

GUI
GRAPHICAL
USER
INTERFACES





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Hochschule für Gestaltung
Schwäbisch Gmünd



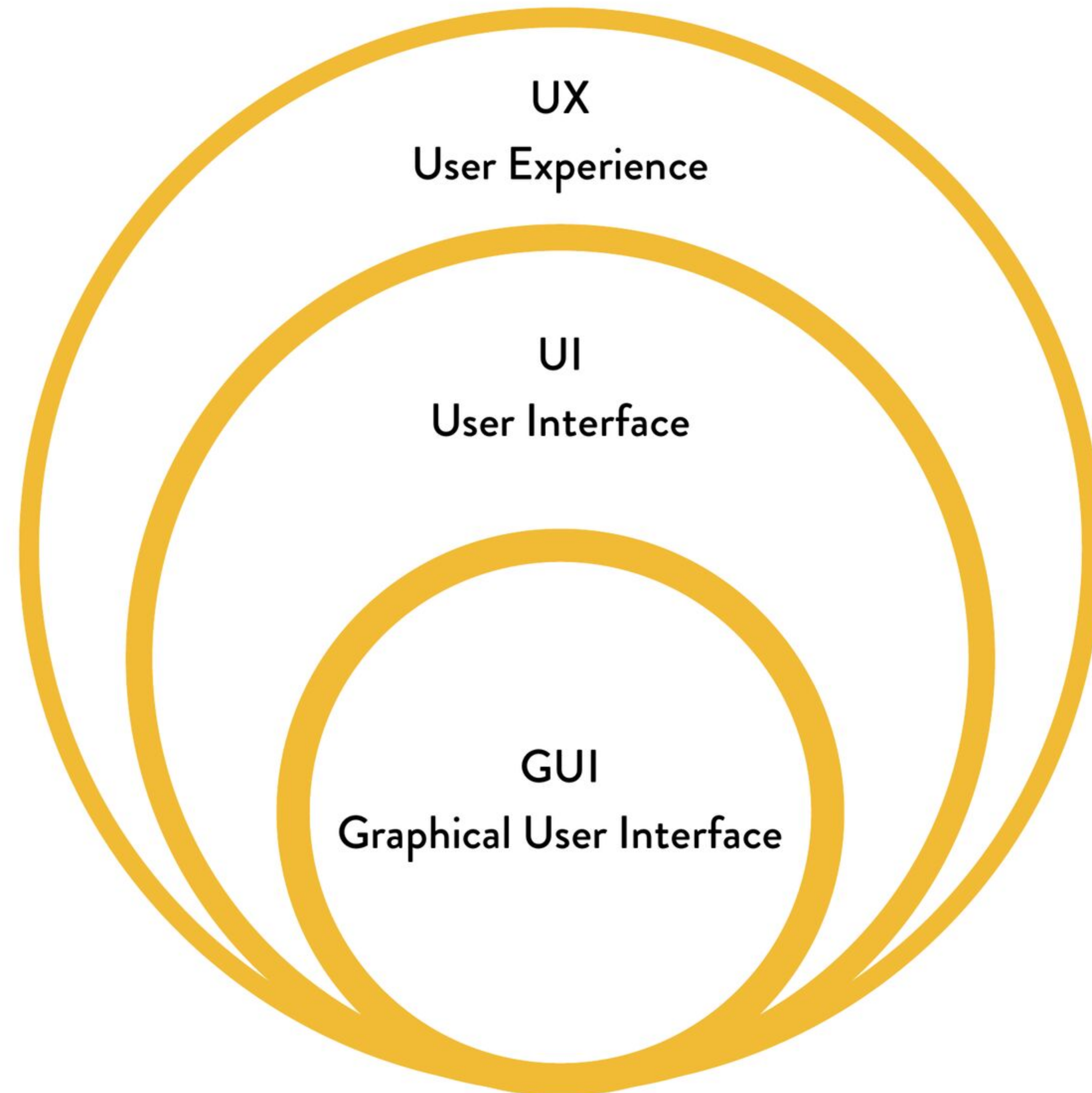
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Photo by Oliver Jung

WHAT IS A GRAPHICAL USER INTERFACE?

UX ≠ UI ≠ GUI



USER INTERFACE

USER INTERFACE

A human that uses something:

Customer, employee, citizen, parent, child

USER INTERFACE

A way for a human to understand
and control a machine or technology

INTERACTION DESIGN



WHAT ABOUT USER EXPERIENCE?

