

*final*

Windows Libraries for OS/2

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# Windows Libraries for OS/2

Plaintiff's Exhibit  
**7541**  
Comes V. Microsoft

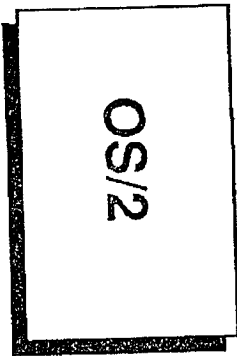
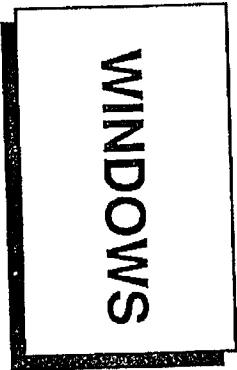
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# Today's Graphical User Interfaces

- o Two Separate API Sets



- o Existing Sets are similar but incompatible
- o Native application port is slow and tedious

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# **"Windows Everywhere"**

- o >1 Million retail copies
- o 47 OEM licenses, 304 OEM machines, and 184 peripheral products certified as Win 3.0 compatible
- o 1,000+ Win 3.0 applications

## Design Goals

1. Enable ISVs to write a single executable to run across the Windows 3.x and OS/2 1.x, 2.x platforms
2. Provide full interaction with PM applications

# Terminology

**Windows Libraries for OS/2  
(WLO)**

Dynamic-link Libraries (DLLs)  
Converts Win API calls at run-time to  
corresponding OS/2 API calls

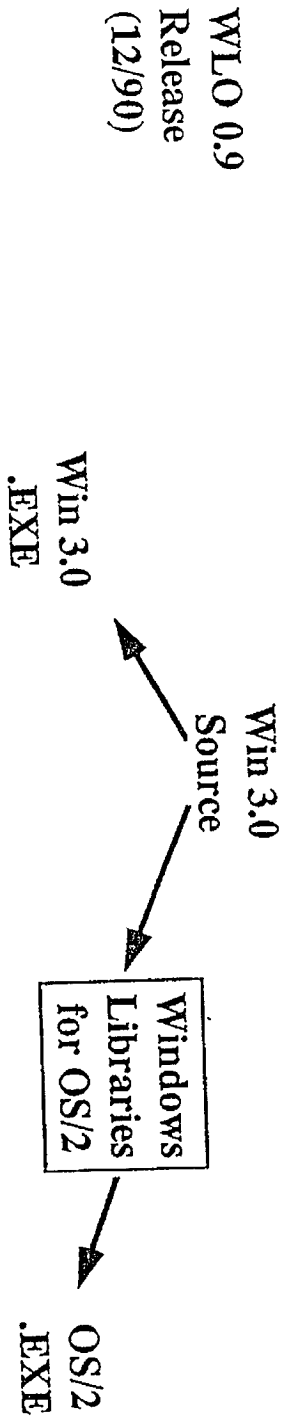
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**Windows Libraries for OS/2  
Development Kit**

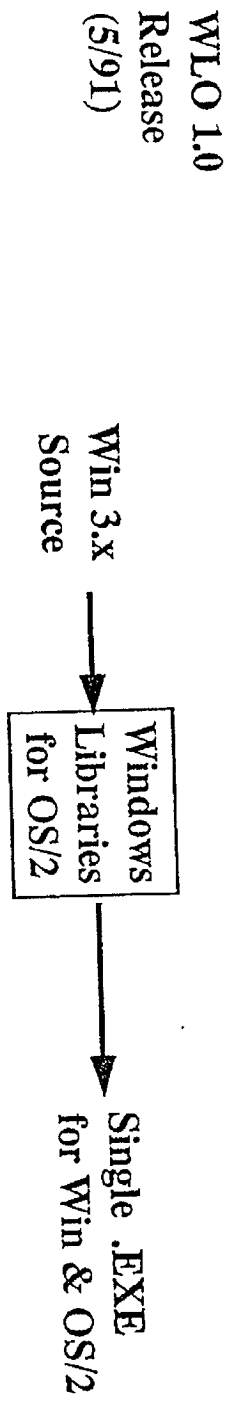
WLO DLLs  
API Libraries (C run-time, Import)  
Utilities  
Documentation  
Sample Applications

# ISV Strategy

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WLO 0.9  
Release  
(12/90)



WLO 1.0  
Release  
(5/91)

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**Windows Libraries for OS/2**

