. Apple Personal Office System Dealers will soon be selected from among Lisa Information Centers. Dealer selection awaits final review and approval of your submitted business plan.

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One salesperson for every Apple Personal Office System Dealership is to attend a 3-day Lisa sales/product training course. The course will be given at three locations on February 10-12. Your Apple Manufacturer Representative will provide you the details shortly.

Please be sure to read the enclosed Lisa Introduction Calendar so you'll know how and when you'll receive more information on Lisa and its introduction. Ask your Representative if your questions are not answered by the materials in the several mailings you're to receive over the next three months.

Best Regards,
Apple Computer, Inc.

Retail Sales Development

apple computer

Lisa

CONTENTS — LISA STARTER KIT - PART 1:

- Lisa and Network Press Releases
- Lisa Introduction Calendar
- Lisa Information Centers List
- Personal Office System Dealer Price List
- Network Information Package
- Point of Sale Materials:

  4 Page Flyer (300)
  LisaCalc (spreadsheet model) Data Sheet (200)
  LisaList (personal database) Data Sheet (200)
  LisaWrite (word processor) Data Sheet (200)
  LisaGraph (business graphics) Data Sheet (200)
  LisaDraw (graphics editor) Data Sheet (200)
  LisaProject (project schedule) Data Sheet (200)

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Oklahoma

Charles Auger
Computer Solutions
105 W. Atkinson Plaza
Midwest City OK 73110
405-733-9556

Charles Riney
Computer Connections
12314 N. May Ave.
Oklahoma City OK 73120
405-755-9220

Charles Riney
Computer Connections
8125A 51st Street
Tulsa OK 74145
918-663-6342

Oregon

John Vito
Computer Store/Eugene
35 W. 8th Ave.
Eugene OR 97401
503-343-1434

Pennsylvania

Ed White
Computerland Lehigh Valley
1457 MacArthur Boulevard
Allentown-Whitehall PA 18052
215-776-0202

Rollin Rheinheimer
The Office Works, Inc.
29 East King Street
Lancaster PA 17603
717-397-7721

The Computer Workshop
3848 William Penn Hwy.
Monroeville PA 15146
412-823-6722

Ralph Covyeau
Business Equipment Sales
5284 Steubenville Pike
Pittsburgh PA 15205
412-923-2533

Rhode Island

Marc Davis
Unicom
297 Elmwood Avenue
Providence RI 02907
401-467-5600

South Carolina

Dr. Ron Seitz
Computer Source
1660 Highway #7
Charleston SC 29407
803-571-1452

Tennessee

Jim Walton
Computerlab of Jackson
133 Old Hickory Boulevard
Jackson TN 38201
901-668-9282

apple computer

Lisa

Jim Walton
Computerlab of Memphis
5041 Park Ave
Memphis TN 38117
901-761-4743

Texas

Ed Culotta
Computer Concepts
4699 Calder Ave.
Beaumont TX 77707
713-892-3992

Al Montross
Compco Computer Center
5519 Arapaho Rd. #108
Dallas TX 75248
214-386-6578

Jeff Elpern
Simtec
12801 Midway #509
Dallas TX 75223
214-484-3311

Palmer Ogden
Mnemonics
1201 Airway, Ste. A1
El Paso TX 79925
915-778-2708

William Parmalee
Computer Pro
6867 A Greenoaks Rd.
Ft. Worth TX 76116
817-654-3360

Billy Ladin
Computer Craft
3233 Fondren
Houston TX 77063
713-977-0664

Daryl A. Airhart
Computer Galleries
2493 S. Braeswood
Houston TX 77030
713-661-0055

Terrence Weakly
Com-Sol Resource Center
4801 Fredicksburg Road
San Antonio TX 78229
512-341-8851

Utah

Don West
Computer Translations, Inc.
1455 South State St.
Orem UT 84057
801-224-1169

Lynn Stauffer
Personal Business Computers
1879 South Main
Salt Lake City UT 84115
801-486-4839

Virginia

Ken Shapero
Universal Computers
1719 Fern St.
Alexandria VA 22302
703-379-0367

Ken Shapero
Universal Computers
1915-A Cedar Hill Rd.
Charlottesville VA 29906
804-971-6771

Ken Shapero
Universal Computers
2355 Hunter's Wood Plaza
Reston VA 22901
703-620-6160

Jim Atchison/Bob Curtis
First Step Computers
2909 Hathaway Road
Richmond VA 23225
804-320-6496

John Crow
The Memory Bank
5760 North Hampton Blvd.
Virginia Beach VA 23455
804-460-2644

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Lisa

Washington

Fred Kraus
Swan Computer, Inc.
1034 116th avenue N.E.
Bellevue WA 98004
206-454-6272

Stan Colsen
Alpha Computer Systems
1609 W. Kennewick Ave.
Kennewick WA 99336
509-586-7603

Denny Olin
Computerland/Seattle
119 Yesler Way
Seattle WA 98104
206-223-1075

John Vito
Computer Store/Spokane
709 Riverside Ave.
Spokane WA 99201
509-747-8700

Craig Ingle
Computershop Business Center
17125 Southcenter Parkway
Tukwila WA 98188
206-367-6800

Wisconsin

Kailas Rao
Computers Unlimited
8360 W. Browndeer Rd.
Milwaukee WI 55223
414-355-5206

Bob Glass
Office Technology
1314 S. Commercial
Neenah WI 54956
414-725-3256

Lisa

Authorized Apple Personal Office Systems Dealer
Confidential Price List January 19, 1983

Part No.	Description	Notes	Suggested Retail Price	1 - 3	4+
SYSTEMS					
A6P0001	Lisa Office System	(1)*	9995.00	6897.00	6497.00
A6P0002	Lisa Demo System (One per store)	(2)*	N/A	5995.00	N/A
SOFTWARE					
A6D0157	LisaTerminal		295.00	180.00	174.00
A6D0101	Pascal		595.00	363.00	351.00
A6D0103	BASIC-Plus		295.00	180.00	174.00
A6D0104	COBOL		995.00	607.00	587.00
INTERFACE CARDS					
A6BB101	Parallel Card	(3)	195.00	127.00	121.00
LITERATURE					
A6F0019	18 Page Brochure (25/box)		N/A	20.00	20.00
A6F0018	4 Page Flyer (25/box)		N/A	6.25	6.25
A6F0017	System Hardware Data Sheet (25/box)		N/A	3.75	3.75
A6F0006	Pascal Data Sheet (25/box)		N/A	3.75	3.75
A6F0004	BASIC-Plus Data Sheet (25/box)		N/A	3.75	3.75
A6F0005	COBOL Data Sheet (25/box)		N/A	3.75	3.75
A6F0010	Letter Quality Printer Data Sheet (25/box (5)		N/A	3.75	3.75
A6F0011	Dot Matrix Printer Data Sheet (25/box)		N/A	3.75	3.75
A6F0009	ProFile tm Data Sheet (25/box)		N/A	3.75	3.75
A6F0016	System Overview Data Sheet (25/box)		N/A	3.75	3.75
A6F0013	LisaCalc Data Sheet (25/box)		N/A	3.75	3.75
A6F0002	LisaDraw Data Sheet (25/box)		N/A	3.75	3.75
A6F0014	LisaGraph Data Sheet (25/box)		N/A	3.75	3.75
A6F0012	LisaWrite Data Sheet (25/box)		N/A	3.75	3.75
A6F0001	LisaList Data Sheet (25/box)		N/A	3.75	3.75
A6F0003	LisaProject Data Sheet (25/box)		N/A	3.75	3.75
A6F0008	LisaTerminal Data Sheet (25/box)		N/A	3.75	3.75
SALES SUPPORT MATERIALS					
A6L0008	Seminar Package		N/A	125.00	125.00
A6L0010	Speaker Slides		N/A	75.00	75.00
A6L0011	LisaFlash Videotape		N/A	25.00	25.00
A6L0012	Videotaped Demo		N/A	50.00	50.00
A6L0013	Poster		N/A	5.00	5.00
A6L0014	In-Store Display		N/A	125.00	125.00
A6L0015	Counter Card		N/A	10.00	10.00
A6L0104	Lisa Demo Book		N/A	75.00	75.00
MANUALS					
A6L0100	Hardware Theory of Operations		125.00 ea	75.00	75.00
A6L0101	Hardware Reference Guide		45.00 ea	27.00	27.00
A6L0103	Owner's Guide		45.00 ea	27.00	27.00
A6L0111	Pascal Manual Set		95.00 set	57.00	57.00
A6L0112	BASIC-Plus Manual Set		45.00 set	27.00	27.00
A6L0113	COBOL Manual Set		95.00 set	57.00	57.00
A6L0141	LisaCalc Manual		45.00 ea	27.00	27.00
A6L0142	LisaDraw Manual		45.00 ea	27.00	27.00
A6L0143	LisaGraph Manual		45.00 ea	27.00	27.00
A6L0144	LisaWrite Manual		45.00 ea	27.00	27.00
A6L0145	LisaList Manual		45.00 ea	27.00	27.00
A6L0146	LisaProject Manual		45.00 ea	27.00	27.00
A6L0147	LisaTerminal Manual		45.00 ea	27.00	27.00

apple computer

Part No.	Description	Notes	Suggested Retail Price	Single and Multiple Quantities 1-3	4-9	10-19	20-39	40-79	80+
PERIPHERALS & ACCESSORIES									
A9M0005	ProFile tm		TBA	TBA	TBA	TBA	TBA	TBA	TBA
A6C0005	ProFile Accessories for Lisa	4	TBA	TBA	TBA	TBA	TBA	TBA	TBA
A2M0058	Dot Matrix Printer		695.00	459.00	445.00	427.00	418.00	407.00	401.00
A3M0025	Letter Quality Printer	5	2195.00	1405.00	1361.00	1328.00	1310.00	1293.00	1275.00
A2M0052	Parallel Interface Cable		14.00	9.00	9.00	9.00	8.00	8.00	8.00
TBA	FileWare		TBA						

Notes: * Availability To Be Announced
(1) Consists of 1-Mb Lisa, ProFile and Cable, LisaCalc, LisaGraph, LisaWrite, LisaList, LisaDraw and LisaProject.
(2) Consists of Lisa Office System, Dot Matrix Printer and Cable, and Parallel Card. One Demo System per authorized store location only.
(3) Shipment pending FCC approval.
(4) A ProFile Accessories Kit must be purchased with each ProFile system to complete the unit.
(5) Also called Daisy Wheel Printer

Apple and the Apple logo are registered trademarks of Apple Computer, Inc.
ProFile is Apple's trademark for its 5-megabyte mass storage device.

