

Java GUI Programming

AWT/SWING - Introduction

USER INTERFACE

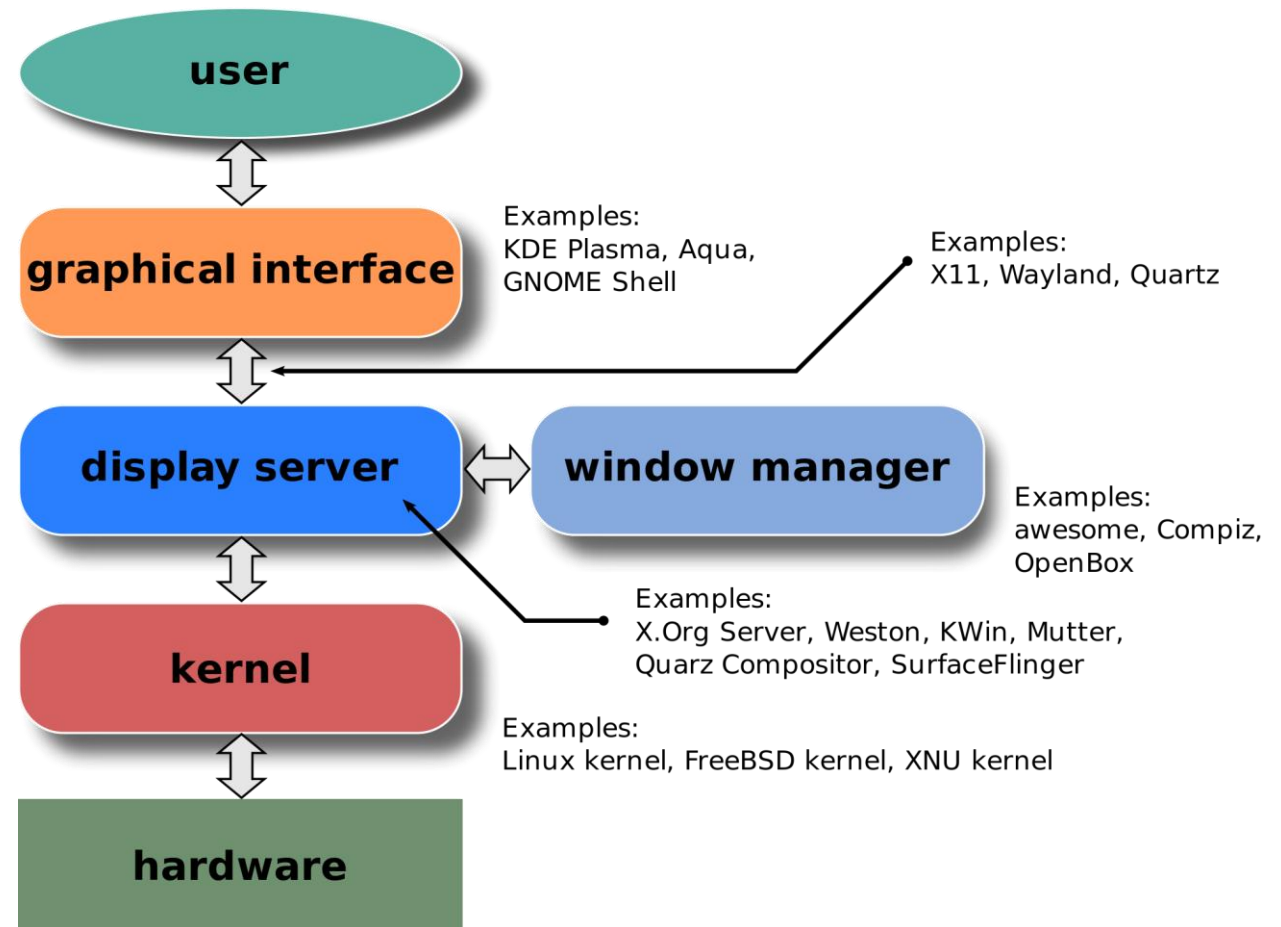
ERIC Y. CHOU, PH.D.

