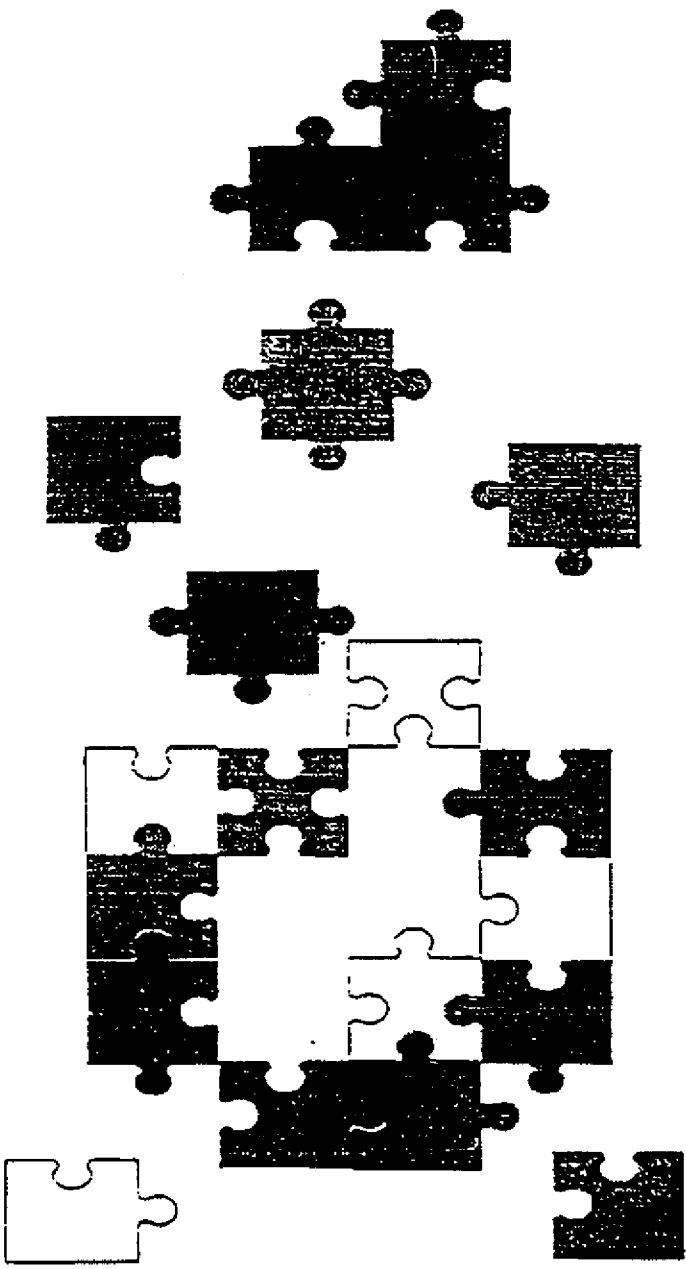




Lotus Application Integration Strategy



January 9, 1990

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Plaintiff's Exhibit
9013
Comes V. Microsoft

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Agenda

- Background and Objectives
 - Objectives
 - Candidate Frameworks
- Application Integration Strategy
 - Framework Selection Rationale
 - Four Product Focus
 - Lotus Product Identity
 - Lotus Office
 - Active Partnerships
- Next Actions

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Application Integration: Background

- Standard User Requirement
 - Combine different application products to solve problems
- New Emphasis
 - GUI value; Macintosh/Windows differentiator
- New Technologies
 - Frameworks within which application programs provide services to one another
- Lotus Objectives:
 - Provide timely, full support of frameworks
 - Provide significant additional value for users who combine Lotus products

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Frameworks

- Present Lotus Frameworks
 - 1-2-3/G - Freelance - WordPerfect "OS/2 Hot Links"
 - Notes *Document Insets*
- Candidate Platform Frameworks
 - IIP NewWave 3.0
 - Apple Machintosh System 7
 - Microsoft *Object Linking and Embedding*
- Dark Horse Frameworks
 - IBM/Metaphor Systems Inc. *Patriot Partners*
 - IIP *Distributed NewWave*

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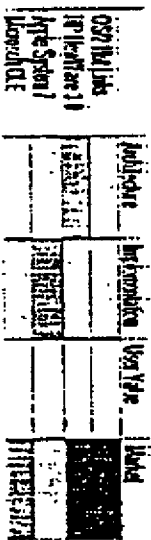
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Summary Comparison of Frameworks

- HP has soundest architecture, Apple close behind
- OLE is likely to become de facto standard anyway
 - HP NewWave cost, complexity on top of Windows
 - Apple timing and size (1.3M) likely to doom acceptance
- No framework has addressed all aspects of application integration yet
- Opportunities exist for Lotus
 - User Interaction
 - Language
 - Networking



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Application Integration Strategy: Framework Support

- Lotus will support only two frameworks:
 - Microsoft Object Linking and Embedding
 - Apple System 7
- Integration Emphasis will be on OLE
 - Common User Tools
 - Integration Tools and Technologies

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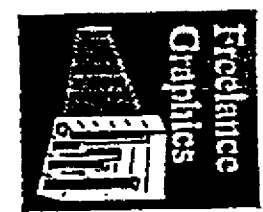
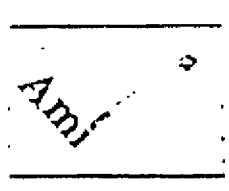
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Application Integration Strategy: Four Product Focus

- 1991 Priorities
 - * Schedules
 - * Shared Technology
 - * User Interface
 - * Responsibilities

Notes



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Four Product Focus Schedules