USER INTERFACE

A way for a human to understand
and control a machine or technology

USER INTERFACE

A way for a human to understand
and control a machine or technology

USER EXPERIENCE

Perceptions and memories of
interactions and events

We can design this



USER INTERFACE



We can design this



USER INTERFACE



To affect this



USER EXPERIENCE



USER EXPERIENCE



Which we hope will affect

Loyalty

Revenue

Brand

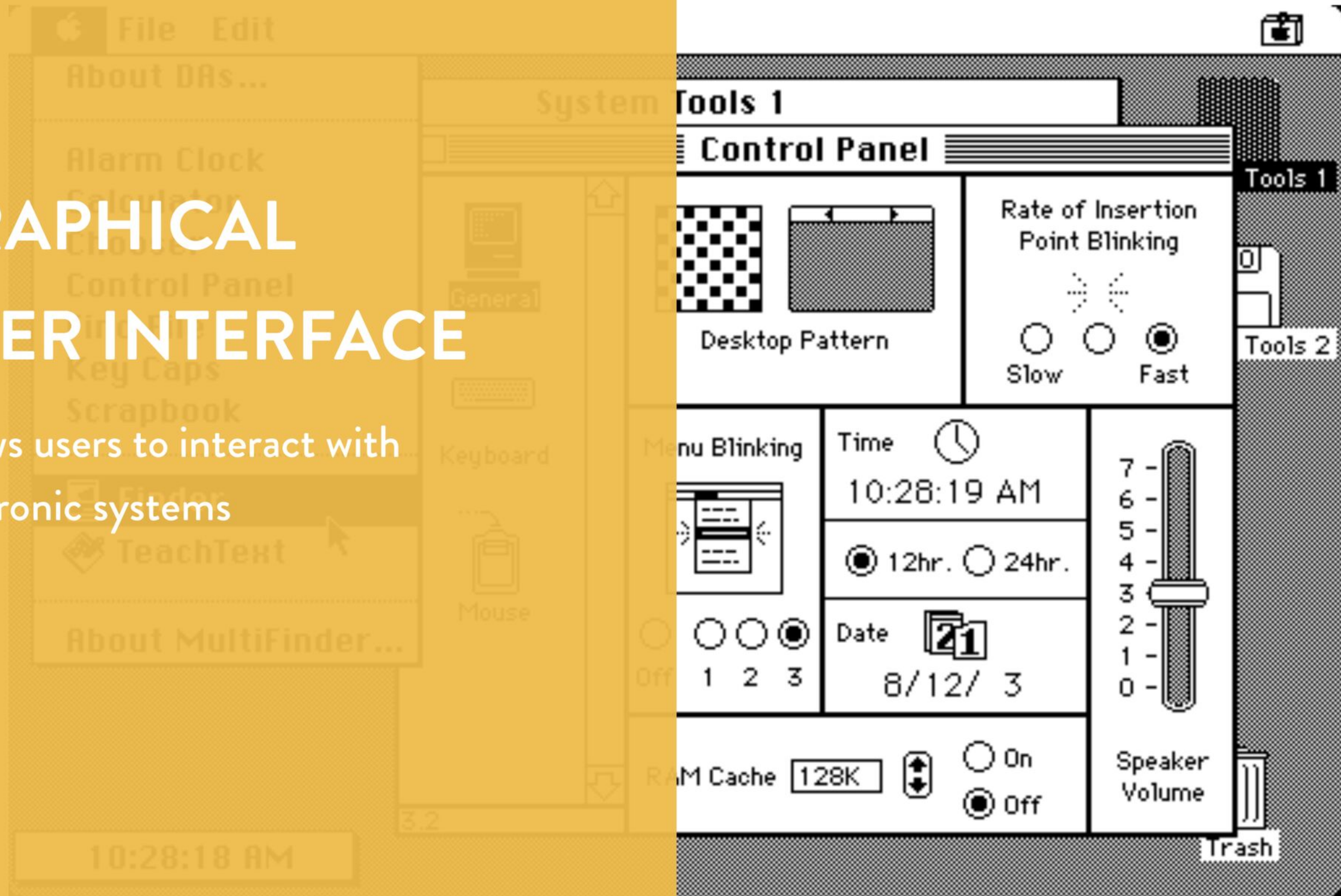
Efficiency

Back to

USER INTERFACE

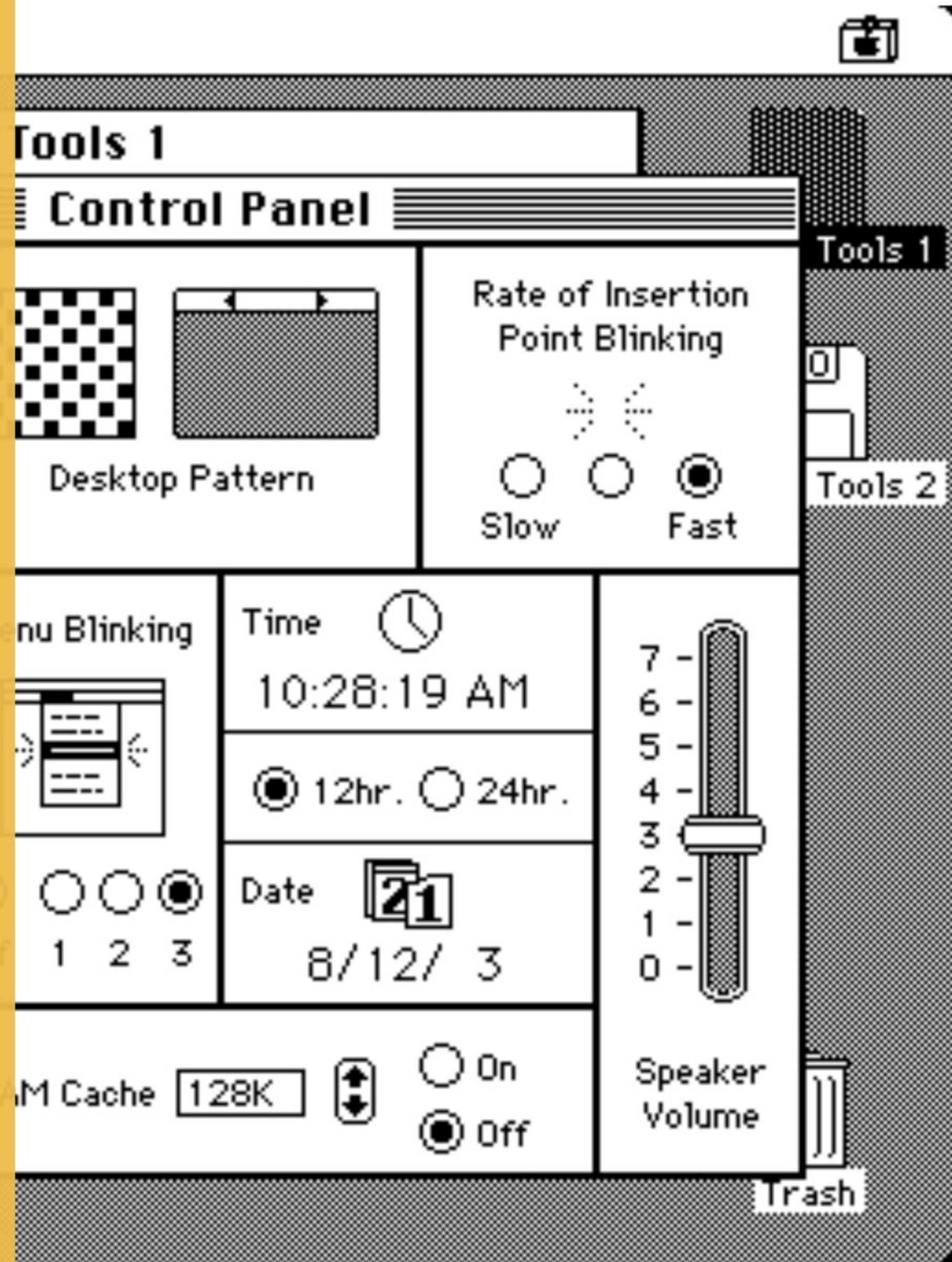
GRAPHICAL USER INTERFACE

Allows users to interact with
electronic systems



GRAPHICAL USER INTERFACE

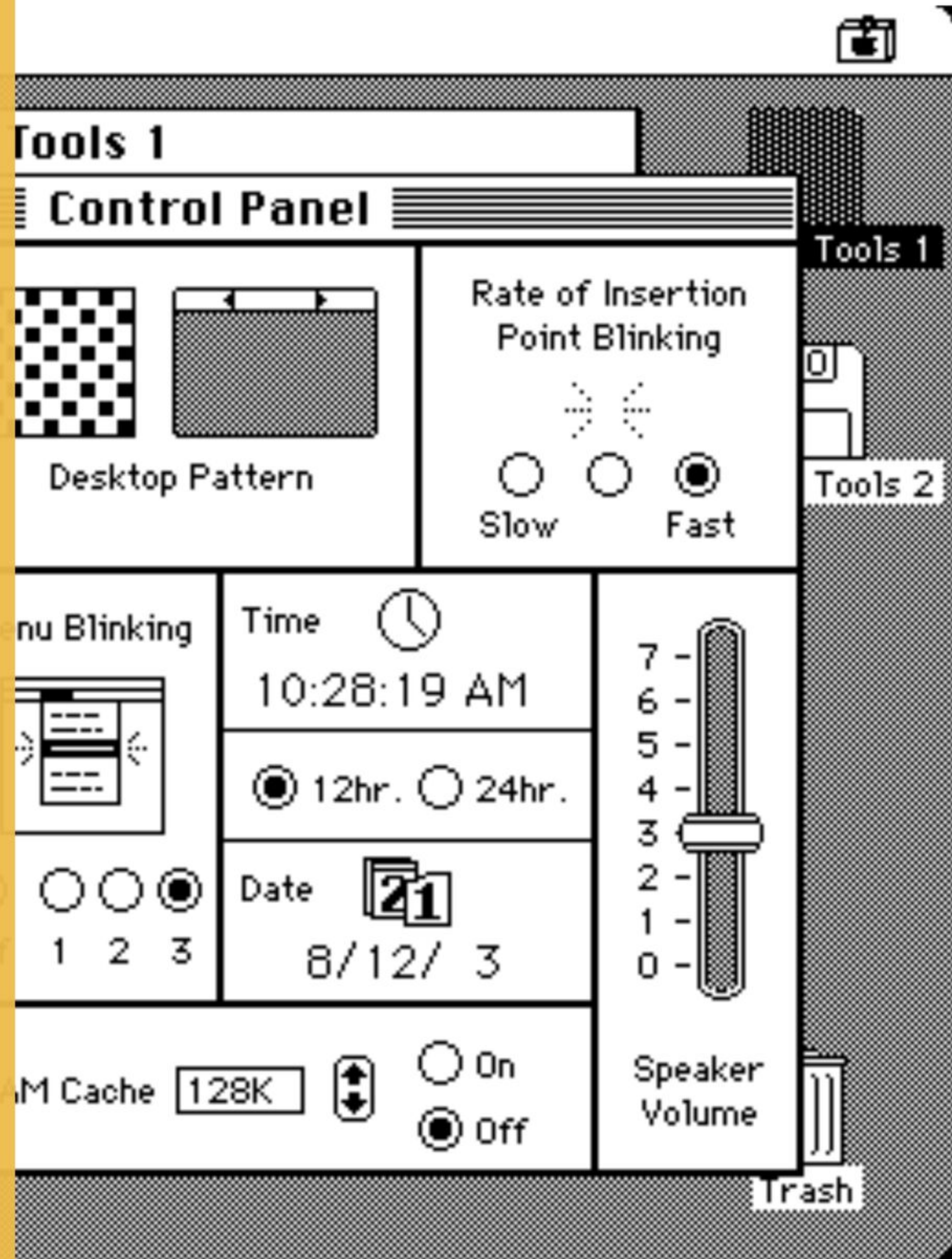
Allows users to interact with
electronic systems
through graphical icons and
visual indicators



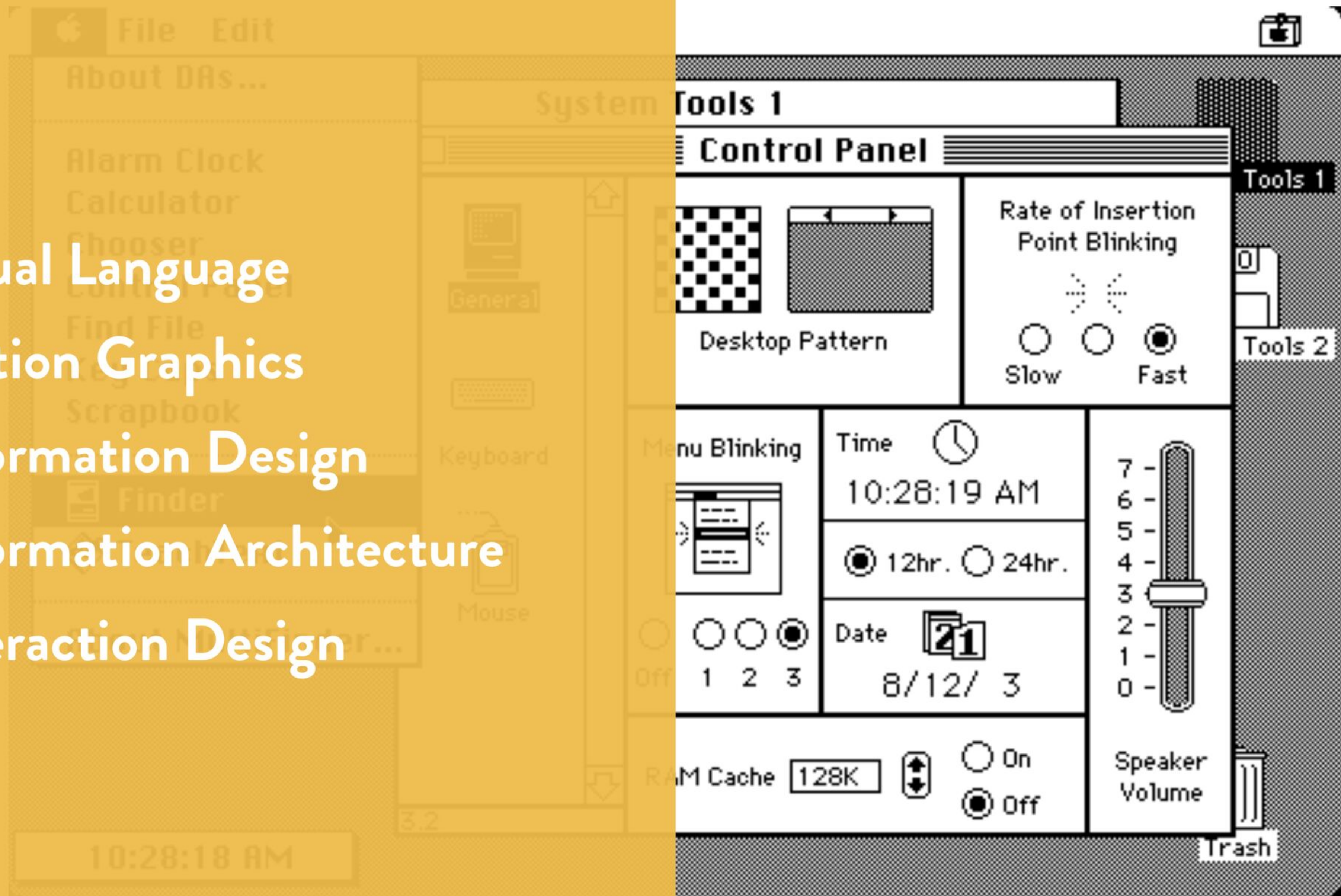
GRAPHICAL USER INTERFACE

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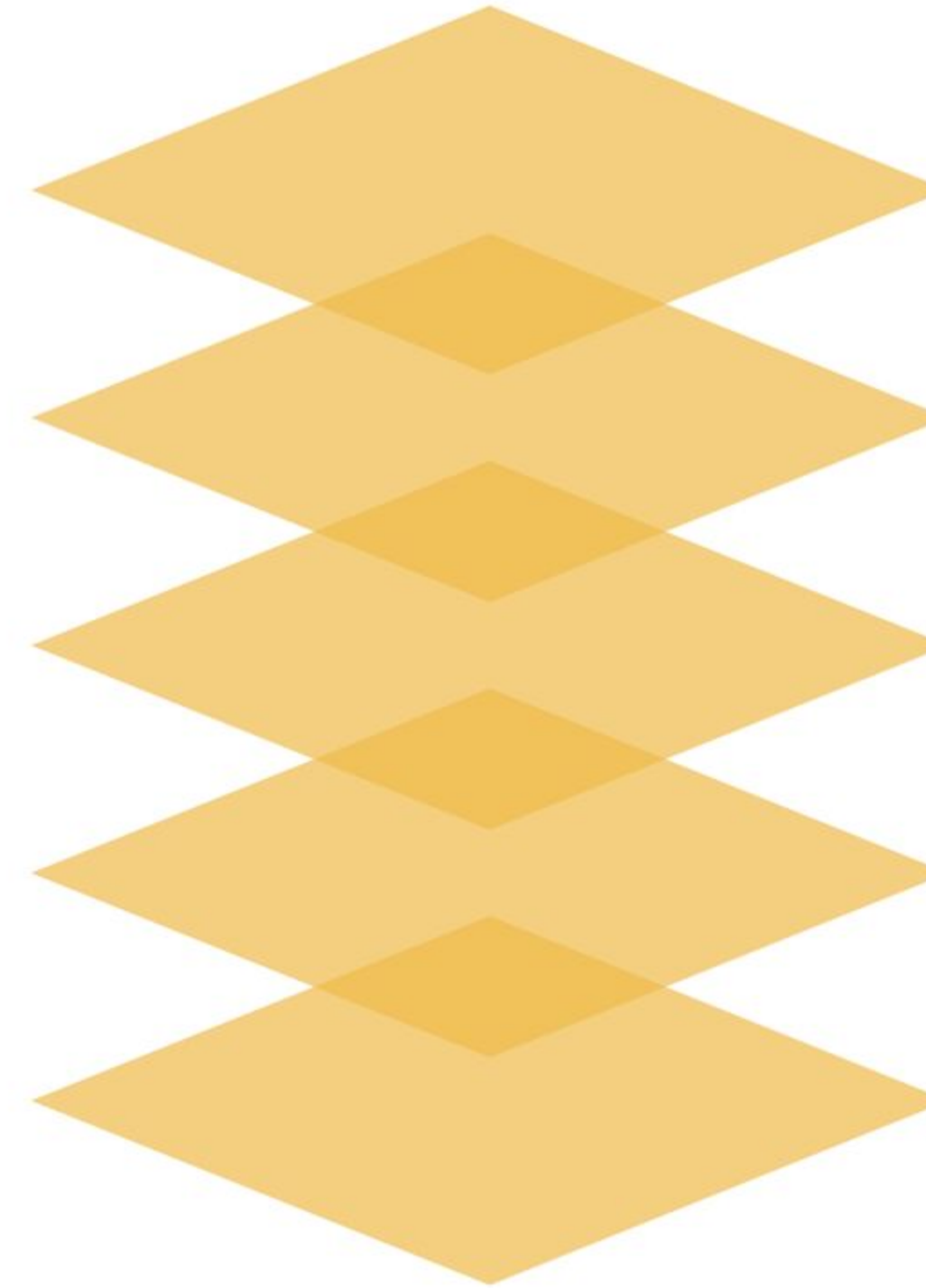
GUIs were introduced because users used to take a lot of time to learn command-line interfaces which require commands to be typed on the keyboard.