## Current Status

### Release

Alpha

Shipped to 900+ ISVs

Date  
Shipped

0.9

Planned usage in retail shipment of  
DynaComm, Corel Trace, Rumba,  
SQL Windows

12/90

1.0

Final Release: supports creation of single  
.EXE for Windows and OS/2

5/91

1.0

Included with OS/2 2.0

tbd



# Windows Development Checklist

## General WLO limitations on OS/2:

Private Device Drivers (DOS, Win, GDI, TSRs)	Direct Port I/O
App Setup Modifications	EMS/XMS Support
Undocumented Windows Structures/APIs	Sound APIs
Imperfect Graphic PEL Emulation	Debug APIs
Dependencies on a Common LDT	
Exported Segment Selectors	

## Additional limitations on OS/2 1.X:

Palette Management	Direct Interrupts
Some Bitmap, Region Functions	Critical Execution Sections (CLI/STI)

## **Additional Support for OS/2 2.0**

- o Windows Libraries ship with Operating System
  - Less cost for ISVs
- o Additional Windows API Support
  - Palette Management
  - 32-Bit Memory Management
  - Bitmap/Region Functions
- o Direct Interrupt Calls

# Added Win API Support in OS/2 2.0

## Win 3.0 API Set



<u>User</u>	<u>Win32-bit Mem Mngmt</u>	<u>GDI</u>
GetKeyboardState	GetWinMem32Version	AnimatePalette
SetKeyboardState	Global32Free	CreatePalette
	Global16PointerAlloc	Realize Palette
	Global32Realloc	Select Palette
	Global16PointerFree	ExtFloodFill
	Global32CodeAlias	FloodFill
	Global32AliasFree	CreateEllipticRgn
	Global32Alloc	CreateEllipticRgnIndirect
		CreatePolygonRgn
		CreatePolyPolygonRgn

## WLO Performance Expectations in OS/2

- o Overall Goal:
  - \* 80-90 Percent of Windows performance
  - \* 90-95 Percent of PM performance
- o Current Performance Limitations:
  - \* Application Load time
  - \* Dialog Boxes
  - \* DC Creation

# WLO Development Kit Contents

## o Windows Libraries for OS/2 (DLLs)

- o Import library \*
- o C-runtime libraries \*  
(derived from C 6.0 protect-mode libraries)
- o OS/2 API references \* (OS/2.LIB)

## o Utilities

- Font converter
- Icon converter
- Windows DLL converter
- WLO Windows Help Engine

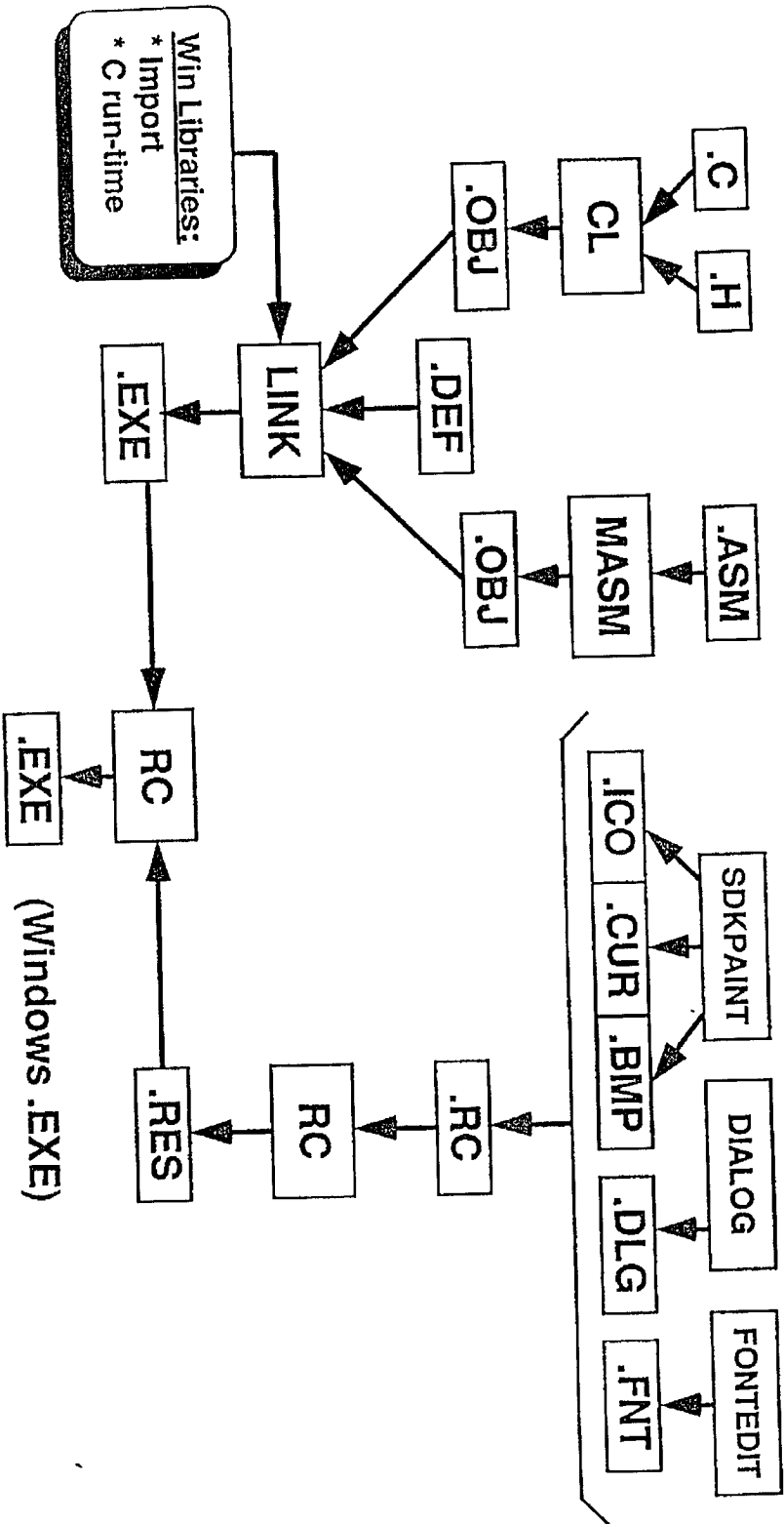
- o On-line documentation (Advisor format)
- o Sample Applications