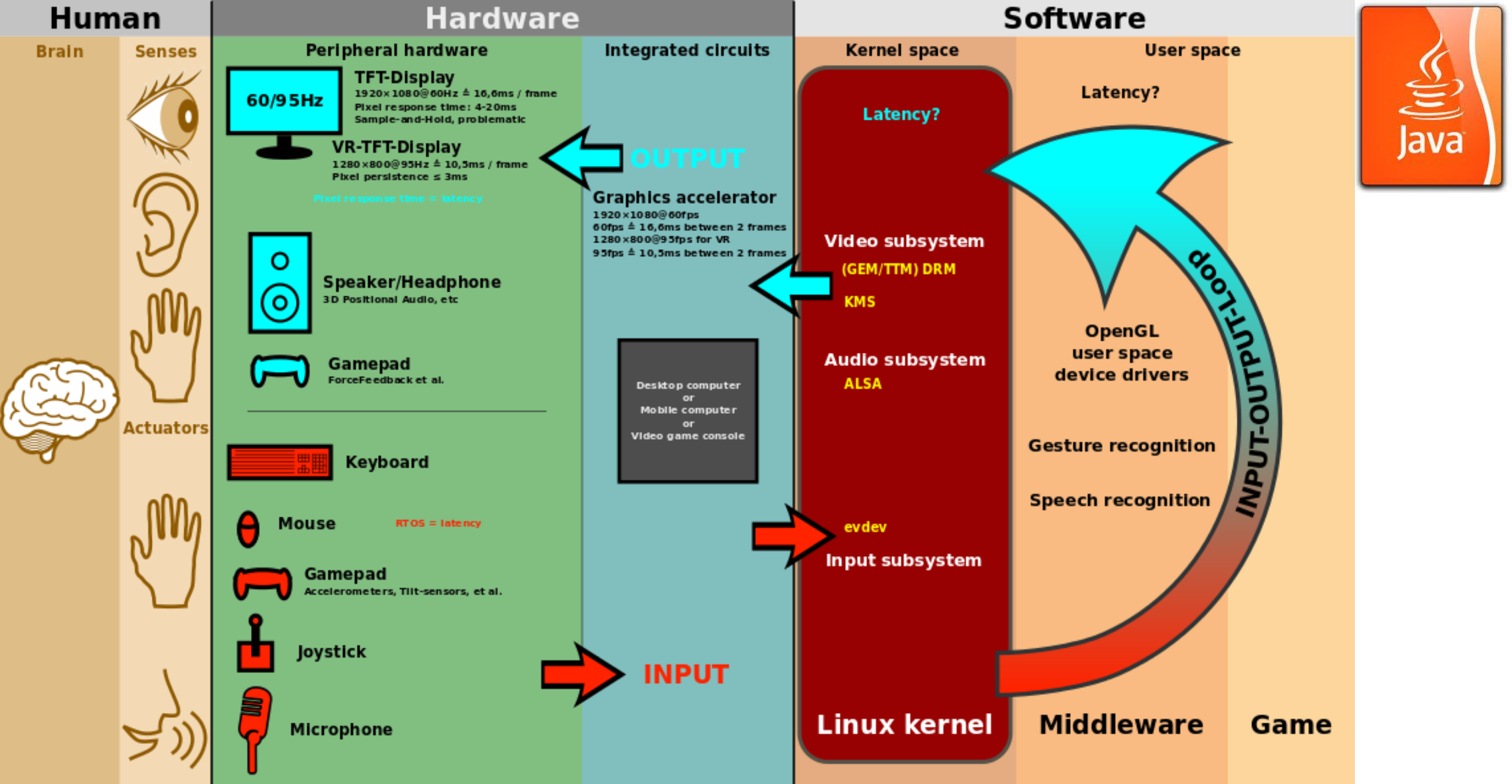
IEEE SENIOR MEMBER



What is User Interface

The user interface (UI), in the industrial design field of **human-machine interaction**, is the space where interactions between humans and machines occur.