Prices are subject to change without notice.
Quantity prices apply to single delivery, single location.

Lisa

Personal Office Systems Products
Suggested Retail Price List
January 15, 1983

Part No.	Description	Notes	Suggested Retail Price
SYSTEMS			
A6P0001	Lisa Office System	(1)*	9995.00
SOFTWARE			
A6D0157	LisaTerminal		295.00
A6D0101	Pascal		595.00
A6D0103	BASIC-Plus		295.00
A6D0104	COBOL		995.00
INTERFACE CARDS			
A6BB101	Parallel Card	(3)	195.00
MANUALS			
A6L0100	Hardware Theory of Operations		125.00 ea
A6L0101	Hardware Reference Guide		45.00 ea
A6L0103	Owner's Guide		45.00 ea
A6L0111	Pascal Manual Set		95.00 set
A6L0112	BASIC-Plus Manual Set		45.00 set
A6L0113	COBOL Manual Set		95.00 set
A6L0141	LisaCalc Manual		45.00 ea
A6L0142	LisaDraw Manual		45.00 ea
A6L0143	LisaGraph Manual		45.00 ea
A6L0144	LisaWrite Manual		45.00 ea
A6L0145	LisaList Manual		45.00 ea
A6L0146	LisaProject Manual		45.00 ea
A6L0147	LisaTerminal Manual		45.00 ea
PERIPHERALS & ACCESSORIES			
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A3M0025	Letter Quality Printer	5	2195.00
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A6BB101	Parallel Card	(3)	195.00
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A6L0100	Hardware Theory of Operations		125.00 ea
A6L0101	Hardware Reference Guide		45.00 ea
A6L0103	Owner's Guide		45.00 ea
A6L0111	Pascal Manual Set		95.00 set
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PRESS INFORMATION

APPLE COMPUTER, INC.

PRESS BACKGROUND INFORMATION

APPLE COMPUTER, INC.
20525 Mariani Avenue
Cupertino, Calif. 95014
Renee Olsen (408) 973-3019

Or:

REGIS MCKENNA PUBLIC RELATIONS
1800 Embarcadero Road
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Shivonne Byrne (415) 494-2030

10260 Bandley Drive
Cupertino, California 95014
(408) 996-1010

Apple was among the first to recognize the importance of convenient product availability and fast, complete service. Today the company has one of the most extensive personal computer sales and service networks in the world.

APPLE TODAY

Apple Computer designs, manufactures and markets personal computers and systems for use in business, education, scientific, and home applications. Apple's manufacturing plants are located in and around corporate headquarters in Cupertino, Calif.; and in Garden Grove, Calif.; Carrollton, Texas; Cork, Ireland; and Singapore. In addition, 12 regional support centers in the U.S. and Europe distribute Apple products worldwide to a network of more than 3,300 independent retail dealers.

Incorporated in 1977, Apple is one of the leading manufacturers of personal computers. By the end of 1982, over 750,000 Apple systems had been sold worldwide.

Apple's main products are the new Apple //e personal computer, the Apple /// computer system, and Lisa--a revolutionary personal computer for the office. The Apple //e is a full-featured, low-cost, personal computer system. The more powerful Apple /// is aimed at the small business and professional user. Lisa, the most sophisticated microcomputer available today, brings 32/16-bit technology and true simplicity of use to the office environment.

In addition, Apple designs and manufactures its own disk drives, printers, and other accessories and develops software for its computers.

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INTRODUCTION

Apple Computer Inc., is in a young and rapidly growing industry—personal computing.

In 1982, the industry was eight years old, yet retail sales of hardware equipment approached $2.5 billion. By 1985, industry sales are expected to grow to $6.75 billion.

Behind these dollar figures lies the true significance of personal computing. It is bringing computer power to countless thousands of new applications because of the low cost, small size, and ease of use of personal computers. There were nearly two million personal computers in daily operation in 1982. That figure will swell to approximately 11.5 million personal computers in 1985.

One-On-One Relationship

From this growth has emerged a new concept, the one-on-one relationship between an individual and a computer. Apple computers are used to predict production costs and profits; create charts and graphs for boardroom presentations; monitor oil-drilling operations; process payroll and inventory for small- and medium-sized businesses; help students at all levels improve their skills in mathematics, spelling, science, and other subjects; and administer and score personality tests for psychologists. They are used by lawyers in the courtroom, and by insurance executives making sales calls.

Apple has helped define the personal computer market, educating people to the potential of these machines and developing systems and software in direct response to customer needs.

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Many independent companies also make equipment and write programs for Apple computers, assuring users of a wide selection of hardware and software with which to expand their systems.

The international market is a large and growing one for Apple. The company began manufacturing personal computers in Cork, Ireland, in 1980 to serve the European market. At the same time, it opened a European regional distribution and support center in Zeist, the Netherlands, and a European marketing and sales headquarters located in Paris. By the end of 1982 there were also distribution and support centers in Great Britain, France, Germany, Australia, and Japan.

ORIGINS--THE FIRST APPLE

The history of Apple Computer begins in early 1976 when two young, self-made engineers collaborated on a small computing board for personal use. Steven P. Jobs, then 21, and Stephen G. Wozniak, then 26, took six months to design the prototype, 40 hours to build it, and soon had an order for 50 of their personal computers.

With that first order in hand they raised about $1,350 from the sales of a used Volkswagen van and a programmable calculator, and set up shop in Jobs' garage. Soon they were doing well enough to form Apple Computer Company, with Jobs as business manager and Wozniak as engineer. They named their computer--and the company--Apple because an apple represents the simplicity they were trying to achieve in the design and use of their computers.

Their first computer--sold in kit form to electronics hobbyists--was so successful that demand soon outstripped the capacity of both Jobs' garage and their capital. Believing they had a product with great

commercial and social value, Jobs and Wozniak set out to find professional managers.

Their first recruit was A.C. "Mike" Markkula, whom they met through a mutual friend. Markkula has successfully managed marketing in two semiconductor companies that experienced dynamic growth--Intel Corporation and Fairchild Semiconductor. Today he is Apple's President and Chief Executive Officer.

After researching the personal computer market and assessing Apple Computer's chances, the three men developed plans for acquiring the necessary capital, management expertise, technical innovation, software development, and marketing.

Initial financing for Apple came from Markkula and a group of venture capitalists that included Venrock Associates, Arthur Rock and Associates, and Capital Management Corporation.

Apple remained a private corporation until December, 1980, when it made a public offering of 4.5 million shares of common stock. A second offering of 2.3 million shares of common stock by approximately 100 selling stockholders, all of whom acquired the shares under employee stock plans or private placement, took place in May 1981.

The company mushroomed and now employs more than 3,700 people at Apple's offices, manufacturing plants, and distribution and support operations throughout the world.

Apple has grown in six short years from a two-man operation run out of a garage to a large corporation with sales of over $583 million for fiscal year 1982. When the company enters the ranks of the Fortune 500 in 1983, it will be the youngest company ever to do so.

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FOR RELEASE 12 NOON P.S.T.
JANUARY 19, 1983

APPLE INTRODUCES LISA^{tm}, A REVOLUTIONARY PERSONAL COMPUTER FOR THE OFFICE

CUPERTINO, Calif., January 19, 1983--Apple Computer, Inc. today announced the Lisa^{tm} system, a new kind of personal computer aimed at revolutionizing the way work is done in office environments. Priced under $10,000, Lisa incorporates the latest software and hardware technology in a desktop system that's powerful and advanced, yet so easy to learn that a first-time user can begin putting it to work in less than 30 minutes.

Lisa (Local Integrated Software Architecture) forges a new relationship between users and computers, allowing people to work in a more natural way without having to adopt rigid computer conventions or special languages. Lisa's screen displays simple pictures of documents, folders, and other familiar things in a typical office. A palm-sized device called a "mouse" is used to point to and manipulate these items, and to perform desired tasks.

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10260 Bandley Drive
Cupertino, California 95014
(408) 996-1010

Six integrated software applications for Lisa cover the core functions of today's office: spreadsheet analysis, word processing, business graphics, graphics design, personal filing, and project management. The user is able to view multiple applications and documents on the screen simultaneously, transferring information between them quickly and easily.

Development of Lisa began in 1979, as Apple sought to create a product that uniquely addressed the needs of individuals who work in offices. Over $50 million and more than 200 person-years of development effort have been dedicated to designing the system.

"Lisa embodies a radical change in how users work with computers," said John Couch, vice president and general manager of the Personal Office Systems Division. "Conventional computers created obstacles for those who wanted to make their jobs more efficient. We used progress in microtechnology, plus advances in software technology, to remove many of those obstacles and to make a computer that really is simple to use."

The Lisa Environment

Lisa fosters a more productive, efficient office environment by following the work habits of the individual. The result is a system that functions as a natural extension of its user.

Largely responsible for Lisa's ease of use are pictures on the screen of objects usually found on an office desktop, and the mouse, which moves the screen's pointer. The user controls the Lisa system intuitively by pointing at and selecting the symbol for a file folder, a memo pad, a wastebasket, or other familiar objects.

Once selected, an object is used just like its real-life counterpart. A file folder, for example, can be opened and the contents revealed; documents can be refiled, copied, taken out and changed, put in a new file, or thrown away.

