

Human Computer Interaction

Goals of HCI

- Make the world a better place
- Understand data
- Help people interact, communicate with one another
- Give people better control over tools (machines)

Goals of HCI – How?

- **Study, plan, design, apply** interaction between people and computers
- **Use results** from computer science, cognitive & behavioral psych, design, media studies, etc.

Douglas Englebart

- 1950 had no idea what he wanted to do
- Responsible in a large part for how computers are used today



Englebart's Motivations

- Make the world a better place
- That requires organized effort
- Harnessing collective intellect of people working on solutions was key
- If that process was made easier, it would boost every effort working on those problems
- Computers could be the tool needed

First Computer Mouse

- First example of a computer “mouse” ever built
- Initially applied in 1967 for an “X-Y position indicator for a display system”

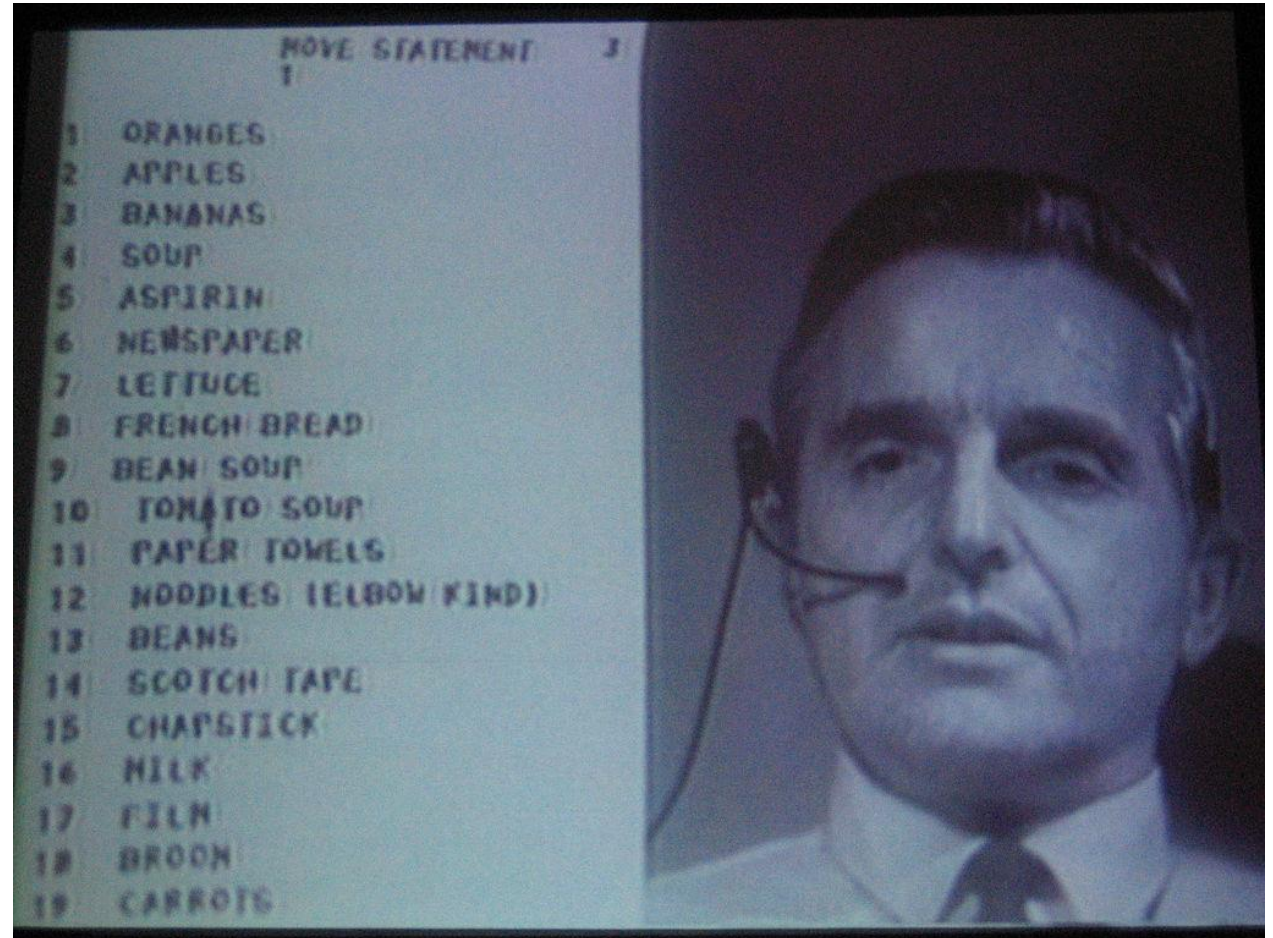


oN-Line System (NLS)