A Brief History of User Interfaces

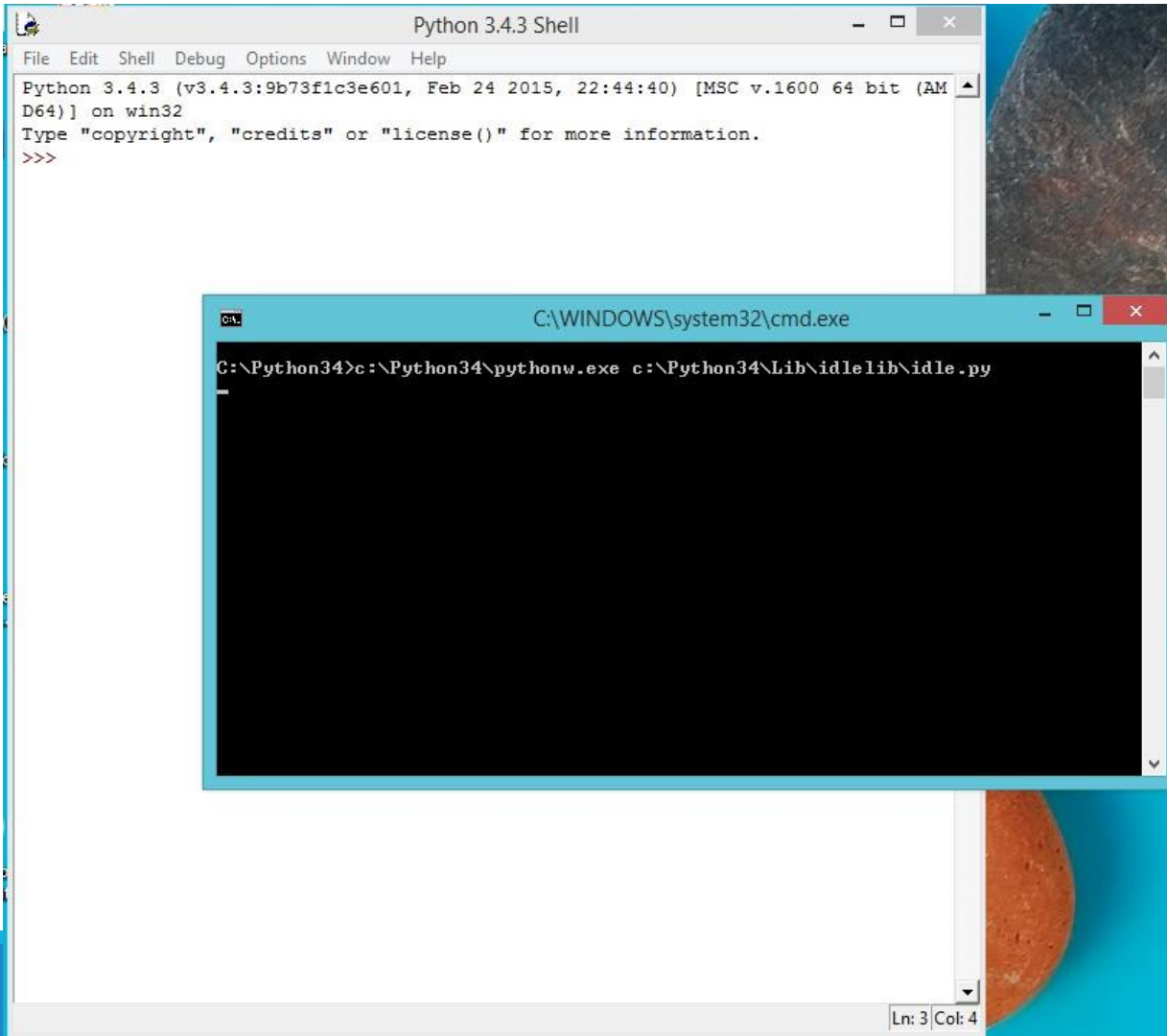
Command Line Interface

Command-line interfaces (CLIs) evolved from batch monitors connected to the system console. Their interaction model was a series of **request-response** transactions, with requests expressed as textual commands in a specialized vocabulary. Latency was far lower than for batch systems, dropping from days or hours to seconds.