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The basic functions in all six of Lisa's integrated software applications operate in the same way. Thus, once a person has used one application, he can learn the others more quickly.

Transferring information from one application to another also is made easy with Lisa. For example, when writing a cost analysis report, the user can quickly shift from word processing to a spreadsheet model to perform the calculations. At that point the user may choose to "cut out" the spreadsheet and "paste" it into the report, or to transfer the spreadsheet information to a business graphics application and turn out presentation-quality graphs--all at the touch of a button.

Designed for the Office: Six Integrated Software Applications

Lisa's software applications are integrated business tools designed to streamline all the work of the office professional, from report writing and forecasting, to financial modeling, project management, and product design.

LisaCalc™ is an electronic spreadsheet for handling budgets, forecasts, and other row-and-column format models that help users plan better. Different assumptions about a forecast situation can be made, plugged in, and results calculated and displayed instantly. Using the mouse, LisaCalc models can be transferred into other programs in seconds.

LisaWrite,™ a word processing program, lets the user generate any written text, from a short memo to a lengthy report. Inserting words, rewriting text, and other sophisticated editing functions can be done quickly and easily. With the mouse, the user can easily select bold, italic, and underlined text in any combination and in a variety of typestyles--all visible on screen. In addition, a user can print one document while simultaneously creating or editing others.

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LisaGraph™ allows users to display spreadsheet data and a related graph--either bar, line, bar/line mixture, scatter graph, or pie chart--together on the screen. The program plots up to seven data sets on a single graph. Blocks of data transferred from LisaCalc to LisaGraph are plotted automatically. Graphs can be customized by cutting and pasting them into LisaDraw.

LisaDraw™ enables users to enhance reports and presentations with clear, easy-to-prepare graphics. Using the mouse and a "palette" of shapes that include lines, rectangles, circles, and freehand shapes, the user can draw organization and flow charts, technical diagrams, schematics, and other visual aids. Shapes can be moved, duplicated, reduced, and expanded automatically to meet the user's needs. Printouts reflect exactly what is on the screen.

LisaList™ is a data base application that searches, sorts, and extracts information quickly and easily. All types of files, from client lists and job candidate data, to competitive product information and other records, can be created and accessed with the program. Sensitive data can be suppressed for security. And columns can be added, deleted, expanded, narrowed, or repositioned at any time without reentering data.

LisaProject™ permits the management of complex projects, including deadlines, resources, and critical paths. One project milestone can be changed and its effect on other milestones will be seen immediately. Results can be printed out in various sizes, from wall charts to single-page reports. Reports are available in Schedule, Task, and Resource formats.

Development Tools

Lisa runs BASIC, Pascal, and COBOL high-level languages, allowing users and independent software vendors to augment Lisa's repertoire of

applications with programs tailored to specific needs. A Lisa Applications Development Toolkit, to be available later in 1983, will help users and software developers create additional integrated programs for Lisa.

In addition, Lisa will support other major operating systems, including the CP/M™ family, available from Digital Research, and Xenix™, available from Microsoft. Other independent software companies are already developing additional applications.

Lisa's High-Performance Hardware Architecture

Lisa is powered by the MC68000, a 32/16-bit microprocessor that has the capability to combine software, display, keyboard, mouse, and peripherals into the most versatile, easy-to-use system yet developed. The MC68000 features 32-bit internal architecture and a 16-bit external data path. Three other microprocessors control input/output functions, relieving the MC68000 of the additional processing overhead and allowing the system to achieve even higher levels of performance.

The system is configured with one megabyte of main memory and 1.7 megabytes (formatted) of built-in mass storage on two 5 1/4-inch floppy disk drives. These incorporate the Apple 871 disk drive, a high-density, double-sided mechanism which provides greater integrity of data, greater data capacity, and faster data transfer rate than conventional floppy disk drives. Apple's ProFile™, bundled with Lisa, is a self-contained, five-megabyte hard disk storage system. It allows Lisa's applications to be stored on one disk and gives the user the advantage of running all Lisa applications concurrently.

Lisa features a 12-inch, black on white, bit-mapped screen. This high resolution screen displays 364 lines of 720 dots each, letting the user create extraordinary graphics and up to 132 columns and 40 rows of sharp,

clear text. Although the mouse replaces special function keys, the keyboard can be programmed for special character functions. Lisa is equipped with a typewriter-style keyboard with a numeric keypad. With a single keystroke, standard characters can be quickly shifted to mathematical symbols or foreign characters.

The system's three built-in interface ports--two serial and one parallel--let Lisa fill a multitude of roles. Using LisaTerminal^{tm}, a telecommunication software package being developed by Apple, Lisa functions as a teletype terminal, a DEC VT100 or DEC VT52 terminal, or an IBM-compatible terminal. When linked to AppleNet^{tm}, Apple's newly announced local area network, Lisa makes it possible for users to share peripherals and exchange information and files.

Interface to external peripherals is handled through either the parallel port or the two serial ports, one of which is equipped for modem interface. The parallel port is used to support the ProFile. Lisa also provides three additional expansion slots, each of which can support special interface boards.

Lisa's hardware components are organized into convenient plug-in modules. LisaTest^{tm}, a diagnostic software program, permits swift determination of any module failures; the plug-in modules allow equally rapid replacement.

Peripherals That Match Lisa's Capabilities

Using dot matrix and daisy wheel printers, Lisa produces printed materials with sharpness unmatched by any other similarly priced system.

Apple's Dot Matrix Printer reproduces everything--manuscripts, charts, pictures and designs--exactly as they appear on the screen, with quality equal to that of printers costing thousands of dollars more. Its high-resolution mode (160 by 144 dots-per-inch) supports proportional

--more--

spacing of bold, italic and underlined type in 22 different typestyles. The printer's draft mode provides high speed printout of long lists and inventories at 120 characters per second.

Like the dot matrix printer, Apple's daisy-wheel printer produces exactly what is on the user's screen, including graphics. Appropriate for written material that requires letter quality, the printer uses a 130-spoke print wheel and new, multipitch and multifont print wheels. These let the user print a variety of text without changing print wheels. Lisa's daisy-wheel printer prints 45 characters per second.

For greater on-line storage, Lisa can be bolstered with additional five-megabyte ProFile hard disks. These mass storage systems feature faster access and data transfer than traditional floppy disk drives.

Communication Facilities

Using a plug-in modem, LisaTerminal software lets the user gain access to remote mainframe computers, and remote data bases such as CompuServe^{tm}, The Source^{tm}, and Dow Jones News Service^{tm}.

LisaTerminal lets Lisa emulate teletype DEC VT100 or VT52 terminals, providing communication with large DEC-compatible systems. Lisa can communicate with any IBM or IBM-compatible system that supports the 3270 bisynchronous protocols through a 3270BSC software package being developed by Apple.

Local Area Networks

Lisa also is designed to become a part of AppleNet, a low-cost local area network being developed by Apple. AppleNet links Lisas together--and to other Apple systems--allowing them to electronically transfer information and documents, and to share expensive peripherals such as mass storage systems and printers.

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In addition to AppleNet, Apple plans to offer interface devices for other local area networks, including Xerox Corporation's Ethernet[tm]. As with AppleNet, the interface will inter-connect all types of Apple computers--Apple //'s, Apple ///'s, and Lisas.

Service And Support

Innovative self-teaching materials are available with the Lisa system. Included is a self-paced, computer-based tutorial program called LisaGuide[tm]. In addition, a short tutorial at the beginning of each manual enables Lisa users to begin doing useful work in under 30 minutes. The materials are supplemented by easy-to-follow reference manuals. Self-instruction on conventional personal computers takes about 10 times as long.

Several flexible and economical service and support options are available to Lisa users, including Apple's toll-free number where a Lisa specialist will be able to answer questions on any part of the system. The same number will carry information on all software updates. As with other Apple products, AppleCare Carry-In Service is available. Or, users may prefer to take advantage of Apple's on-site service program, a joint effort between Apple and RCA. In addition, Apple can provide in-house training for large firms wishing to do their own maintenance.

Price And Availability

The Lisa system includes the computer with one megabyte of read/write memory and two built-in floppy disk drives, a five-megabyte ProFile, and the six integrated application programs. This system has a suggested retail price of $9995, and will be available from authorized Lisa dealers in the United States in spring 1983. LisaTerminal also will be available

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in spring 1983. Several foreign language versions of Lisa will be introduced worldwide in summer 1983. AppleNet, the Ethernet interface device, and the 3270 data communication package will be available in late 1983.

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apple computer

PRESS INFORMATION

APPLE COMPUTER, INC.
20525 Mariani Avenue
Cupertino, CA 95014
Renee Olsen (408) 973-3019

Or:

REGIS MCKENNA PUBLIC RELATIONS
1800 Embarcadero Road
Palo Alto, CA 94303
Shivonne Byrne (415) 494-2030

FOR RELEASE 12 NOON P.S.T.
JANUARY 19, 1983

APPLE TO MARKET LOCAL AREA NETWORK

CUPERTINO, Calif., January 19, 1983--Apple Computer, Inc. has developed a local area network that will allow companies to link together electronically their Apple personal computers to exchange information and share centrally-stored files.

The network, known as AppleNet^{tm}, speeds and enhances typical office communications by allowing Apple computer users to electronically transfer information from one system to another quickly and easily. Designed especially to complement Apple personal computers, AppleNet combines reliability and simplicity in design, and is easier to install than a home stereo.

10260 Bandley Drive
Cupertino, California 95014
(408) 996-1010

--more--

AppleNet links together as few as two systems or can be expanded to meet the needs of a larger office. All Apple computers--Lisa, Apple ///, and Apple II--use AppleNet. Thus, an organization can connect all of its Apples to a single network. At under $500 per connection, AppleNet is a cost-effective solution for both large and small organizations.

"Apple recognizes that network communication is an integral part of the personal computer industry. As a result, we are firmly committed to providing this capability for all Apple users," said A.C. Markkula, Jr., president and chief executive officer.