- Notes is in Beta
- Ami Pro is in design freeze
- Rockport OLE support will be via an add in shipped in October.
- Pennington is currently doing cost estimate

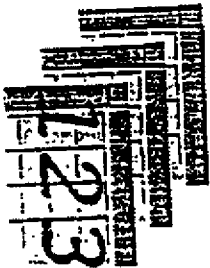
• Jan/Feb

Notes

• May

Ami

• June



• October



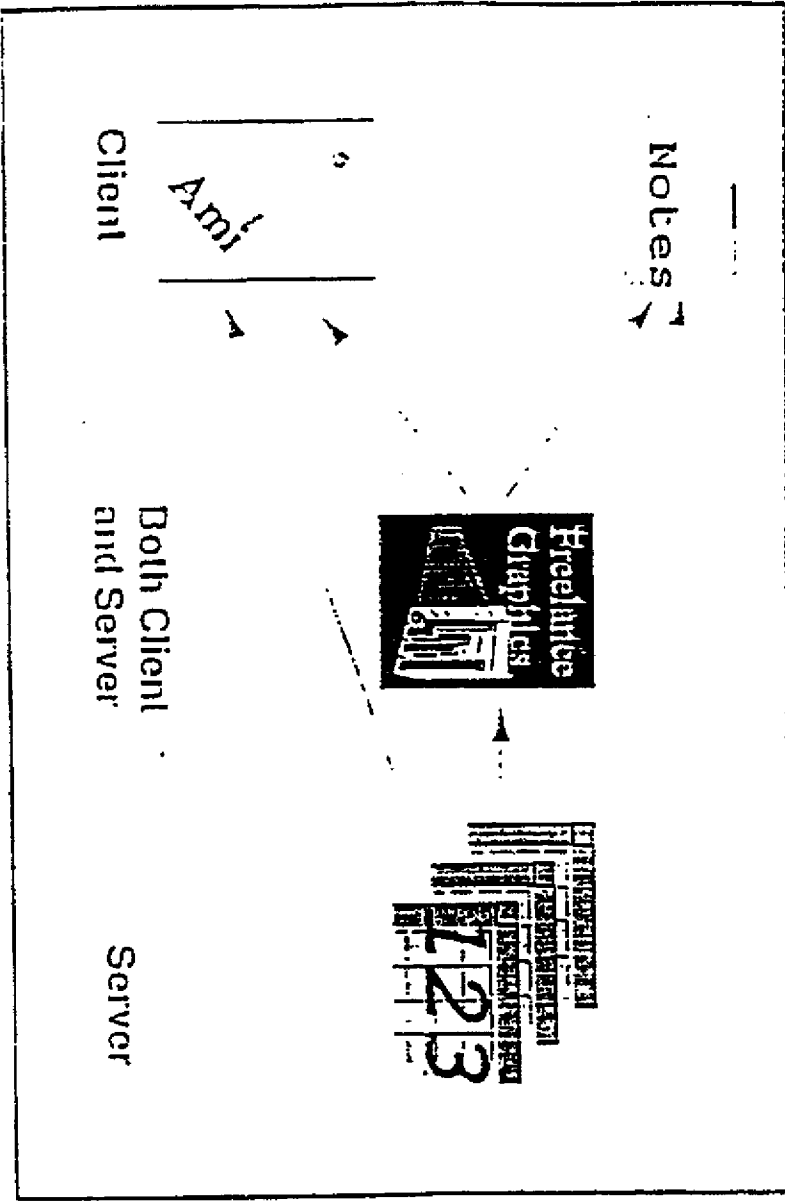
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Four Product Focus Roles

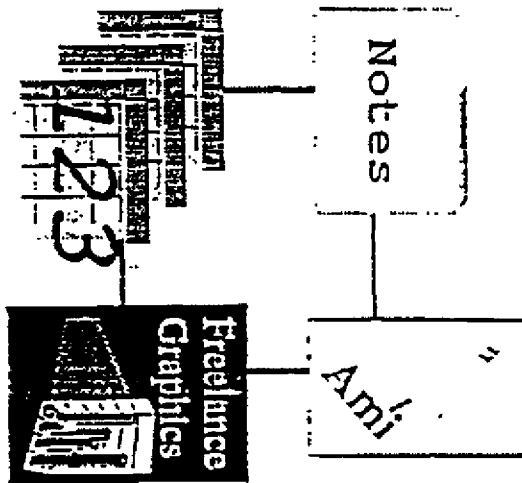


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Application Integration Strategy: Product Line Identity

- Common services
 - Subsets of Lotus products
 - ▶ Objective: seamless upgrade to full Lotus product
- Levels
 - ▶ Specification
 - ▶ Documentation templates
 - ▶ Common code
 - ▶ Common QA material

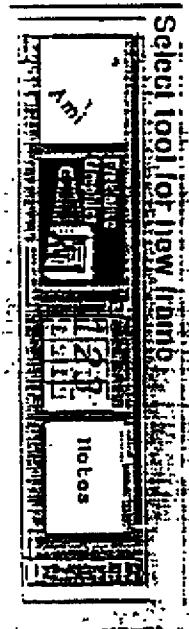


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User Interaction Common Tools

- Frame Tool
- Table Tool with formulas
- Data Access Tool
- Text Editing Tool
- Icon Toolbox
- Elementary Charting Tool
- Elementary Drawing Editor
- Spell/Thesaurus
- Color Model
- Font Model