Visual Language
Motion Graphics
Information Design
Information Architecture
Interaction Design



Visual Language
Motion Graphics
Information Design
Information Architecture
Interaction Design



Still relevant

Visual Language

Motion Graphics

Information Design

Information Architecture

Interaction Design

And will remain relevant



But there's more to
UI than just GUI

Physical

Brain

Voice

Embedded

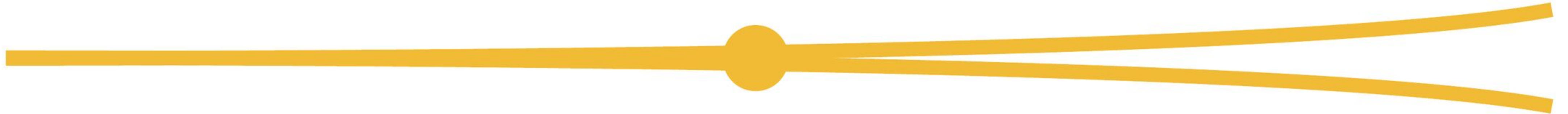
Distributed

TIMELINE

PAST

STATUS QUO

FUTURE

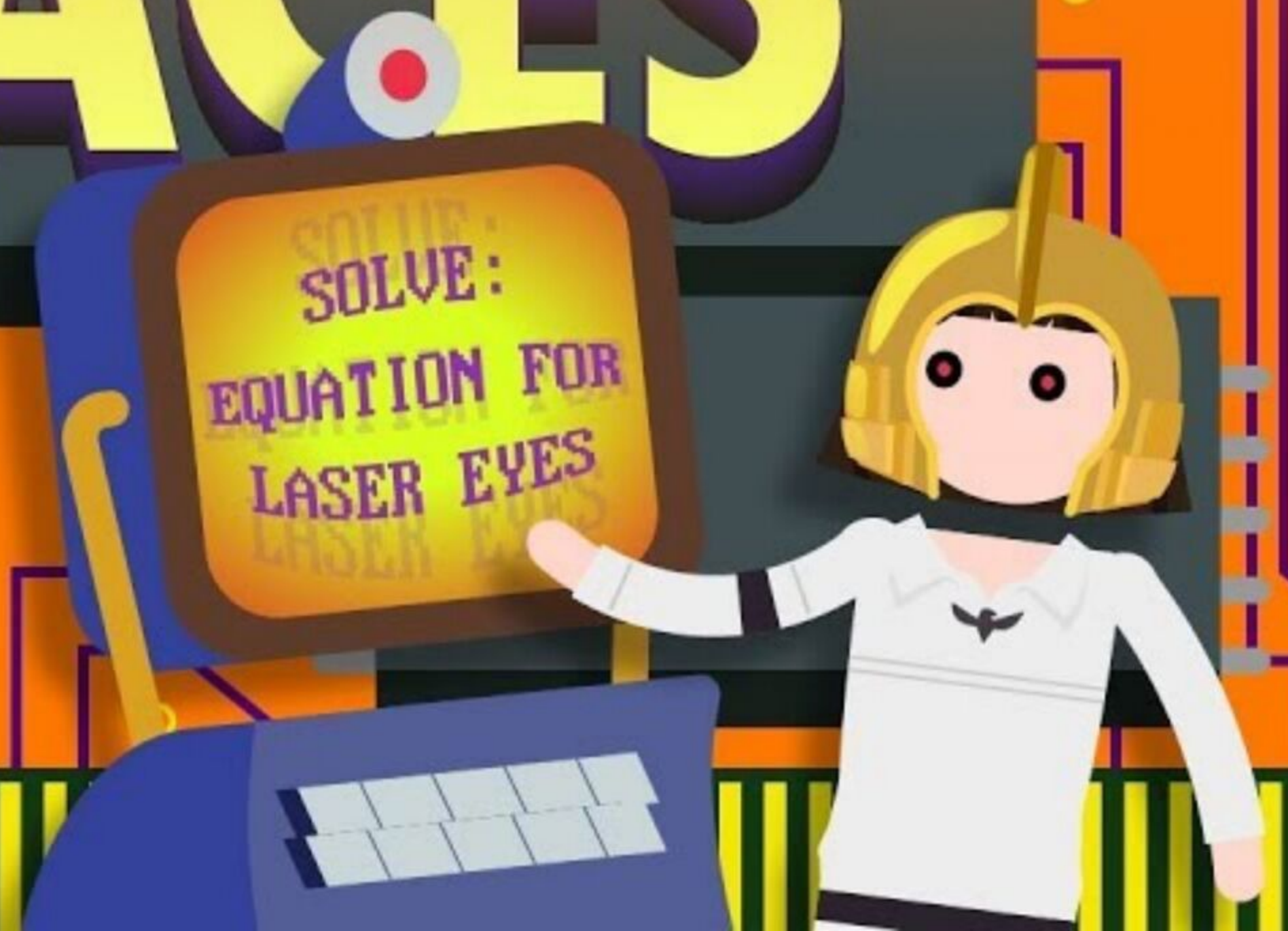


TYPES OF INTERFACES

GUI — CRASH COURSE COMPUTER SCIENCE

GRAPHICAL USER INTERFACES

GRAPHICAL USER INTERFACES



COMMAND LINE INTERFACE CLI

The commands are entered in a string behind a prompt
C: \> via the keyboard. The command will be executed
after a successful interpretation.

```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2) 56(84) bytes of data.
^C
--- text.pmtpa.wikimedia.org ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 540.528/540.528/540.528/0.000 ms
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 30 22:43 .
drwxr-xr-x. 23 root root 4096 Sep 14 20:42 ..
drwxr-xr-x.  2 root root 4096 May 14 00:15 account
```

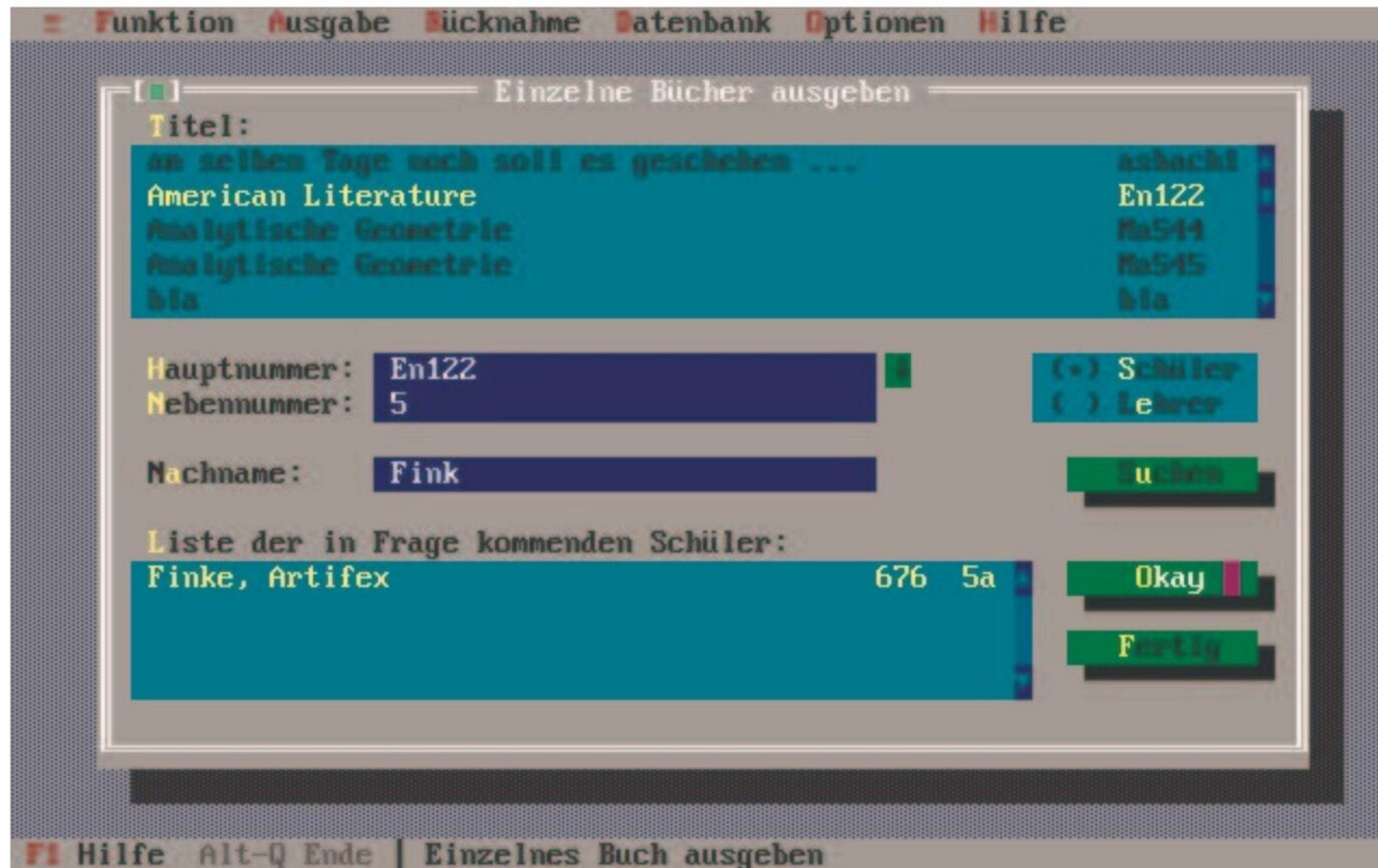
COMMAND LINE INTERFACE CLI

Sample Commands:

Aktion	Windows (cmd.exe)	Unix/Linux/Mac OS X (bash)	Unix/Linux/Mac OS X (POSIX-Shell)
durch bereits ausgeführte Befehle scrollen	↑ / ↓	↑ / ↓	ESC ⌘ / ESC ⌘
Signal <i>Ende der Datei</i>	Strg + Z	Strg + D	
Aktuellen Befehl/Eingabe abbrechen	Strg + C	Strg + C	Strg + C
linkes Wort löschen		Strg + W	
rechtes Wort löschen		Alt + D	
links vom Cursor löschen	Esc	Strg + U	
rechts vom Cursor löschen	Entf	Strg + ⌘	
Ein Wort nach links bewegen (rückwärts)	Strg + ←	Alt + B	
Ein Wort nach rechts bewegen (vorwärts)	Strg + →	Alt + F	
zum Zeilenanfang springen	Pos1	Strg + A	
zum Zeilenende springen	End	Strg + E	
Reverse search of history	F7	Strg + R	
Send current job to the background		Strg + Z	
Autovervollständigen des Befehls/Dateinamen	Tab ⇐ (sofern aktiviert)	Tab ⇐ (normalerweise doppelt)	Esc ⇐ (normalerweise doppelt)

