Worldwide Developers Conference

Introduction to OpenStep Application Framework

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Senior Evangelist
Rhapsody Evangelism

Introduction to Yellow Box Application Framework

Ali Ozer

Manager, Yellow Box Application Frameworks

Yellow Box Application Framework

Where does it fit?

Yellow Box Application Framework

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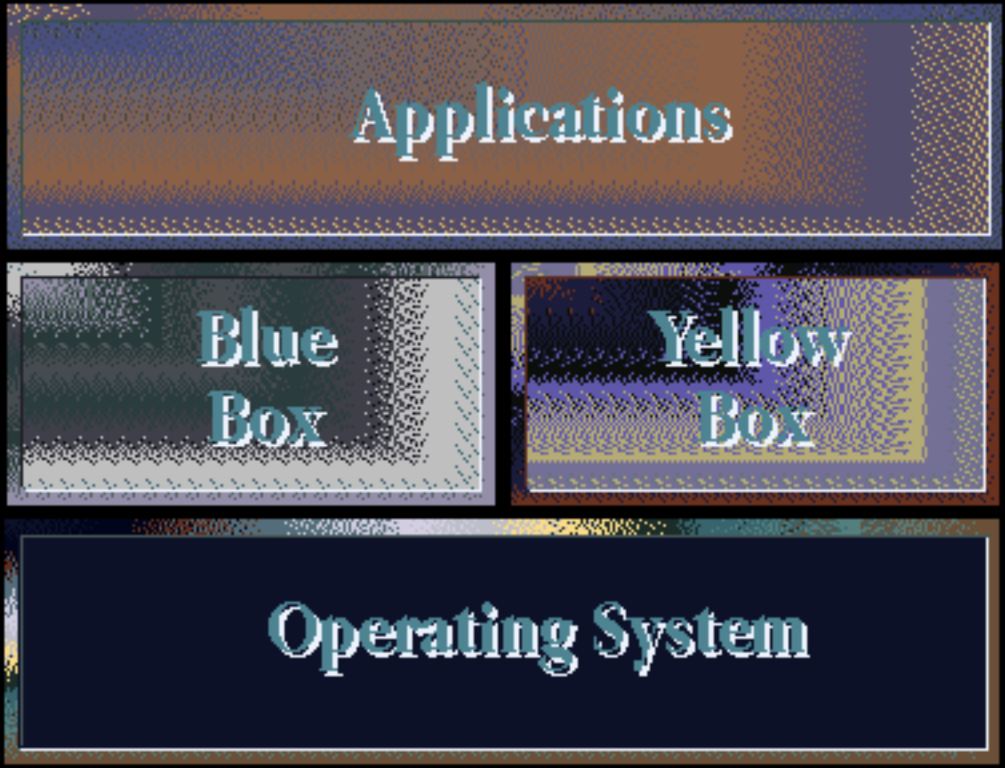


