Interaction Design (IxD)
(User Experience Design I)

History

History

- Course Overview (Timetable) + Organizational Stuff
- What is Interaction Design?
- The Story of the Mouse
- PARC
- The Desktop Metaphor
- The GUI

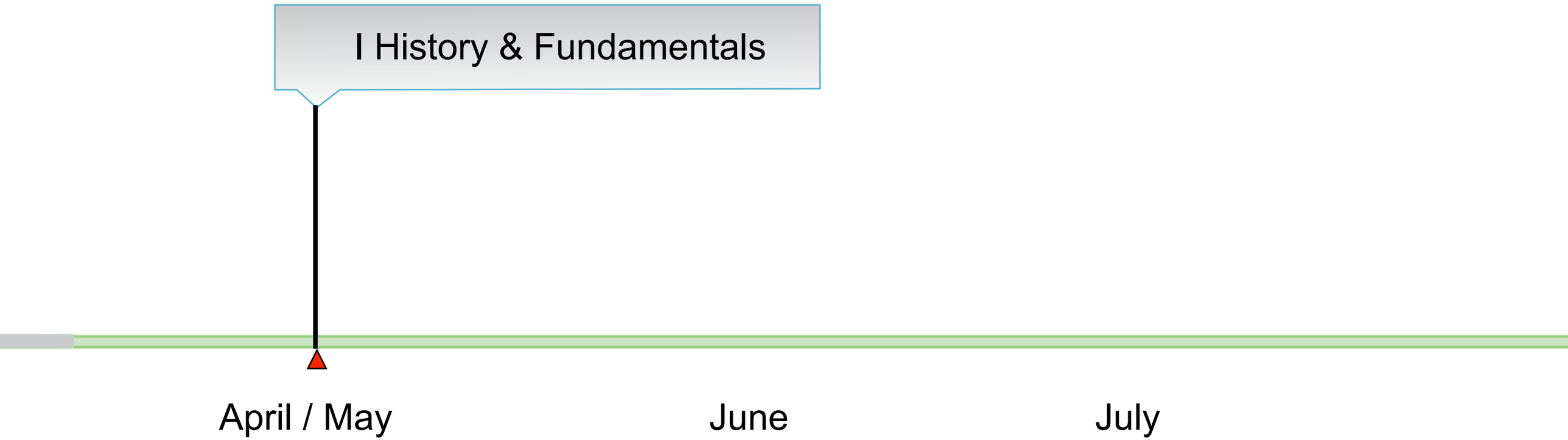
Tutorials & Exam

- **Interaction Design** required for Concept Development
- no Podcast, so be here every week :)
- register via UniWorX!

- **tutorials** close to the lecture
- practical exercises to apply theoretical knowledge
- important preparation for the exam
- will be held in breakout sessions during the lecture
- sometimes homework

- **Bonus** of 5% in exam possible if you hand in deliverable at the end
- deliverable: sketchbook with works during and inspired by the course / documentation of the course to be delivered at the end of the semester (at the last lecture)
- **Written Exam** will be announced on the website shortly
- exact time and location will be announced soon

Course Overview:



LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

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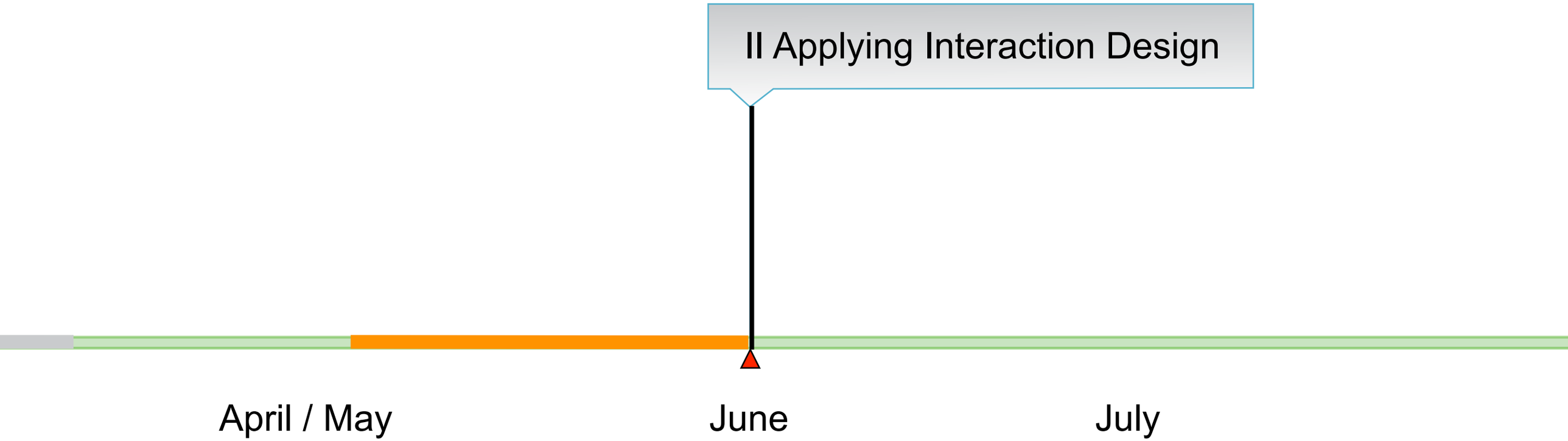

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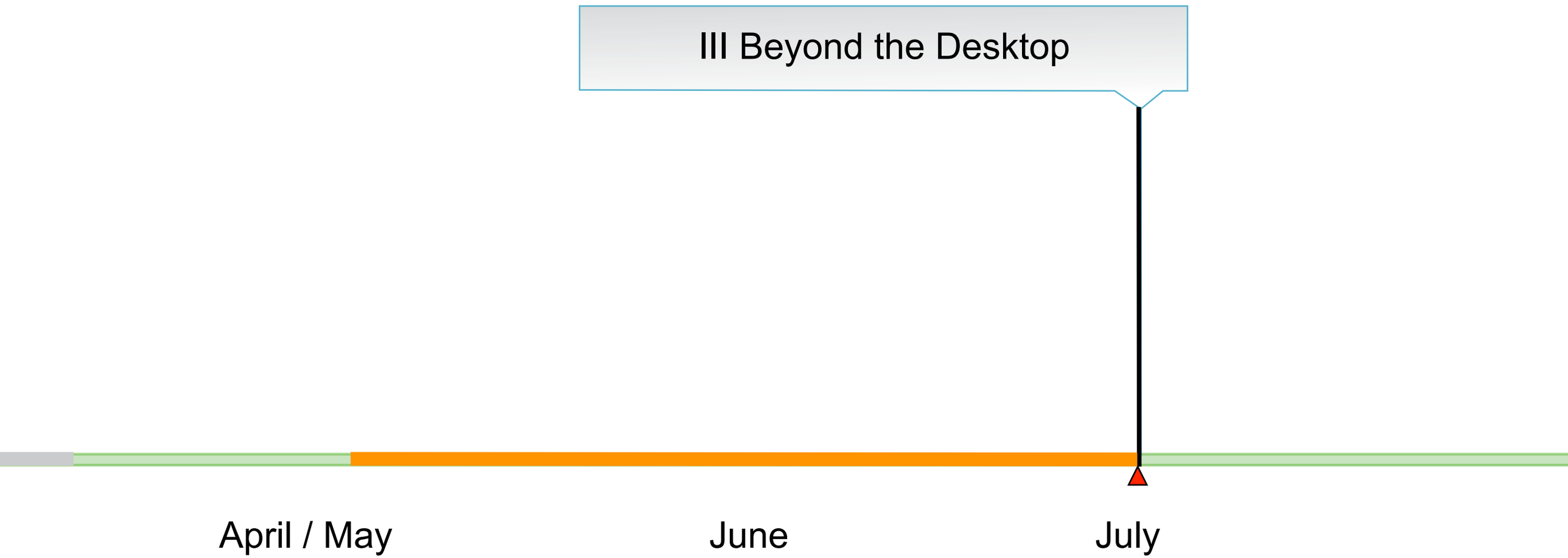