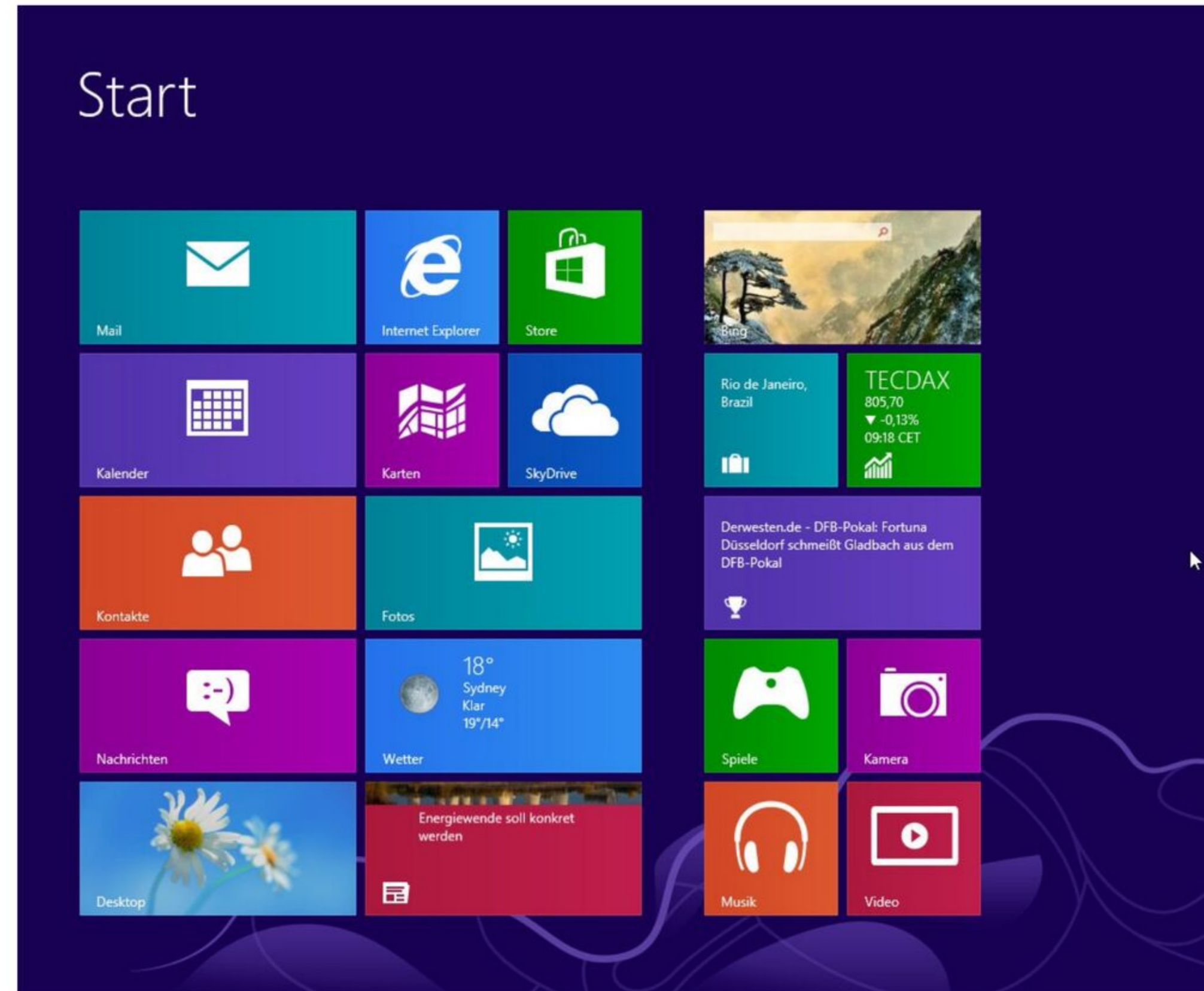
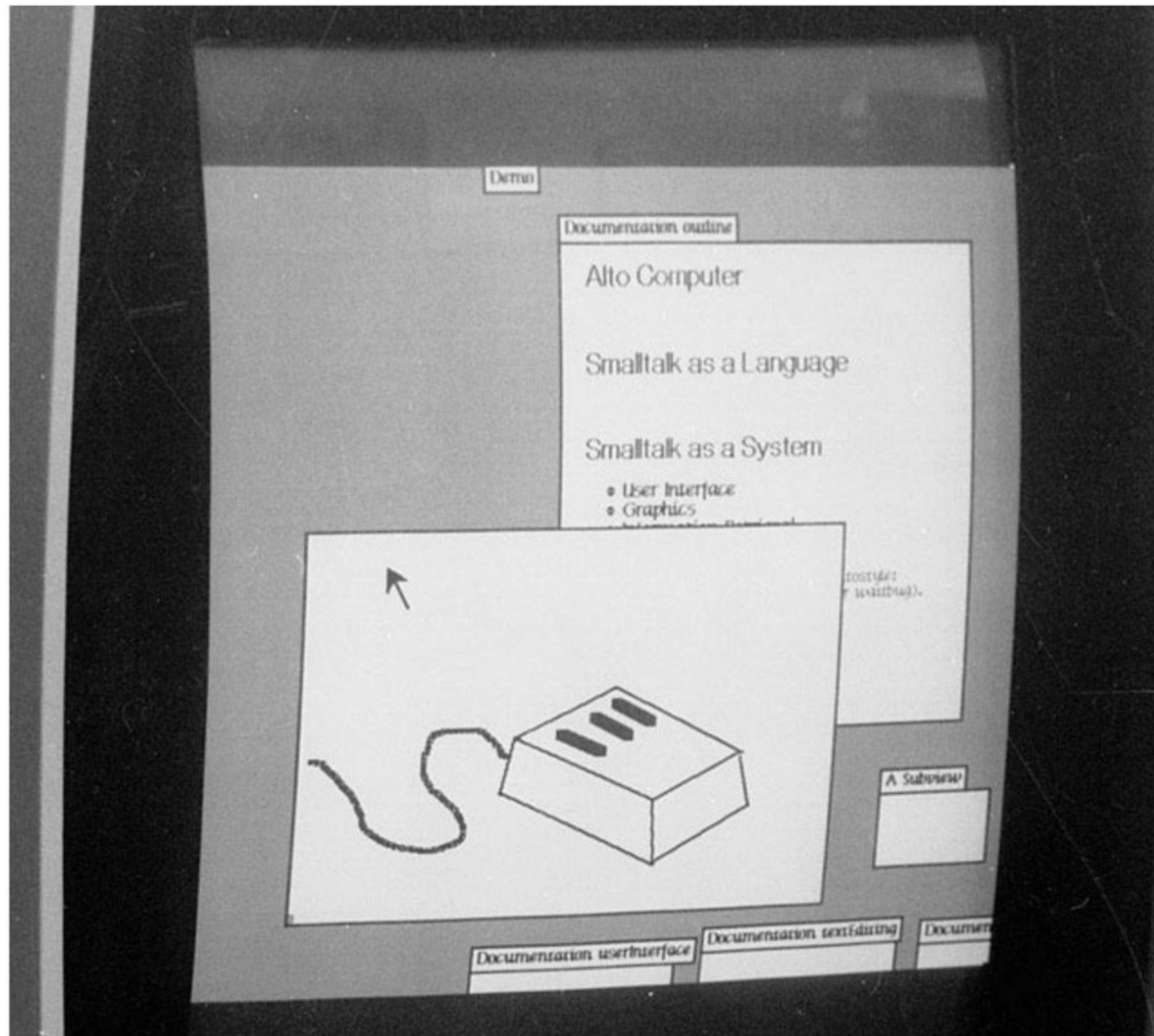
TEXT USER INTERFACE TUI

Character-based user interfaces use the whole screen surface, but still running in text mode.



GRAPHICAL USER INTERFACE GUI

A graphical user interface allows users to interact with the machine by graphic symbols.



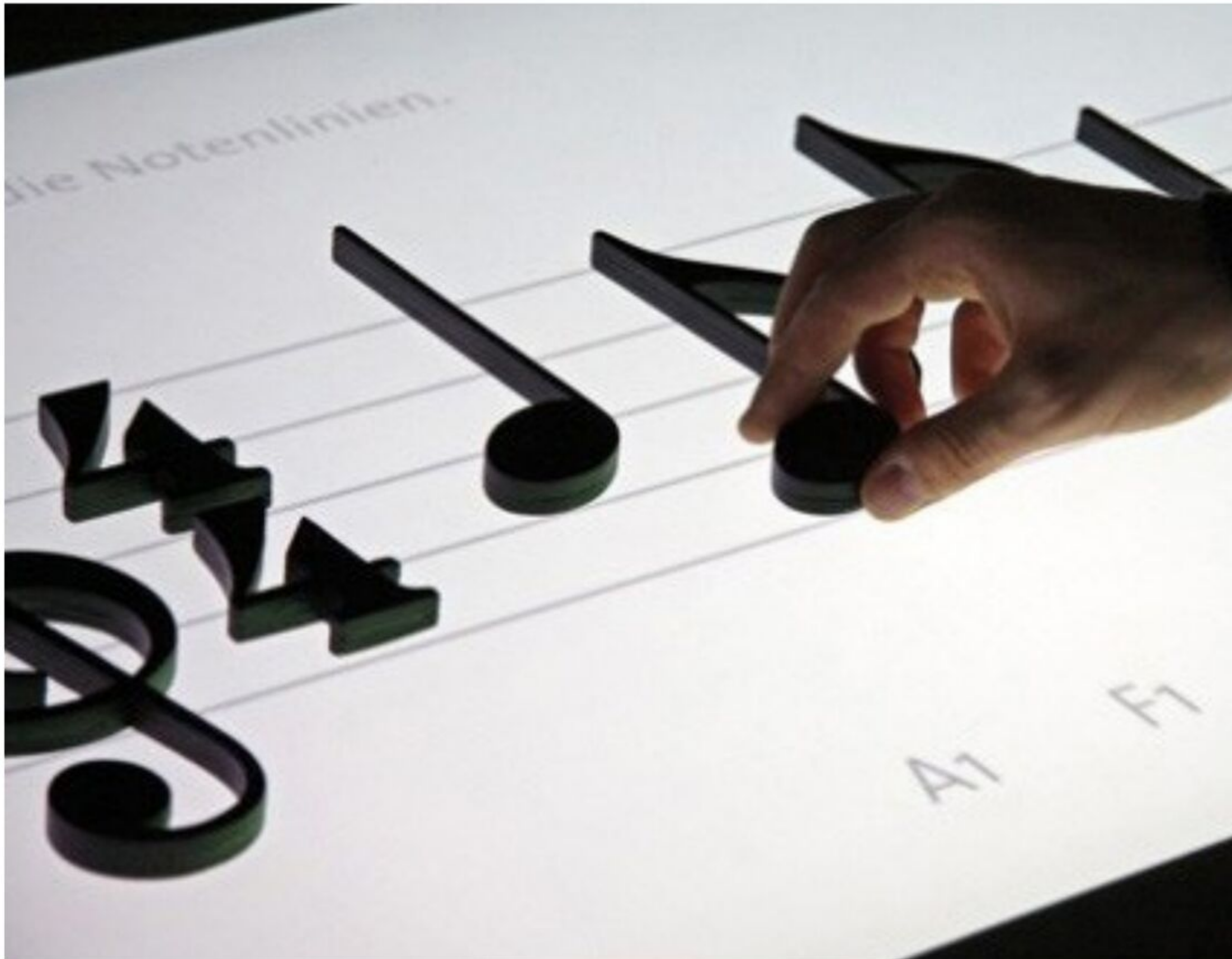
VOICE USER INTERFACE VUI

With a voice user interface, the interaction between man and machine takes place via speech input and speech output.



TANGIBLE USER INTERFACE TUI

The interaction will take place via physical objects. The objects are perceived from the computer by tracking technologies.



NATURAL USER INTERFACE NUI

This is intended to enable the user to interact as naturally and intuitively as possible. The input is done by wiping, typing, touching, gestures or speech.