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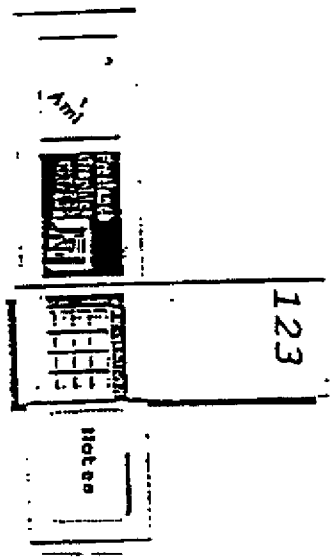
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User Interactions Common Tool Specifications

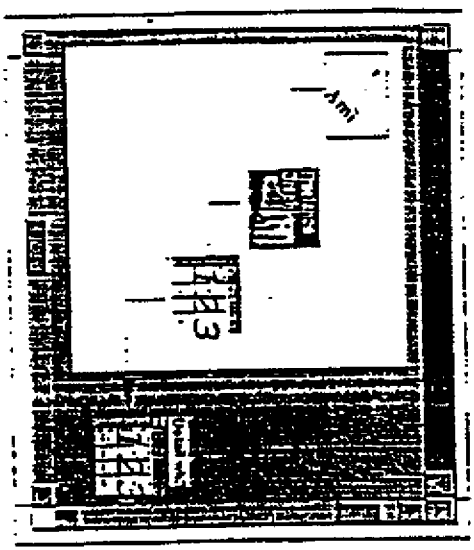
- User Interaction
 - ▶ Menu and Dialog Interface
 - ▶ Accelerator Keys
 - ▶ Toolbox
- User Language
 - ▶ Command Equivalents for all UI facilities
- Non-disruptive growth to full product embedded documents
- File Format
 - ▶ Cross platform access



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User Interactions Integration Tools

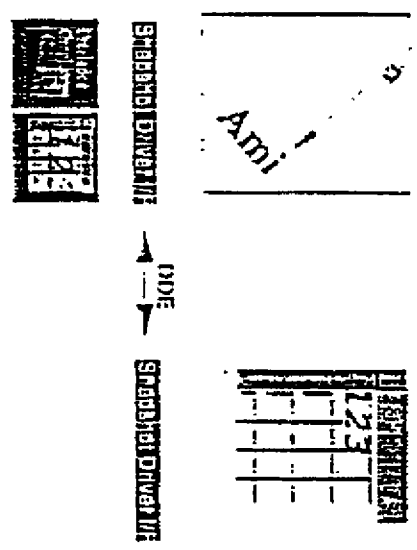
- Link and Thread Management Tool
- Forms Tool
- Data Access Tool
- Script Language
- Dialog Builder
- Record/Playback Tool



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Application Environment Integration Technology

- DDE/OLE Interfaces
- Common file format
- Embedded file management
- Snapshot Driver Interface
- Metafile/Binary/Richtext rendering
- Native data rendering and services
- Link management
- Add in support
- Datalens Driver support



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Lotus Object Manager

- Implementation of Integration Technology
- Conceptually simple - thin layer
- Provides information hiding boundary
 - Access to data
 - Access to methods
- Maintains relationships between participating objects
- Provides local object store
- Provides common file format support
- Provides driver sites to address future frameworks

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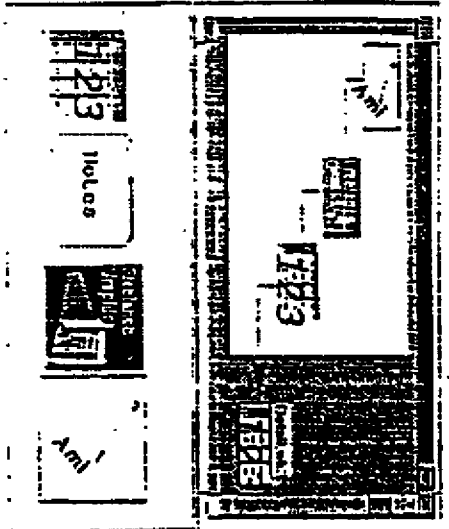
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**Application Integration Strategy:
Lotus Portable Office**

- Lotus Integration Technology plus Lotus Product Suite
- Provides user with portable, custom desktop
- Complements Notes

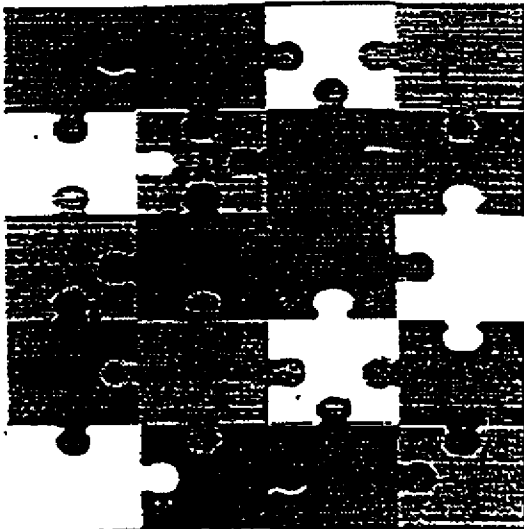


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Partnerships!
Lotus ISV and Add-In Vendors

- Extend and in interfaces
 - Common tool interfaces
 - Integration tool interface
- New facilities address many and in vendor issues
 - Shadow files
 - Packaging