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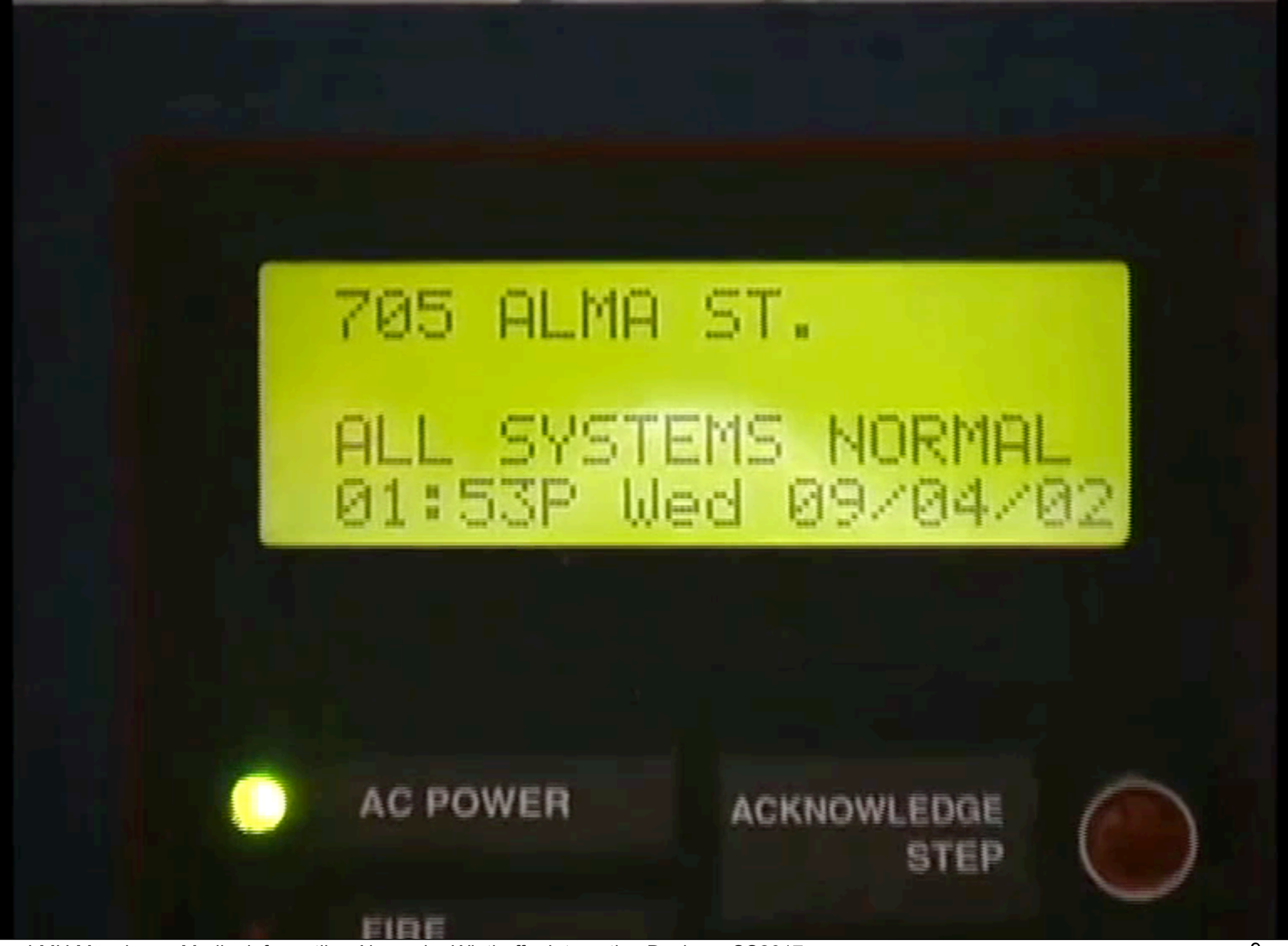
Gillian Crampton Smith

-established the first Interaction Design MA program at the Royal College of Art (RCA)
-was the founder and academic director of the Interaction Design Institute Ivrea (IDII)

http://www.designinginteractions.com/img/interviews/GillianCramptonSmith.jpg

source: [2]


705 ALMA ST.
ALL SYSTEMS NORMAL
01:53P Wed 09/04/02
AC POWER
ACKNOWLEDGE
STEP
FIRE

Looking back... (Discussion Part)

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-shaping our lives through digital artefacts...

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-elements of interaction design
-the part of the interaction designer is to design
the **quality** on how the interaction is performed, how the system behaves

Designing for Everyday Life

Designing for Everyday Life

(1) Professional Tools

(2) Game Machines for Teenagers

25 years ago **today**

New Challenges

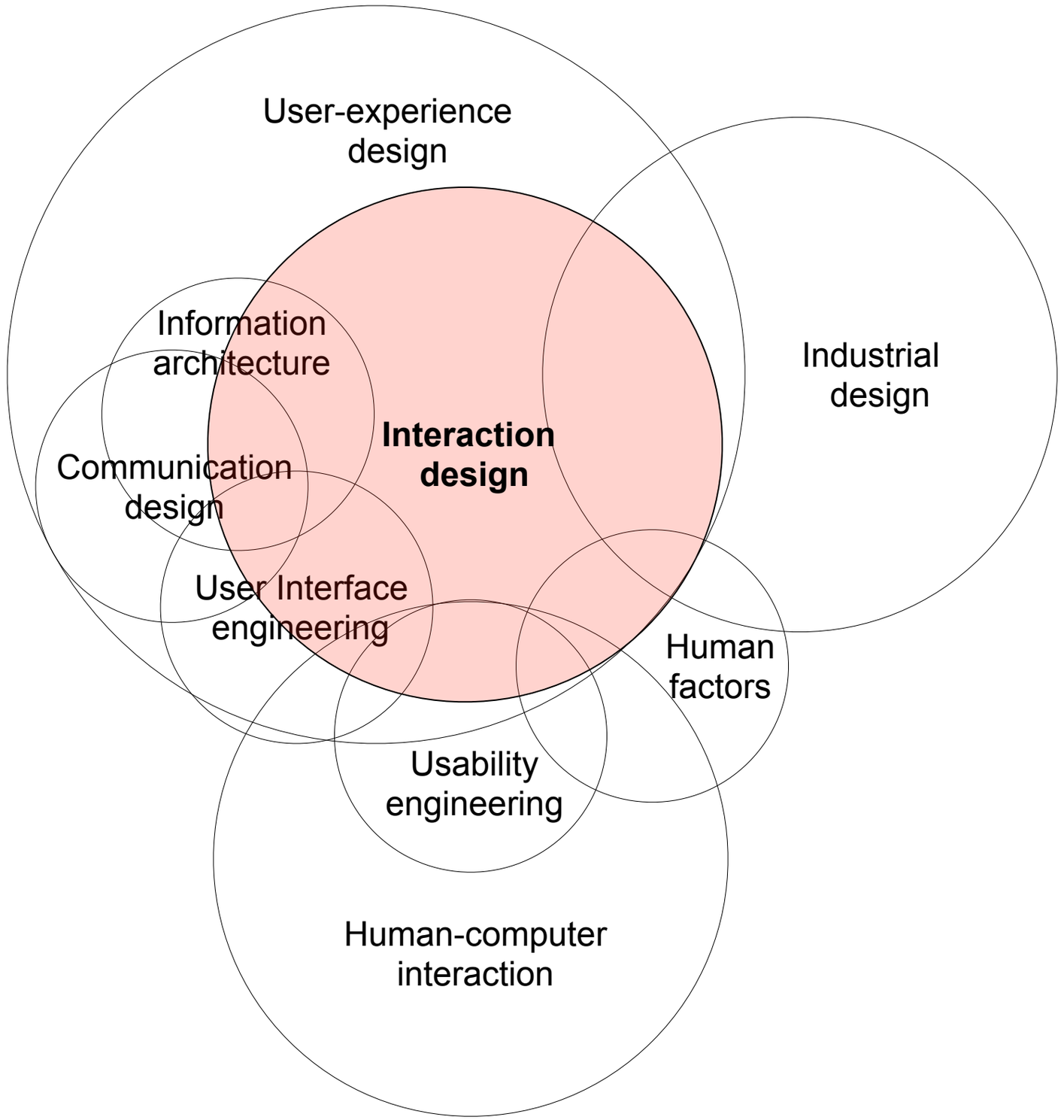
(1) Professional Tools

(2) Game Machines for Teenagers

(1) Larger user groups (e.g. Kids/Parents/ Grandparents)

(2) Various Contexts of use (e.g. Work/School/ Home/Leisure)

25 years ago **today**


User-experience design
Information architecture
Industrial design
Interaction design
Communication design
User Interface engineering
Human factors
Usability engineering
Human-computer interaction

source: [3]

"Great design is as much about prospecting in the past as it is about inventing the future."