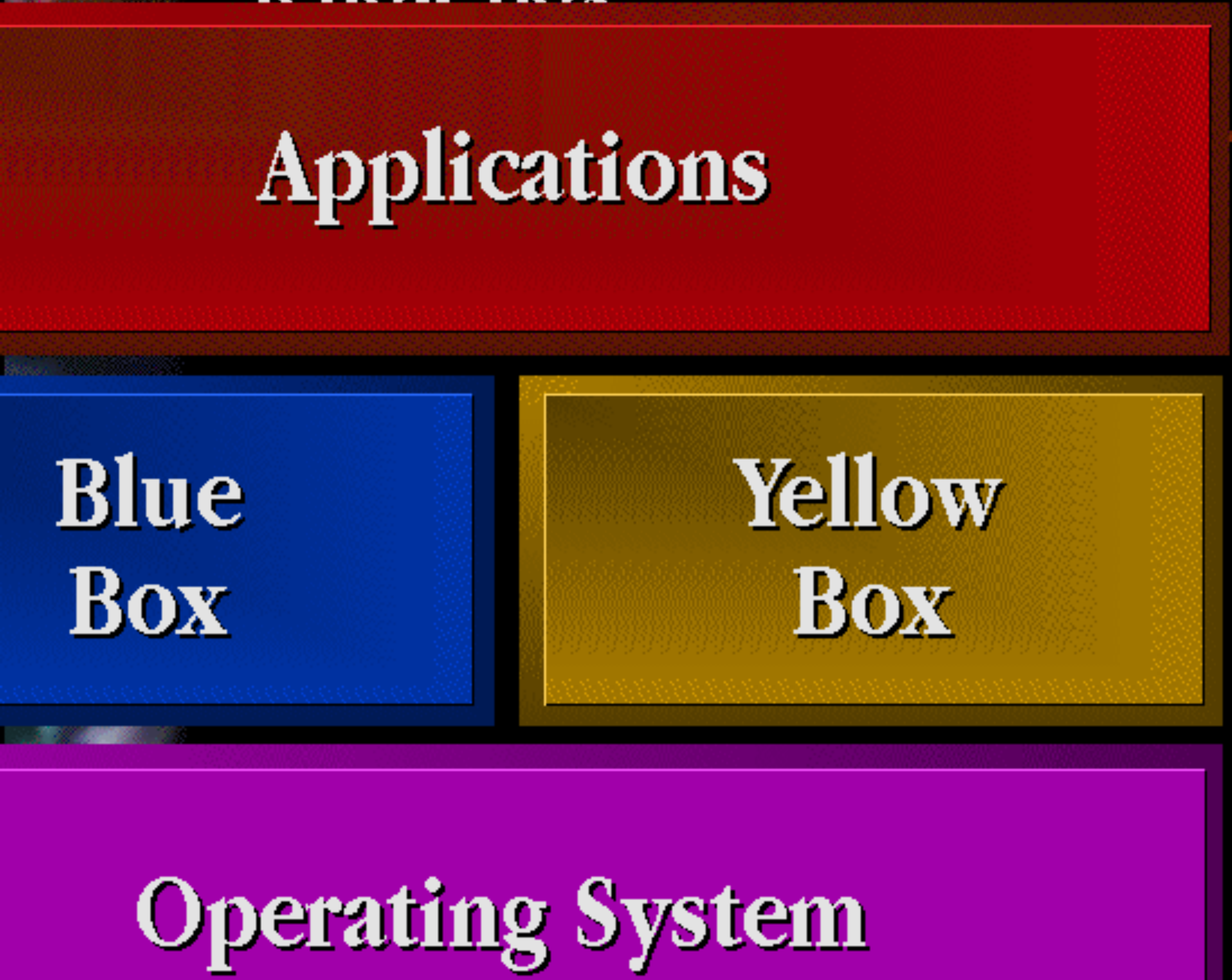
Applications

Blue Box

Yellow Box

Operating System

Yellow Box



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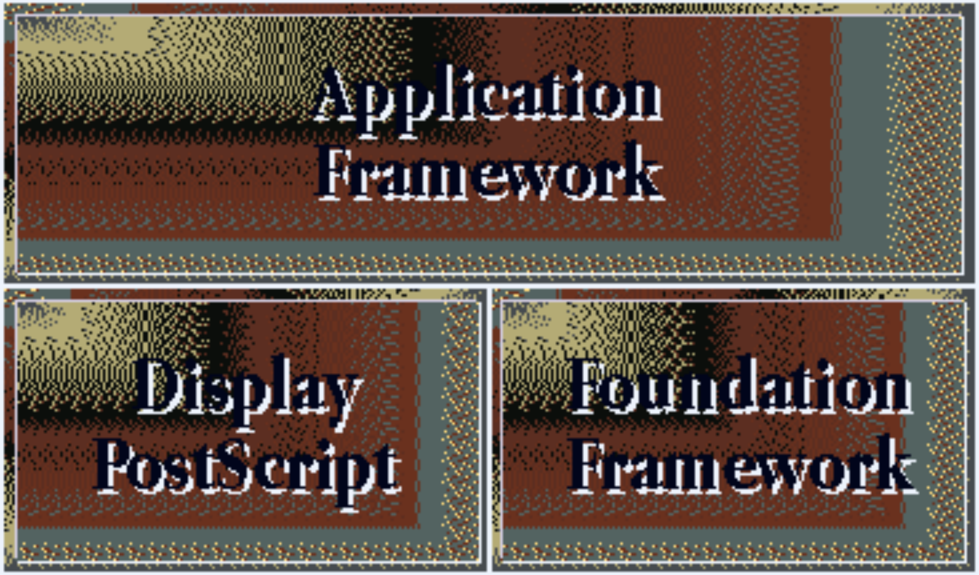

Application Framework

Display PostScript

Foundation Framework

Yellow Box
Application Framework

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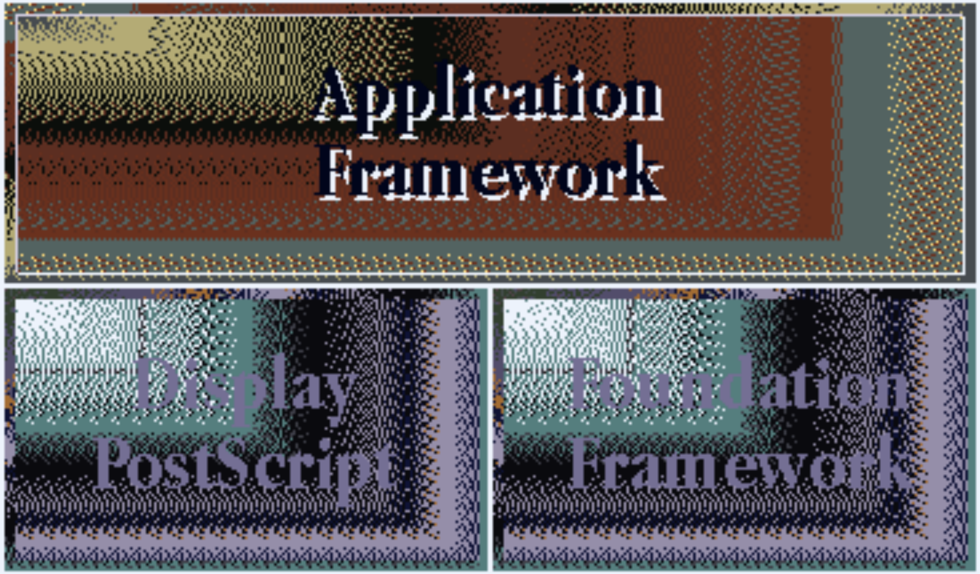

Yellow Box
Application Framework

What is it?