- First operating system to include:
 - Mouse
 - Hypertext links
 - Raster-scan video monitors
 - Screen windowing
 - Presentation programs
 - Organized information
 - Collaborative editing and messaging

The Mother of All Demos

- December of 1968, he assembled over 1000 computer professionals for a NLS demo
- Used it to control his computer 30 miles away
- Left audience spellbound – The Mother of All Demos



The Mother of All Demos

- December 9, 1968
- Over 1000 computer professionals
- Combined state-of-the-art technology in a single demo:
 - Live Video Projection
 - Tele / Video Conferencing
 - Computer Displays

Demo Clips

Introduction

Wiki

Graphic Files

Presentations

Mouse

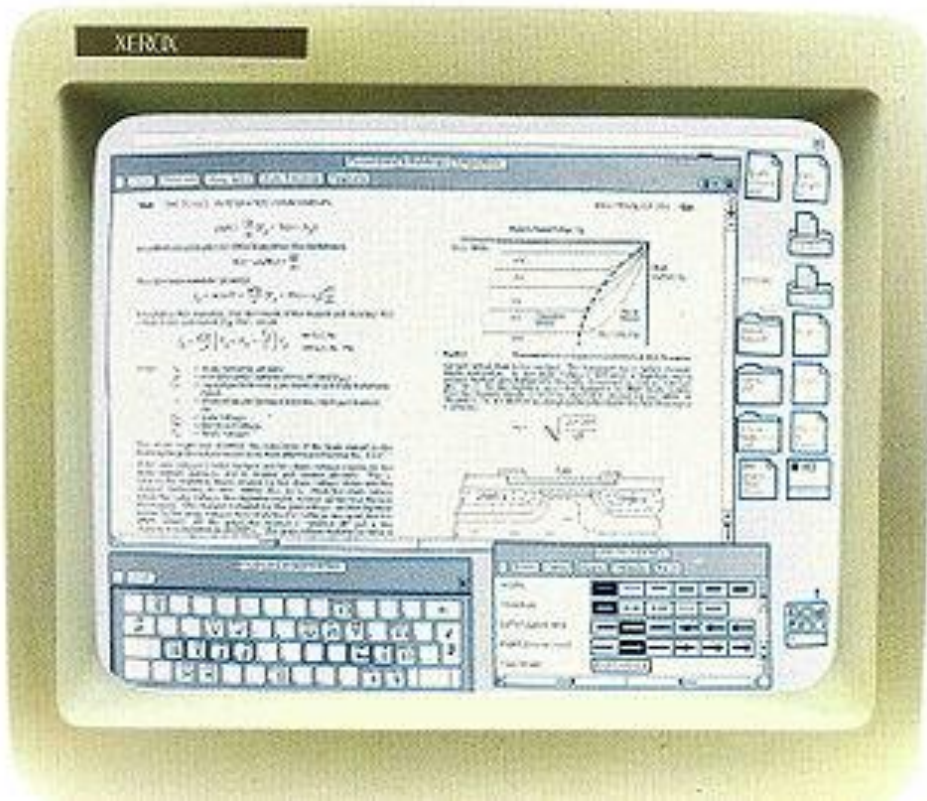
CRT Display

Word
Processing

Email

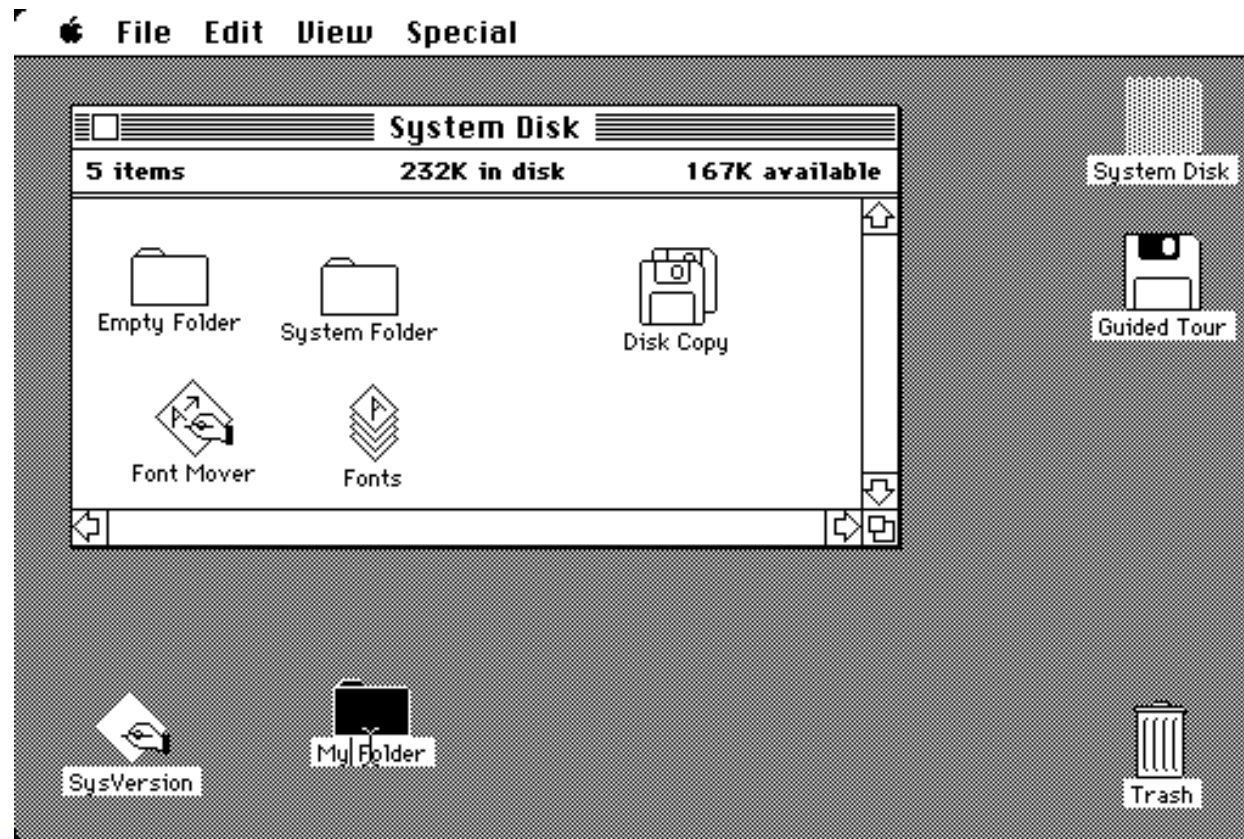
Live
Collaboration

Desktop Metaphor



- NLS was revolutionary, but hard to use
- A more approachable design was found called the “desktop metaphor”
- First introduced in 1970
- Xerox Star Workstation (1981)

Desktop Metaphor- Macintosh Desktop (1984)