Bill Buxton

source: [6]

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The **Beginnings**...(let´s jump back to 1943)

P 38 Lightning Cockpit (1943)

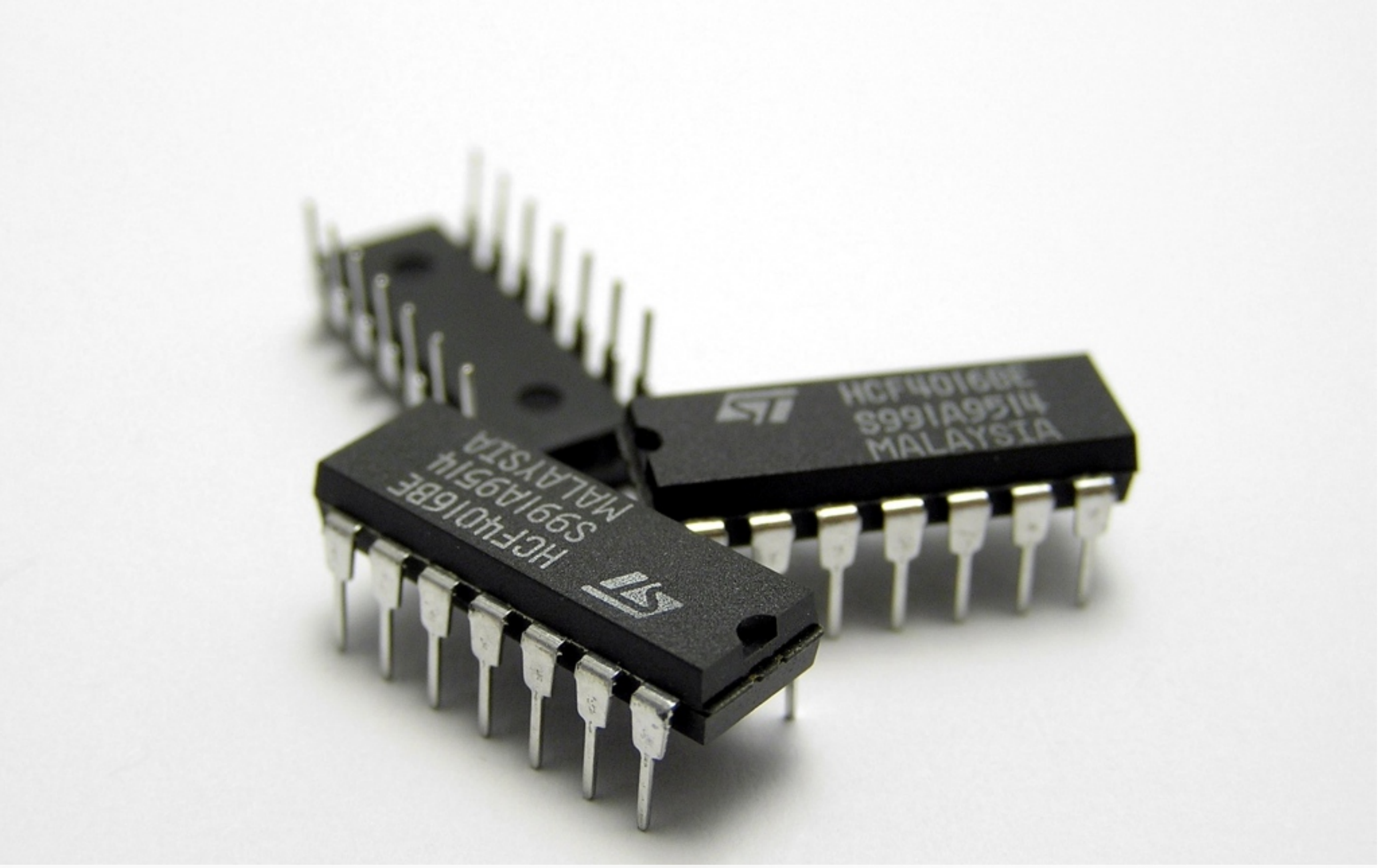
http://www.world-war-2-planes.com/lockheed-p-38.html

EDSAC computer (1949)

http://www.xgn.nl/images/upload/20080908172430.jpg

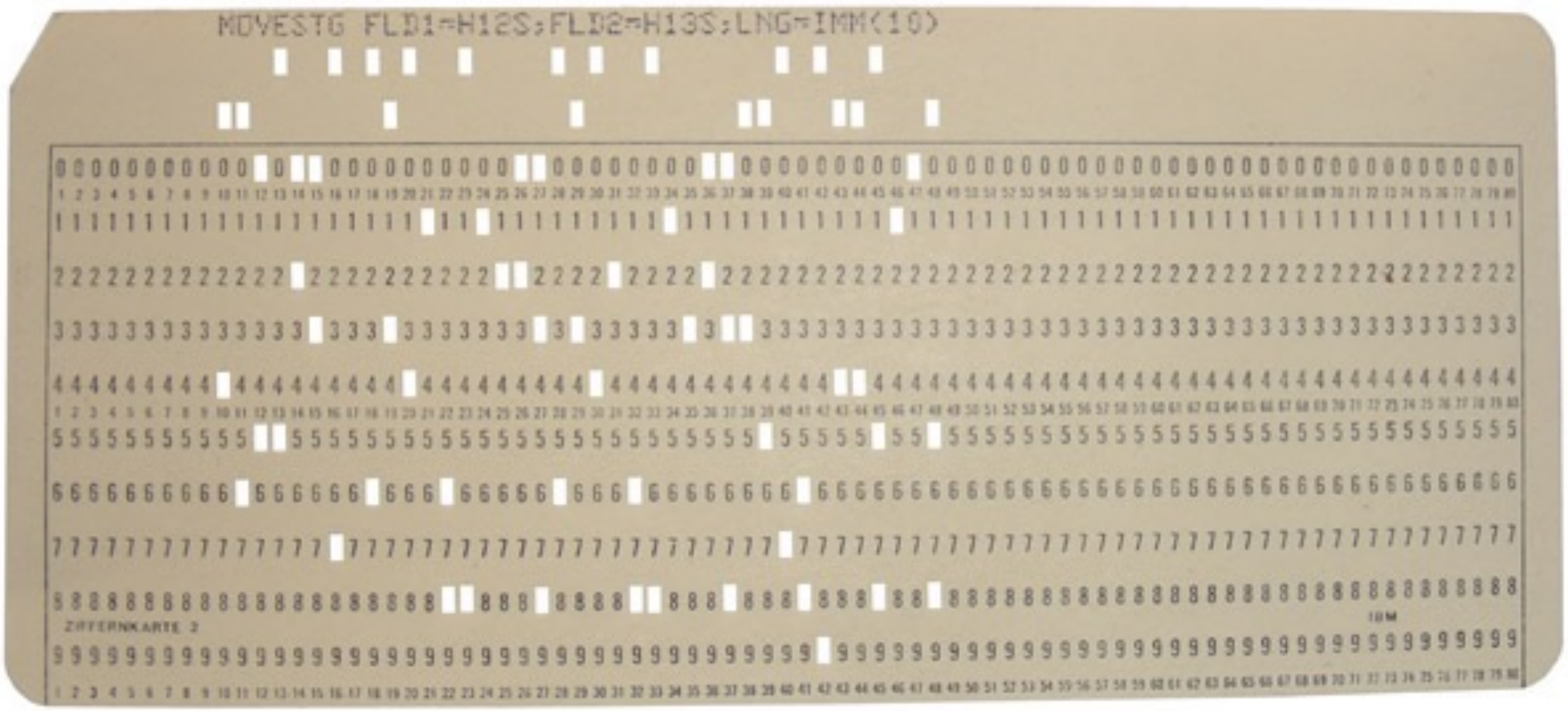
"I think there is a world market for maybe five computers."