AppleNet uses the published and widely-accepted Xerox Network Systems (XNS) Protocols. Apple will encourage the development of network-related products by making public all network interfaces and specifications. All Apple software will be developed to function on both AppleNet and the Xerox/Intel/DEC Ethernet^{tm} standard network.

Network Capabilities

Local area networks enable computers in the same office to communicate with one another via electronic messages sent along a cable. Through AppleNet, users can gain access to information contained in common files and data bases, distribute documents electronically, share peripherals such as expensive mass storage devices and printers, and communicate with other computers and remote data bases.

Using a drop cable, systems are connected to the network through an interface device called a cluster box--a passive unit containing no electronic components. Each box supports the connection of up to four computers to the network cable. For offices starting with two to four computers, only one cluster box is required. For larger networks, cluster boxes are connected to a twinax network cable--a standard, two-conductor cable shielded for noise immunity.

--more--

Each 2,000 feet of twinax cable can support up to 32 cluster boxes--a total of 128 systems. A simple "gateway" computer expands AppleNet past 2,000 feet. AppleNet provides flexibility in the physical office arrangement by allowing drop cables connecting computers to the network to be extended up to 100 feet from the cluster box.

AppleNet's Baseband Bus Architecture uses Carrier Sense Multiple Access with Collision Detection (CSMA C/D) to avoid data loss during communication. The twinax cable carries information at one million bits per second.

All network electronics are located on an interface card that plugs into the computer. This modular design increases network reliability, and, should a network failure occur, promotes swift isolation of the problem.

Availability

AppleNet will be available in late 1983 through Apple's National Accounts program and authorized Apple dealers.

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apple computer inc.

APPLE CONFIDENTIAL

LISA INTRODUCTION CALENDAR

FOR: APPLE SALES OFFICES

APPLE MANUFACTURER REPS

APPLE NATIONAL ACCOUNT EXECUTIVES

DATE: JAN. 19, 1983

NOT FOR DEALERS--SEPARATE CALENDAR

WAS SENT TO APPLE PERSONAL OFFICE SYSTEM DEALERS

Your Calendar and Dealers' Calendar

This Calendar summarizes the January through April agenda for Field Sales and Apple Personal Office System Dealers. As such, this is your schedule of what's going to happen as the Lisa Introduction unfolds. Review this, and make sure you understand your role(s).

Do not show your Calendar to Apple Personal Office System dealers (we'll call them POS Dealers hereafter) -- POS Dealers (or, Lisa Information Centers for now) are getting their own calendar in parallel to you receiving this Calendar. A copy of their Calendar is enclosed, for your information.

Assistance from Apple

A Hotline has been set up by Apple's POS Division to help you with questions you find unanswered here. But PLEASE take the time to read over this Calendar first. The Hotline number is (408) 973-2810; Marcia Lindberg will take your question.

Do NOT, however, call the Hotline for details on the March-April Lisa Seminar Program. You'll find the Lisa Seminar Program summarized in Sec. 4 of this Calendar document. Later, Judy Castanola in POS Marketing ((408)-973-2578), will have details on the Seminar Program.

Here's what's in this Calendar memo.

LISA INTRODUCTION CALENDAR

	Page
1. Summary	1
2. Schedule of Lisa Mailings, Materials, and Lisa Units	2
3. Schedule of Lisa Product Training	5
4. Schedule for the Lisa Seminar Program	7
5. Schedule of Shows, Advertising and other Key Outside Events	9
6. Monthly Calendars for January, February, March, and April	10

1. SUMMARY

The Lisa Information Center List, which is in the same package as this Calendar, gives our current Personal Office System Dealer candidates.

On January 19, Apple formally announces Lisa to the public; ALL Apple dealers also receive a Lisa Flyer in their New Product Announcement of January 19. This New Product Announcement is a combined Apple //e and Lisa announcement.

Between January 19 and Lisa's first shipments, this Spring, several important product training, sales training, and other introduction activities will occur. The key activities are:

Mailings, Materials, Lisa Units

- o Field Sales and/or POS Dealers will receive several informational mailings on Lisa -- starting January 19.
- o Fields Sales and Dealers will both receive 4-part installments of the Lisa Starter Kit.

Lisa Product Training

- o Field Sales and POS Dealers will be given their sales and marketing training for Lisa.
- o Field Sales will be given Lisa hands-on training. Then POS dealer salespeople will also be given Lisa hands-on training -- so that they'll be able to effectively use their store's Lisa demo unit.

Lisa Demo Units and Training Units

- o In February, Lisa units will arrive at the training facilities of each Apple office -- and other units will arrive for National Account Execs.
- o Shortly thereafter, POS dealers' Demo units will arrive at dealerships.

Lisa Seminar Program

- o Lisa Seminars will be given around North America for National Account Execs' key prospects.
- o The Seminars will also be (separately) given to dealers -- as a presentation model to see and later emulate.

2. SCHEDULE OF LISA MAILINGS, MATERIALS, AND LISA UNITS

What mailings (both informational mailings and materials mailings/shipments) to Apple Regional Offices, Apple Reps, and POS Dealers will occur? When? How? To whom? Here's your summary:

APPROX. DATE YOU'LL RECEIVE IT	MAILING TYPE & WHO GETS IT	DESCRIPTION
1/17	Informational -- for: Apple locations (sales offices, support centers, manuf sites, etc.)	Apple Employees' Announcement Package -- joint "inside" announcement of Lisa and Apple //e. Package contains: - Markkula letter - press releases - Apple //e literature - Apple //e tape - Lisa flyer - "Soul of Lisa" video tape - Lisa Demo tape - Balloons, etc.
1/19	Informational -- for: Field Sales, ALL dealers.	New Product Announcement -- jointly, for Apple //e and Lisa. This is a regular field sales and dealer mailing.
1/19	Informational -- for: Field Sales, Lisa Info Centers.	Letter on Lisa Training Details A summary of the particulars of the Feb 7-12 Lisa Training (discussed in Sec. 3, below).
1/19	Materials -- one for each: Lisa Info Center, Apple Sales Office, Rep firm office, & each National Account Exec.	Lisa Starter Kit - Part 1 this is a set of sales literature to use in selling the Lisa product line. Quantities of sales literature are included as listed below. Part 1 contains: - Cover letter - Lisa and Network press releases - Lisa Information Centers List - POS Dealer Price List - Calendar of Events (the one you're reading now; POS dealers get their own version of it) - Lisa demonstration video tape (1/2 in VHS, 15 min.) - Network Information Package - Data Sheets for the 6 Lisa applications in the Lisa Office System bundle (200 ea.): LisaCalc (spreadsheet) LisaList (data manager) LisaWrite (word processor) LisaGraph (business graphics) LisaDraw (graphics editor) LisaProject (project schedule) - 4 Page Lisa Flyer (300)

		Lisa Starter Kit - Part 1 will be sent via the Mailhouse -- directly to fields sales and directly to Lisa Information Centers.
1/24	Materials -- one for each Apple Sales office.	Procedures for Lisa Seminar Arrangements This tells how to set up a Lisa Seminar (room layout, equipment, invitations, etc.) -- you'll use it to get set for the Lisa Seminar Program (discussed in Sec. 4).
2/1	Materials -- one for each: POS Dealer, Apple sales office, Rep firm office, and each National Acct Exec.	Lisa Starter Kit - Part 2 -- This is the second installment of sales materials for Field Sales and POS Dealers. It contains: - Cover letter - Data Sheet, Lisa System Overview (200) - Data Sheet, Lisa System Hardware (200) - Data Sheets for 4 more Lisa products: ProFile (200) BASIC Plus (200) COBOL (200) Pascal (200) - 18 Page Lisa Brochure (100) - Draft Dealer Info Guide - Lisa Questions and Answers - Lisa Seminar schedule & locations - Lisa presentation materials which can be made into overheads - Lisa Buttons (10) - Lisa Posters (2) Part 2 will be shipped to each recipient direct from the Mailhouse. EXCEPT that each POS Dealer's set will be shipped to that Dealer's Rep -- so that a Rep can personally deliver the materials and review them with the Dealer.
February	Lisa Units -- for: POS Dealers, Apple Regional Training Mgrs/ Specialists, Rep firms, & National Acct Execs.	Lisa Training Units and Dealer Demo Units -- One Lisa Demo System is orderable by each POS Dealer -- at a dealer cost of $5,995. Other units available to Apple sales and Apple Reps.

3/1

Materials -- for: POS Dealers, Apple sales offices, Rep firm offices, and each National Acct Exec.

Lisa Starter Kit - Part 3 This contains:

- Cover letter
- 1 Lisa Point-of-Sale Display (EXCEPT for National Acct Execs)
- 2 Lisa Point of Sale Mobiles (EXCEPT for National Acct Execs)
- 1 Launch Package, containing final copies (1 each) of:
  - Dealer Info Guide
  - Dealer Sales Handbook
  - Sales/Marketing Binder
  - Ad Planner Kit
- 1 Lisa Seminar Kit, with product slides.
- Data Sheets for 4 more Lisa products:
  - Dot Matrix Printer (200)
  - Daisy Wheel Printer (200)
  - LisaTerminal (200)
  - Parallel Card (200)

All these materials are shipped direct to the recipients by the Mailhouse. EXCEPTION: for POS Dealers, the first 3 items in the above list go directly to each POS Dealer. Each POS Dealer's copies of the last 2 items listed get shipped to that dealer's Rep firm office -- so that a Rep can, him(her)self, take them to the dealer -- going over these sales/marketing materials in depth with the dealer principal/ sales manager and then with the store salespeople.

4/1

Materials -- for: Each Field Sales Training Mgr./ Specialist, Each POS Dealer.

Lisa Starter Kit - Part 4 This is the Lisa Demo Book -- for learning how to give customer-oriented demos of Lisa and its applications.

Will be sent by the Mailhouse direct to each Field Sales recipient. Dealers' copies will go their respective Rep firm office -- so that a Rep or the Rep Training person can go over it one-on-one with the dealer salespeople.