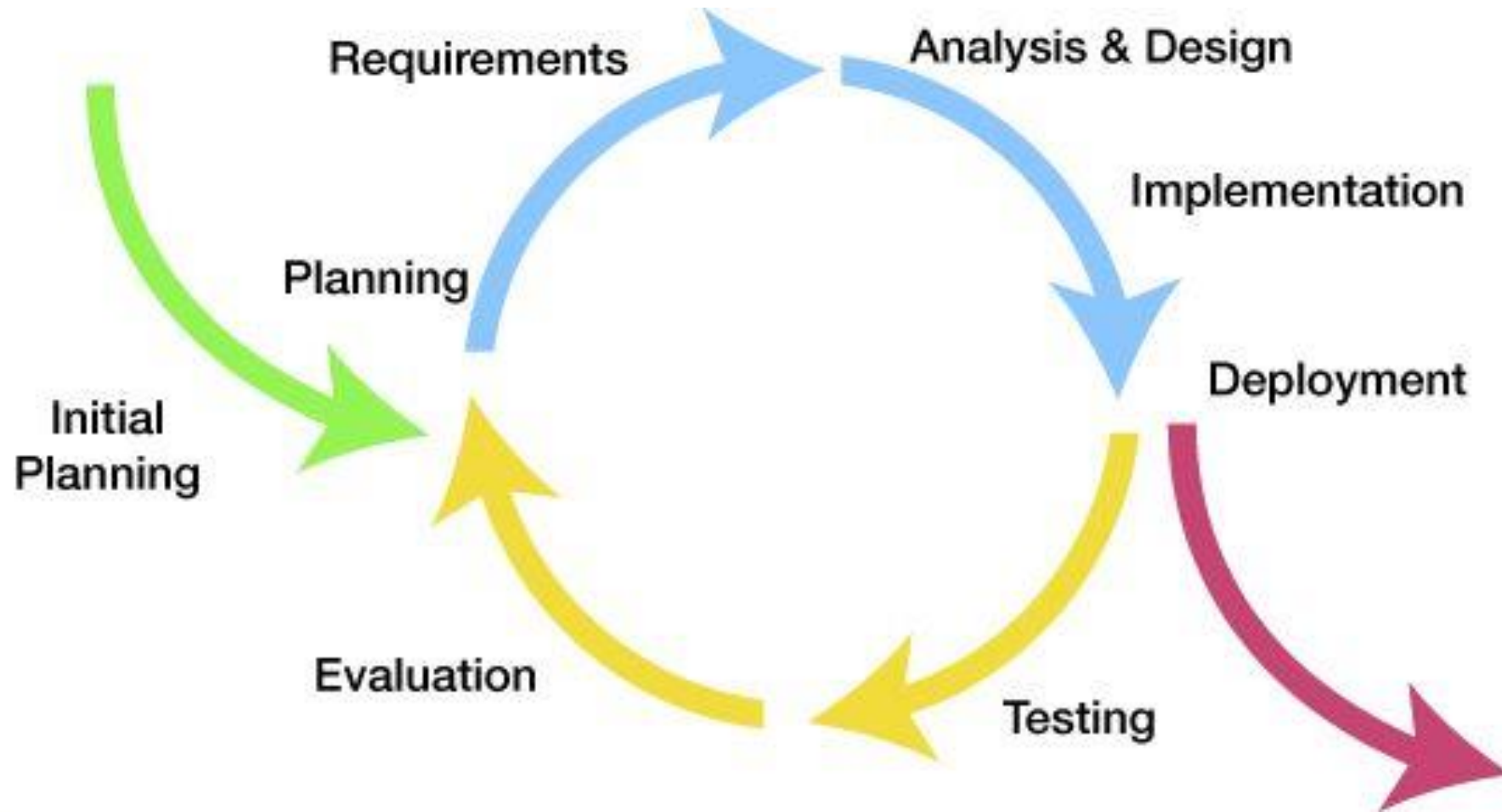
Pirates of Silicon Valley

What makes a *good* computer interface?

“Good” HCI

- Functionality
- Reliability
- Usability
- Efficiency
- Maintainability
- Portability