Thomas Watson,
chairman of IBM, 1943



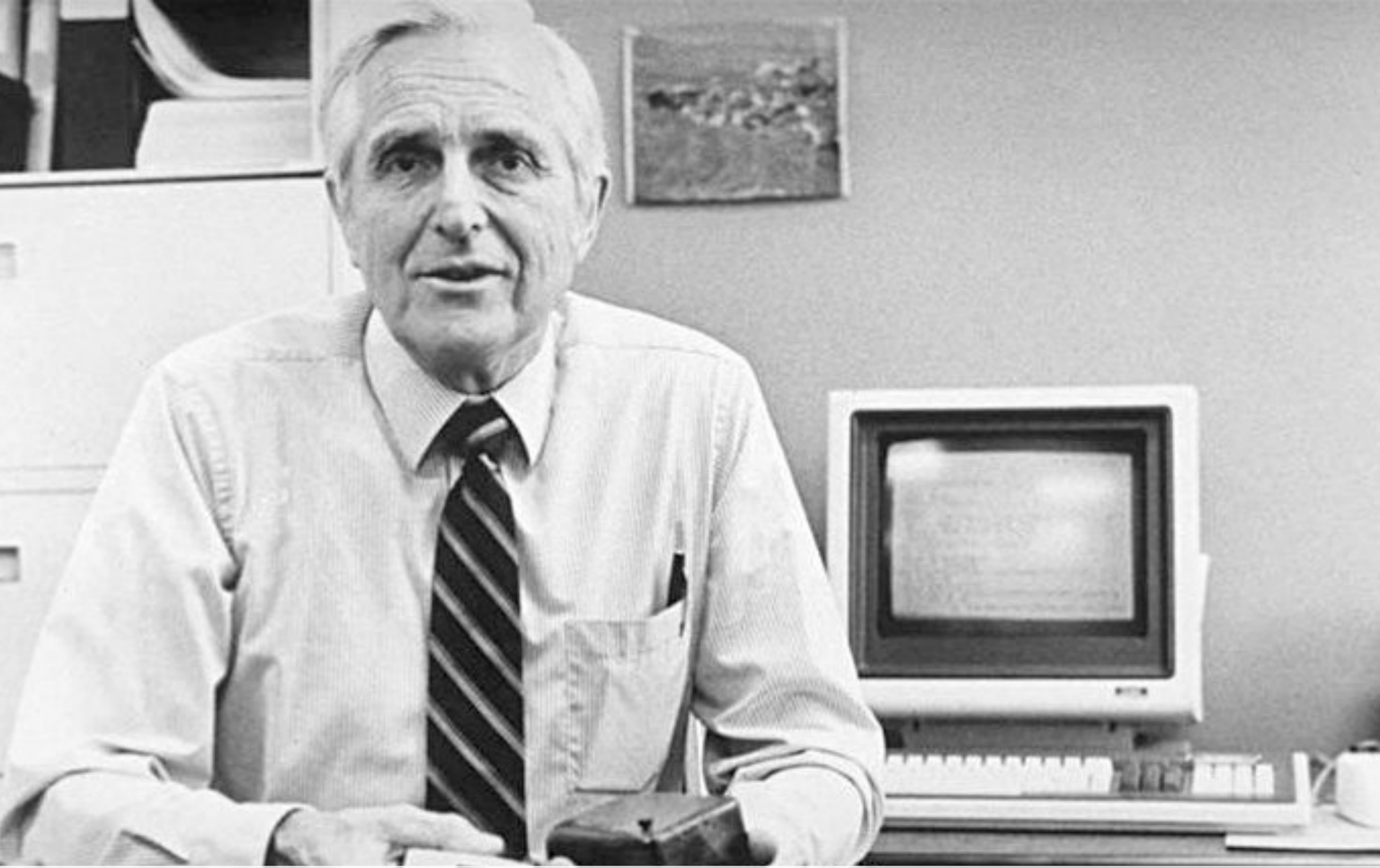
Mid sized ICs

http://upload.wikimedia.org/wikipedia/commons/8/80/Three_IC_circuit_chips.JPG



Punch Card

http://datentraeger-museum.de/Media/Shop/lochkarte_01.jpg

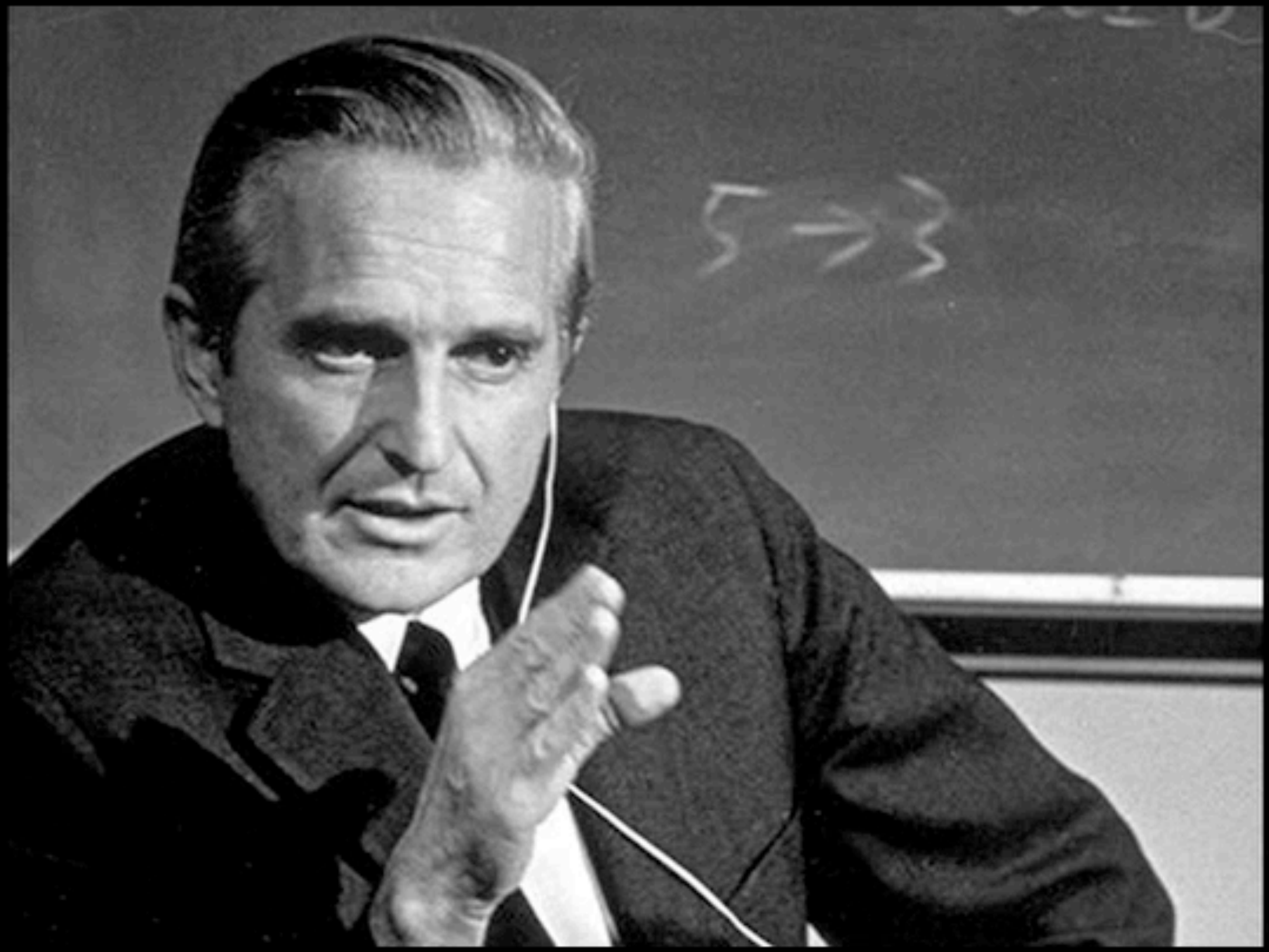


Douglas Engelbart

http://www.corporationtocommunity.com/wp-content/uploads/2011/02/engelbart.jpg

“When you were interacting considerably with the screen, you needed some sort of device to select objects on the screen, to tell the computer that you wanted to do something with them.”

Douglas C. Engelbart, 2003, referring to 1964



Looking back... (Discussion)

http://1.bp.blogspot.com/_jhhJghwNlgo/ST01UsQ74oI/AAAAAAAAA7k/5xDWdR-4ODY/s400/worlds+first+mouse.JPG

