

A Political History of X

or
How I Stopped Worrying and Learned to Love the GPL

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Unix in 1984

- BSD Everywhere
 - But not actually BSD
- AT&T wants to make System V real
 - Surely they still matter
- No Free Software Anywhere



The Origins of X

- Brian Reid and Paul Asente at Stanford
 - V kernel → VGTS → W window system
 - Ported to VS100 at Stanford
- Bob Scheifler started hacking W → X
 - Working on Argus with Barbara Liskov at LCS
 - Made it more Unix friendly (async), renamed X



VAXstation 100 (aka vs100)



Unix Workstation Market

- Unix was **closed source**
- Most vendors shipped a proprietary OS based on BSD 4.x
- Sun, HP, Digital, Apollo, Tektronix, IBM
- “congratulations, you're not running Eunice”.
 - Still, so many gratuitous differences



VAXstation II



Sun 3/60



Early Unix Window Systems

- SunView dominated (actual commercial apps! Desktop widgets!)
- Digital had VWS/UIS (VMS only)
- Apollo had Domain
- Tektronix demonstrating SmallTalk



X1-X6

- Non-free software
- Used internally at MIT
- Shared with friends informally



X10

- Almost usable
- Delivered by Digital on VAXstations
- Distribution was not all free software
 - Sun port relied on SunView kernel API
 - Digital provided binary rendering code
 - IBM PC/RT support actually complete (?)



Why X11?

- X10 had warts
 - rendering model was pretty terrible
 - sadly, X11 wasn't much better...
 - External window management without borders
- Get everyone involved
 - Well, at least every workstation vendor willing to write big checks



X as Corporate Tool

- Jim Gettys and Smokey Wallace
- Write X11, release under liberal terms
- Displace SunView
- “Reset the market”
- Digital management bought this plan



X11 Development

- Protocol designed by cross-org team
- Sample implementation done mostly at DEC WRL, collaboration with people at MIT
- Internet failure



MIT X Consortium

- Hired dev team at MIT
- Funded by Consortium members
- Members also voted on standards



Where Was The GPL?

- We knew Richard too well
 - The GPL's worst sponsor
- Corporate sponsors dedicated to non-free software
 - Pay for say turns out to have powerful control



X Consortium Standards

- XIE – X Imaging Extension
- PEX – Phigs Extension for X
- LBX – Low Bandwidth X
- Xinput (version 1)