3. Schedule of Lisa Product/Sales Training

Each Rep Firm and each POS Dealer will receive a 3-day product/sales training course on Lisa. At the end of the 3 days, each trainee should be able to discuss or describe the product and its market position -- as well as be able to demonstrate the 6 applications in the Lisa Office System bundle:

- LisaCalc
- LisaDraw
- LisaGraph
- LisaList
- LisaProject
- LisaWrite

Attendees will be given drafts of the:

- Lisa Launch Package -- which contains a Dealer Info Guide, a Lisa Sales Handbook, an Ad Planner Kit, and a Lisa Sales/Marketing Binder.
- Lisa Seminar Kit
- Lisa Demo Book

which will support their sales efforts until the final copies of these are shipped to them on 3/1.

This training will be conducted in the period February 7-12. There will be only 3 training sites: one in Cupertino, one in Dallas, and one in Newark NJ (details in a letter to Field Sales and POS Dealers on/about Jan. 19). At each site, the Feb. 7-12 period will be used this way:

Feb. 7-9 : Three (3) people from each Rep firm office may attend. They will be trained on:

- Product overview and positioning
- Product pricing
- Personal Office System Dealer Program
- The Lisa system
- Lisa system set-up
- The Lisa applications
- Giving Lisa demos
- Giving Lisa Seminars

The course will be taught by training people from Apple's POS Marketing and from Retail Sales Development. Apple Regional Training Specialists will also be in attendance -- as course assistants.

Feb. 9 -- Evening : The course presenters and the Regional Training Specialists will meet to debrief themselves on the Feb. 7-9 training they just completed. Purpose: prepare the Regional Training Specialists for giving the course -- in the next 3 days -- to dealers.

Feb. 10-12 : One (1) designated salesperson from each authorized store location will attend this 3-day course. (On the first day only, a dealer principal or sales manager may accompany this person). He/she'll learn the same things that the Rep trainers/SSAs just learned. The emphasis will be to ensure that he/she can fully demonstrate and discuss Lisa and all its applications. The 3-day course will be taught by a team of the Regional Training Specialists -- with the Apple POS Marketing and Retail Sales Development people acting as assistants.

Field Sales and POS Dealers will receive a letter on/about Jan. 19 that detailing who should attend the training sessions -- and when and where.

4. Schedule for the Lisa Seminar Program

The Lisa Seminar Program will be conducted between March 7 and April 7. Seminar selling is key to Lisa sales. The Lisa Seminar Program gives National Account Execs, Reps, and POS Dealers the experience of a Lisa Seminar -- and training in how to use the Lisa Seminar Kit to do their own Lisa Seminars.

How will National Account Execs, Reps, and POS Dealers get this experience and training? Through attending a Seminar that'll come to their locale. 16 U.S. and 3 Canadian cities will each have a 2-day visit, for Seminar training, by a Cupertino team from Sales and POS Marketing.

The cities are (dates, places, and the other specifics will follow soon):

City

WESTERN U.S.:

Seattle, WA
San Francisco, CA
Los Angeles, CA

CENTRAL U.S.:

Chicago, IL
Detroit, MI
Minneapolis, MN
Cincinatti, OH
St. Louis, MO
Dallas, TX
Houston, TX

EASTERN U.S.:

Boston, MA
New York, NY
Philadelphia, PA
Washington, DC
Atlanta, GA
Miami, FL

CANADA:

Montreal, Quebec
Toronto, Ontario
Edmonton, Alberta

The Cupertino teams will spend day-1 of each 2-day visit to conduct a Lisa Seminar. The Day-1 agenda is:

DAY-1, LISA SEMINAR

8 - 10 a.m.	Seminar to local POS Dealers. This seminar will "show by example" how to give a Lisa presentation to prospects. It will be exactly the same presentation as given to Apple National Account Execs later in the day. These dealers' Reps will also attend.
1 - 3 p.m.	Seminar to local National Account Execs and their accounts.
3:30 - 5:30	A second Seminar to local National Account Execs and their accounts.

REMINDER: On/about January 24, you'll receive your Lisa Seminar Procedures mailing. Use those procedures to get set up for these March & April Seminars. Contact either Judy Castanola in POS Marketing ((408) 973-2578) if you need information/assistance on scheduling and setting up for the Seminars.

Day-2 of each visit would be spent with the Cupertino team making visits to POS Dealers' stores in the area as well as to National Accounts in the area -- answering questions and seeking feedback. Here's how Day-2 is planned:

DAY-2, LISA SEMINAR

9 - 12 a.m.	Cupertino team visits National Accounts in the area, as desired by local National Account Execs.
1 - 5 p.m.	Cupertino team visits local POS Dealers.

5. Schedule of Shows and other Key Outside Events

Here are some other events to be aware of:

Date(s)	Event
1/19	Lisa and Apple //e public announcement. Press stories.
1/19 - 1/21	Info West, Los Angeles -- Lisa's first regional show.
1/20	BusinessWeek Magazine story on newstands. Stories in other major business and trade publications start on this date, too.
1/21 & 1/24	3-pg Wall Street Journal Ad appears on these two dates.
1/25 - 1/27	Automated Office Expo, San Francisco -- Lisa's second regional show.
1/26	Lisa and Apple //e shown at the meeting of the Boston Computer Society.
1/30 - 2/3	ASM, RSM, DSM Meeting, Steamboat Springs, CO.
2/12	Lincoln's birthday.
2/14	Today Show -- Steve Jobs interview; national TV.
2/21	Apple Holiday -- President's Day
2/21 - 2/23	The Office Automation Conference -- Philadelphia, Lisa's first national show.
2/22	Washington's Birthday
2/27 - 3/3	Apple Dealer Council Meeting, San Francisco
3/29	Passover
4/1	8-page Lisa advertising insert starts appearing in major publications.
4/3	Easter

6. Monthly Calendars for January, February, March, and April

On the next 4 pages you'll find calendars, which you may want to post in your office, for the months of January, February, March and April. These calendars summarize all the activities that were covered in Sections 1-5, above.

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LISA INTRODUCTION ACTIVITIES CALENDAR

For the Month: January

SUN	MON	TUES	WED	THURS	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17 Mailing: Apple Empl Anncmt Pkg	18	19 Mailings: New Prod Anncmt, Lisa Trn Letter, Lisa Starter Kit. part 1 (Note 1) Lisa & //e Pub.Anncmt.--Info West-LA (Note 2)	20 Lisa articles in major bus publications	21 3-pg Wall St Journal Ad	22
23	24 Mailing: Proc for Lisa Sem. Arrngmts 3-pg Wallst Journal Ad	25 <Automated Office Expo--San Francisco> Lisa's second reg. show	26 Boston Comp. Society	27	28 Letter to all Apple Dealers --Nat Acct Pr	29
30 <ASM, RSM, DSM Mtg - Steamboat Springs, CO>	31 (through 2/3)					

NOTES:

(1) Lisa Starter Kit - Part 1 outlined in Sec. 2 of Lisa Intro. Calendar memo of 1/19/83.

(2) Lisa's first regional show.

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LISA INTRODUCTION ACTIVITIES CALENDAR

For the Month: February

SUN	MON	TUES	WED	THURS	FRI	SAT
		1	2	3	4	5
		Mailing: Lisa Starter Kit-Part 2 (Note 1)				
		<Lisa Units shipped to POS Dealers, Apple Regional Training Mgrs--				
6	7	8	9	10	11	12
	<Lisa Product/Sales Training>			<Lisa Training --Designated Salesperson>		
			Debriefing (Note 2)			
through February 15>>>>>

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LISA INTRODUCTION ACTIVITIES CALENDAR

For the Month: March

SUN	MON	TUES	WED	THURS	FRI	SAT
		1 — Lisa Starter Kit - Part 3 (Note 1)	2	3	4	5
6	7	8	9	10	11	12
	<-- Lisa Seminar Program Thoughout U.S. -- All through March					
13	14	15	16	17	18	19
	--- Lisa Seminar Program ----					
20	21	22	23	24	25	26
	--- Lisa Seminar Program ----					
27	28	29	30	31	COMING UP IN APRIL:	
---	---	---	---Lisa Seminar Progrem (2)----->		o Lisa Seminar Program for Canada.	
					o Lisa Starter Kit - Part 4 comes to Field Sales & POS Dealers (Note 3)	
					o 8-page Lisa Advertising inserts appear.	

NOTES:

(1) Lisa Starter Kit - Part 3 outlined in Sec. 2 of Lisa Introduction Calendar memo of 1/19/83.

(2) Lisa Seminar Program is outlined in Sec. 4 of Lisa Introduction Calendar memo of 1/19/83. Seminar will come to 16 U.S. cities in March; 3 Canadian cities in April.

(3) -- similarly for Lisa Starter Kit - Part 4.

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LISA INTRODUCTION ACTIVITIES CALENDAR

For the Month: April

SUN	MON	TUES	WED	THURS	FRI	SAT
					1 Lisa Starter Kit - Part 4 comes to Fld Sales & Dlrs. 8-pg Lisa Advertising insert begins	2
		-- Lisa Seminar Program ends for 16 U.S. cities ----->				
3	4 <--- Lisa Seminar Program	5	6	7	8	9
	for 3 Canadian cities ---------->					
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

NOTES:

(1) See Sec. 2 of Lisa Intro-duction Calendar memo of 1/19/83 for outline of Lisa Starter Kit Parts.

(2) See Sec. 4 of same memo for outline of Lisa Seminar Program.

Lisa

NETWORK INTRODUCTION PACKAGE

AppleNet Announcement

AppleNet Announcement	1
AppleNet Specifications	2
AppleNet Questions and Answers	8

Ethernet Announcement

Etherbox Specification	11
Etherbox Question and Answers	13

apple computer

AppleNet Press Release

Cupertino, California, January 19, 1983—Apple Computer, Inc. has developed a local area network that will allow companies to link together electronically their Apple personal computers to exchange information and share centrally-stored files.