A Brief History of User Interfaces

Command Line Interface



UI Design: Text-based
Request-Response Model
Hardware: Keyboard
Events: Enter-Key



A Brief History of User Interfaces

Text-based Full Screen Navigation

```
Synchronet Main Menu

Read/Post Messages
N New message scan
R Read message prompt
Z Continuous new scan
B Browse new scan
Q QWK packet transfer

P Post a message
A Post auto-message

Message Search
F Find text in messages
S Scan for msgs to you

Anytime: Ctrl-U Who's online  Ctrl-P Send private msg  Ctrl-C Abort cmd/text

Message Area Selection
J Jump to new msg area

* List sub-boards
/* List groups
{ } # Select sub-board
[ ] /# Select group

Go to
T File Transfer section
G Text file section
C Chat section
X External programs

Electronic Mail
E Read/Send E-mail

Other Commands
D Default user config
& Message scan config
U User lists
I Information
M Minute Bank
/L Node activity
^K Ctrl-key Menu

O Logoff BBS (or /O)

Main 0:00:14 [1] Main [1] Notices: █
```

UI Design: Text-based
Full Screen Navigation Model

Hardware: Keyboard/Mouse
Console(80-Character/Line)

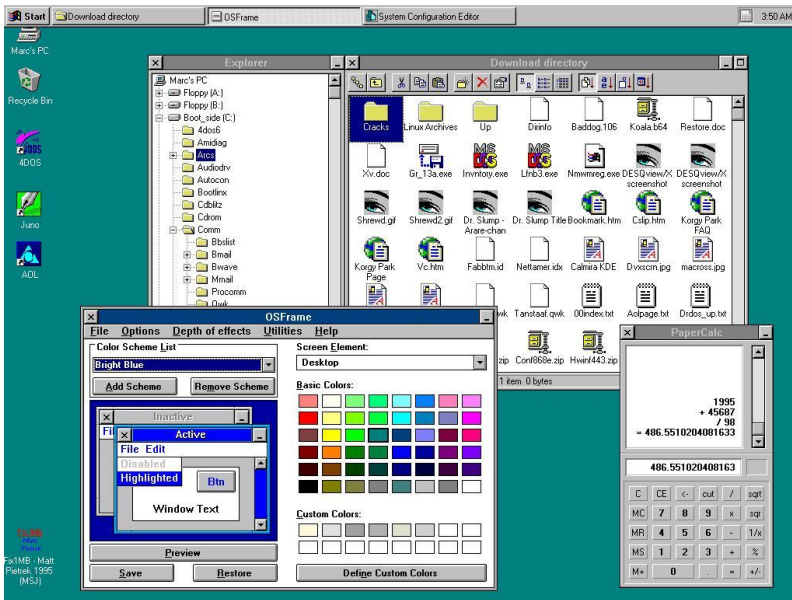
Events:

UP, DOWN, LEFT, RIGHT,
HOME, END, PgUP, PgDN,
TAB, Enter, and etc. Keys
Mouse Clicks