- A full-featured, object-oriented, platform-independent framework for building applications
- AKA “AppKit”

Application Framework

Topics

- Design principles
- Paradigms for extensibility
- Conventions for APIs
- Overview of classes
- What's there in 4.2
- What's coming up

Design Principles

Simple things simple, complex things possible

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Paradigms for Extensibility

- Subclassing
  - Basic way to extend most objects
  - Define primitives, override points

Paradigms for Extensibility

- Delegation
  - Allows one object to act on behalf of another
  - Extension without subclassing
  - Examples
    - NSWindow's *windowShouldClose:*
    - NSSavePanel's *panel:shouldShowFilename:*

Paradigms for Extensibility

- Notification
  - Allows broadcasting of events to any interested object
  - Objects register for notifications based on type and posting object
  - Examples
    - *NSWindowWillMiniaturize*, *NSWindowDidMiniaturize*
    - *NSApplicationWillTerminate*
  - Notifications are often available as delegate methods as well

Conventions for APIs

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Overview

- Drawing
- Event handling
- User interface
- Standard panels
- Data types and abstractions
- Services
- Internationalization

Drawing

- NSView
  - Abstract class to handle drawing
  - Also provides event handling, dragging, printing/pagination, keyboard navigation, context sensitive menus, mouse tracking
  - Lives in hierarchies, one per window
  - Override *drawRect:* to customize drawing
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  - NSCell *drawWithFrame:inView:*
  - NSImageRep, NSString, NSAttributedString *drawAtPoint:, drawInRect:*
  - NSImage *compositeToPoint:operation:*
  - NSBezierPath *stroke, fill, clip (New in DR)*
  - NSColor, NSFont *set*

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    ```

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  - NSTableView, NSBrowser, NSOutlineView
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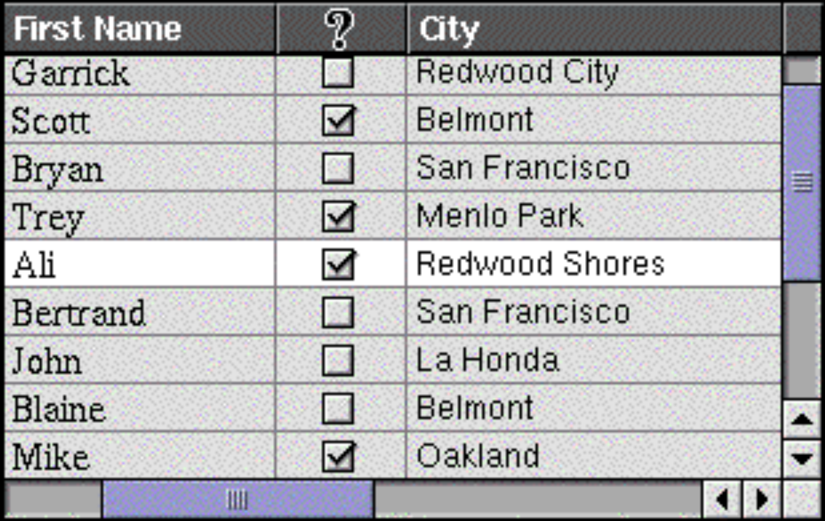
User Interface Elements

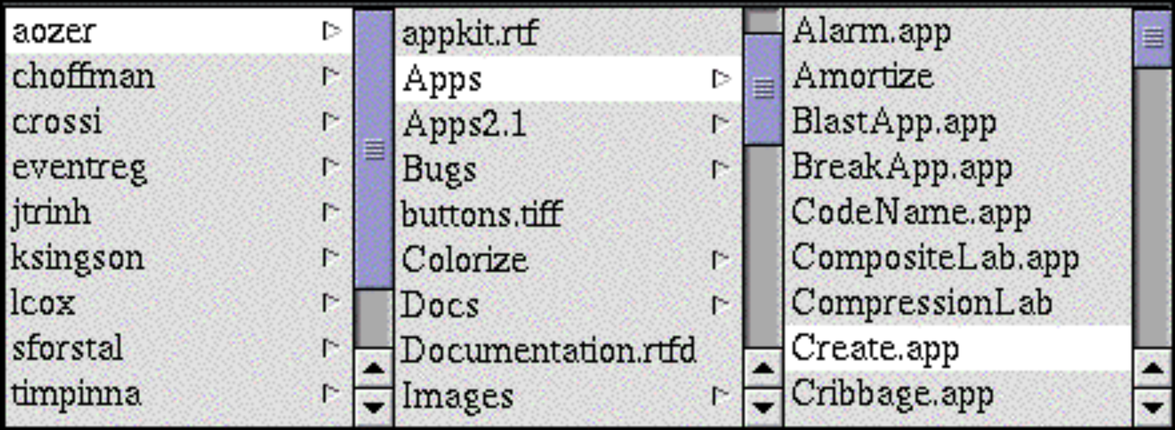
- **NSTableView**
  - Tables of data



First Name	?	City
Garrick	☐	Redwood City
Scott	☑	Belmont
Bryan	☐	San Francisco
Trey	☑	Menlo Park
Ali	☑	Redwood Shores
Bertrand	☐	San Francisco
John	☐	La Honda
Blaine	☐	Belmont
Mike	☑	Oakland