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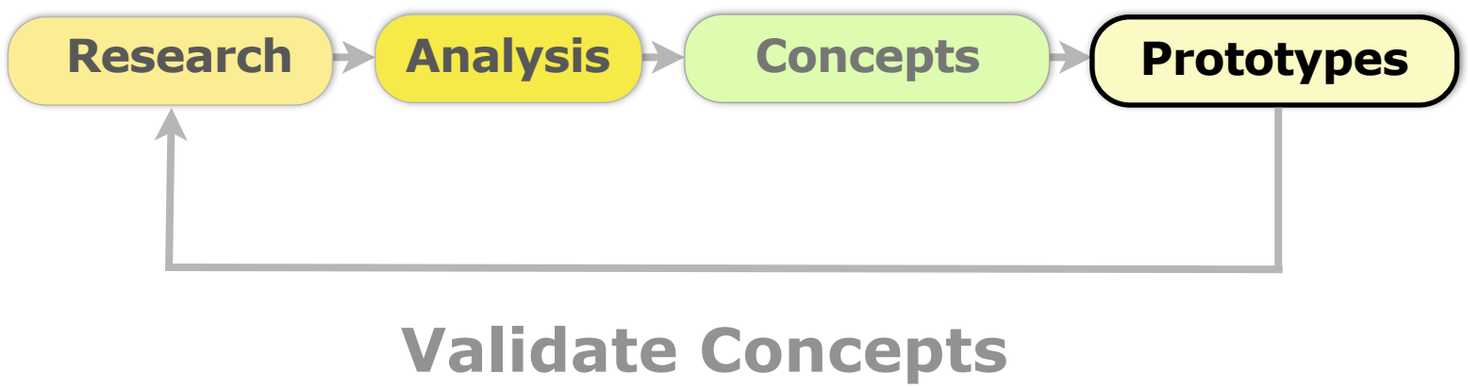
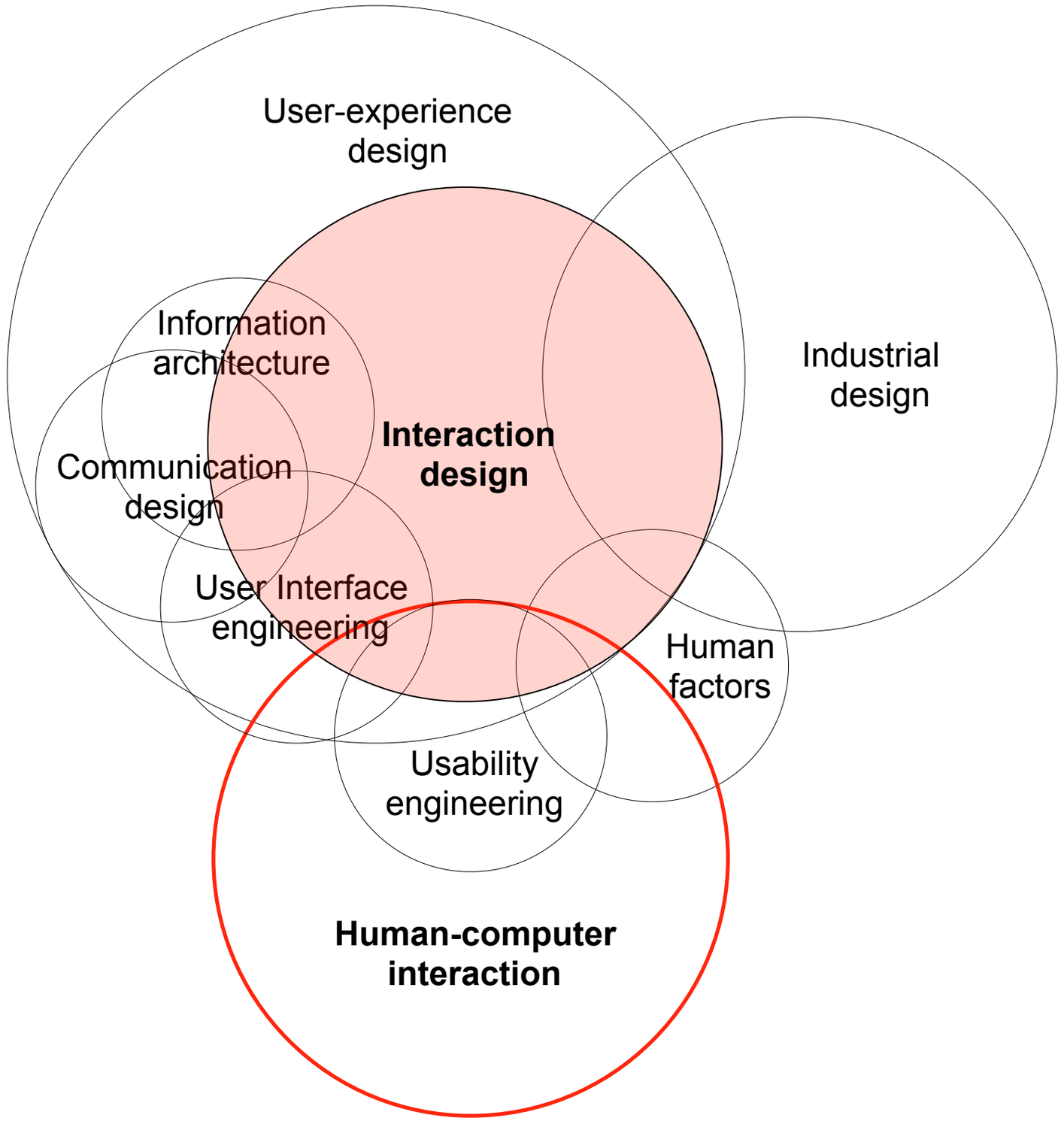


Looking back... (Discussion)

-reflection of the process (concept generation)
-construction of different prototypes (alternative design)
-iterative development of prototypes (prototyping and testing)
-tests with users to validate the approach and make decisions (usability testing)

http://www.usabilis.com/img/user-research-france/usability-testing.jpg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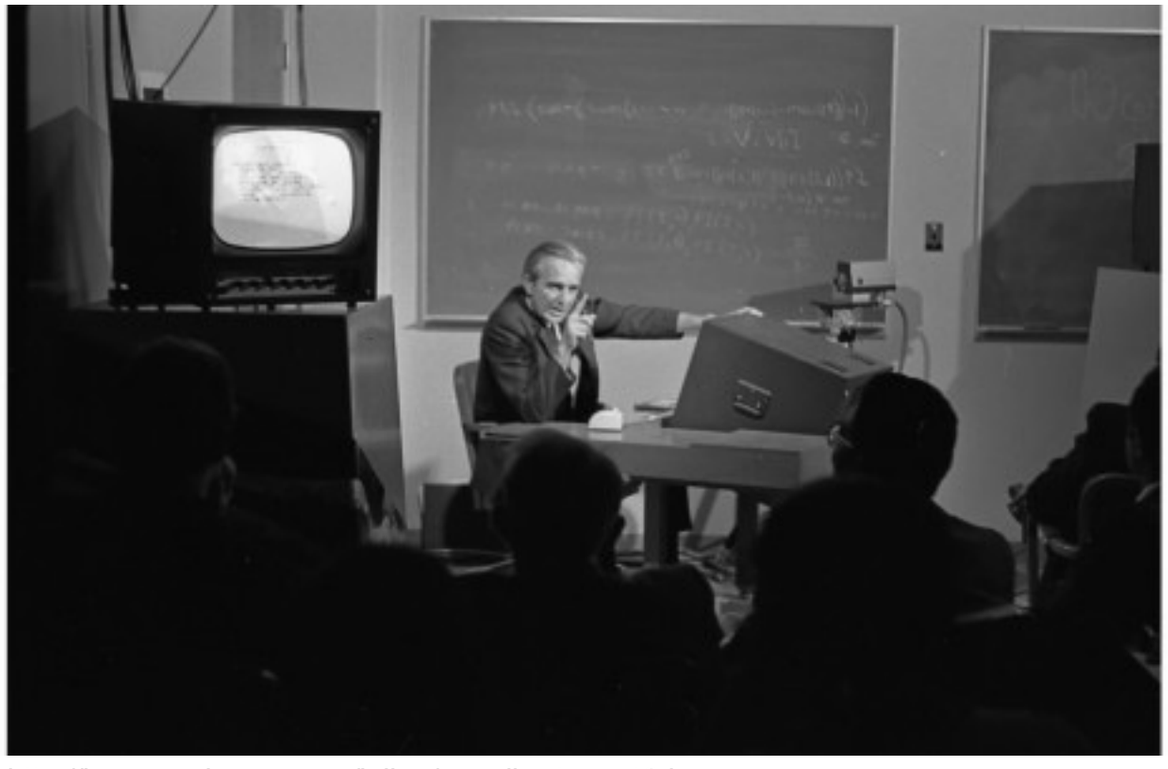
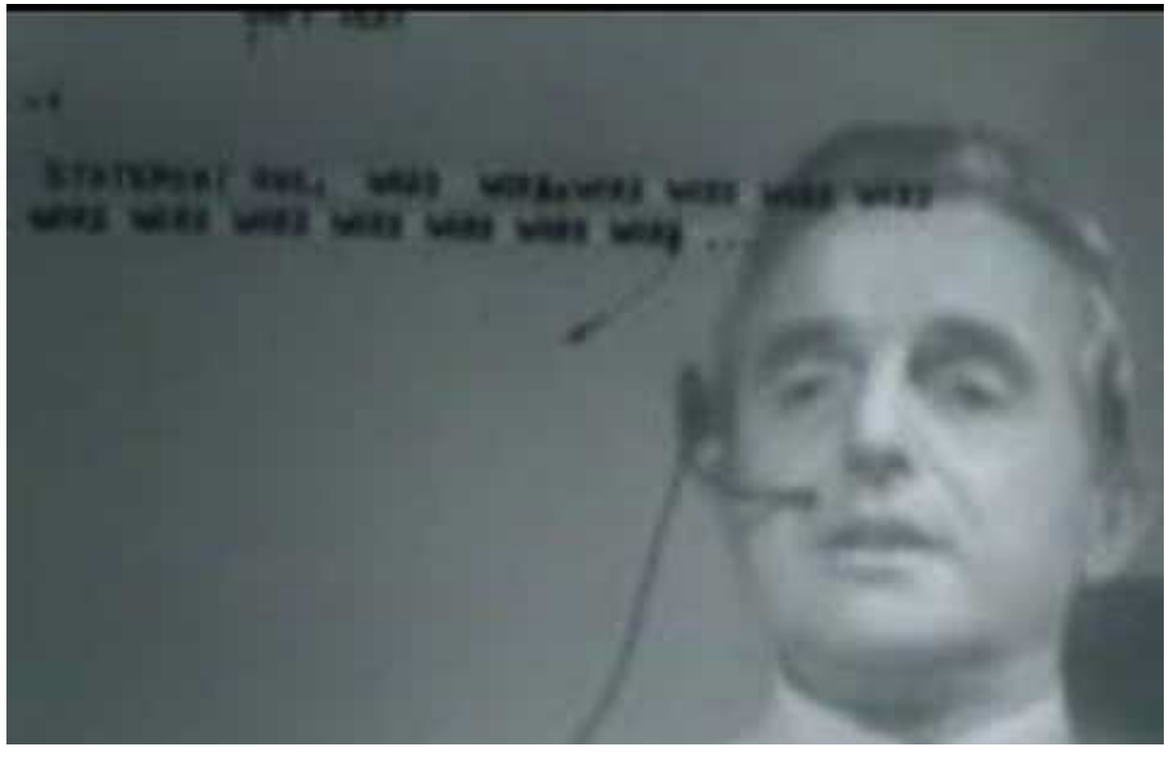


http://images.gizmag.com/inline/engelbart-arc-10.jpg



http://img.youtube.com/vi/JfIgzSoTMOs/0.jpg

http://www.w2vr.com/timeline/15_Engelbart_demo1.jpg

http://www.mprove.de/diplom/_media/fig3.2_NLSWorkstation.jpg

Douglas C. Engelbart : **Augmenting human intellect: A Conceptual Framework**

Stanford Research Institute (SRI), 1962.