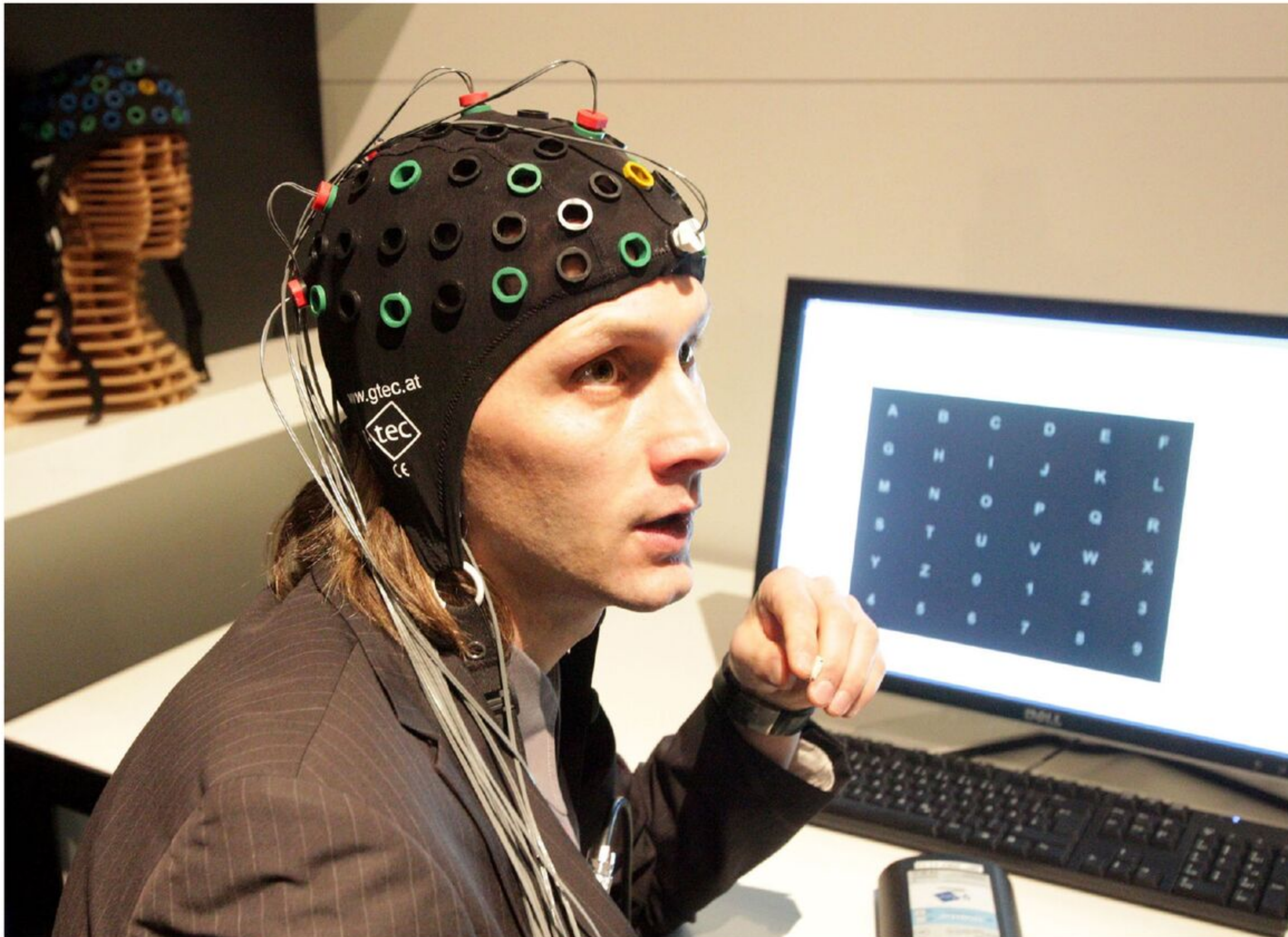
PERCEPTUAL USER INTERFACE PUI

A PUI is a perception driven user interface. The system is usually able to analyze gestures and facial expressions.



BRAIN COMPUTER INTERFACE BCI

A BCI uses measurable brain waves. Thus the interaction can take place with the help of the thoughts.



PRINCIPLES OF GUI

PROVIDE VISUAL APPEAL

Provide meaningful contrast between screen elements

Create groupings

Use colors and graphics effectively and simply

PROVIDE VISUAL APPEAL

Provide meaningful contrast between screen elements

Law of Figure Ground

Our goal is to highlight the search bar when it is active

Do

Visual Perception:
The main focal point is the field



Don't

Visual Perception:
The main focal point is not really identifiable, so the cognitive load is higher.



PROVIDE VISUAL APPEAL

Provide meaningful contrast between screen elements

Create groupings

Use colors and graphics effectively and simply

PROVIDE VISUAL APPEAL

Create groupings

7 ± 2

Miller's Law

Seitenbereich

☒ Alles

☐ Markierung

☐ Seiten:

☐ Aktuelle Seite

Anzahl Exemplare:

☒ Sortieren



PROVIDE VISUAL APPEAL

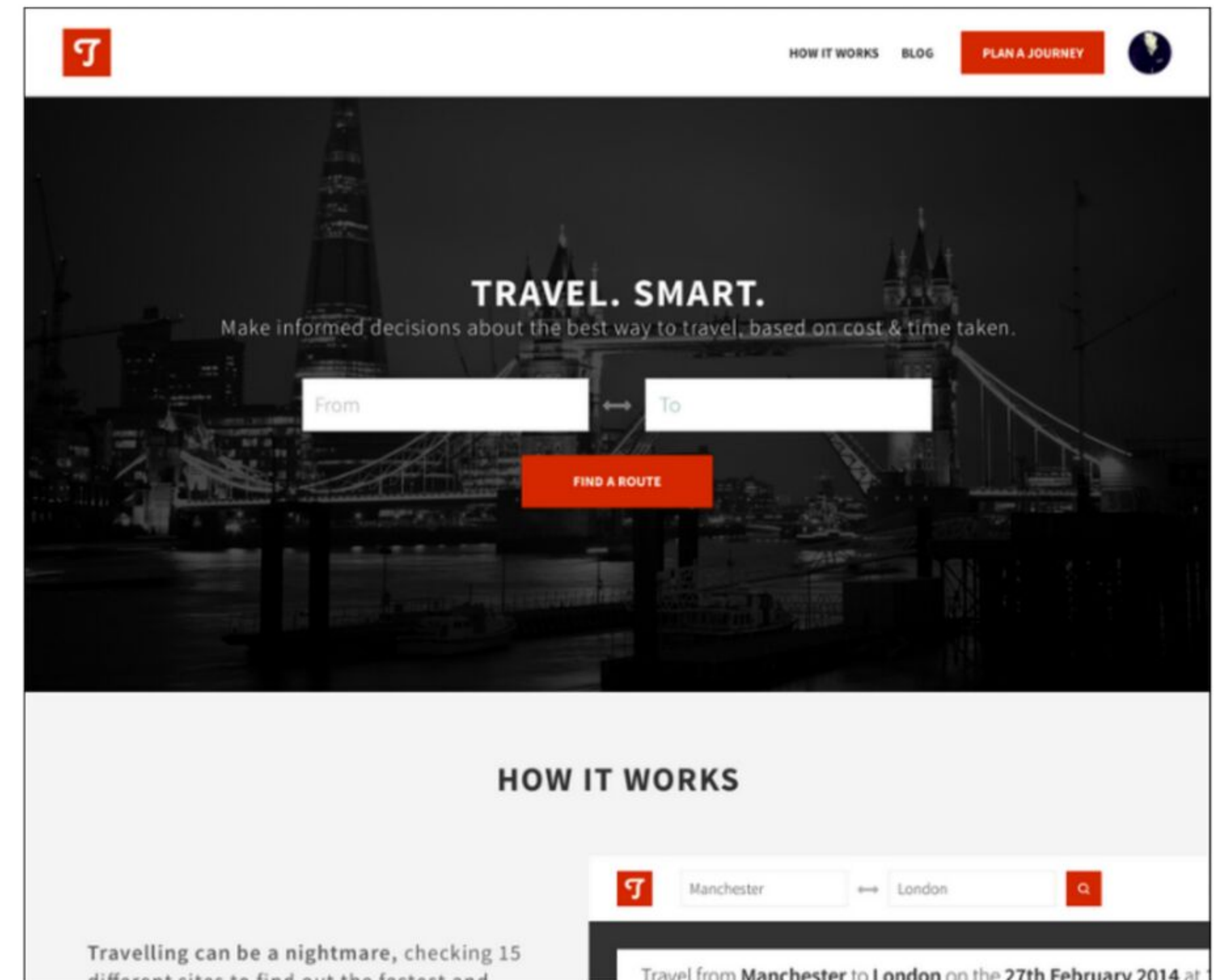
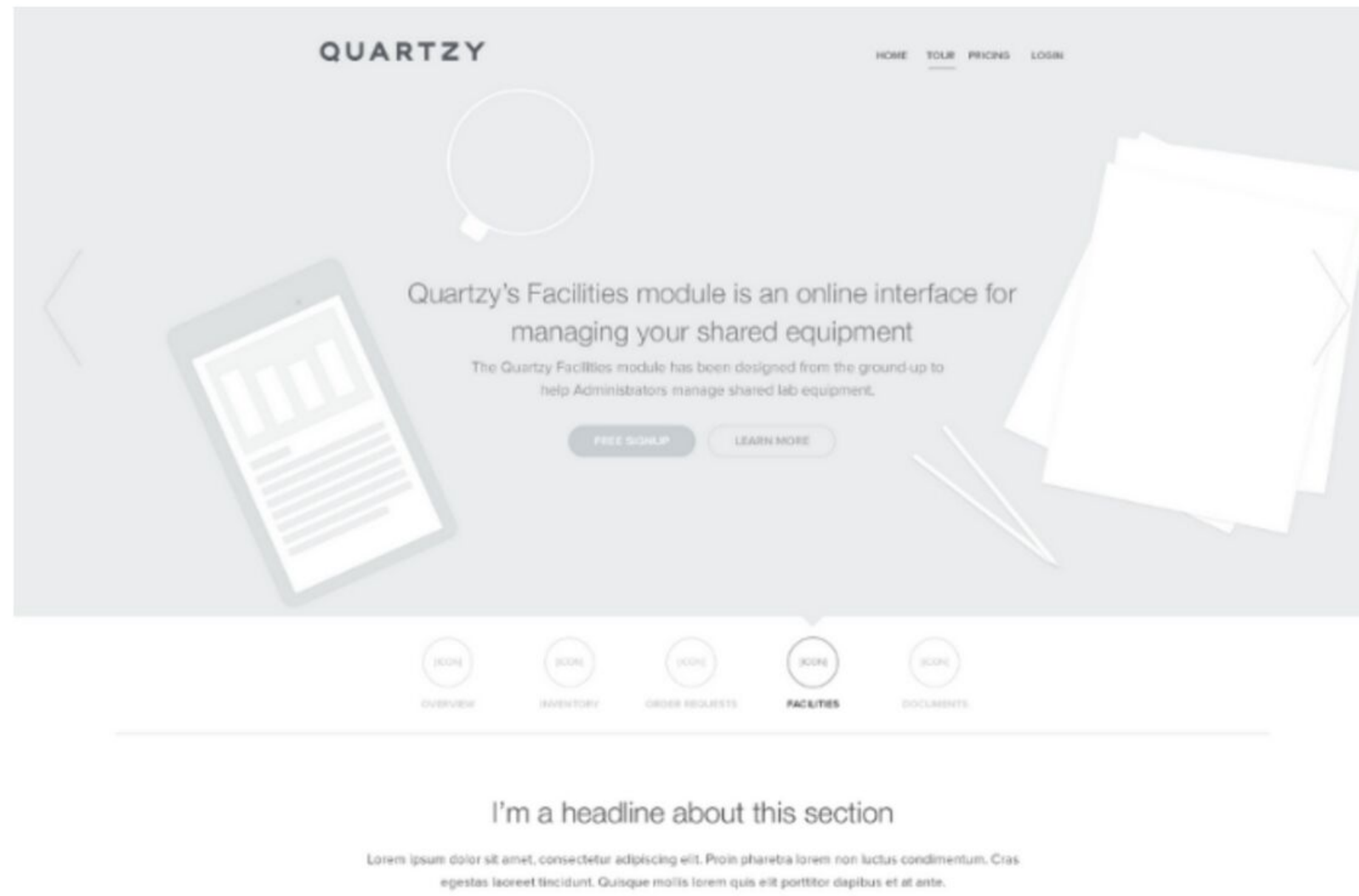
Provide meaningful contrast between screen elements