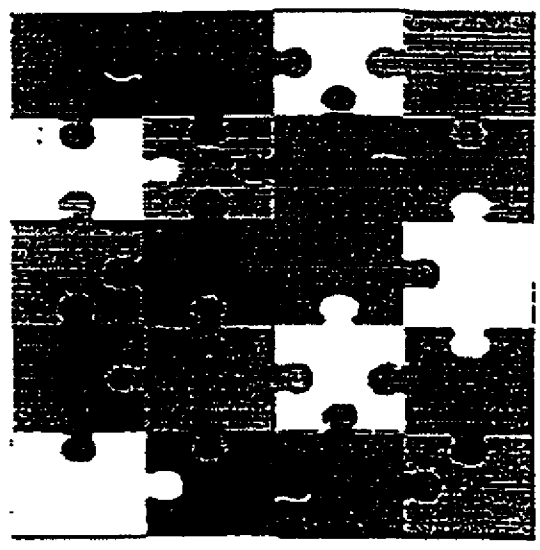


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**Partnerships
Other ISVs**

- Joint OLE Specification Review
- Cross product testing
- Product support agreements
- Usability testing plan
- Cooperation on application integration evolution
 - OMG: Network and Object Store Issues
 - WPMA: OLE Evolution, Shared drivers



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Next Actions

- Plan for 1991 specifics
 - Complete getting 1991 product commitments in place
 - Publish plan for Hotspot add-in
 - Publish proposed joint test/support arrangements
- Plan for 1992 specifics
 - Complete specification of integration model
 - Work with Walden, Graphics Products, Ami, Notes
 - Produce proposed plan
- Plan for 1993 specifics
 - Publish position paper
 - Appropriate standards activity

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Appendix

- Framework Comparisons

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Frameworks

- Present Lotus Frameworks
 - 1.2.3/G Techbase - WordPerfect "OS/2 Hot Links"
 - Notes Document Insets
- Candidate Platform Frameworks
 - IIP NewWave 3.0
 - Apple Macintosh System 7
 - Microsoft Object Linking and Embedding
- Dark Horse Frameworks
 - IBM/Metaphor Systems Inc. Patriot Partners
 - Digital Equipment Application Control Architecture
 - IIP Distributed NewWave

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Frameworks

- Present Lotus Frameworks
 - Lotus 3.0 - Freelance - WordPerfect "OS/2 Hot Links"
 - Notes Document Icons
- Candidate Platform Frameworks
 - HP NewWave 3.0
 - Apple Macintosh System 7
 - Microsoft Object Linking and Embedding
- Dark Horse Frameworks
 - IBM/Metaphor Systems Inc. Patriot Partners
 - Digital Equipment Application Control Architecture
 - HP Distributed NewWave

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Framework Elements

- Architecture
 - Object Management Model
 - User Interaction Model
 - User Programming
 - Application Environment
 - Administration
- Implementation
 - Runtime Support
 - Software Development Tools
 - Networking Support
- User Value
 - Advantages, Disadvantages

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Framework Elements

- Architecture
 - Object Management Model
 - User Interaction Model
 - User Programming
 - Application Environment
 - Administration
- Implementation
 - Runtime Support
 - Software Development Tools
 - Networking Support
- User Value
 - Advantages, Disadvantages

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Present Lotus Frameworks: OS/2 Hot Links

- Architecture
 - * Object Management: OS/2 File System and Lotus Desktop "Traffic Manager"
 - * User Interaction: Copy/Paste Link and Link Create
 - * User Programming: No
 - * Application Environment: Extended DDE
 - * Administration: File-Utility for desktop, Link-Edit for link maintenance
- Implementation
 - * Runtime Support: Supports links between G Platform Tools
 - * Software Development Tools: No Comment
 - * Network Support: None [Network Edition of Freelance ...]
- User Value
 - * Advantages: Access to 1-2-3/G and Graph Tool from Freelance;
 - * Disadvantages: Large, fairly slow runtime; Complex User Interface

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Present Lotus Frameworks: OS/2 Hot Links

- Architecture
 - * Object Management: OS/2 File System and Lotus Desktop "Traffic Manager"
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 - * Advantages: Access to 1-2-3/G and Graph Tool from Freelance;
 - * Disadvantages: Large, fairly slow runtime; Complex User Interface

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Lotus Frameworks: Notes Version 2 Document Insets

-- Architecture

- ▶ Object Management: DOS, OS/2 Files
 - ▶ User Interaction: Notes Desktop with Copy/Paste Special
 - ▶ User Programming: N/A
 - ▶ Application Environment: N/A
 - ▶ Administration: No
- ### -- Implementation
- ▶ Runtime Support: Integrated in Notes Version 2
 - ▶ Software Development Tools: N/A
 - ▶ Networking Support: Integrated in Notes Version 2
- ### -- User Value
- ▶ Advantages: Provides embedding for current Windows, OS/2 DDE servers without reprogramming
 - ▶ Disadvantages: Pragmatic design with some applicability and usability issues

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Lotus Frameworks: Notes Version 2 Document Insets

- Architecture
 - ▶ Object Management: *DOS, OS/2 Files*
 - ▶ User Interaction: *Notes Desktop with Copy/Paste Special*
 - ▶ User Programming: *N/A*
 - ▶ Application Environment: *N/A*
 - ▶ Administration: *No*
- Implementation
 - ▶ Runtime Support: *Integrated in Notes Version 2*
 - ▶ Software Development Tools: *N/A*
 - ▶ Networking Support: *Integrated in Notes Version 2*
- User Value
 - ▶ Advantages: *Provides embedding for current Windows, OS/2 DDE servers without reprogramming*
 - ▶ Disadvantages: *Pragmatic design with some applicability and usability issues*

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Frameworks: HP NewWave

- Architecture
 - ▶ Object Management: Object Management Facility
 - ▶ User Interaction: Drag/Drop Desktop; Objects, Tools
 - ▶ User Programming: GUI-based extensible language
 - ▶ Application Environment: NewWave layer on Windows
- Implementation
 - ▶ Runtime Support: 2M Layer on DOS, Windows. Not fully integrated with Windows facilities. e.g. printing
 - ▶ Software Development Tools: SDK, provides various encapsulations but requires extensive application work for full support
 - ▶ Networking Support: LAN files.

