

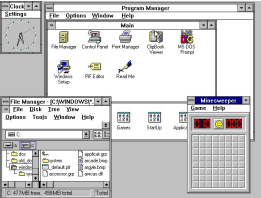
-
- NeXTSTEP Mac OS X
- Project Looking Glass 3D
- Windows
- Linux

Wayland

Linux Wayland Wayland X
Compositing Window Manager

Stacking Window Manager

Windows 3.11



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Desktop Metaphor

#####

"" 800x600 \800
\\times 600\\times 3 \\approx 1.4 \\text{MiB}\\)
30Hz 30FPS CPU \\(1.4 \\times 30 = 41
\\text{MiB}\\) \\ VESA \\(25 \\text{MHz} \\times 30
32 \\text{bits} \\ = 100 \\text{MiB/s}\\)
Windows 3.1 1MBCPU

- 1.
- 2.
- 3.

X11 twm XP Windows Mac OS

Windows XP

hack

NeXTSTEP Mac OS X

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NeXTSTEP





Windows PC Macintosh Jobs
NeXTSTEP Mac OSX

NeXTSTEP GUI X Windows
NeXTSTEP
(Display) PostScript PostScript

Display PostScript (DPS)



DPS Mac OS X Mac API
(carbon) Adobe Display PostScript
Mac OS X Quartz PDF



Mission Control



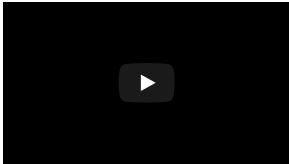
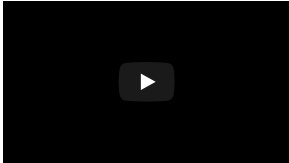
Mac OS X 20013 Mac OS X
v10.0

Mac OS X v10.2 Quartz Extreme
20031 Mac OS X v10.3 Exposé (Mission
Control)

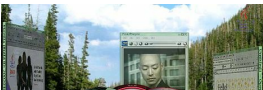
Mac OS X Exposé

Project Looking Glass 3D

2003 Sun Microsystems Linux Solaris
Java3D Project Looking Glass 3D LG3D
Google Project Glass



LG3D





LG3D LG3D Mac OS X

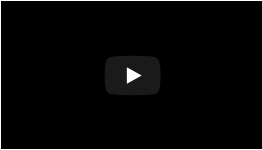
Wayland LG3D

LG3D GPL LiveCD 12
VirtualBox LiveCD

Exposé 2003623 Apple
Worldwide Developers Conference LG3D
200385 LinuxWorld Expo

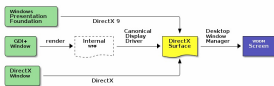
Windows

Longhorn Wobbly



Windows XP Mac OS X
Windows 2003 Project Longhorn
wobbly Windows Vista
Manager (DWM) DWM Mac OS X

Desktop Window



Mac OS X Windows Vista Win32API
 GDIGDI+ Longhorn WPF WPF
 DirectX WPF DirectX GDI
 DirectX GDI
 Windows Metafile (WMF)
 WMF Mac OS X Quartz PDF NeXTSTEP
 DPS WMF Canonical Display Driver
 (cdd.dll) DirectX DWM DWM CDD
 DirectX

WPF C/C++ Windows Office
2007 Ribbon C/C++ .Net WPF
OS X Objective-C Cocoa API Quartz

DirectX	Windows Vista	WDDM
DirectX	Windows XP	DirectX
DirectX	WDDM	Vista
DirectX	DirectX	DWM DWM
DirectX	DirectX	

DWM GPU DWM DirectX

DWM Vista Windows 7 Aero Glass
Flip 3D Aero Peek Windows 8
Windows 8 Modern UI

Linux

Linux X Wayland X