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Using a drop cable, systems are connected to the network through an interface device called a cluster box—a passive unit containing no electronic components. Each box supports the connection of up to four computers to the network cable. For offices starting with two to four computers, only a cluster box is required. For larger networks, cluster boxes are connected to a twinax network cable—a standard, two conductor cable shielded for noise immunity.

Each 2,000 feet of twinax cable can support up to 32 cluster boxes—a total of 128 systems. A simple "gateway" computer expands AppleNet past 2,000 feet. AppleNet provides flexibility in the physical office arrangement by allowing drop cables connecting computers to the network to be extended up to 100 feet from the cluster box.

AppleNet's Baseband Bus Architecture uses Carrier Sense Multiple Access with Collision Detection (CSMA/CD) to avoid data loss during communication. The twinax cable carries information at one milion bits per second.

All network electronics are located on an interface card that plugs into the computer. This modular design increases network reliability, and, should a network failure occur, promotes swift isolation of the problem.

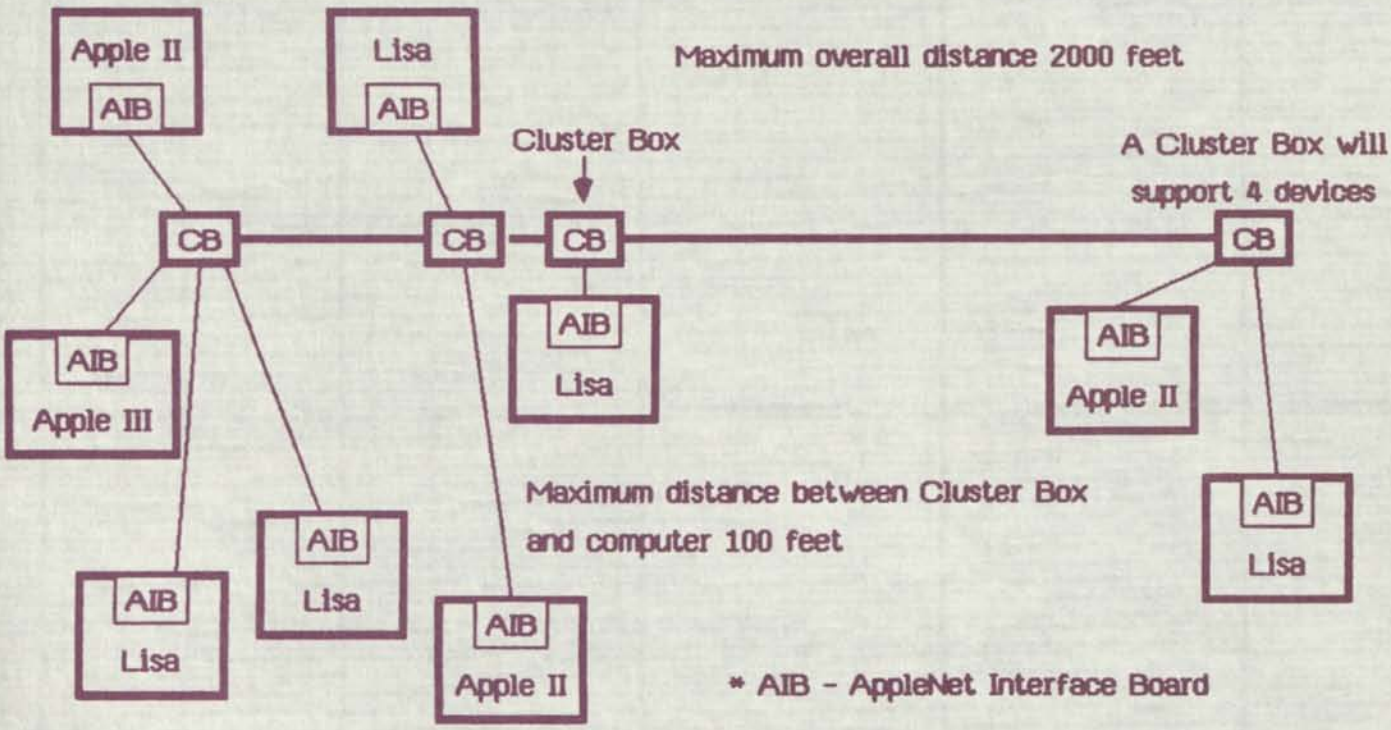
Availability

AppleNet will be available in late 1983 through Apple's National Accounts program and authorized Apple dealers.

AppleNet Specifications

- Baseband CSMA/CD (Carier-Sense Multiple-Access Collision Detection) Bus Topology.
- 1 Million bits per second Bandwidth.
- Maximum length of the Network Cable 2000 feet.
- Maximum length of the Drop Cable 100 feet.
- Network Cable Twinax.
- Maximum number of devices 128 per 2000 foot network.
- Passive network cable connection - Cluster Box.

AppleNet Architecture Diagram



Bus Topology

The primary advantages of the bus structure is the ability to implement distributed control of the bus. This results in a reliable topology in which the failure of any node disrupts service at that node only, while the rest of the network can continue to function.

The performance of bus topologies is dependent on the number of nodes connected, bus bandwidth, user traffic rates, protocols, and other timing related factors. Contention control schemes in which each node competes for access to the bus may provide bus utilization of 95% (or greater) of the available bandwidth.

Access Method

The contention scheme for controlling the distributed access of users to the AppleNet bus is Carrier-Sense Multiple-Access with Collision Detection (CSMA/CD). This is a decentralized control strategy in which each node wishing to access the bus listens to verify the transmission path is not being used before transmitting. Each node also listens while transmitting to detect a collision. If a collision occurs both sending nodes wait a different time interval (random) and try again. CSMA/CD was chosen because it is the most efficient access method available, is simple to implement, and is an access standard specified by IEEE 802 Local Area Networks Standards Committee. CSMA/CD also provides fair sharing of the network among nodes and remains stable under extreme network loads.

Bandwidth

Bandwidth is the width of the signal spectrum and is a convenient measure of transmission speed. Speed is an important property of any network in that efficient network utilization requires minimizing transmission time. The bandwidth of AppleNet was chosen as 1 million bits per second. This speed was chosen as appropriate for the cost/performance objective of AppleNet and more than adequate for the maximum number of nodes that AppleNet supports (128).

Extensive measurements have been performed on an 3 million bits per second operational Ethernet which supported 120 devices. These devices included personal computers, network servers, time-share computers, and gateways to other networks. Users of these devices use the network regularly for file transfer, electronic mail, bootstrap loading, software distribution, and many other purposes. In a typical 24-hour period, 2.2 million packets are carried in this network, totaling approximately 300 million bytes. For a 3.2 million bits per second channel, this amounts to less than 1 percent utilization of the available bandwidth. But utilization has high variance, and observed utilization has been as high as 3.6% for one hour, 17% for one minute, and 37% for one second. On the average, less than 1% of all packets are delayed due to deference, and less than 0.03% are involved in collisions. This existing Ethernet system could support a substantial increase in traffic without a noticeable increase in latency (message delay). This Ethernet was also tested under overload conditions and remained stable.

Because the number of nodes on a typical segment of AppleNet will be 40 to 60 rather than 120, a bandwidth of 1 million bits per second has proven to be effective and is expected to handle all levels of network activity.

Maximum Length of the Network

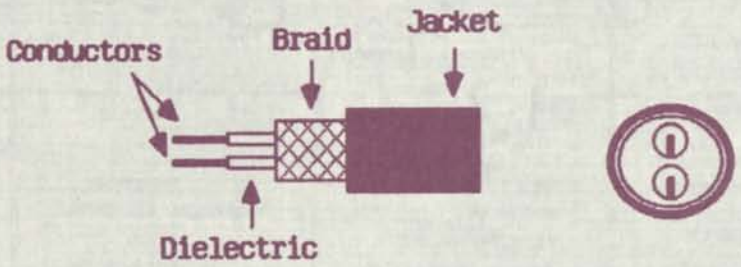
The maximum length of a single AppleNet is 2000 feet. This length is dictated by several factors, including the signal isolation of the cable used and the load imposed by cluster boxes on the cable.

Surveys showed that this length would satisfy most departmental level requirements. Gateways will be used to connect AppleNets that require greater geographical coverage.

Network Cable

The network cable chosen for AppleNet is twinax cable. Twinax cable is a two-conductor, twisted, balanced wire having a specific impedance with a shielding braid around both wires. Twisting the two balanced signal carrying wires provides cancellation of any random induced noise voltage pickup, thereby protecting against low-frequency noise fields that pass through the copper braid. Twinax also provides protection against ground loops and capacitive fields.

Twinax Cable Diagram



Twinax cable was chosen because of its low loss characteristics in the 1 MHz signal range over a maximum distance of 2000 feet. The characteristic impedance of the cable (100 ohms) is well controlled in order to prevent reflections and for proper operation of the cluster boxes. The trunk cable is commercially available, and will be sold in preassembled lengths with connectors. The cable will be available in both PVC and Teflon versions. The Teflon cables may be required in certain installations to meet fire code.

Drop Cable

The maximum Drop cable length is 100 feet. This is the maximum distance that a device may be from a Cluster Box.

The drop cables chosen for the network are two shielded twisted pair cables. The primary requirement for two different cables is to reduce magnetic crosstalk and optimize impedance matching. The drop cables will also come in preassembled lengths. Both PVC and Teflon versions will be available.