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FrameWorks! HP NewWave

- Architecture
 - ▶ Object Management: Object Management Facility
 - ▶ User Interaction: Drag/Drop Desktop; Objects, Tools
 - ▶ User Programming: GUI-based extensible language
 - ▶ Application Environment: NewWave layer on Windows
- Implementation
 - ▶ Runtime Support: 2M Layer on DOS, Windows. Not fully integrated with Windows facilities. e.g., printing
 - ▶ Software Development Tools: SDK, provides various encapsulations but requires extensive application work for full support
 - ▶ Networking Support: LAN files.

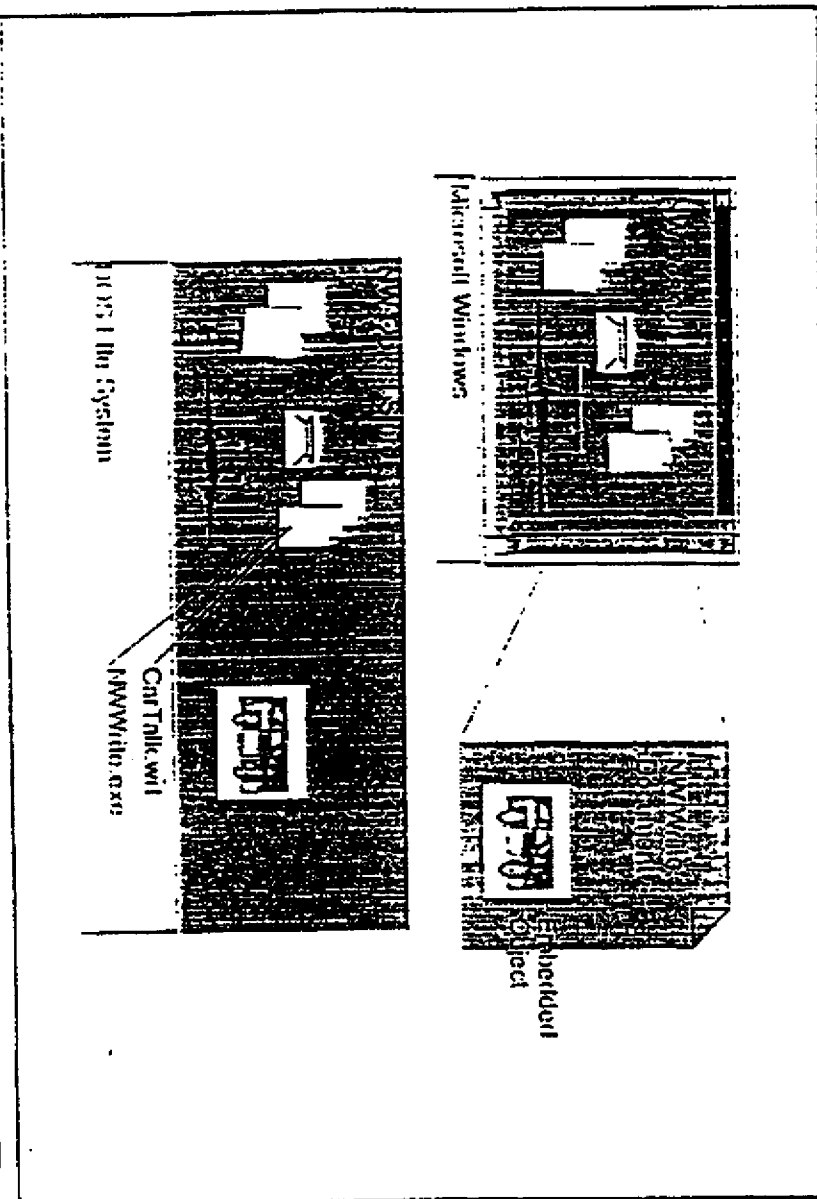
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HP NewWave



