Friedrich-Alexander-Universität
Technische Fakultät

Machine Learning
Data Analytics

FAU

Human Computer Interaction

Chapter 2: History of HCI

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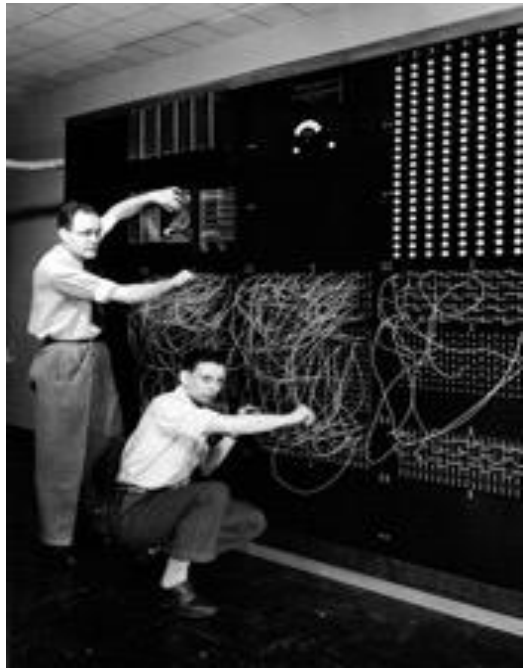
Interactive Computing

People and Inventions

Early Computer Operators and Engineers



https://www.computerhistory.org/

Foundations for Interactive Information Processing – Vannevar Bush

digital file from b&w film copy neg.
http://hdl.loc.gov/loc.pnp/cph.3a37339

- As We May Think (1945) article in **Atlantic Monthly**
- Seed the problem of **storing**, **accessing**, **distributing**, and **annotating** information
- Understands the **wealth** of large amounts of information and easy access to it
- Identifies **organization** of information as key issue

Foundations of interactive Information Processing

Organization is a problem.

Foundations for Interactive Information Processing
– Vannevar Bush

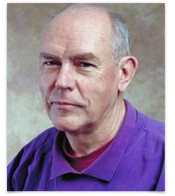
MEMEX

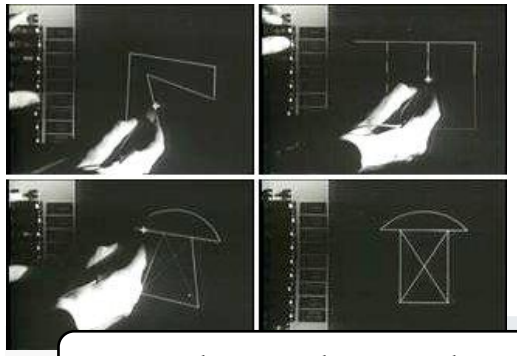
- Extending human memory
- Concepts of links and annotations
- Focus on search and indexing
- Many ideas for the **WWW**
- “microfilm-age” solutions not really feasible

Screenshot from (last access 20.04.2022)
https://www.youtube.com/watch?v=c539cK58ees

Inventing interactive computing – Ivan Sutherland

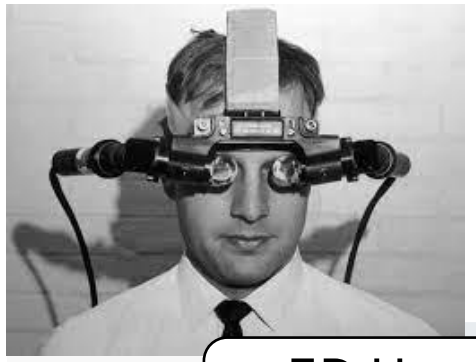
image from: https://www.computer.org/profiles/ivan-sutherland





SketchPad (1963)

- Drawing Package
- User interface included: icons, copying, light-pen input
- Development based on „OO"-principles
- Many ideas are still in use

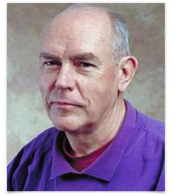


3D Head Mounted Display (1965 – 1970)

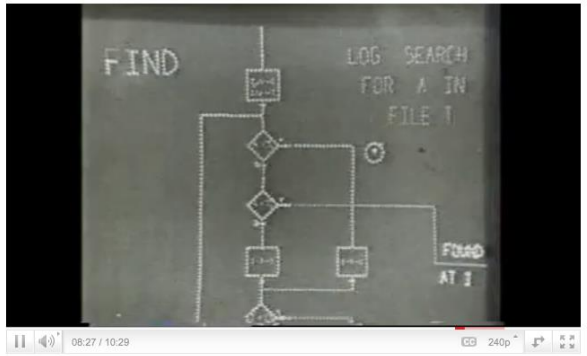
- 3D „visualization" (very basic)
- Large apparatus