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4. Training—the conditioning needed by the individual to bring his skills in using augmentation means 1, 2, and 3 to the point where they are operationally effective.

The system we wish to improve can thus be visualised as comprising a trained human being, together with his artefacts, language, and methodology.

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founded 1970 by Xerox

http://upload.wikimedia.org/wikipedia/commons/e/e8/PARC-logo-color.png

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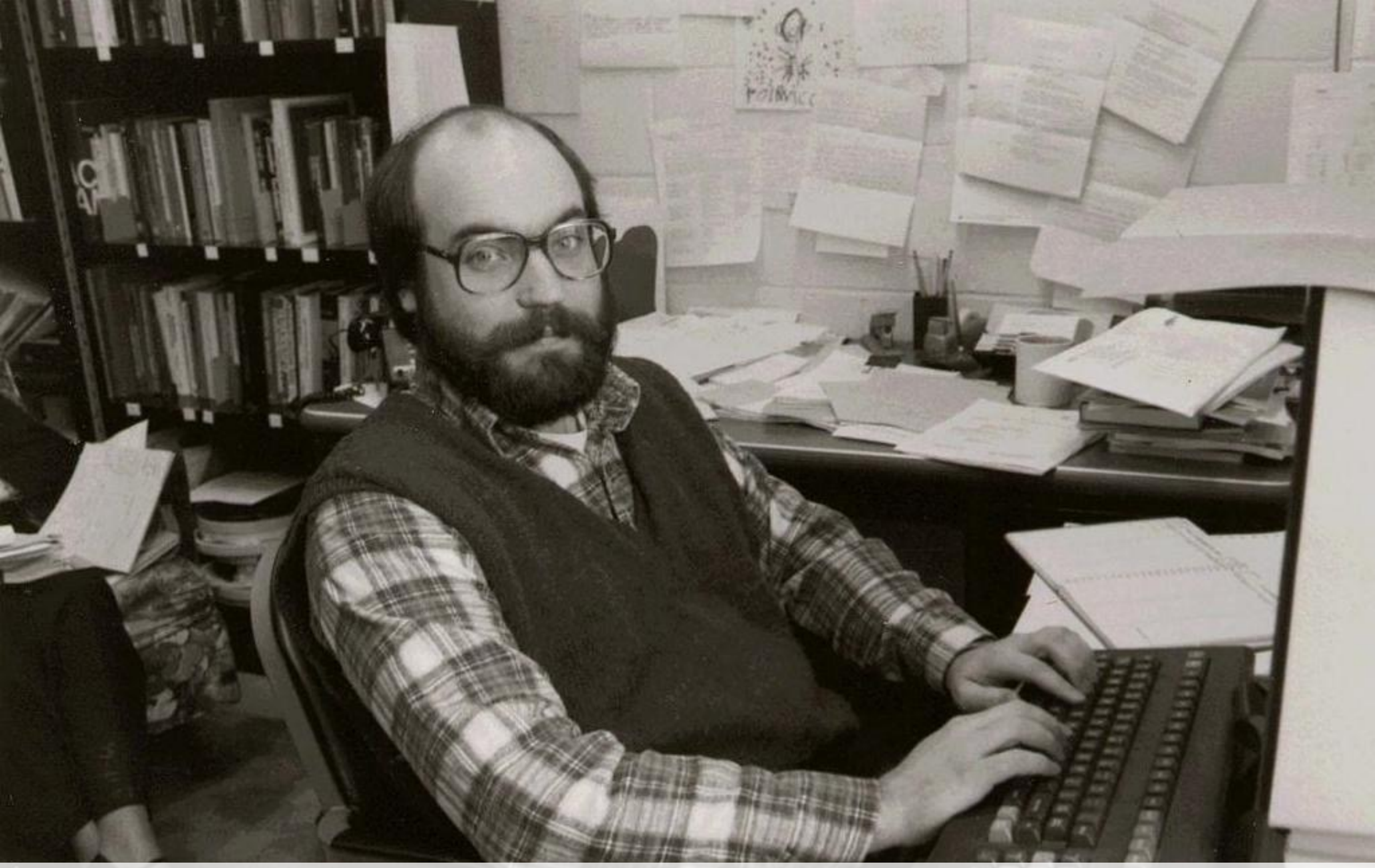
http://de.academic.ru/pictures/dewiki/80/Parcentrance.jpg



Marc Weiser

http://www.cs.umd.edu/projects/photohistory/facultypictures_full/weiser.jpg

The Computer for the 21st Century

Specialized elements of hardware and software, connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence

by Mark Weiser

The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

Consider writing, perhaps the first information technology. The ability to represent spoken language symbolically for long-term storage freed information from the limits of individual memory. Today this technology is ubiquitous in industrialized countries. Not only do books, magazines and newspapers convey written information, but so do street signs, billboards, shop signs and even graffiti. Candy wrappers are covered in writing. The constant background presence of these products of "literacy technology" does not require active attention, but the information to be transmitted is ready for use at a glance. It is difficult to imagine modern life otherwise.

Silicon-based information technology, in contrast, is far from having become part of the environment. More than 50 million personal computers have been sold, and the computer nonetheless remains largely in a world of its own. It is approachable only through complex jargon that has nothing to do with the tasks for which people use computers. The state of the art is perhaps analogous to the period when scribes had to know as much about making ink or baking clay as they did about writing.

The arcane aura that surrounds personal computers is not just a "user interface" problem. My colleagues and I at the Xerox Palo Alto Research Center think that the idea of a "personal" computer itself is misplaced and that the vision of laptop machines, dynabooks and "knowledge navigators" is only a transitional step toward achieving the real potential of information technology. Such machines cannot truly make computing an integral, invisible part of people's lives. We are therefore trying to conceive a new way of thinking about computers, one that takes into account the human world and allows the computers themselves to vanish into the background.

Such a disappearance is a fundamental consequence not of technology but of human psychology. Whenever people learn something sufficiently well, they cease to be aware of it. When you look at a street sign, for example, you absorb its information without consciously performing the act of reading. Computer scientist, economist and Nobelist Herbert A. Simon calls this phenomenon "compiling"; philosopher Michael Polanyi calls it the "tacit dimension"; psychologist J. J. Gibson calls it "visual invariants"; philosophers Hans Georg Gadamer and Martin Heidegger call it the "horizon" and the "ready-to-hand"; John Seely Brown of PARC calls it the "periphery." All say, in essence, that only when things disappear in this way are we freed to use them without thinking and so to focus beyond them on new goals.