Maximum Number of Nodes

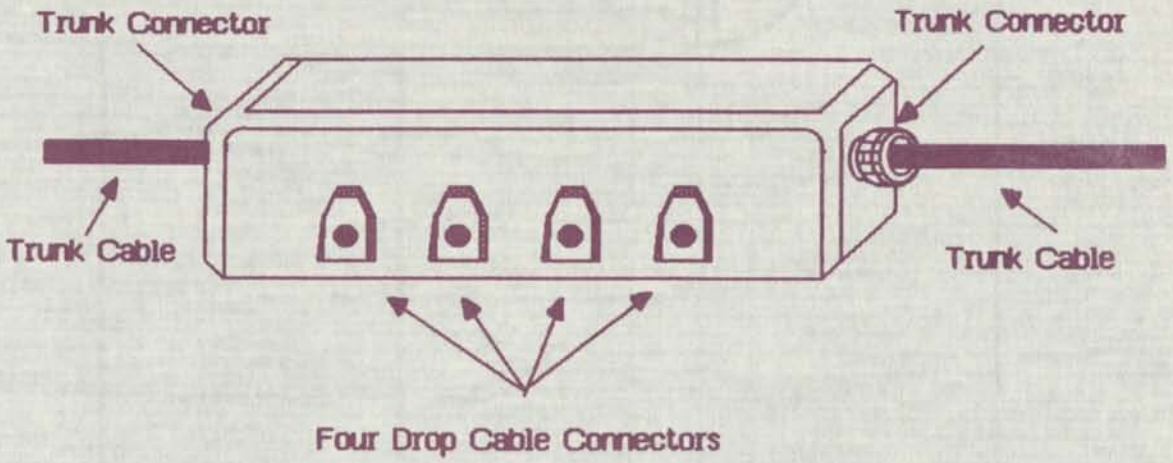
The maximum number of nodes that can be attached to a single AppleNet segment is 128. This maximum node number is based on the maximum allowable signal drop which is reached when 32 (4-port) cluster boxes are attached in a 2000 foot network segment.

Cluster Box

The connection of devices to the network are made through a Cluster Box. The cluster box can service up to four drop cables of 100 feet each that are connected through an interface card to an Apple //, Apple ///, or Lisa.

The cluster box allows the simultaneous transmission and reception of signals on the network trunk cable to support the Carrier-Sense Multiple-Access with Collision/Detction protocol. The cluster box is designed to provide good signal isolation between the transmit and receive signals. The cluster boxes are completely passive devices that use four transformer couplings. The transformer couplings provide good ground loop isolation.

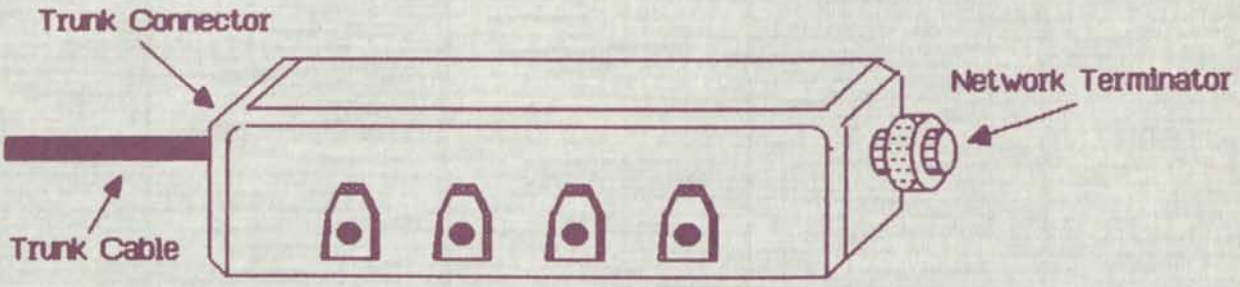
Cluster Box Diagram



Network Terminator

The network cable must be terminated at both ends with terminators that provide the characteristic impedance of the network cable. The terminator will connect to the end of a network cable segment with a barrel connector or directly to a cluster box. The terminator is pictured below.

Terminator Diagram

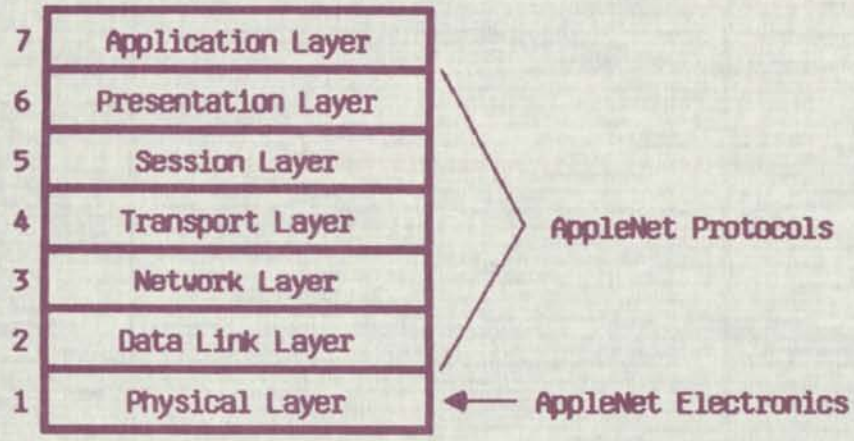


Protocols

AppleNet provides a set of layered protocols to define the communication between devices on the network. A layered protocol structure is used to allocate and isolate communication functions. Each protocol layer builds on and communicates through the services provided by the layer directly below it. The protocol layer in a sending device communicates with the peer protocol layer on the receiving device by passing its information down through the protocol layers under it to the media. The media then carries the information to the receiving node where it is passed up through the same protocol layers on the receiving side until it reaches the same protocol layer.

The advantage of layering protocols is, that if properly implemented, one protocol layer can be modified or replaced without impacting the overall protocol structure.

Protocols Diagram



The International Standards Organization (ISO) has defined a Reference Model for Open Systems Interconnection which is widely accepted as the architecture for intersystem communications. The Reference Model describes seven distinct protocol layers. These layers are from bottom to top: the Physical layer, which in AppleNet is the baseband; the Data Link layer which is CSMA/CD; the Network layer which is Xerox's Level 1; the Transport layer which is Xerox's Level 2; the Session layer; the presentation layer; and the Application layer.

AppleNet uses packet-oriented protocols; that is , all information (be it a short message or a large file) is transmitted in separate packets at the Data Link level. Each packet includes a "header" which describes the packet length, the destination address, and the source address. Packets may range in size from 32 bytes (minimum) to 4080 bytes (maximum on Lisa, 2048 bytes is the maximum on Apple // or Apple ///). It is anticipated that most protocols will use packets smaller than 600 bytes.

With the Carrier Sense Multiple Access with Collision Detection (CSMA/CD) there is no global bus "arbiter" of the net when several nodes wish to gain access to the network. Instead, each node listens to the line, that is senses carrier, before placing its data on the line. Each transmitter waits a minimum time of line idle (Inter-Packet Gap) before attempting transmission.

However, it is possible (but not likely) that several nodes will sense the line as available at the same time and, thus, all attempt to transmit their packets; such a state is called a collision. When a collision is detected by transmitting parties, they enter a resolution mechanism which will guarantee that one of them will gain access to the line; the others will wait their turn and try again later. The particular method waiting procedure implemented in AppleNet is "exponential binary backoff." This means that colliders wait a time whose maximum value increases in an exponential manner. This is the same proven method used by Xerox's Ethernet.

The AppleNet Network layer is compatible with Xerox's Internetwork Datagram Protocol (IDP). This protocol decides where data is to go and is concerned with how to address a source and destination. IDP defines the internet packet and the rules for delivering it as a datagram. An internet packet is the fundamental unit of information that is passed between networks as a

datagram. A datagram is an independent self-contained message. The internet gives its "best effort" to deliver internet packets, but does guarantee delivery. An internet packet consists of header and data. The internet packet header contains: a 16-bit checksum; the interpacket length in bytes, including checksum; a transport control field that maintains internetwork routing information such as hop count and maximum packet lifetime; packet type to identify the format of the data field of the internet packet; 32-bit destination and source network numbers, 48-bit destination and source host numbers; 16-bit destination and source socket number; and 0 to 546 bytes of data.

Internet packets are passed between sockets within the internet, much as the post office transfers letters between post office boxes. Communicating sockets may be on the same host, on different hosts on the same network, or on different hosts on different networks of the internet. A socket is simply a sub-address within a host, much as a P.O. Box is a sub-address in a postal station. The network address scheme allows for the broadcasting of packets to be received by all hosts on the network, multicasts to a group of hosts on the network, or packets transmitted to a unique host.

AppleNet also implements the Xerox's Level 2 Transport Control protocols. These protocols are needed to give structure to a stream of related packets. This may involve retransmission, sequencing, duplicate suppression, and flow control. The Transport Protocol implemented is the Sequenced Packet Protocol.

AppleNet Interface Board

All the electronics required to interface a system to AppleNet are located on theAppleNet Interface Board. This modular design increases network reliability, and should a network failure occur, promotes swift isolation of the problem. There is a different interface board available for the Apple //, Apple ///, and Lisa, which plugs into a standard expansion slot.

The AppleNet Interface Board uses a Z-8 processor with 2K bytes of ROM to store the Data Link Protocols. Up to 4K bytes of shared RAM is available for buffering of receive and transmit packets. The AppleNet transceiver is also located on this board.

All network communications are controlled by this interface board. This isolates the Apple computer from being constantly interrupted by network activity; only packets addressed to the specific Apple computer are passed to it.

AppleNet Marketing Questions

Q - Who will market AppleNet ?

A - AppleNet will be marketed by both Apple National Account Execs and authorized Apple Dealers.

Q - Who will install AppleNet ?

A - AppleNet will be installed by Apple Dealers, RCA Service, and Customers.

Q - When will AppleNet be available ?

A - AppleNet will be introduced (demonstrated) late summer 1983, and will be available to end users in late 1983.

Q - What Apple products will be supported on AppleNet ?

A - Apple //, Apple ///, Lisa, as well as all future Apple products.

Q - When will the Protocols be published ?

A - When we introduce AppleNet in the summer, the protocols which are available at that time will be published.

Q - What will be the arrangement for developers to get access to the protocols ?

A - There will be a minimal licensing fee.

Q - What services (such as File Server, Print Server, Communication Server) will be provided on AppleNet ?