Sketchpad Demo
– Ivan Sutherland

image from: https://www.computer.org/profiles/ivan-sutherland



Part 1 of 2: https://www.youtube.com/watch?v=FDC9UOY-c9g&t=319s



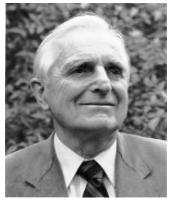
Part 1 of 2: https://www.youtube.com/watch?v=FDC9UOY-c9g&t=319s

- Sketchpad, A Man-Machine Graphical Communication System
- Ivan Sutherland's Ph.D. theses from Massachusetts Institute of Technology 1963
- Republished by University of Cambridge in 2003 as Technical Report Number 574

http://www.cl.cam.ac.uk/TechReports/UCAM-CL-TR-574.pdf

Inventing Interactive Technologies – Douglas Engelbart

image from: https://www.computer.org/profiles/douglas-engelbart



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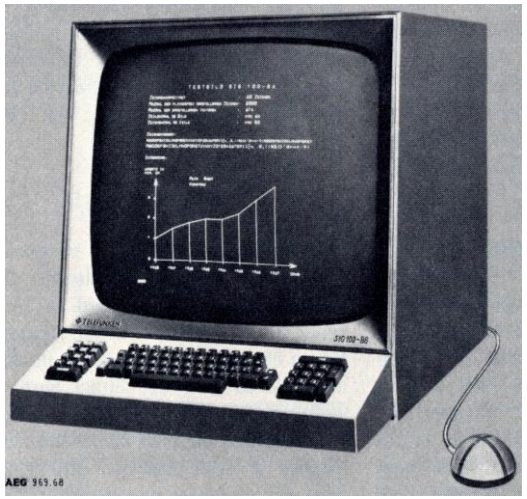
- A Conceptual Framework for Augmenting Human Intellect (SRI Report, 1962)
- Understand **need** for collaborative (several potentially distributed people together) and immediate **problem solving**
- A key issue is to **improve abilities** of people to make use of information
- Invention of the **mouse** (1964) as a pointing device
- **"Hi-res"** video conferencing, shared applications, window-concept (1968)

Parallel Inventions (1965/1968)

Pointing devices: Rollkugel

Image: Computermuseum Fakultät Informatik Universität Stuttgart

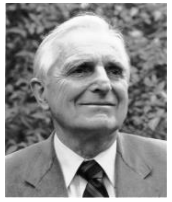


SIG-100 with Rollkugel. Image: Computerschau-sammlung der FH Kiel

http://www.heise.de/ct/meldung/Auf-den-Spuren-der-deutschen-Computermaus-216255.html

The Mother of All Demos
– Douglas Engelbart

image from: https://www.computer.org/profiles/douglas-engelbart



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copy paste
word processing.
View/organize

Hyperlink
Real-time
Collaboration.
Video
Conferencing.

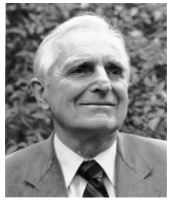
Part 1 of 10
https://www.youtube.com/watch?v=VScVgXM7lQQ&index=1&list=PLCGFadV4FqU2yAqCzKaxnKKXgnJBUrKTE

Further reading: Augmenting the Human Intellect
http://dougengelbart.org/pubs/augment-3906.html

Making more ARPANET

Douglas Engelbart (Exam Relevant)

image from: https://www.computer.org/profiles/douglas-engelbart



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Inventor of the Computer Mouse

http://www.youtube.com/watch?v=SQ7totFRh4g (2 min)

Engelbart explains binary text input

→ like fingers

1 - A
2 - B
1,2 - C
4 - D
1,4 - E

http://www.youtube.com/watch?v=DB_dLeEasL8 (1 min)

The Mother of All Demos

→ word processing
copy paste

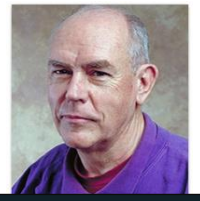
https://www.youtube.com/watch?v=B6rKUf9DWRI (5 min)

Many people shaped early HCI

Vannevar Bush

Foundation for Interactive Information Processing

MEMEX (1963)



Douglas Engelbart

Computer Mouse

Mother of all Demos

Ivan Sutherland

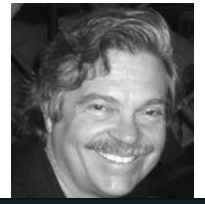
Sketchpad (1963)

HMD (1965-1970)

J.C.R. Licklider

Man-computer symbiosis (1960)

Interactive Computing



Alan Kay

Vision of a notebook computer Dynabook(1969)

Computing for everyone

Many Others ...

Lessons Learned from History

What can we learn from the evolution of user interfaces

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Lessons Learned

Technology drives new user interface concepts and interaction metaphors

New user interfaces create **new applications**

Designs and user interface concepts **evolve**

You cannot hide the user interface – **good ideas spread out**

1. The **first** to come out with a new user interface is not necessarily the most successful

first is not the best

Thank you for your attention