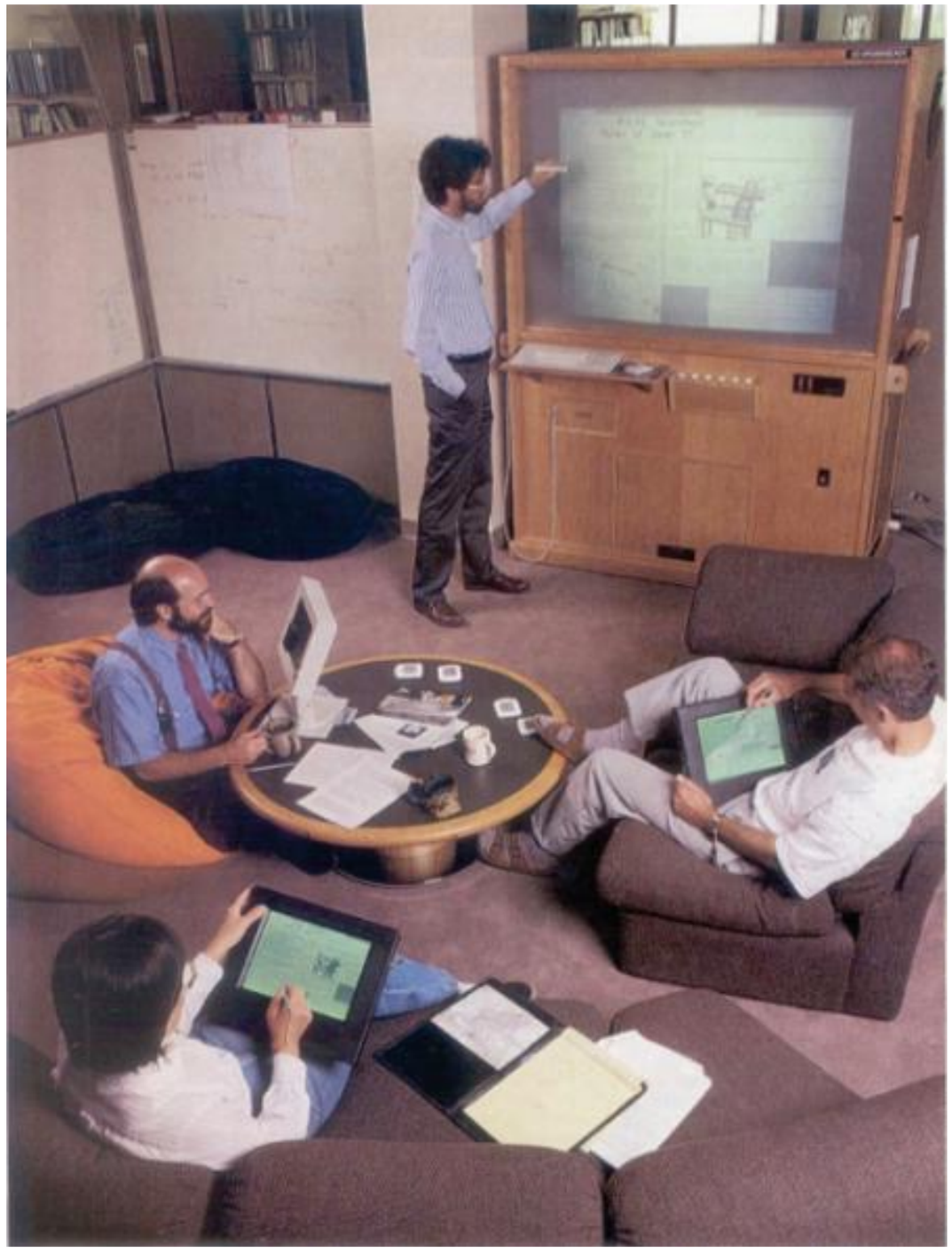
The idea of integrating computers seamlessly into the world at large runs counter to a number of present-day trends. "Ubiquitous computing" in this context does not mean just computers that can be carried to the beach, jungle or airport. Even the most powerful notebook computer, with access to a worldwide information network, still focuses attention on a single box. By analogy with writing, carrying a superlaptop is like owning just one very important book. Customizing this book, even writing millions of other books, does not begin to capture the real power of literacy.

Furthermore, although ubiquitous computers may use sound and video in addition to text and graphics, that does not make them "multimedia computers." Today's multimedia machine makes the computer screen into a demanding focus of attention rather than allowing it to fade into the background.

Perhaps most diametrically opposed to our vision is the notion of virtual reality, which attempts to make a world inside the computer. Users don special goggles that project an artificial scene onto their eyes; they wear gloves or even bodysuits that sense their motions and gestures so that they can move about and manipulate virtual objects. Although it may have its purpose in allowing people to explore realms otherwise inaccessible—the insides of cells, the surfaces of distant planets, the information web of data bases—virtual reality is only a map, not a territory. It excludes desks, offices, other people not wearing goggles and bodysuits, weather, trees, walks, chance encounters and, in general, the infinite richness of the universe. Virtual reality focuses an enormous apparatus on simulating the world rather than on invisibly enhancing the world that already exists.

Indeed, the opposition between the

MARK WEISER is head of the Computer Science Laboratory at the Xerox Palo Alto Research Center. He is working on the next revolution of computing after workstations, variously known as ubiquitous computing or embodied virtuality. Before working at PARC, he was a professor of computer science at the University of Maryland; he received his Ph.D. from the University of Michigan in 1979. Weiser also helped found an electronic publishing company and a video arts company and claims to enjoy computer programming "for the fun of it." His most recent technical work involved the implementation of new theories of automatic computer memory reclamation, known in the field as garbage collection.



https://www.ics.uci.edu/~corps/phaseii/Weiser-Computer21stCentury-SciAm.pdf

The Computer for the 21st Century, 1991

http://www.pmstudio.co.uk/pmstudio/sites/default/files/images/ubicomp1991.jpg

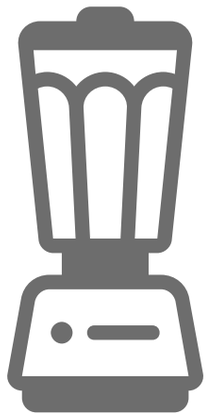
Stu Card

-joined Xerox Palo Alto Research Center (PARC) in 1974
-aimed at perfecting scientific methods to integrate with creative design
-developed a process to predict the behaviour of a proposed design, using task analysis, approximation, and calculation
-proposed a partnership between designers and scientists, by providing a science that supports design.

http://www.designinginteractions.com/interviews/StuCard

Looking back...

-exploration of the design space through the integration of industrial design



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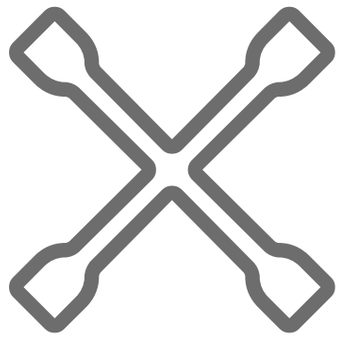
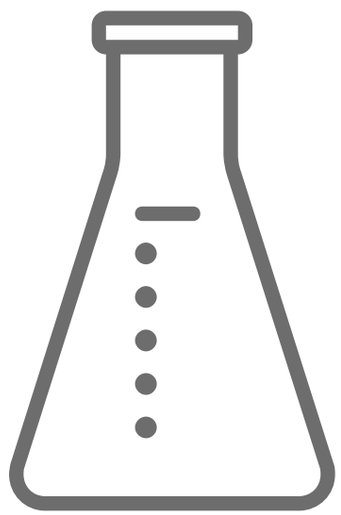
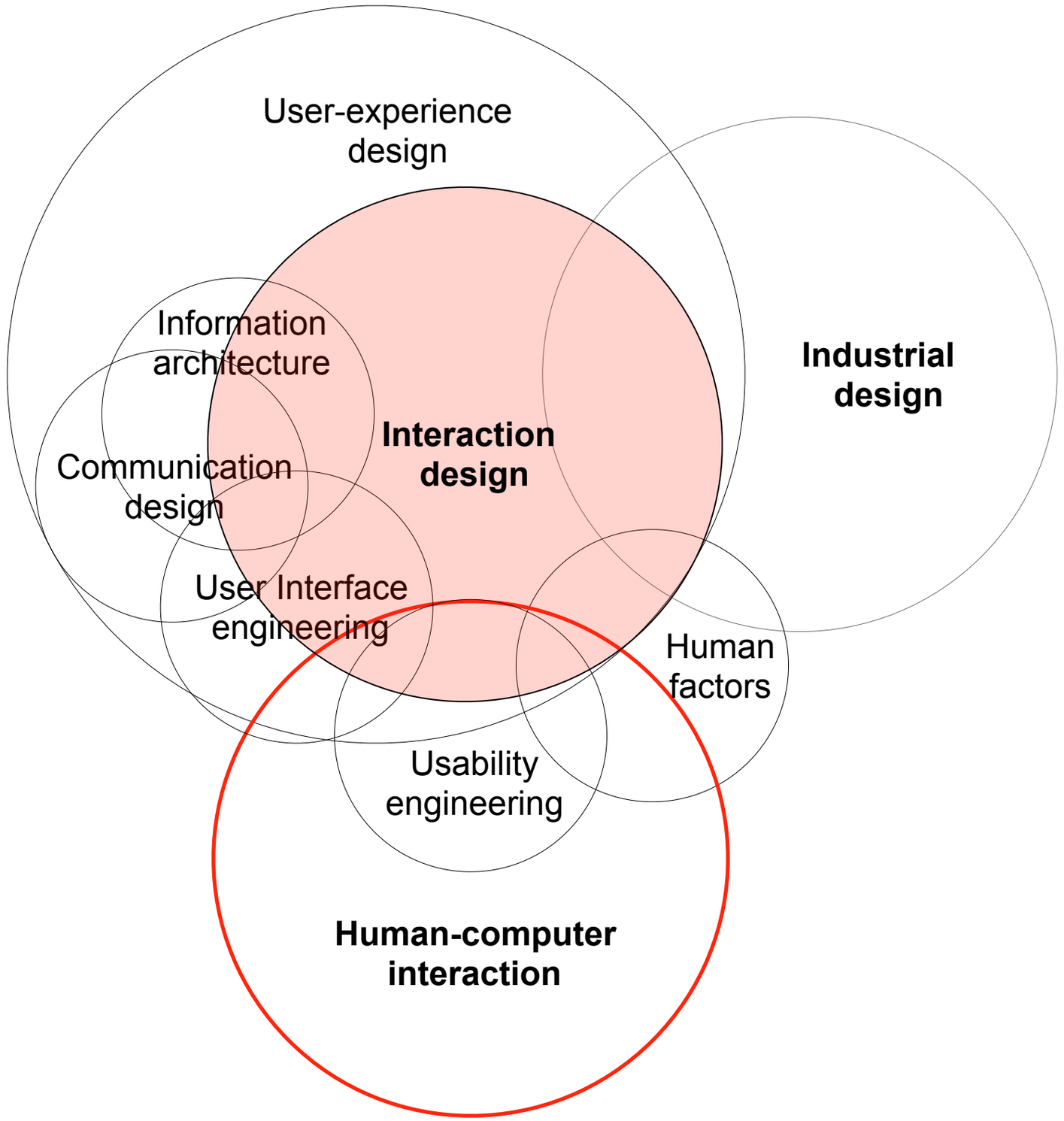