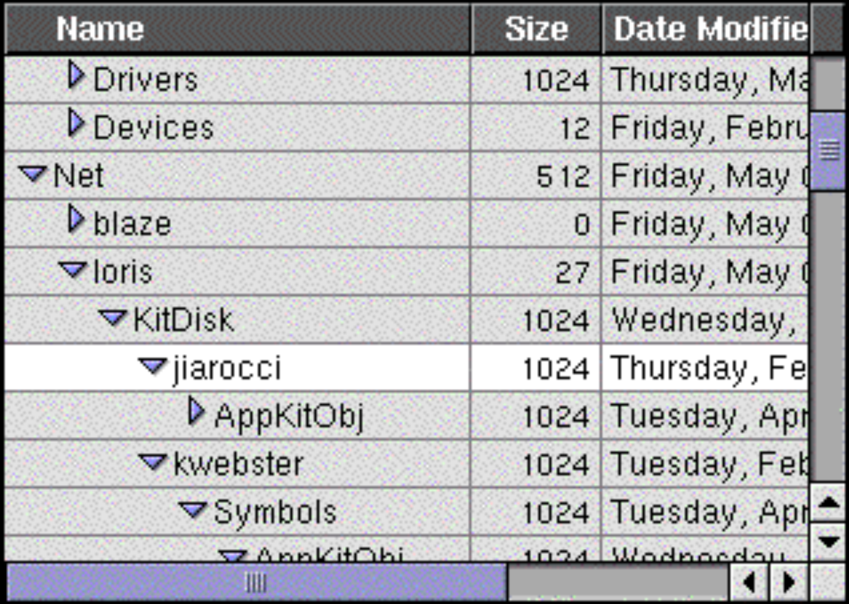
User Interface Elements

- NSBrowser
  - Hierarchical data, shown in columns



User Interface Elements

- NSOutlineView (New in DR)
  - Hierarchical data, shown hierarchically



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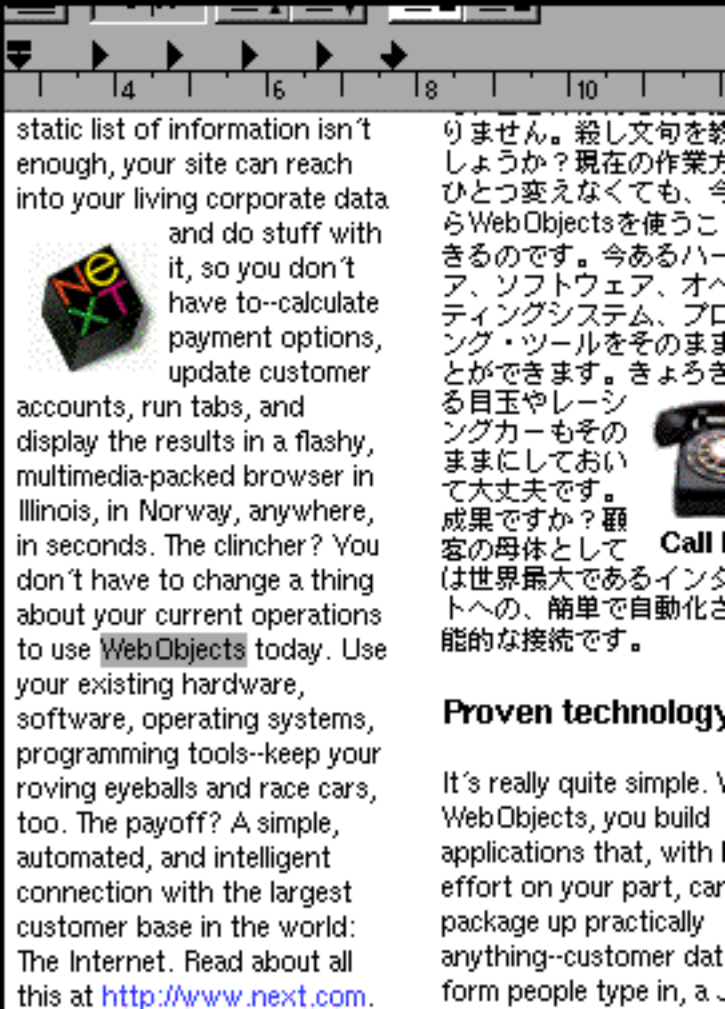
Devices	12	Friday, Febru
Net	512	Friday, May (
blaze	0	Friday, May (
loris	27	Friday, May (
KitDisk	1024	Wednesday,
jiarocci	1024	Thursday, Fe
AppKitObj	1024	Tuesday, Apr
kwebster	1024	Tuesday, Feb
Symbols	1024	Tuesday, Apr
AppKitObj	1024	Wednesday

User Interface Elements

- NSTextView
  - Front-end to the text system
  - Powerful, extensible, international