DECstation 3100

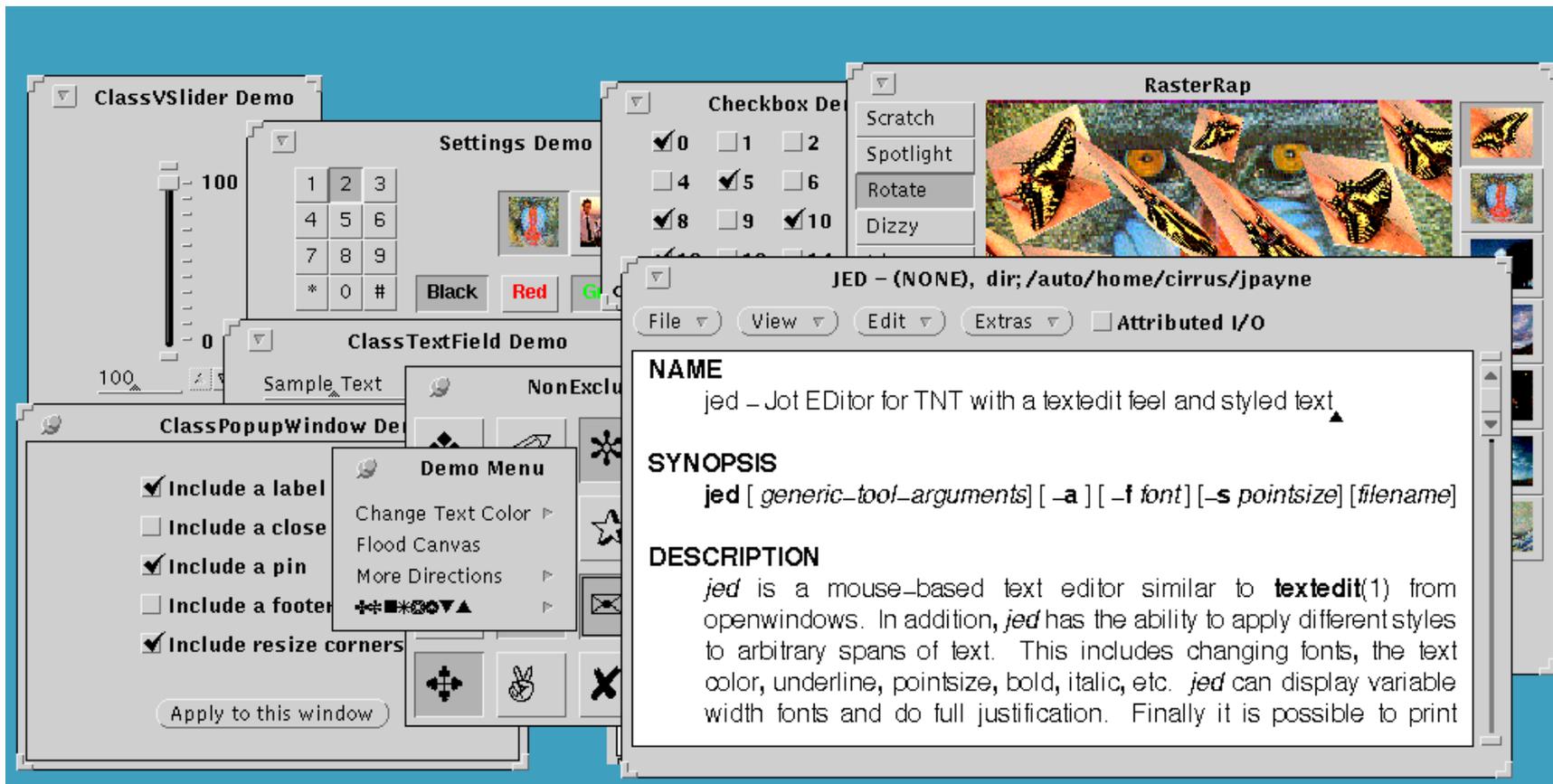


Software Framebuffer Code

- Parallel development at DEC and MIT
- MIT code in open
- Proprietary code by DEC