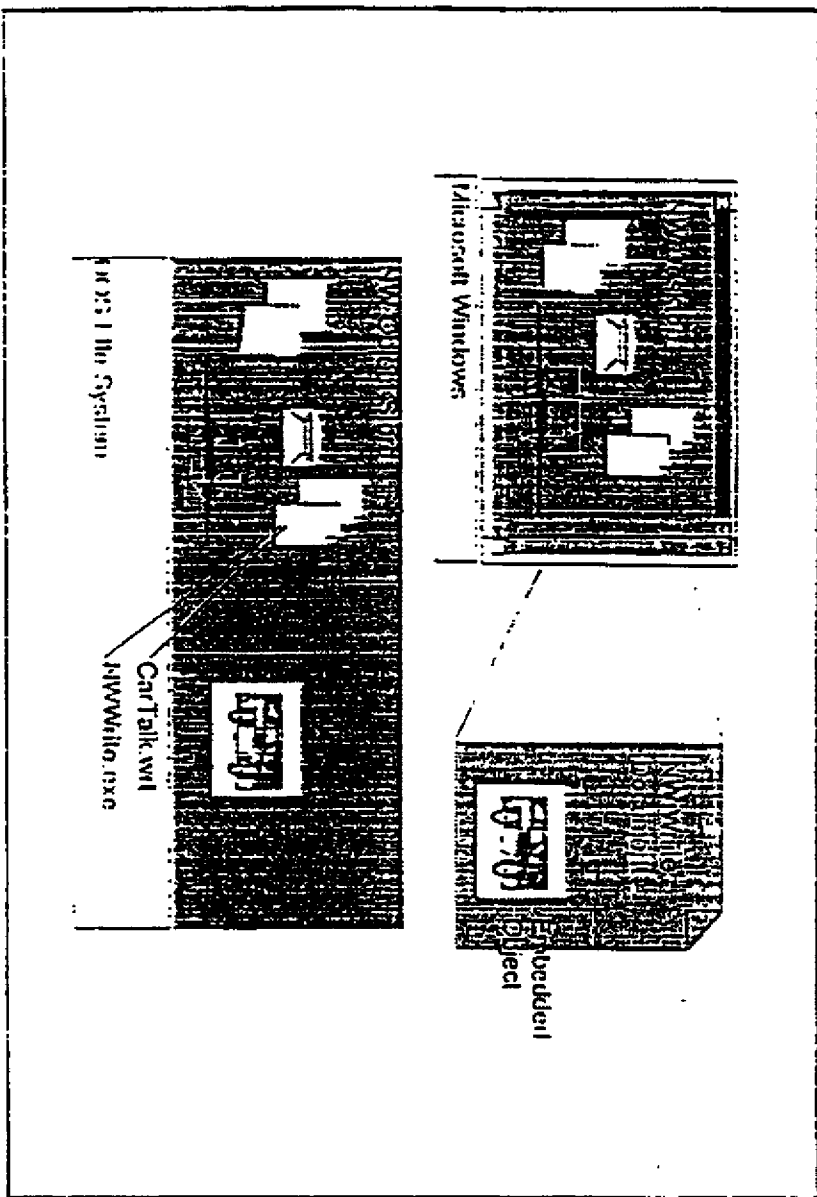
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HP NewWave



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FrameWorks: HP NewWave

- Advantages:
 - > Drag/Drop Desktop Usability
 - > General Object Support: Multimedia, Animation, ...
 - > Task Languages
 - > Help*
 - > Computer Based Training*
- Disadvantages:
 - > Install base
 - > Size, Cost, Complexity of extra layer on Windows
 - > High Cost of Application Compliance
 - > Relatively Low Payback
 - > Lack of Administration Tools

* HP are downgrading these facilities

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Framework: HP NewWave

- Advantages
 - ▶ Drag/Drop Desktop Usability
 - ▶ General Object Support: Multimedia, Animation, ...
 - ▶ Task Languages
 - ▶ Help*
 - ▶ Computer Based Training*
- Disadvantages
 - ▶ Install base
 - ▶ Size, Cost, Complexity of extra layer on Windows
 - ▶ High Cost of Application Compliance
 - ▶ Relatively Low Payback
 - ▶ Lack of Administration Tools

* HP is accomplishing these facilities

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Framework: Apple System 7

- Architecture
 - Object Management: Current Apple metaphor
 - User Interaction: Edit/Publish/Subscribe to file system
 - User Programming: Applescript, later
 - API: File System and AppleEvent extensions
- Implementation
 - Runtime Support: Integrated into System 7
 - Software Development Tools: Extended Apple SDK currently in Beta at Lotus
 - Networking Support: Designed for LAN, not implemented in System 7

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Framework: Apple System 7

- Architecture
 - Object Management: Current Apple metaphor
 - User Interaction: Edit-Publish/Subscribe to file system
 - User Programming: Applescript, later
 - API: File System and AppleEvent extensions
- Implementation
 - Runtime Support: Integrated into System 7
 - Software Development Tools: Extended Apple SDK currently in Beta at Lotus
 - Networking Support: Designed for LAN, not implemented in System 7

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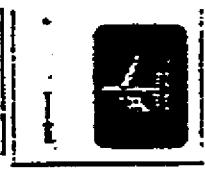
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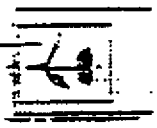
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Frameworks: Apple System 7