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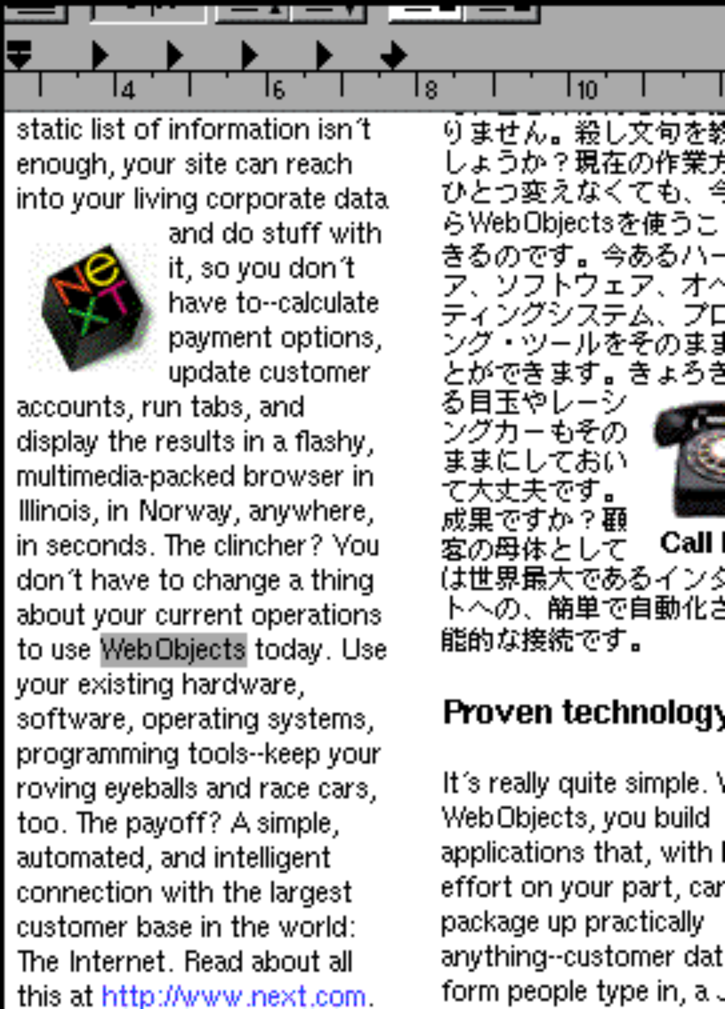

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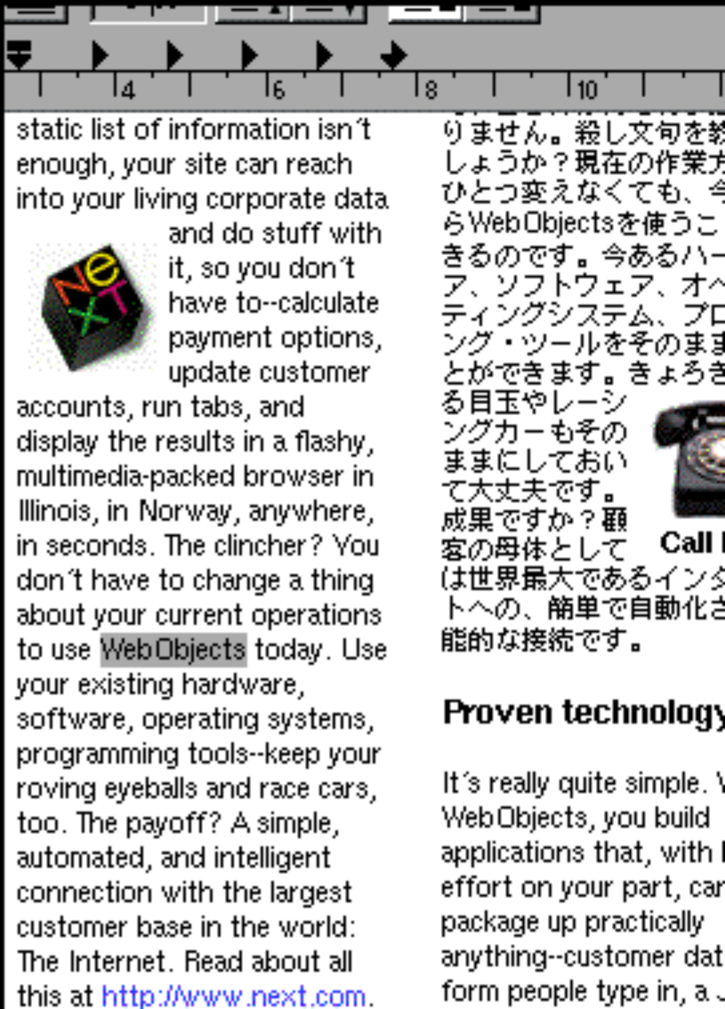