NeWS

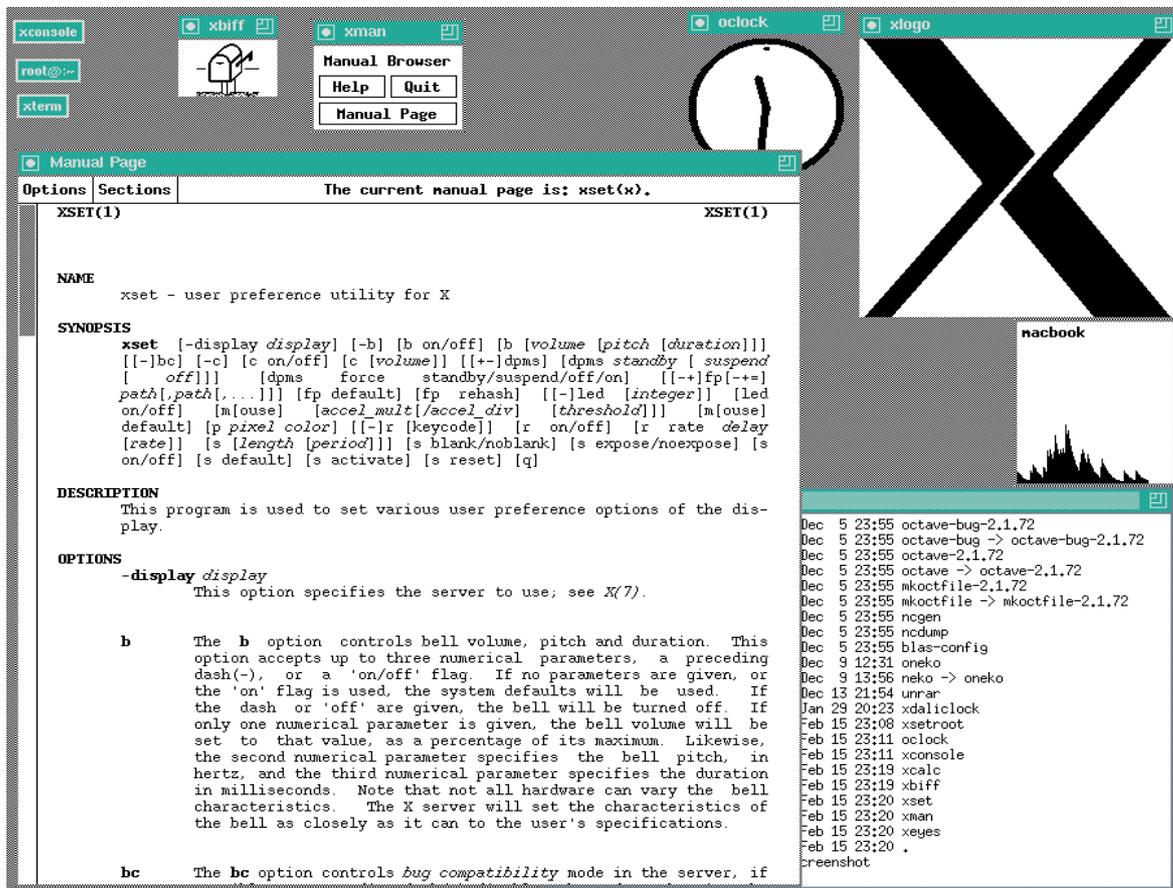


X11, NeWS and PostScript

- James Gosling and David Rosenthal wrote NeWS
 - Very slow, but pretty cool
- Adobe adapted PostScript interpreter for window systems
 - Next, X and others (?)
 - Closed source
- Merged X11/NeWS server
 - closed source



The Free Unix Desktop

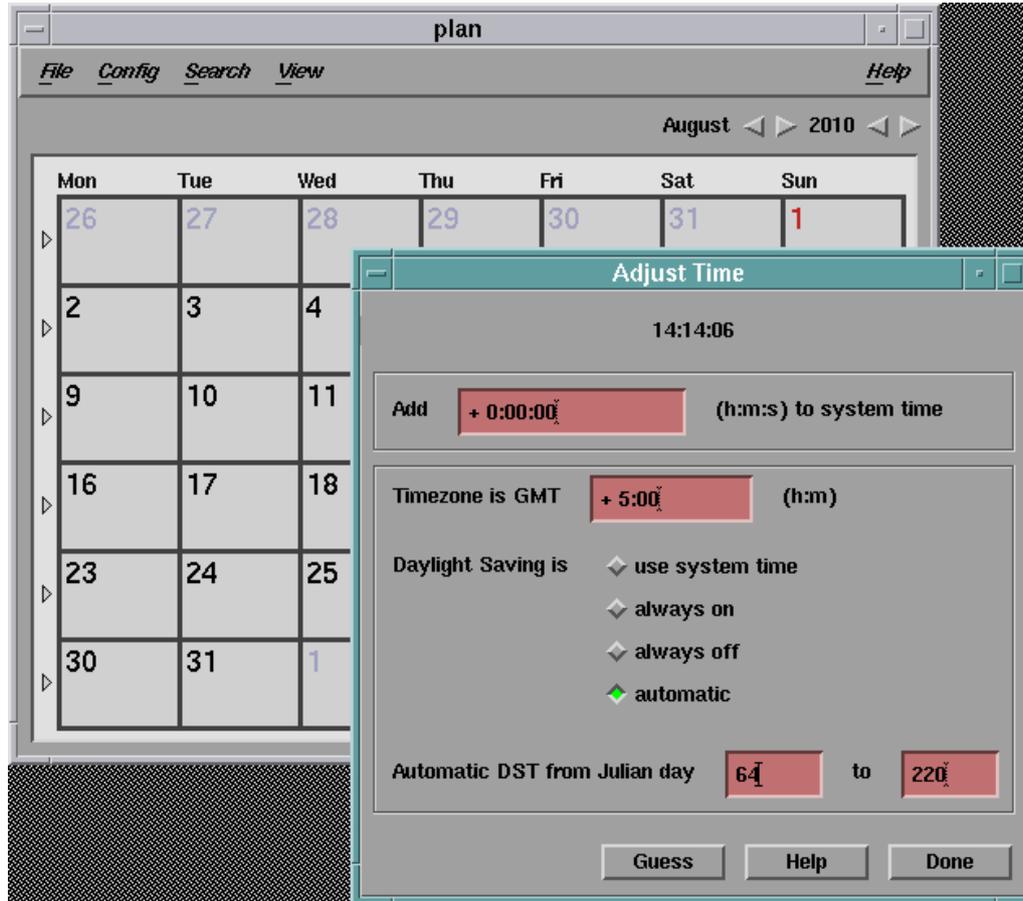


Open Look

The screenshot displays the Open Look desktop environment with a blue background. On the left side, there is a vertical dock containing icons for Desktop, X-Errors, Shelltool, martin, and Waste. The desktop features several windows:

- Workspace Properties:** A window for configuring workspace settings, including a color palette and buttons for 'Apply' and 'Reset'.
- Cmdtool:** A terminal window displaying a list of files and a context menu. The file list includes: `parport.c`, `parport2.c`, `sprache3.po`, `sprache3.tex`, `password*`, `status.c`, `password.c`, `status.tex`, `std-kopf.c`, `pinquin300.eps`, `sub_d25.eps`, `pipe*`, `subd25.fig`, `pipe.c`, `subd25.fig`, `pipe.tex`, `terminal*`, `pipe2*`, `terminal.c`, `pipe2.c`, `terminal.tex`, `pipe2.tex`, `test`, `l.gif`, `pipe2_bild.fig`, `test.asc`, `test.c`, `pipe2_bild.fig.bak`, `test.pgm`, `pipe2_1`, `st.ppm`, `play_co`, `st.txt`, `play_co`, `p.tex`, `primz_1`, `deograb*`, `primz_1`, `deograb.c`, `primz_1`, `Find`, `deoinfo*`, `primz_1`, `Extras`, `deoinfo.tex`, `primz_1`, `File Editor`, `deowork.c`, `primz_1`, `Scrolling`, `lit_for_serial.c`, `primz_1`, `bcam-test.ppm`, `primz_math_h.tex`, `work*`, `get_formats.c`, `primzah1-bug.c`, `work.c`, `get_formats.tex`, `primzah1`, `xman.eps`, `getmixerdevs*`, `primzah1.c`, `xman.gif`, `getmixerdevs.c`, `primzah1.make`, `xwpe.eps`, `redit.gif`, `primzah1.tex`, `xwpe.gif`, `lang_test.c`, `primzah12.c`, `xxgdb.gif`, `lang_test.mo`, `read_args.bak`, `zeichentabelle.c`, `lang_test.po`, `read_args.c`, `tauflicht*`, `read_args.c`.
- Term Pane:** A sub-window showing a menu with options: History, Edit, Find, Extras, File Editor, Scrolling.
- WorkMan:** A window for managing work, showing 'No artist', 'No CD name', and playback controls for a CD.
- Main Menu:** A menu with categories: Shells (XTerm, RXVT, Shelltool, Cmdtool, Root Shell), Editors, Math, Graphics, Sound, Misc, Toshiba, Desktop, Window list, Shutdown, and Exit.
- Linux Meminfo v1.1:** A system information window showing memory usage (29.8 MB Used, 0.0 MB Shared, 5.0 MB Buffers, 0.0 MB Swap) and load averages (1 Min: 0.05, 5 Min: 0.04, 15 Min: 0.00). It also shows the update frequency and uptime (0 Days 0 Hours 33 Minutes).

Motif



The X Toolkit (Xt)

- C library for building toolkits
- Base of Athena Widgets (Xaw)
- “Object Oriented”
- Flexible design to support many toolkits
 - Mechanism not policy → implement every policy we can think of

Open Look

- SunView → XView
 - Similar API, Open Look appearance
 - Closed source
- OpenView
 - Xt based toolkit
 - Driven by politics (“More open”)



Motif

- Xt
 - Open source common toolkit infra
- Motif
 - Closed source, built on Xt



Open Look vs Motif

- Both closed source
- “sharing” Xt library
- App developers had no good choice
 - Sun wanted Open Look
 - HP/DEC/SGI(?) wanted Motif



X Stagnates

- Core protocol not allowed to change
- Non-members pushed out of collaboration
- Market fragments, app developers confused



Collapse of Unix

- App market failed to thrive
 - So many Unix versions
 - So many UI wants
 - So much gratuitous re-engineering
- Windows happened
 - Stupid cheap hardware
 - Completely standard ABI
 - “good enough is good enough”