Adobe Illustrator



Publish



Subscribe

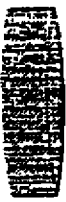


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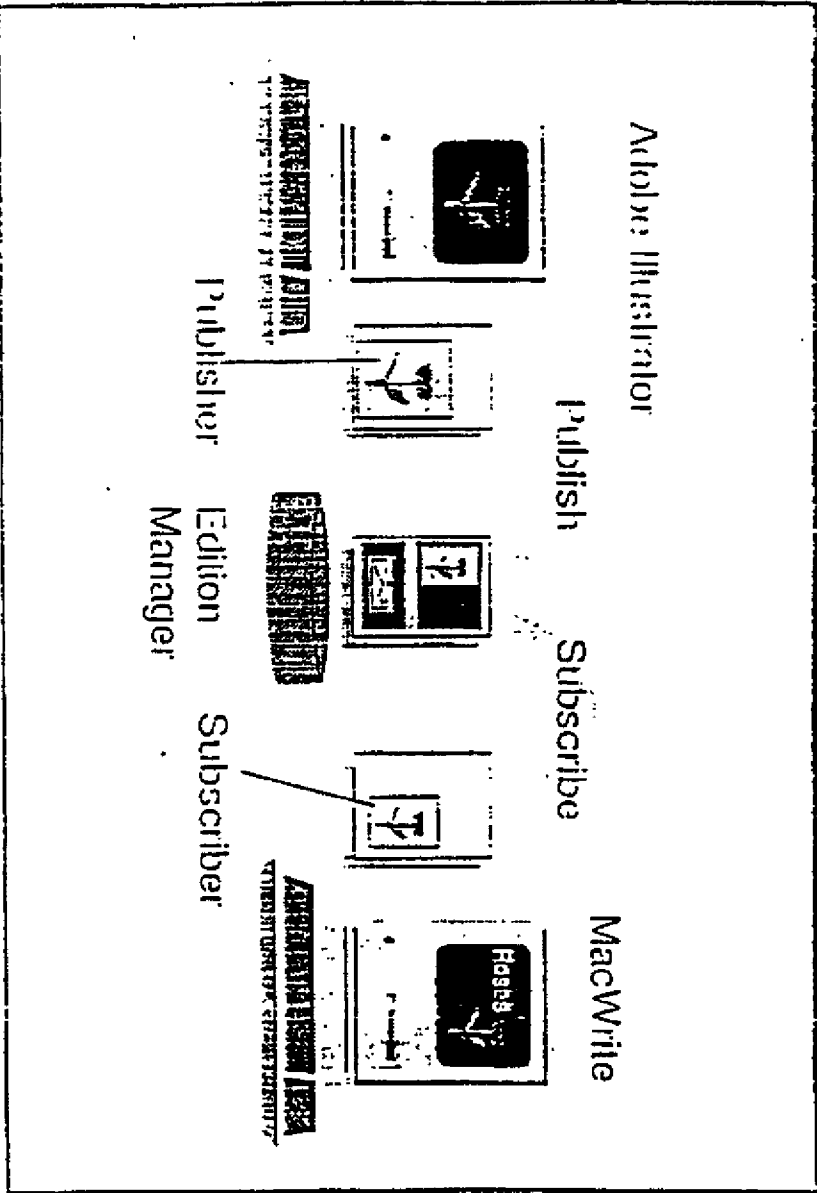
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Framework: Apple System 7



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Macintosh System 7 Advantages and Disadvantages

- Advantages
 - Simple User model, consistent with Apple UI metaphor
 - Well integrated into operating system
 - Relatively easy to implement
 - Good administration tools
- Disadvantages
 - Fragmentation of Macintosh market because of size of System 7
 - Performance concerns
 - Usability for complex compound documents unclear

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Macintosh System 7 Advantages and Disadvantages

- Advantages:
 - Simple User model, consistent with Apple UI metaphor
 - Well integrated into operating system
 - Relatively easy to implement
 - Good administration tools
- Disadvantages:
 - Fragmentation of Macintosh market because of size of System 7
 - Performance concerns
 - Usability for complex compound documents unclear

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Framework: Microsoft Object Linking & Embedding

- Architecture
 - ▶ Object Management: DOS file system with Windows class registration
 - ▶ User Interaction: Recommendations
 - Embedding: Copy/Paste, Embedded Object Properties
 - Linking: Copy/Paste Link, Linked Object Properties
 - ▶ User Programming: None.
 - ▶ API: DDE extensions via Microsoft libraries
- Implementation
 - ▶ Runtime Support: With minor exceptions, provided entirely by each individual application.
 - ▶ Software Development Tools: Alpha toolkit. Beta, 2/91. To be shipped with MSW3.1 SDK 2Q91.
 - ▶ Networking Support: None

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Paradigms: Microsoft Object Linking & Embedding

- Architecture
 - ▶ Object Management: DOS file system with Windows class registration
 - ▶ User Interaction: Recommendations
 - Embedding: Copy/Paste, Embedded Object Properties
 - Linking: Copy/Paste Link, Linked Object Properties
 - ▶ User Programming: None.
 - ▶ API: DDE extensions via Microsoft libraries
- Implementation
 - ▶ Runtime Support: With minor exceptions, provided entirely by each individual application
 - ▶ Software Development Tools: Alpha toolkit. Beta, 2/91. To be shipped with MSW3.1 SDK 2Q91.
 - ▶ Networking Support: None

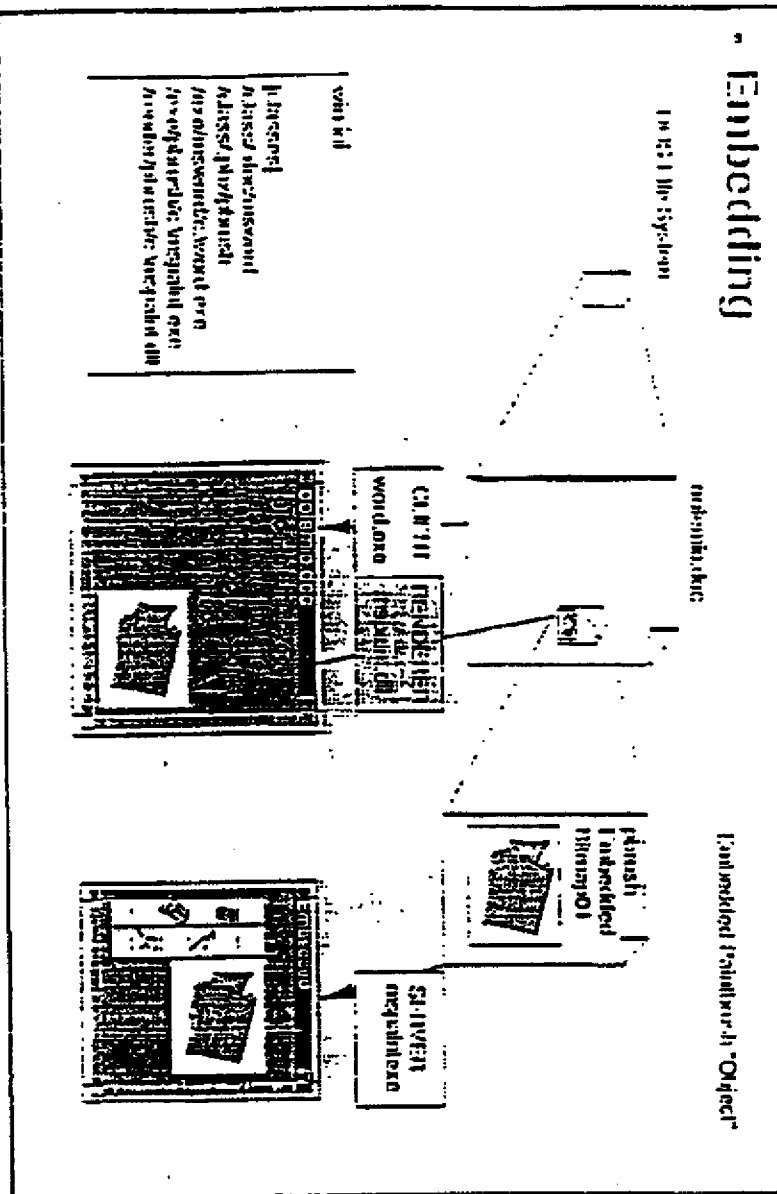
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Framework: Microsoft Object Linking & Embedding