NOTE: \* = Applies to WLO 0.9 only

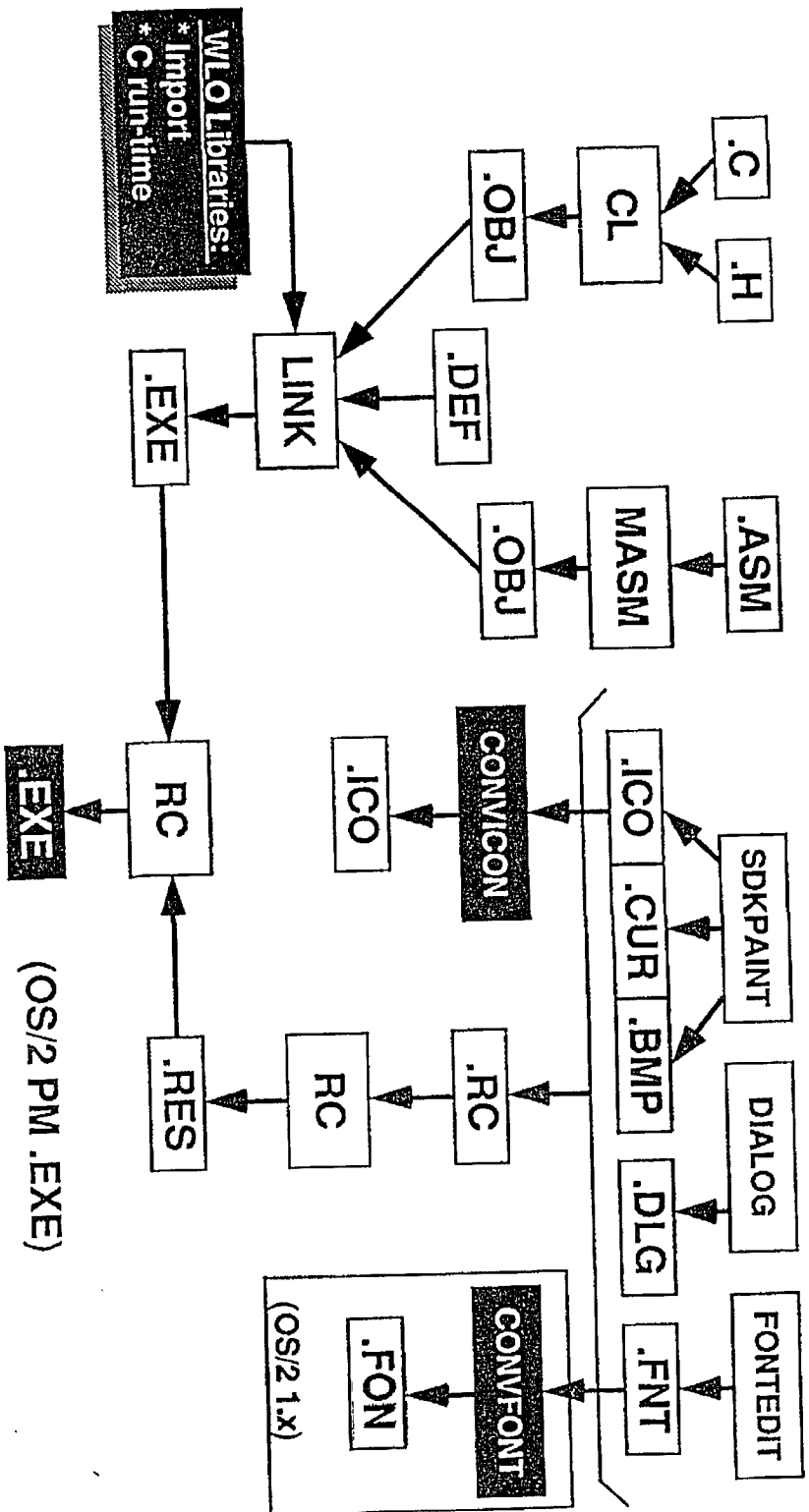
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# Building a Windows 3.x App