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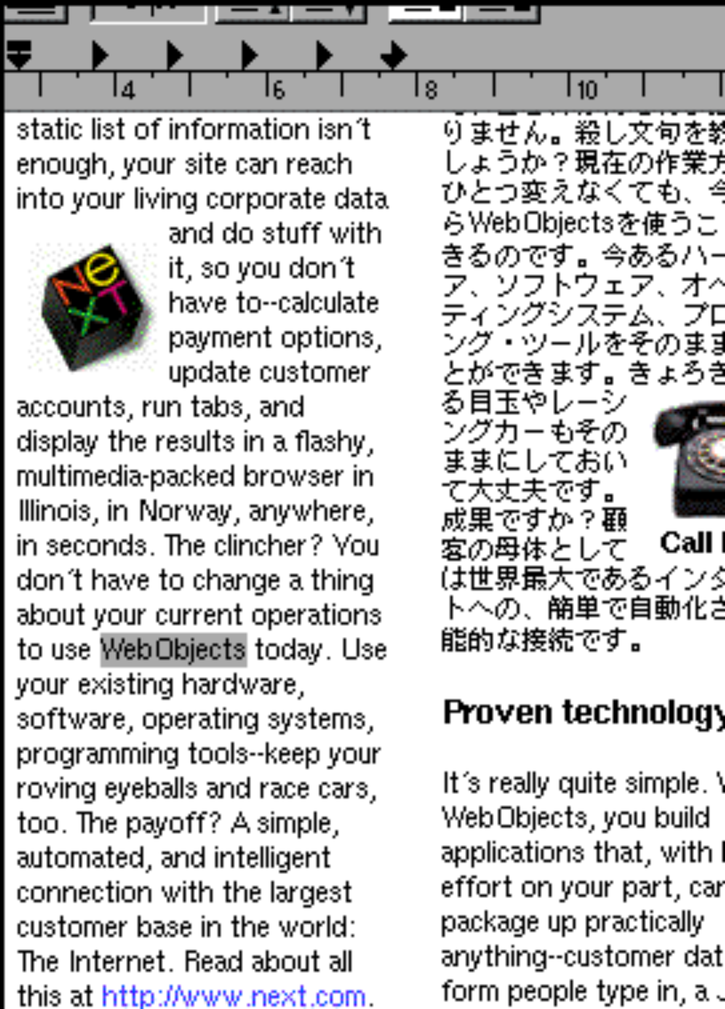

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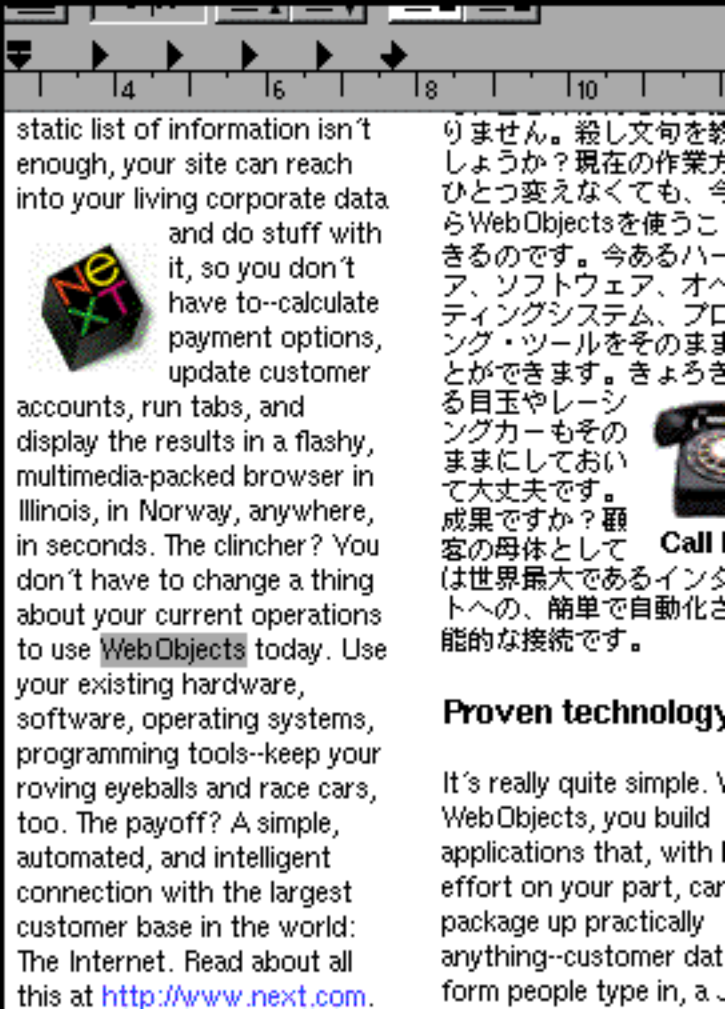