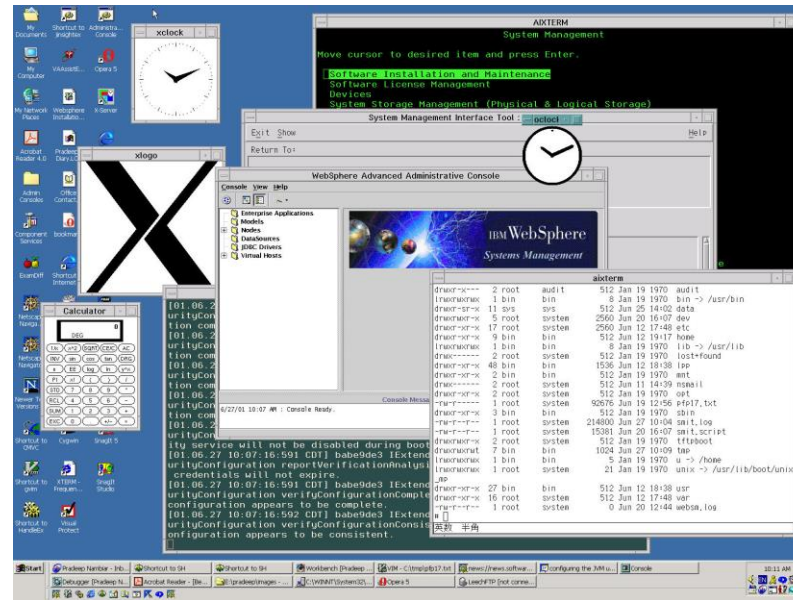


A Brief History of User Interfaces

Desktop Window-based UI

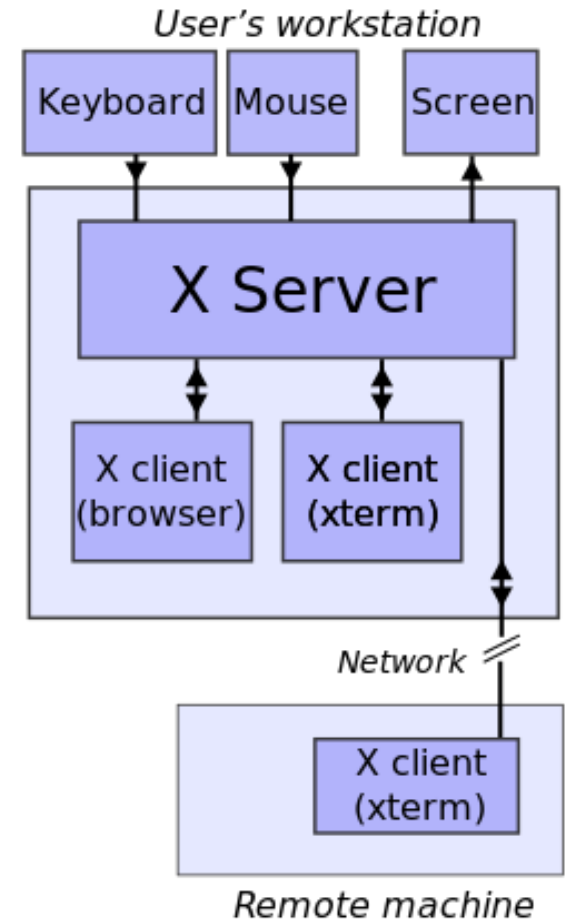


Windows 3



Unix/Linux X11 Window

AWT/Swing is a technology of desktop and HTML-based age. It is still robust and it can be embedded in JavaFX system. It is still a good tool to learn GUI Programming for Java.





A Brief History of User Interfaces

Touch Panel-based UI



Pinch

Touch surface with two fingers and bring them closer together

Spread

Touch surface with two fingers and move them apart

Press

Touch surface for extended period of time

Press and tap

Press surface with one finger and briefly touch surface with second finger

Press and drag

Press surface with one finger and move second finger over surface without losing contact

Rotate

Touch surface with two fingers and move them in a clockwise or counterclockwise direction





A Brief History of User Interfaces

Responsive GUI Design – HTML5/CSS3/Javascript based/like GUI



JavaFX is invented for this generation. It is an HTML/CSS like system. But it does not gain popularity.





Swing can be embedded in JavaFX

JavaFX Features

- ➔ Support FXML (Similar to HTML)
- ➔ 2D and 3D designing
- ➔ Designing Using CSS
- ➔ Effects and Animations
- ➔ Embedded web pages
- ➔ Platform Independent