Create groupings

Use colors and graphics effectively and simply

PROVIDE VISUAL APPEAL

Use colors and graphics effectively and simply



MAKE IT WORK IN BLACK AND WHITE

PROVIDE COMPATIBILITY

The user

The task and job

The product

EASILY UNDERSTOOD AND LEARNED

What to do

What to look at

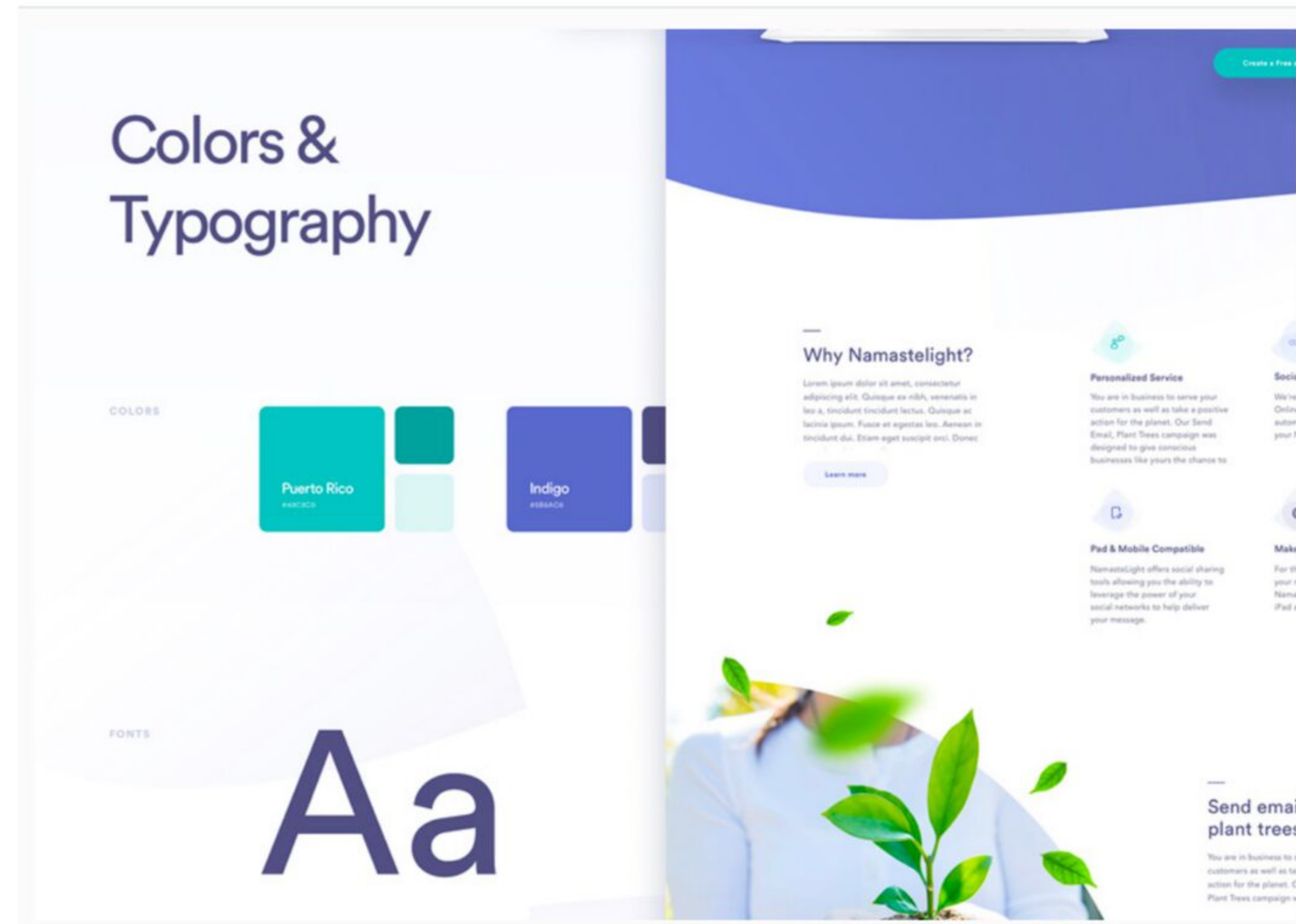
When to do it

Where to do it

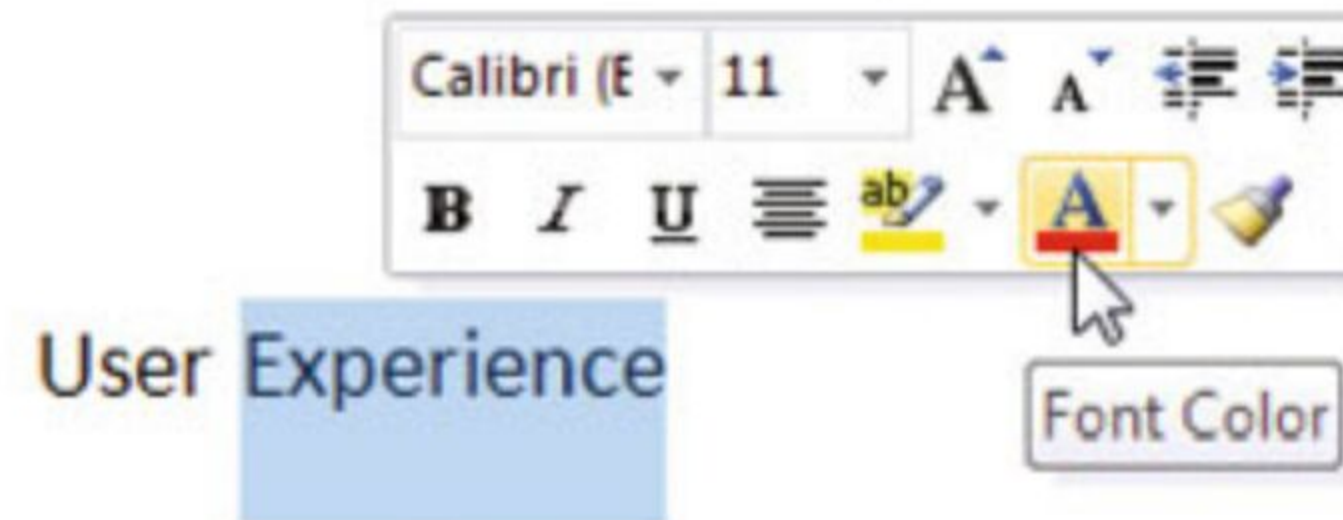
How to do it

CONSISTENCY

A system should look, act, and operate the same throughout.

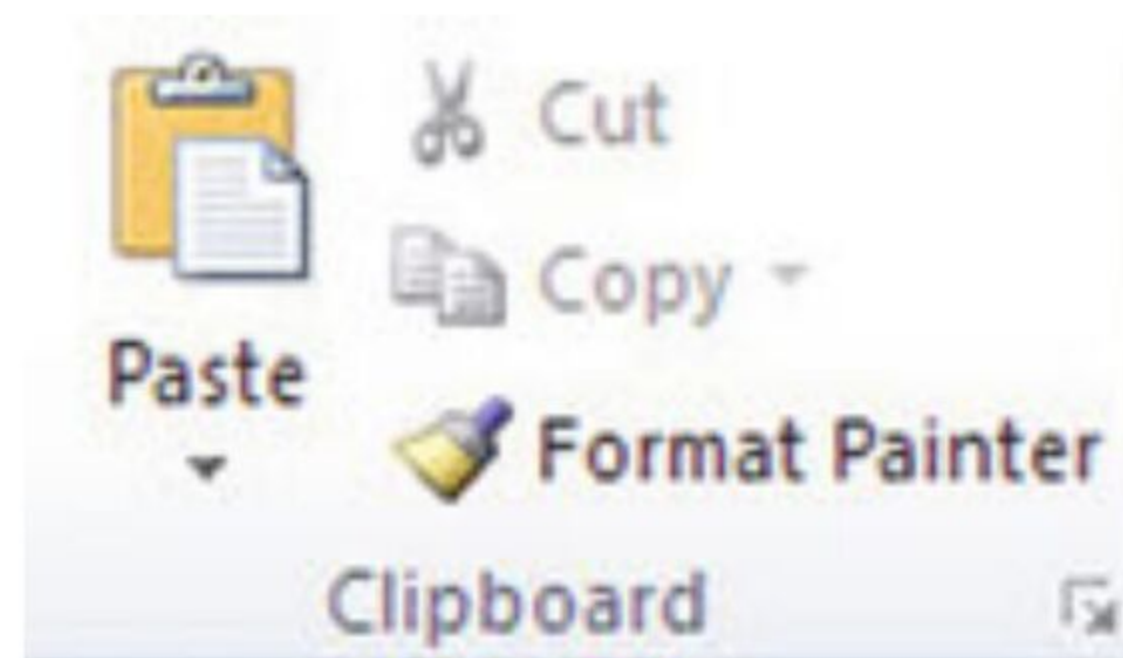


~~EFFICIENCY~~



Minimize eye and movements

Navigation paths should be as short as possible



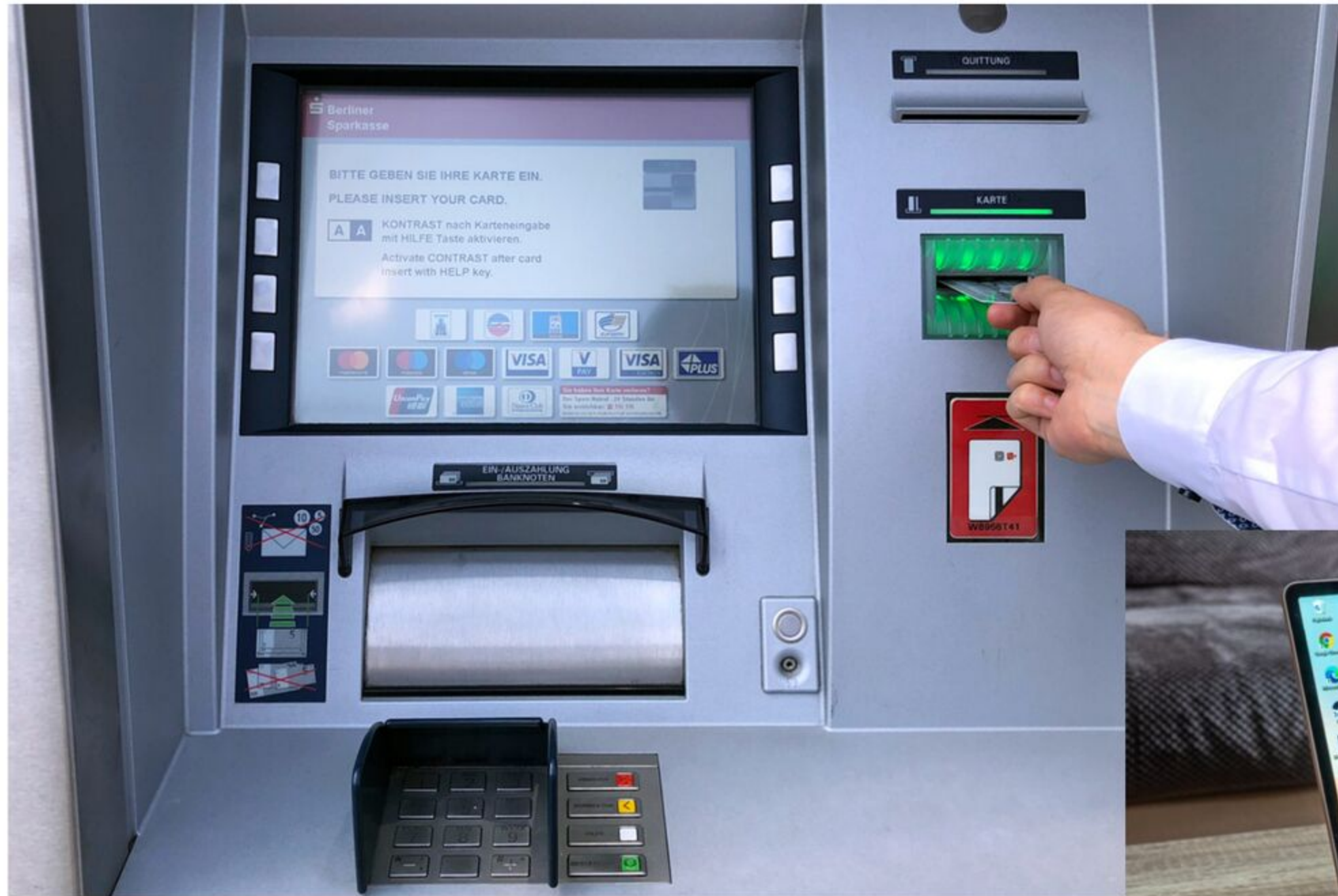
RESPONSIVENESS

The system must rapidly respond to the user's requests.