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Standard Panels

- Panels
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  - Print, PageLayout
  - Fax
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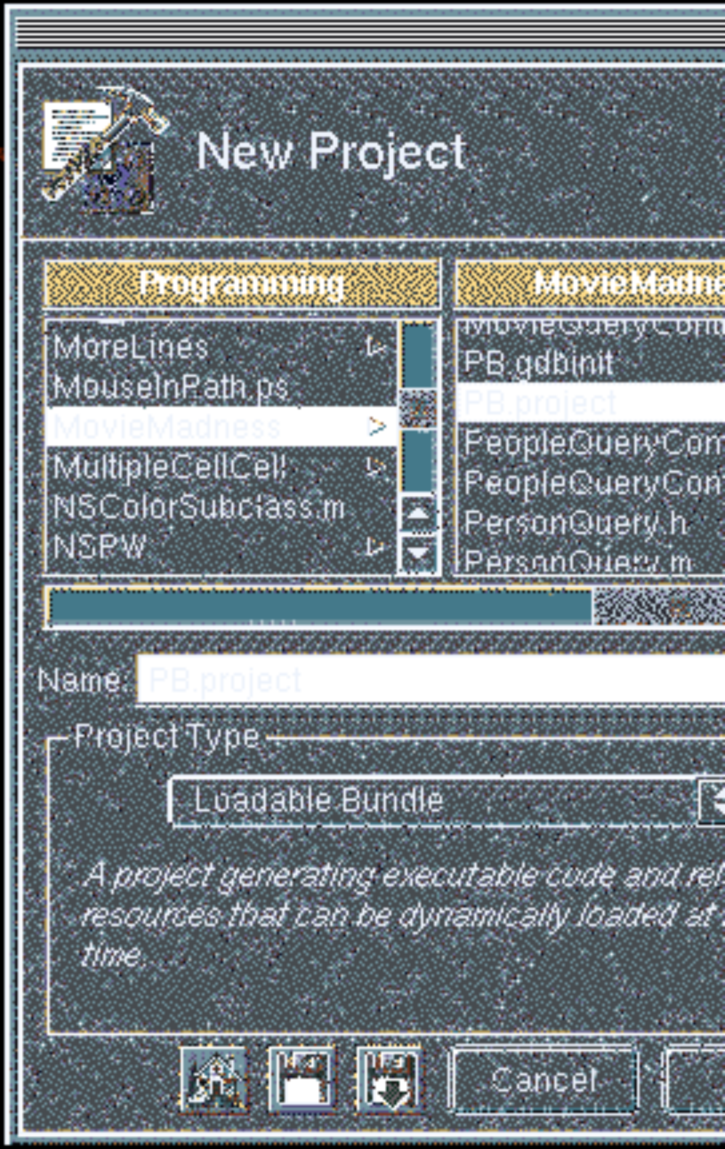

New Project

Name: PB.project

Project Type: Loadable Bundle

A project generating executable code and re resources that can be dynamically loaded at time.

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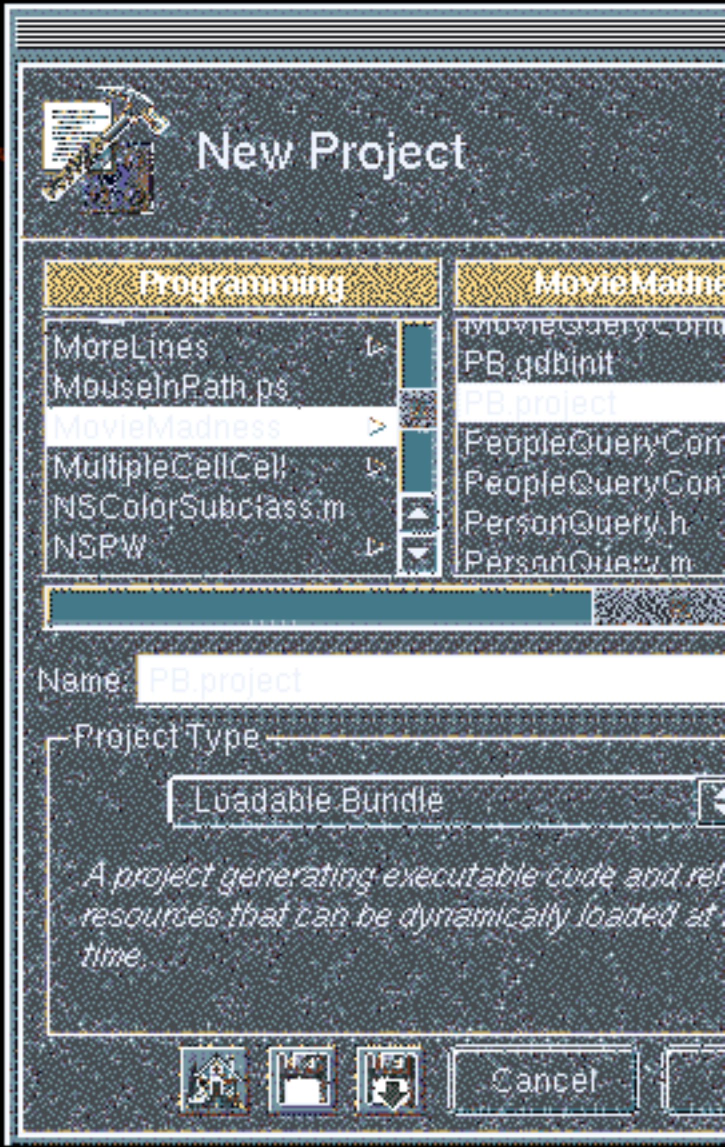

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- NSInputManager, NSInputServer