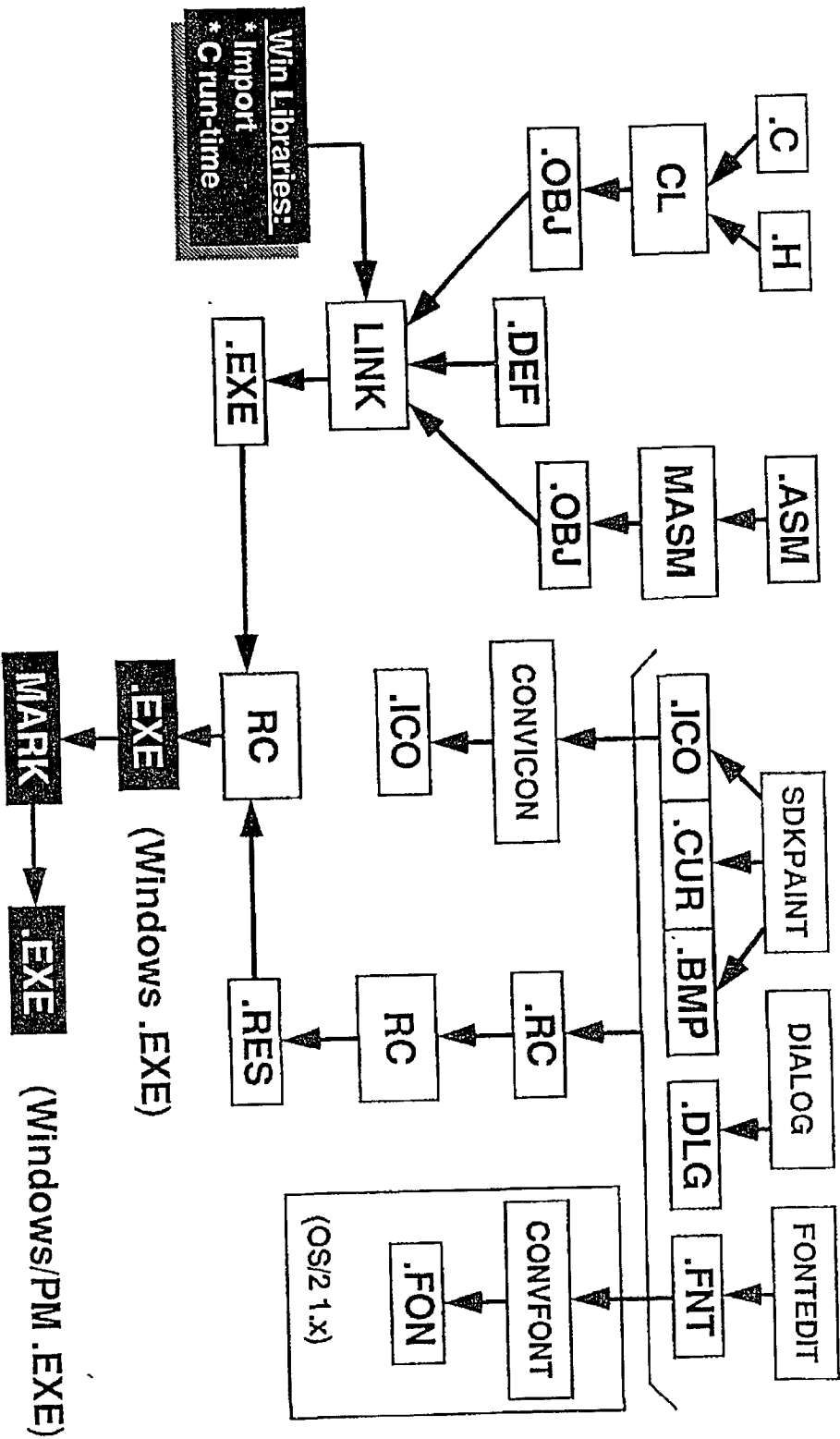


# Using WLO (0.9) to Build an OS/2 App



# Using WLO (1.0) to Build a Single Win/OS/2 App

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Win Libraries:  
\* Import  
\* C run-time



## WLO Apps can call OS/2 APIs

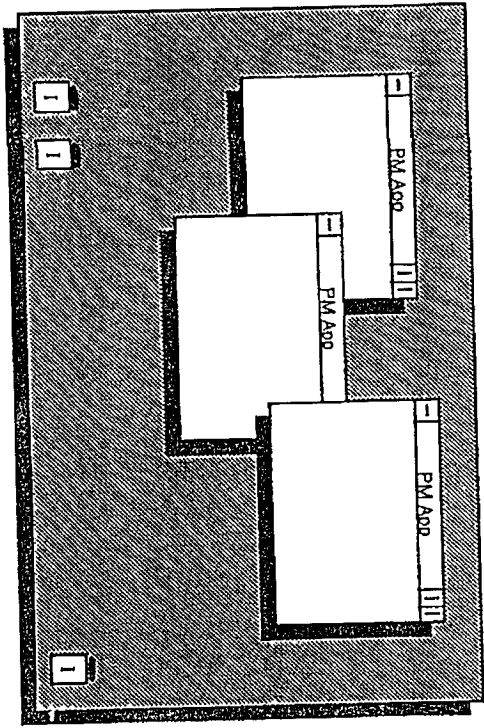
Can take advantage of unique OS/2 features:

- \* Long File Names
- \* Extended Filename Attributes (EAs)
- \* Multiple Threads of Execution
- \* Interprocess Communication (IPC)

## Other Enhancements for Windows in OS/2

- o Run Windows 3.1 as a DPMM client in a DOS box (VDM)