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Microsoft Object Linking and Embedding User Value

- Advantages
 - ▶ Linking: Users can divide work and work independently
 - ▶ Embedding: Single user compound object management is reduced to a single LUS file
- Disadvantages
 - ▶ Potential Usability Problems: Three similar concepts with somewhat arbitrary differences controlled by two menu choices
 - ▶ Embedded documents will be difficult to convert automatically to other editors, whether upgrades or replacements
 - ▶ No standard services to find, display, and correct links or display embeds.
 - ▶ Conversion between linked and embedded documents complicated by arbitrary differences

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Microsoft Object Linking and Embedding User Value

- Advantages
 - Linking: Users can divide work and work independently
 - Embedding: Single user compound object management is reduced to a single DOS file
- Disadvantages
 - Potential Usability Problems: Three similar concepts with somewhat arbitrary differences controlled by two menu choices
 - Embedded documents will be difficult to convert automatically to other editors, whether upgrades or replacements
 - No standard services to find, display, and correct links or display embeds.
 - Conversion between linked and embedded documents complicated by arbitrary differences

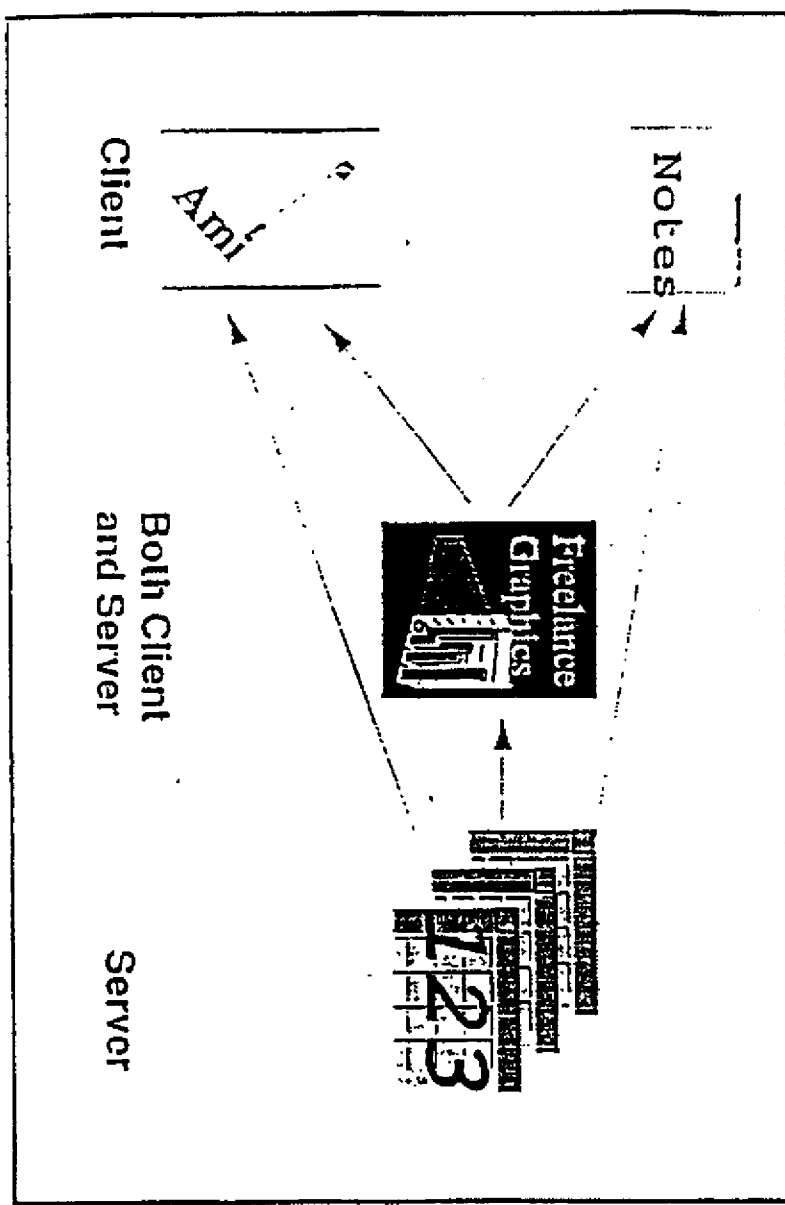
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Four Product Focus Roles



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