Iterative Design



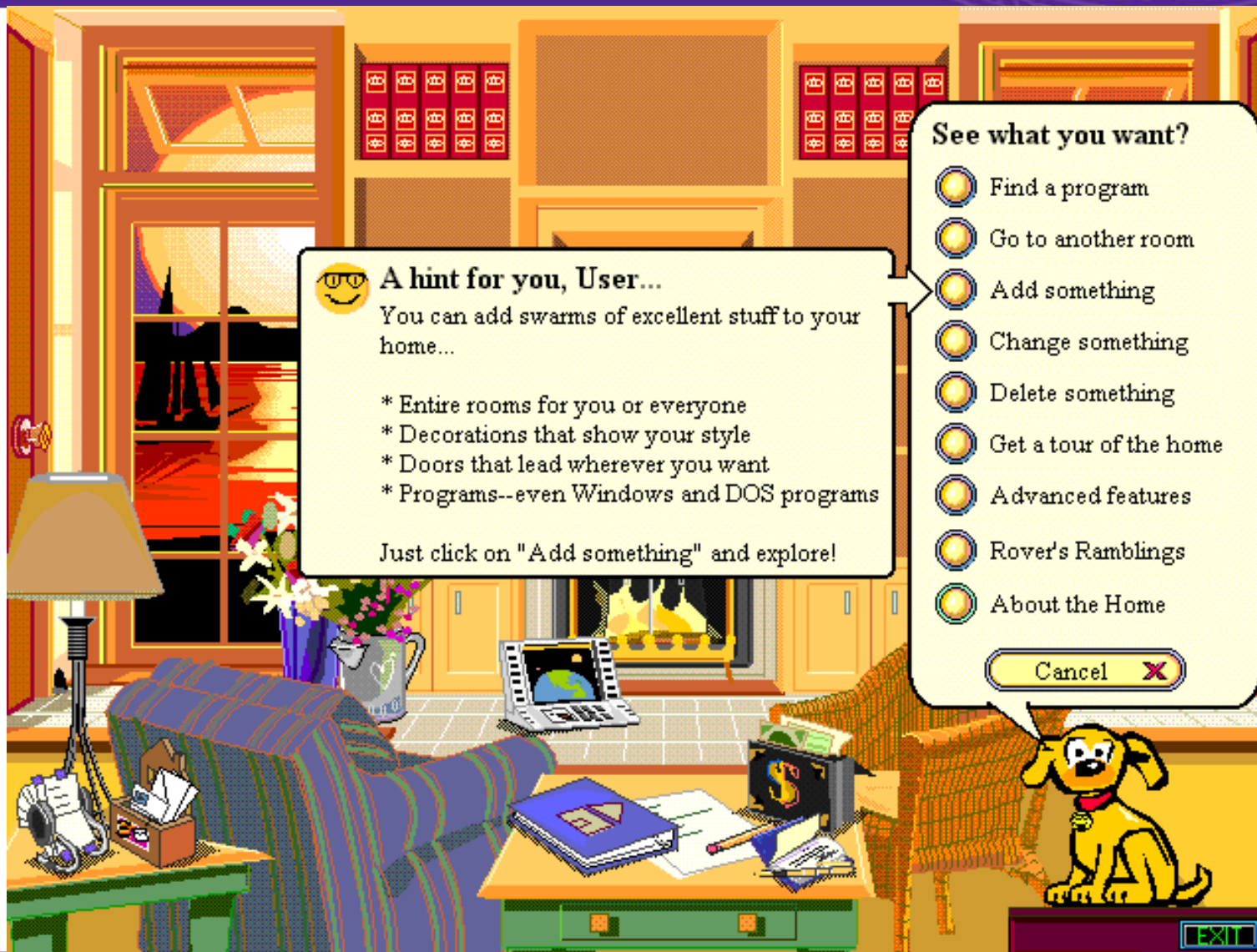
Related Fields


- Psychology (memory and perception)
- Sociology
- Cognitive Science
- Ergonomics
- Graphic Design
- Interaction Design
- Speech-language Pathology
- Phenomenology (consciousness)

Automated Adaptive Instruction

- Providing the user with instructions based on previous actions and possible next actions
- Users were overwhelmed by the technology
- Companies like Microsoft turned to this area of research





 **A hint for you, User...**
You can add swarms of excellent stuff to your home...

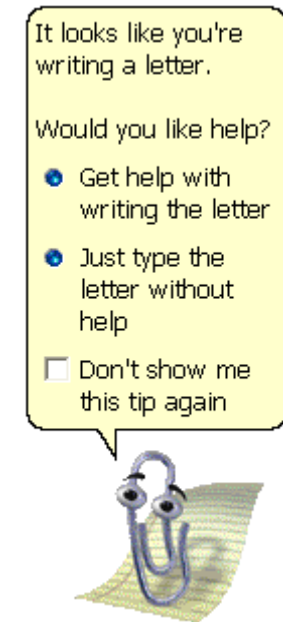
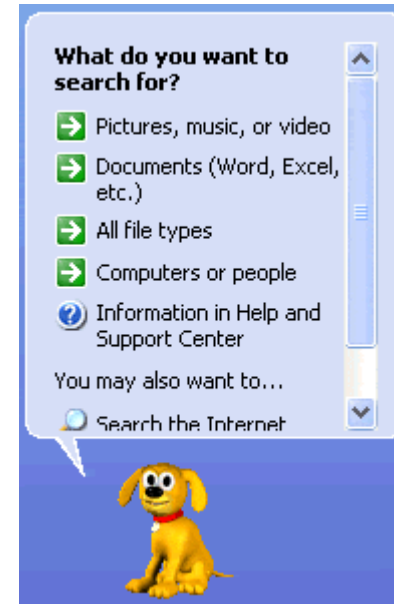
- * Entire rooms for you or everyone
- * Decorations that show your style
- * Doors that lead wherever you want
- * Programs--even Windows and DOS programs

Just click on "Add something" and explore!