- o Windows applications run in protect mode
- o OS/2 2.0 will support this as a DPMM server

PM Screen Group

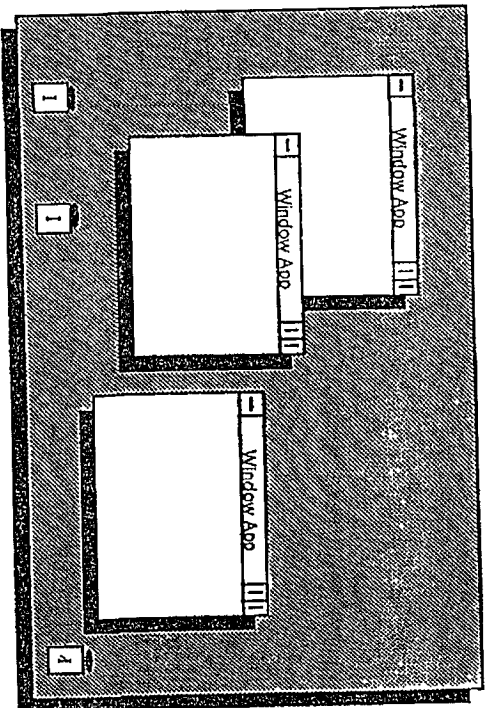


CTRL-ESC



# Separate Screen Groups

Windows in a Full-screen VDM



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# Windows Binary Compatibility

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	Windows			OS/2		
Applications	Win 3.0	Win 3.1	1.21	1.3	2.0	
Win 3.0 Executable	X	X			Some	
WLO 0.9 Executable			X	X	X	
WLO 1.0 Executable	X	X	X	X	X	

 = Executable tested and marked as OS/2 version compliant