


The X Window System - Design Principles



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Based on Jim Gettys' video presentation

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- Video recapitulation
 - X11 protocol
 - terms
 - protocol atoms
 - C interface: Xlib
 - Extensions
 - glX (OpenGL)
 - DOUBLE-BUFFER
 - MIT-SHM
 - IPC with ICElib
 - Discussion

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Recapitulation

Jim Gettys, Rob Scheifler developed distributed windowing system

Open standard, many implementations today

Window managers

Toolkits

Networking issues



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Terms and acronyms

server: graphical display
client: application

window: attributes
visual: "drawable"

requests
events
errors

atoms: see next slide

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X atoms

packet structure: header + data

samples of atoms include:

CARDINAL

PIXMAP

STRING

FONT

RGB_GRAY_MAP

WM_NAME

STRIKEOUT_DESCENT

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`Xlib (main X library)`

`<X11/Xlib.h>`

client-side protocol wrapper

low-level, thus:
toolkit libraries

Xt -> Motif -> Qt, Gtk+

glut, SDL

Demonstration!

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X protocol extensions

glX: OpenGL context

DOUBLE-BUFFER: ensure
flicker-free graphics operations

MIT-SHM: high-performance messaging
shortcut

Extensions are implementation dependent ->
fallbacks?

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Inter-client exchange: ICElib

Generic IPC facility

Independent of X11, but can gain network transparency and more

K Desktop Environment:
DCOP

Representative for many other X libraries:
ICCCM, fontlib, XIM

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```
XClosePresentation();
```

-> X didn't lose importance
-> new projects like MAS

Questions?

x.org
xfree86.org
xwin.org
man x