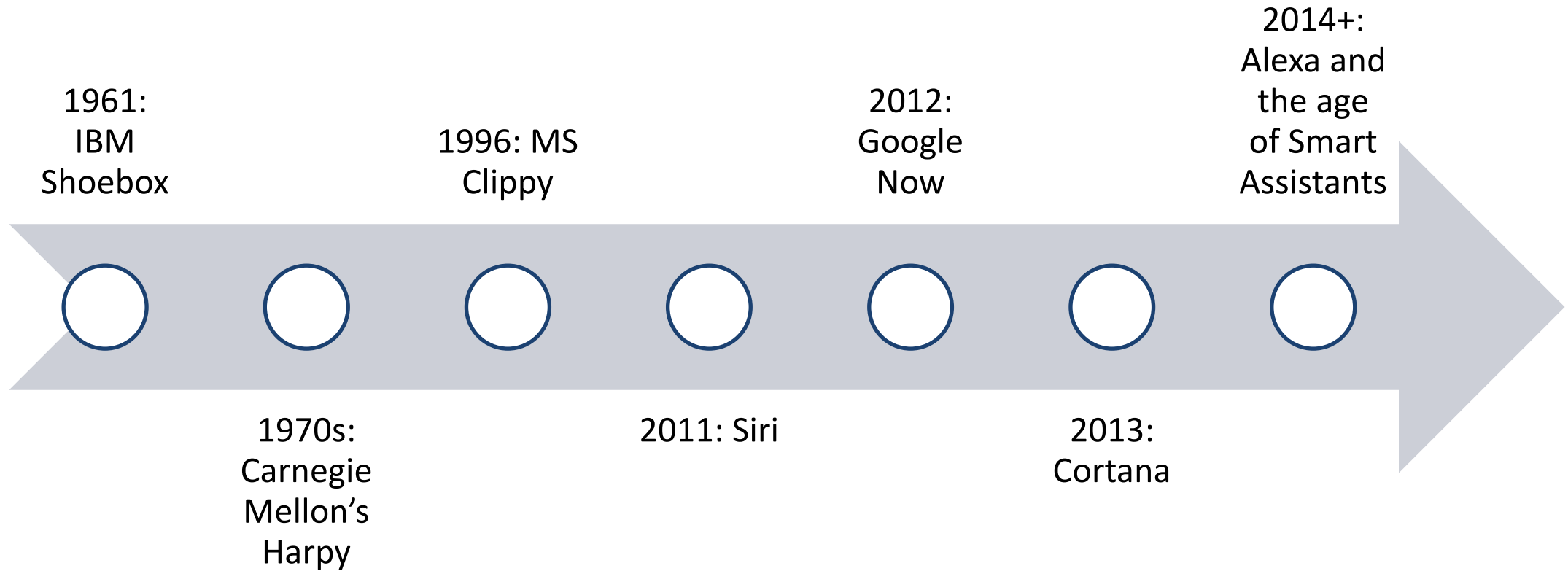
- See what you want?**
- Find a program
 - Go to another room
 - Add something
 - Change something
 - Delete something
 - Get a tour of the home
 - Advanced features
 - Rover's Ramblings
 - About the Home
- Cancel 

Assistive Agents

- Similar ideas were still used for other Microsoft products
 - Clippy Office Assistant from Microsoft Office '97
- These weren't very popular, but companies were able to learn and shape them into what we know today



Virtual Assistants



Lessons Learned

- Led to lots of ideas
 - Search hints on Google
 - Context clues on touch interfaces
- Legacy: instead of changing human behavior, change the program to fit their expected behavior