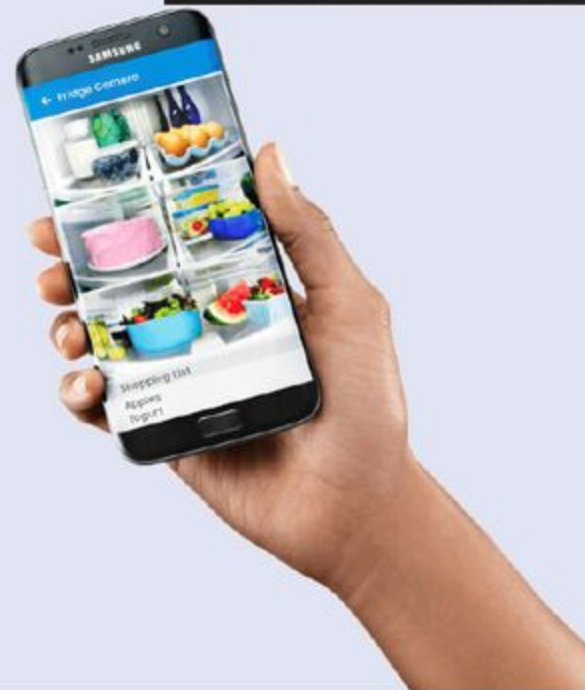
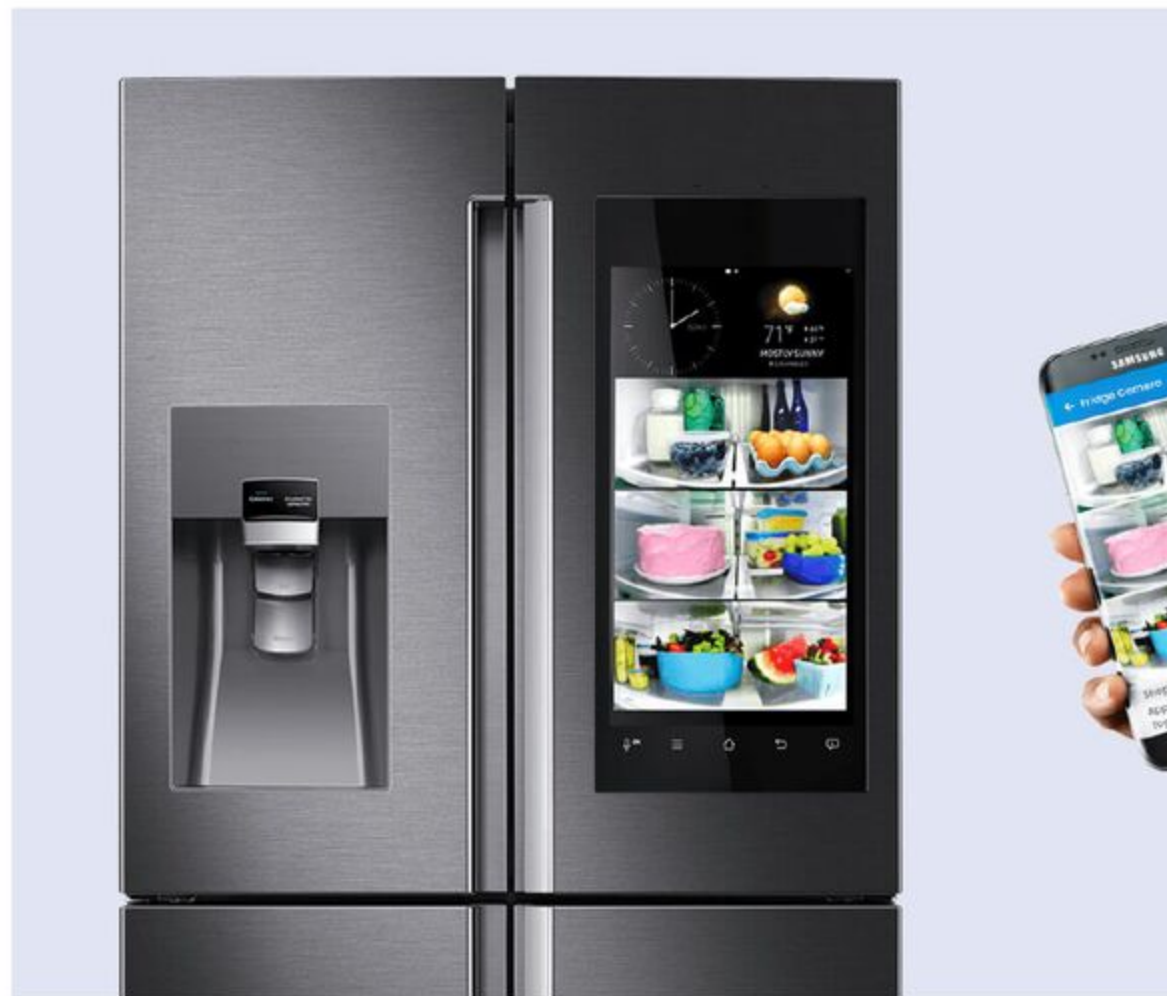
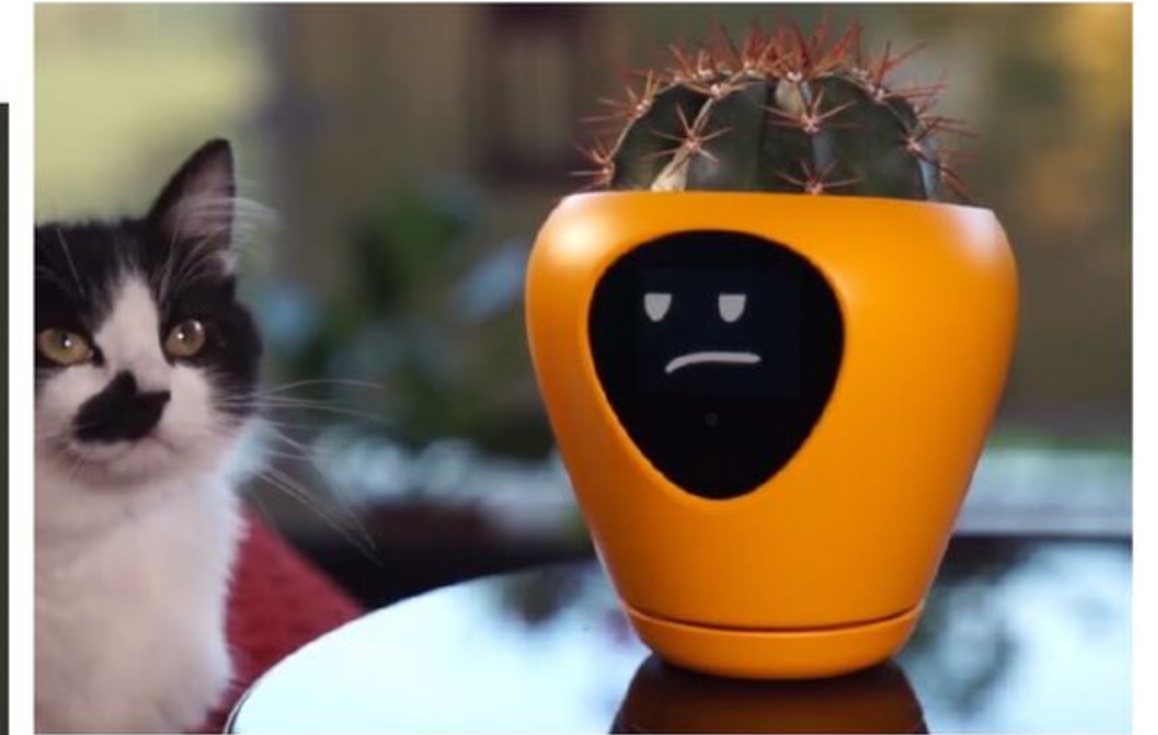
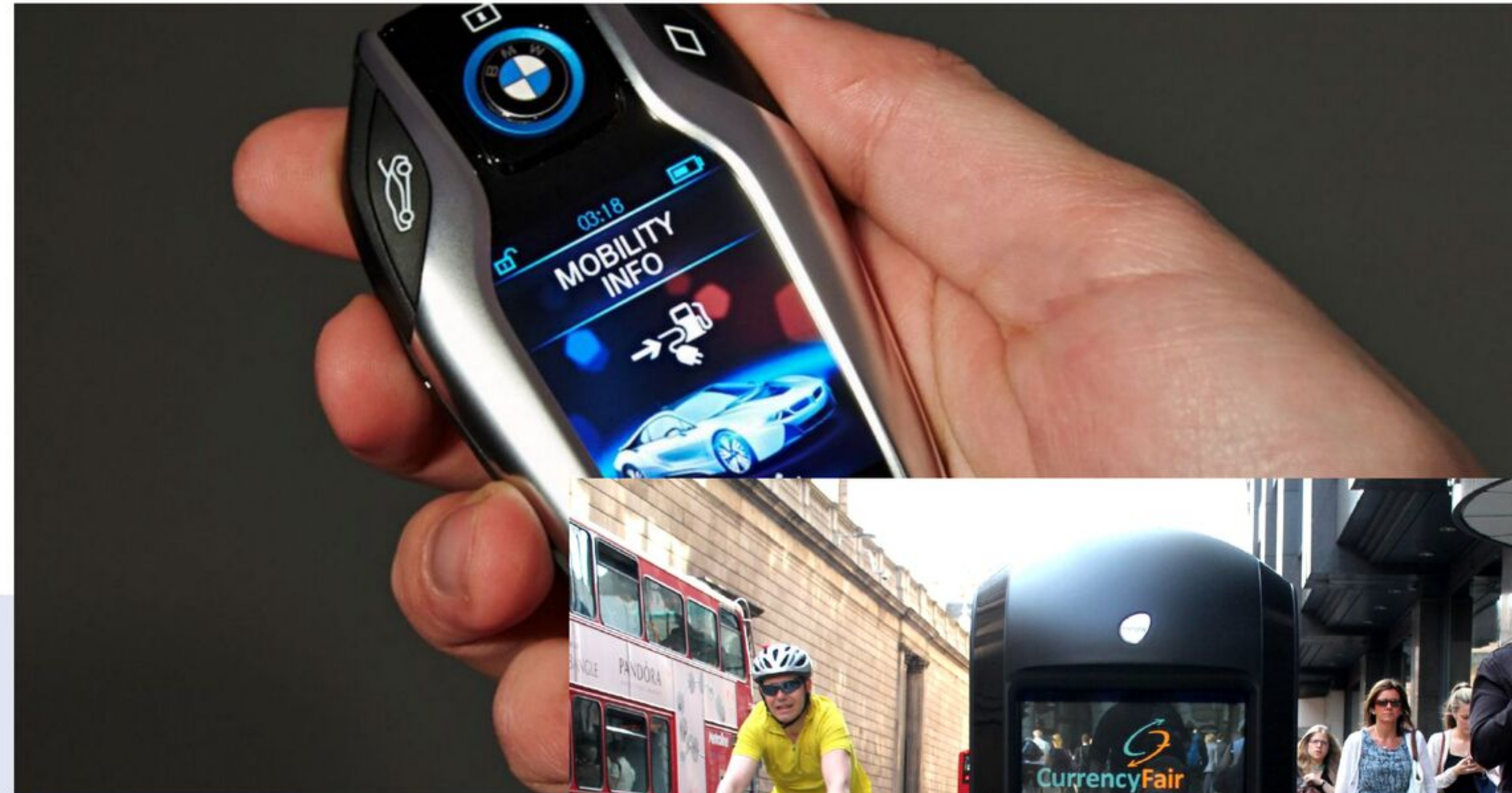
- Provide immediate acknowledgment for all user actions
 - Visual
 - Textual
 - Auditory

WHAT WILL BE IN THE FUTURE?