A - It is Apple's intention to eventually provide all the servers which will be required to support our market.

Q - When will there be servers (such as File Server, Print Server, Communication Server) available on AppleNet.

A - It is Apple's intention to introduce these servers in a phased approach as they are ready.

Q - How does School-Bus relate to AppleNet ?

A - School-Bus is only for the class room environment and does not interface to AppleNet.

Q - What operating systems will be supported on AppleNet ?

A - It is currently under investigation.

Q - Will a File Server be required in order to transfer files between systems on AppleNet ?

A - No.

Q - If one of the networked systems fail does the whole network fail ?

A - No, just that one system.

Q - Is there a minimum AppleNet configuration ?

A - Yes, one cluster box with terminators, two drop cables, two AppleNet interface cards, and two systems.

Q - When will the AppleNet gateway be available ?

A - The gateway will be available sometime in 1984.

Q - Is Lisa required on an AppleNet ?

A - No.

AppleNet Compatibility Questions

Q - Will AppleNet be compatible with Corvus Omninet ?

A - No.

Q - Will AppleNet be compatible with Nestar Cluster/One or Plan -4000 ?

A - No.

Q - Will AppleNet be compatible with Ethernet ?

A - AppleNet hardware is not compatible with Ethernet.

AppleNet protocols are compatible with Xerox Network Systems (XNS) Protocols.

Q - Can files created on an Apple // or Apple /// be transferred to Lisa.

A - It is Apple's intention to provide the capability to transfer "text" files across all its product lines.

Q - Will Apple develop an interface to IBM Token-Passing nets ?

A - Yes if it becomes a widely used network.

AppleNet Technical Questions

Q - What is the maximum length for the Network cable ?

A - 2000 feet.

Q - What is the maximum length of the drop cable ?

A - 100 feet.

Q - How many Cluster Boxes can be connected ?

A - Up to 32 Cluster Boxes can be connected per 2000 feet of Network cable.

Q - Is there a minimum distance between Cluster Boxes ?

A - No.

Q - Is there a maximum distance between Cluster Boxes ?

A - Yes, 2000 feet.

Q - How many devices can be attached to one Cluster Box ?

A - Up to 4 devices.

Q - How many devices can be attached to AppleNet ?

A - 128 devices.

Q - Can you attach different systems (i.e. Apple //, Apple ///, Lisa) to one Cluster Box ?

A - Yes.

Q - Are the Cluster Boxes active or passive ?

A - The Cluster Box is totally passive (no electronics).

Q - Can all of the devices that connect to a Cluster Box function concurrently ?

A - Yes.

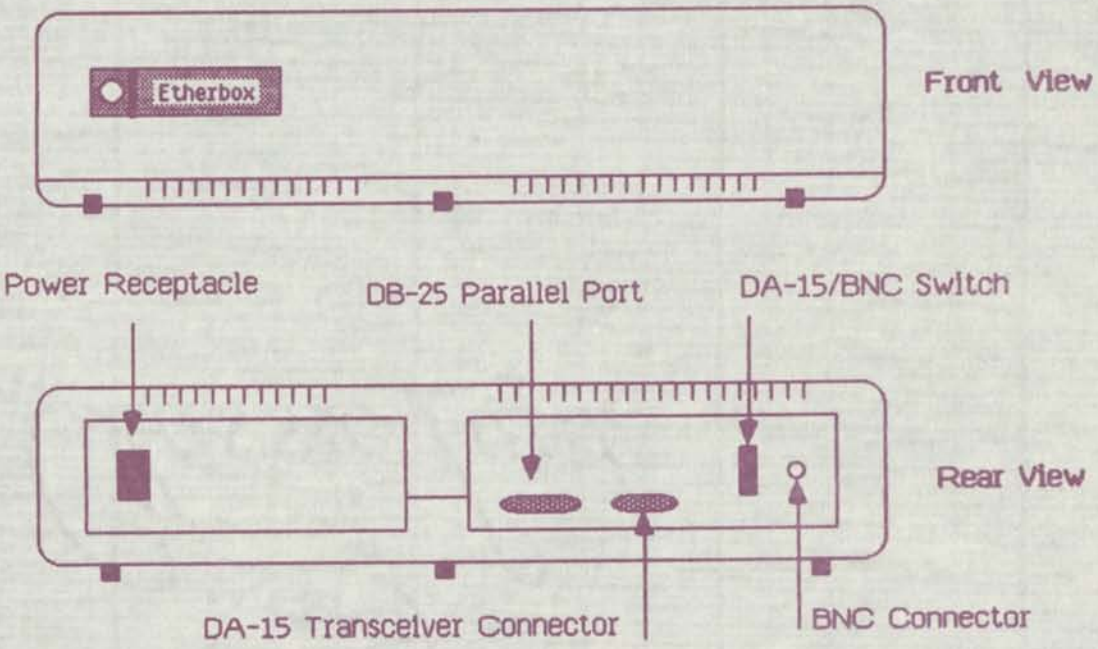
Q - Does AppleNet require terminators ?

A - Yes, a terminator is required at both ends of the network cable.

Etherbox Specification

Etherbox is a standalone self powered peripheral for connecting Apple //, or Apple ///, or Lisa to an Ethernet network. The Etherbox communicates over Ethernet at the standard Ethernet signaling rate of 10 million bits per second using the standard Xerox Data Link Protocols for transmission on the cable. The Etherbox is fully compatible with the Xerox/DEC/Intel Ethernet standard.

Etherbox Diagram



Connections

The interface between Apple products and the Etherbox are made through an Apple standard parallel port. Apple ///s, and Lisas come standard with a, bidirectional eigth-bit parallel port connector. A parallel port card is an optional card on the Apple //s, and is required in order to interface to the Etherbox. The parallel port connector is a female DB-25 connector that has pin 7 blocked so that an RS232C connector can not mistakenly be inserted in the connector. The interface cable for the connection will be provided with the Etherbox and will have a maximum length of six feet.

The Etherbox can be connected to Ethernet through one of two interfaces: a standard Ethernet transceiver interface or an RG-58 Ethernet "Thin Cable" interface. A switch is provided for defining the type of Ethernet connecting to (RG-58, or standard).

The standard Ethernet transceiver interface connector is a female DA-15 DIX connector with slide lock. An Ethernet drop cable that can be up to 100 feet in length can be attached to this connector. The other end of the drop cable attaches to any Ethernet transceiver, which in turn attaches to the standard Ethernet RG8U ("Yellow") Network cable. The Ethernet transceiver for use with this connector must be purchased separately. Standard Ethernet transceivers can be purchased from 3COM, or TCL as well as several other vendors.

The other Ethernet interface uses an onboard transceiver and is designed to be used with low-cost (50 ohm) RG-58A/U "Thin Cable". The onboard transceiver is attached to the "Thin Cable" via a single, female BNC connector on the rear of the box that is mated to a BNC "T" connector that is pre-installed on the "Thin Cable". The Etherbox can be coupled and uncoupled from the network without affecting network operations.

The RG-58 "Thin" cable is electrically compatible with the standard Ethernet "Yellow" cable. The RG-58 can in fact be attached to a "Yellow" Ethernet cable by simply coupling them with an N-series/BNC adapter, thus allowing the Etherbox to communicate with any other station on the RG-58 or "Yellow" cables. The RG-58 cable is thinner, more flexible, and less expensive than standard Ethernet cable, but limits the length of a network segment to 330 meters instead of the 500 meters obtainable with standard "Yellow" cable.

Availability

The Etherbox will be available in late 1983 through Apple's National Accounts program and qualified Apple dealers.

Etherbox Marketing Questions

Q - Who will market the Etherbox ?

A - The Etherbox will be marketed by Apple National Account Execs and qualified dealers.

Q - Who will install the Etherbox ?

A - The Etherbox can be installed by the customer or Apple dealer. For larger installations RCA Service can be contracted to provide installation support.

Q - When will Etherbox be available ?

A - The Etherbox will be introduced (demonstrated) late summer 1983. Etherbox will be available to end users late 1983.

Q - What Apple products will be supported by Etherbox ?

A - Apple //, Apple ///, and Lisa.

Q - Will users be able to interface to Xerox File Servers, Print Servers, or Communication Servers through the Etherbox ?

A - Communication with these Xerox servers requires serveral higher-level interface protocols that Xerox has not yet published.

Q - Will a European version of the Etherbox be offered ?

A - A separate version of Etherbox will be manufactured for European markets. The only difference will be the line voltage and frequency.

Etherbox Technical Questions

Q - Is Etherbox truly Ethernet compatible ?

A - Etherbox conforms to the Ethernet Specification, Version 1.0, 30 September 1980, as published by DEC, Intel, and Xerox.

Q - What technology is the Etherbox based on ?

A - The design is based on a VLSI Ethernet Data Link Controller integrated circuit (EDLC) and 3COM transceiver.

Q - Is Etherbox safety certified ?

A - Etherbox will be UL certified under UL 114 (Office Machines) and UL 478 (Data Processing Equipment).

Q - Is Etherbox electromagnetically certified ?

A - Etherbox will be certified as a Class A device under FCC Part 15, Subpart J for radiated and conducted emissions.

Q - What functions are performed by Etherbox ?

A - The Etherbox implements Level 0 of the Xerox Network Systems protocols. This translates to Layer 1 and Layer 2 of the ISO Reference Model:

Layer 1

- Electrical isolation between coax aand workstation
- Bit transmission and reception
- Carrier sensing
- Transmit collision detection
- Signal encoding and decoding
- Packet preamble generation and removal.

Layer 2

- 32-bit CRC generation and checking
- Carrier deference
- Transmit collision enforcement
- Collision fragment filtering
- Bad packet filtering
- Address recognition.

Q - Does Etherbox provide buffering ?

A - Etherbox has three 2K byte buffers that are permanently assigned; two are assigned as receive buffers and one as a transmit buffer. The buffers are large enough for any legal size Ethernet packet.