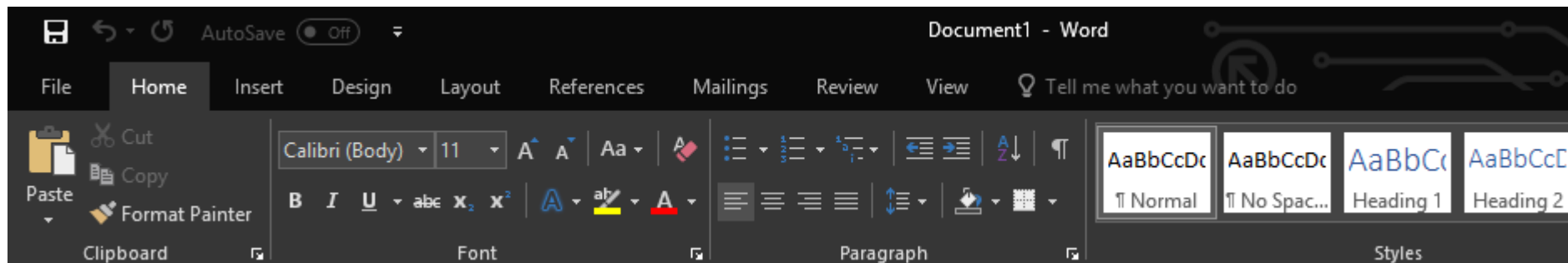
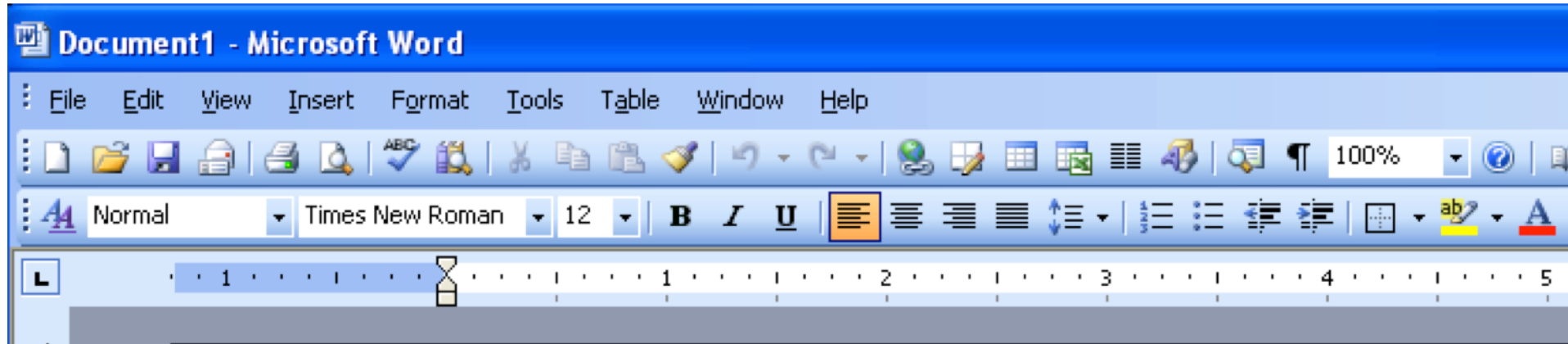
***Put things where people
expect them to be***

Don Norman

- 2006 Franklin Medalist
- How things are designed versus how we expect them to be designed
- [Short Clip](#)



Design Changes Over Time





A problem has been detected and windows has been shut down to prevent damage to your computer.

The problem seems to be caused by the following file: SPCMDCON.SYS

PAGE_FAULT_IN_NONPAGED_AREA

If this is the first time you've seen this stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced startup options, and then select Safe Mode.

Technical information:

*** STOP: 0x00000050 (0xFD3094C2,0x00000001,0xFBFE7617,0x00000000)

*** SPCMDCON.SYS - Address FBFE7617 base at FBFE5000, DateStamp 3d6dd67c



Your PC ran into a problem and needs to restart. We're just collecting some error info, and then we'll restart for you. (0% complete)

If you'd like to know more, you can search online later for this error: HAL_INITIALIZATION_FAILED

The Future - Immersion & Ubiquity

- [Touch](#) Interfaces
 - [10/GUI](#)
- Ubiquitous Computing
- Augmented Reality
 - [Google Glass](#)
- 3D Vision
 - [Oculus Rift](#)
- [Accessibility](#)