SCREENS DOMINATING



SCREENS ON EVERYTHING



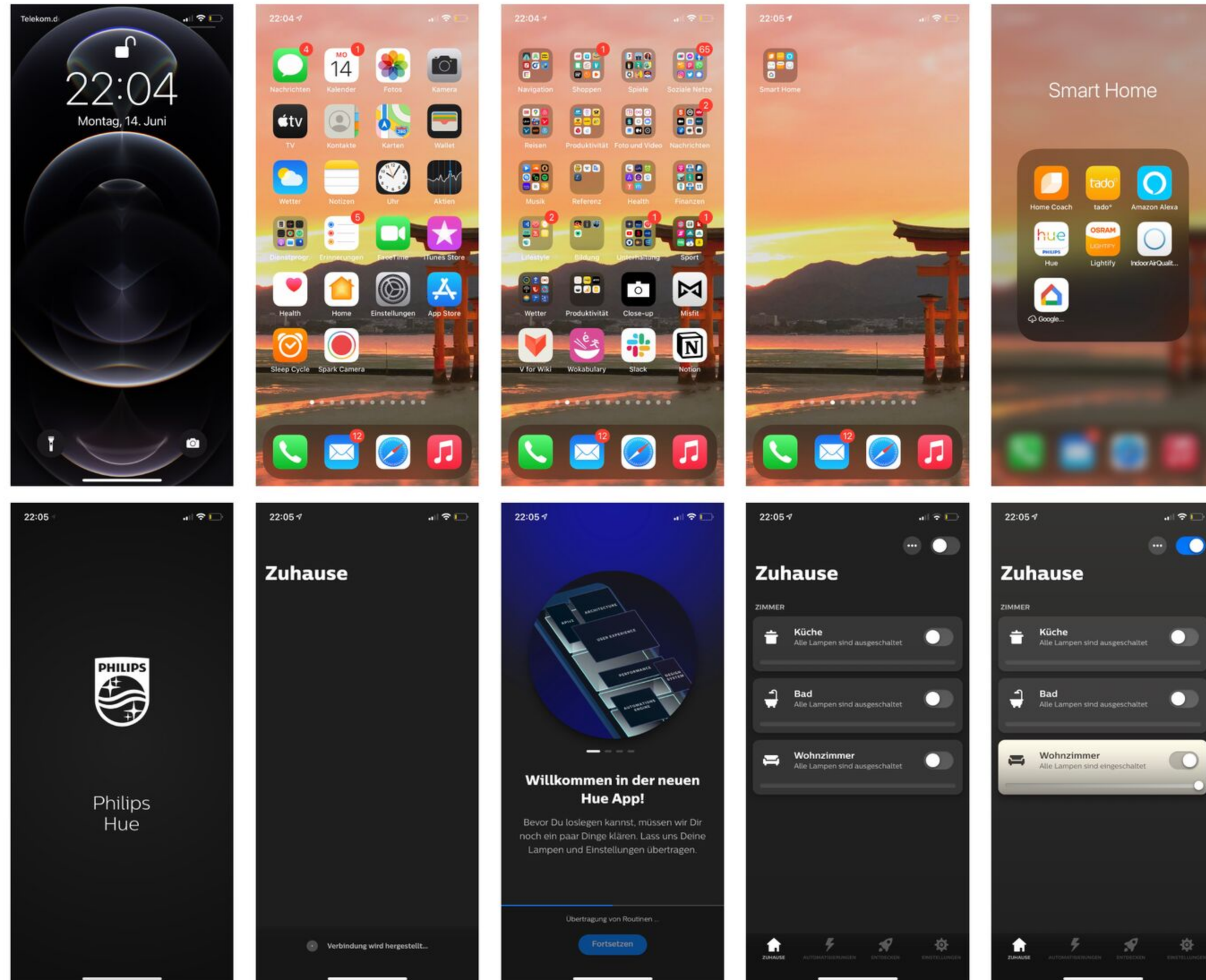
SCREENS REPLACING TACTILE CONTROLS



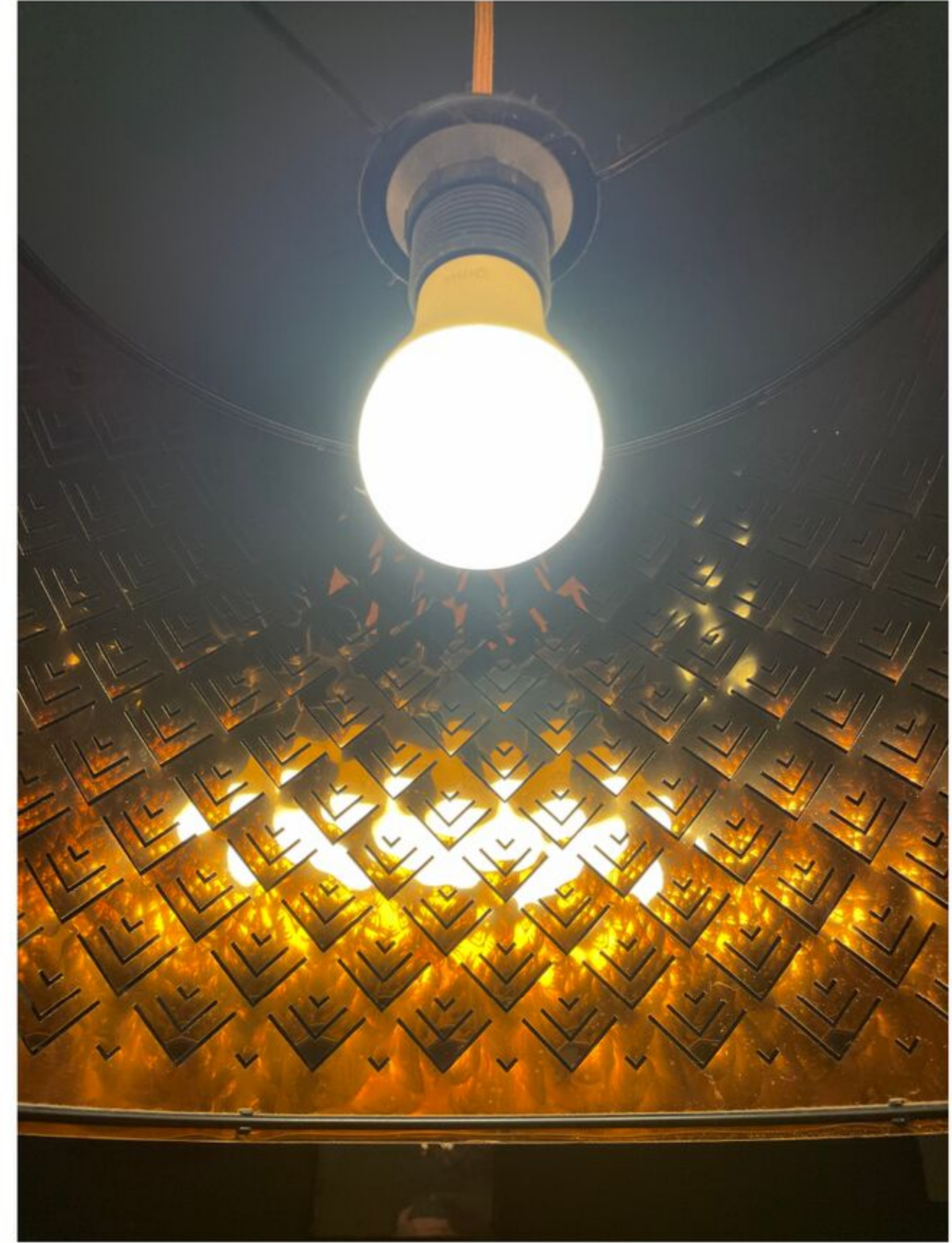
SCREENS IN FRONT OF BABIES



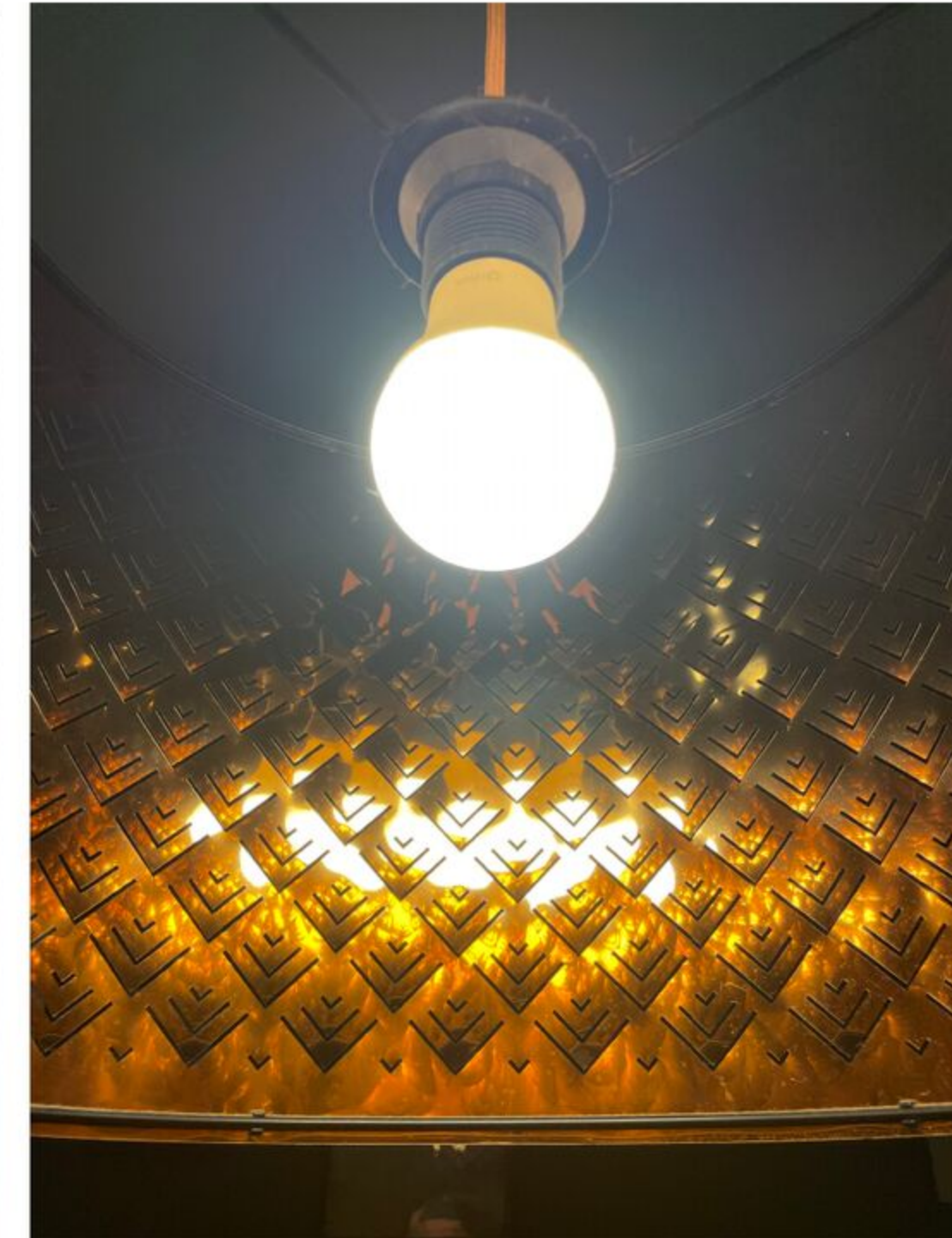
UI FOCUSSED INTERACTION



ANALOG HAPTIC INTERACTION



WITHOUT USER INTERFACE



THE BEST INTERFACE IS NO INTERFACE

NO INTERFACE IS NOT ALWAYS BETTER

Better for

Less visual clutter

Less learning (in theory)

Less conscious interactions



Displaced complexity

System rules

Mental models



Or we lose control

THANK YOU