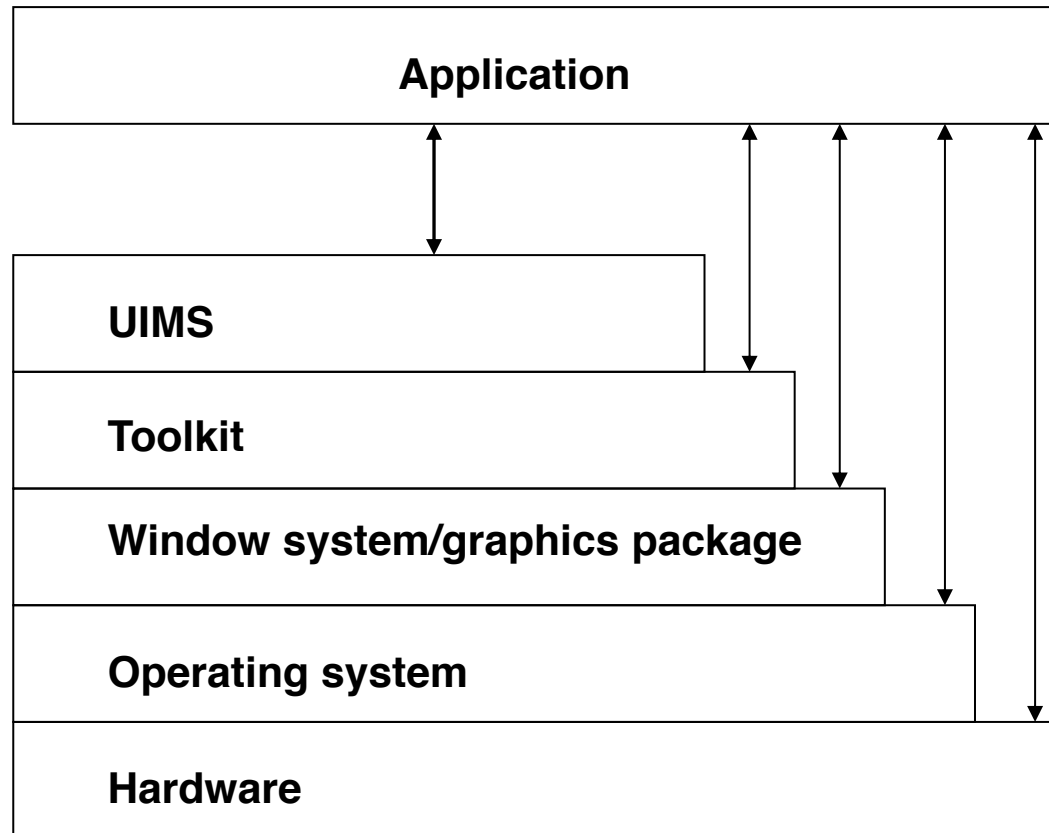
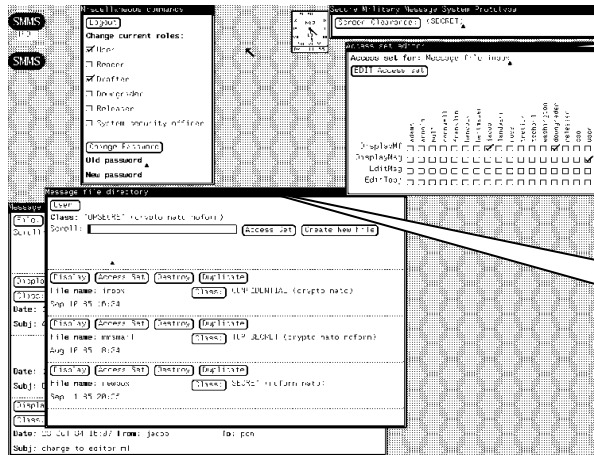


User Interface Software Tools



Window Systems

- Manage shared resources (pixels, keyboard, mouse), provide clipping, translation
- Tells client when exposed, resized, or other damage
- Could implement in different places
- Single built-in window manager or allow separate
- Dispatcher



```
AccessWindowMouseEvent (Event *e) {  
    . . .  
}
```

```
FileWindowMouseEvent (Event *e) {  
    If (e->type==MS_LEFT) . . .  
}
```

(N.B. Security classifications shown are simulated only.)

Toolkits

- Divide window into controls or widgets

The screenshot shows a complex GUI with several windows. Three callout boxes point to specific UI elements:

- AccessCheckBox (Boolean val)**: Points to a checkbox in the 'Access set for: Message file info' window.
- ClassifTypein (char *val)**: Points to a dropdown menu in the 'Access set for: Message file info' window.
- DisplayMsgFile ()**: Points to a list of message files in the 'Message File History' window.

The 'Message File History' window displays the following data:

Date:	File name:	Class:
Sep 10 05 16:04	trans	TOP SECRET (inform nats)
Aug 18 05 8:04	message-1	TOP SECRET (crypt nats inform)
Sep 1 05 20:26	message	SECRET (inform nats)

(N.B. Security classifications shown are simulated only.)