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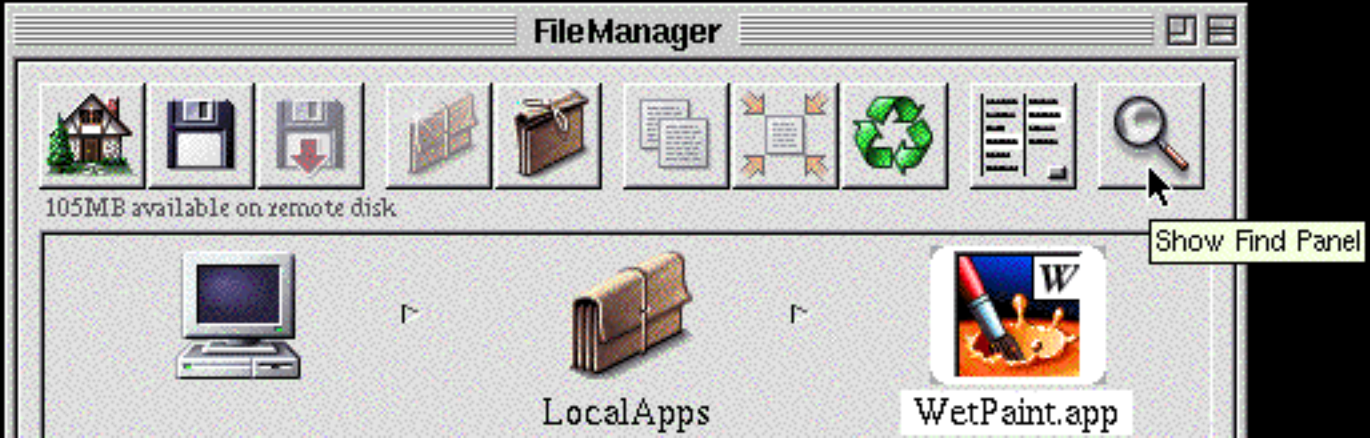
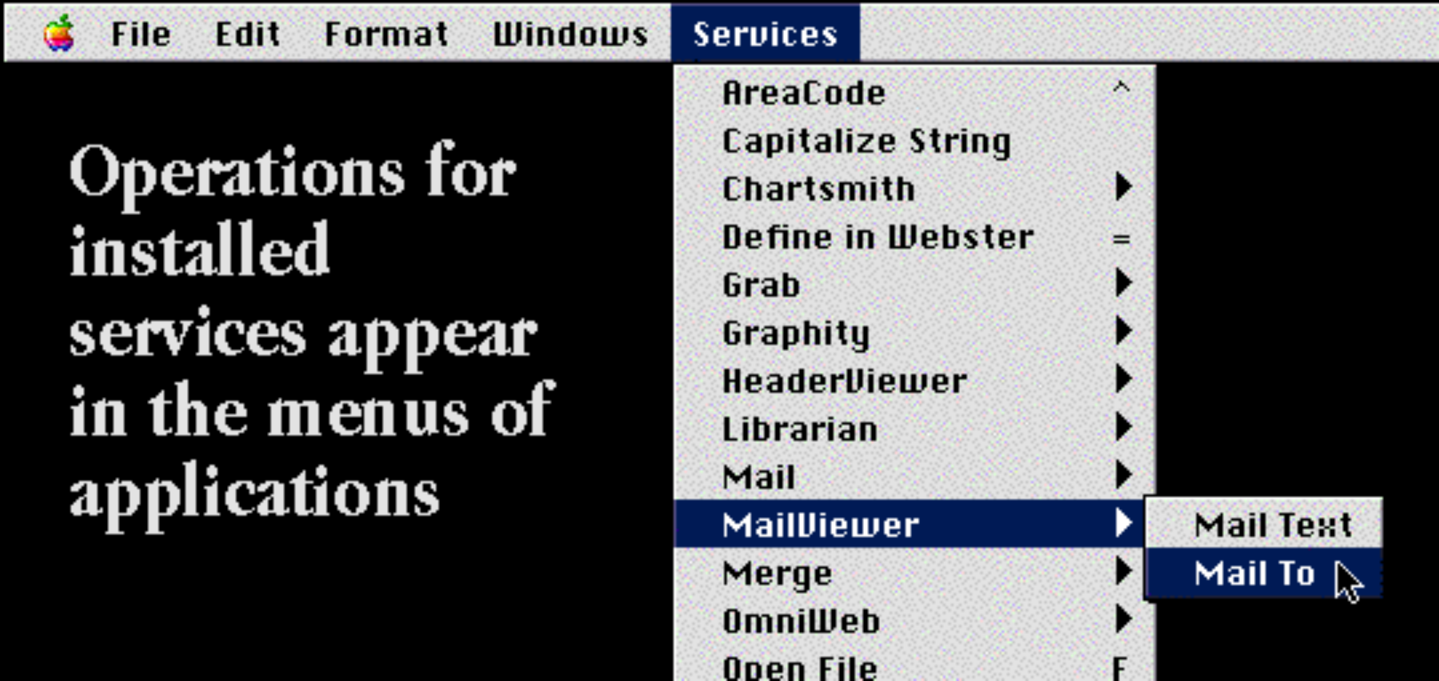
System Services

- Help
  - ToolTips
  - Context Help
  - Comprehensive Help



Interapplication Services

- Allows extending the system via operations on data



Operations for installed services appear in the menus of applications

Filter Services

- Convert files to formats recognized by the system
  - NSPasteboard *pasteboardByFilteringFile:* or *pasteboardByFilteringData:ofType:*
  - NSImage *initWithContentsOfFile:*, *imageFileTypes*
  - Soon on NSAttributedString

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- International text object

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Related Talks…

Talks you hopefully went to…

- *209* Rhapsody Text System and Localization
- *212* Imaging Under Rhapsody

Related Talks...

And talks you should go to...

- *208* Yellow Box Overview
  Today 3:10, Room B
- *216* Developing with IB & PB
  Tomorrow 10:50, Hall 1
- *405* Building Java-based Applications
  Tomorrow 3:10, Room A2
- *207* Intro to Foundation Framework
  Tomorrow 3:10, Room B
- *219* OpenStep: A View from the Trenches
  Tomorrow 3:10, Hall 1

Q&A

Worldwide Developers Conference