Looking back...

-exploration of the design space through the integration of industrial design
-designers and engineers had to work together (interdisciplinary approach)
-science served to constrain the design space

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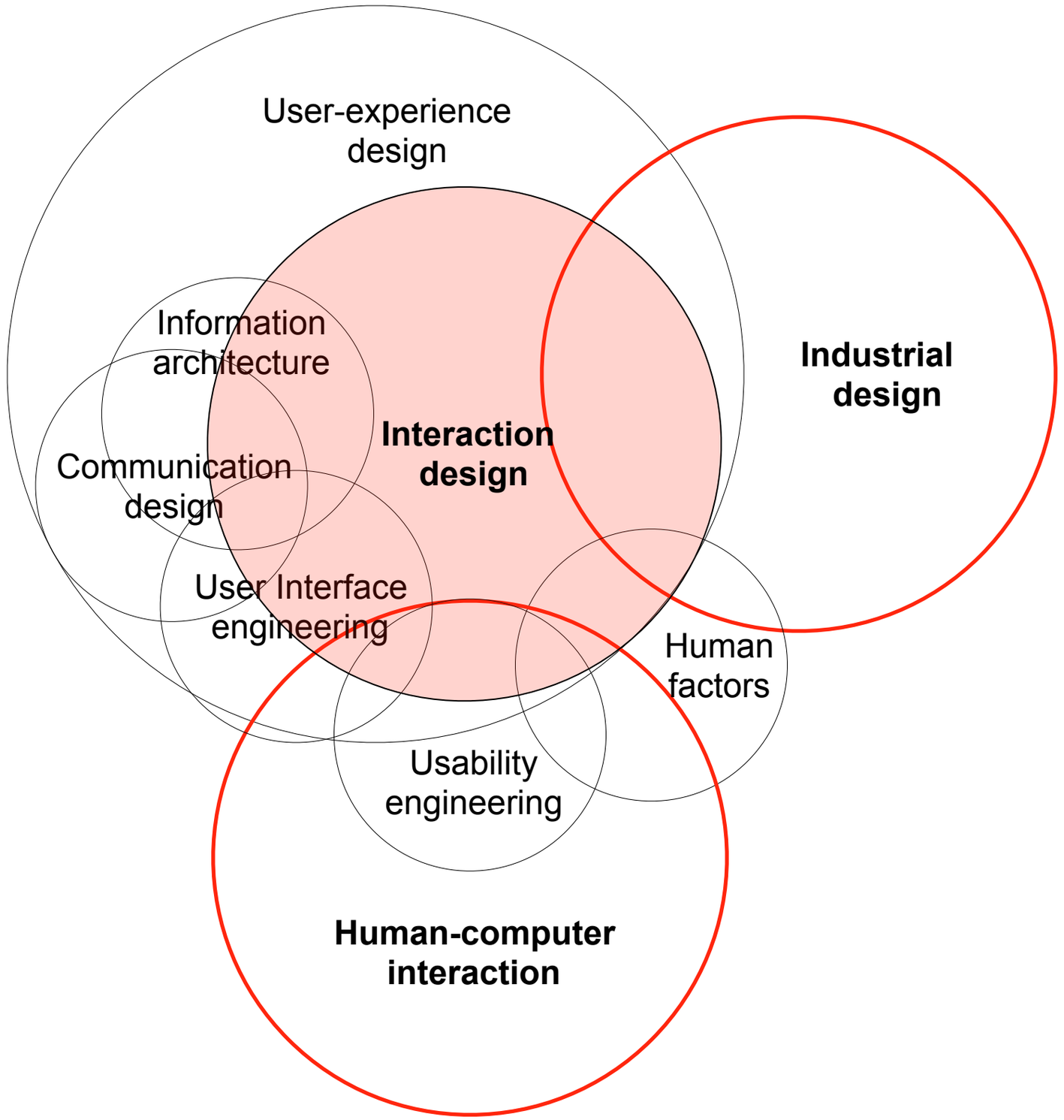
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Microprocessor early 1970s

img src: wikimedia creative commons

Tim Mott

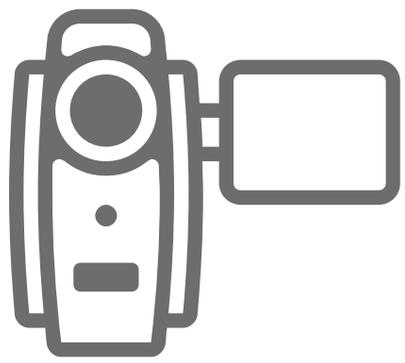
-collaborated remotely with Xerox Palo Alto Research Center (PARC) and Larry Tesler
-worked on a new publishing system that included a “desktop metaphor”
-invented a “user centred design process” with Larry Tesler
-later co founded Electronic Arts (EA)

http://www.designinginteractions.com/interviews/TimMott

Indent for paragraph	The injured were taken to MeritCare Hospital,
Begin new paragraph	where they were treated. According to Sheriff
Eliminate paragraph	Larry Costello, none were seriously hurt.
	The driver of the southbound vehicle
Transpose (letters, words)	the spokesperson MeritCare said
Use figures (or words)	about seventeen workers attended 7 sessions
Spell out (or abbrev.)	the delegate from N.D. came to Moorhead, Minn.
Uppercase	majored in english literature at Msum
Lowercase	Bachelor's Degree in Mass Communications
Remove space	extra effo rt will be required
Insert space	according to sourceclose to the president
Retain original	will be completed in ~~early~~ January
Delete	the ~~very~~ exciting climax of the film
Insert word	the exciting climax of the film

Looking back...

-spending time to understand users (design research)



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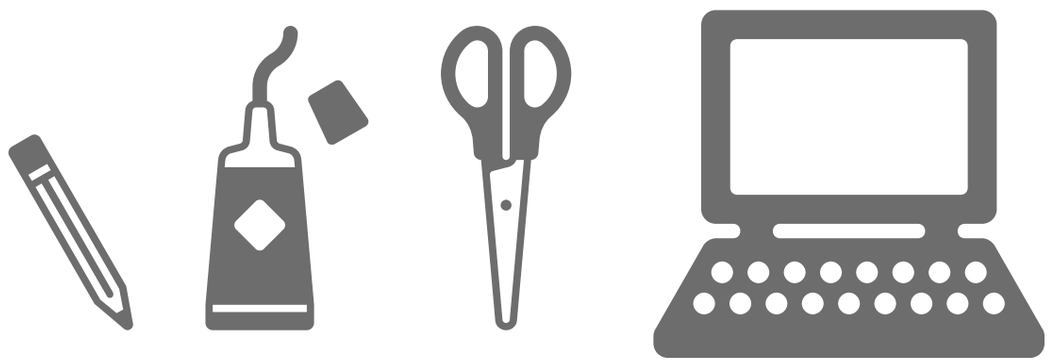

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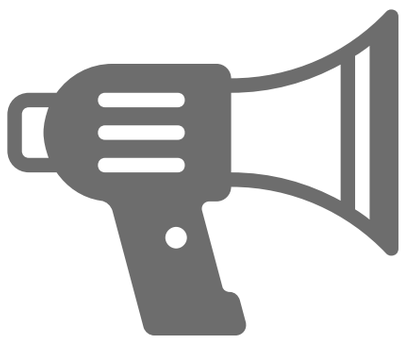

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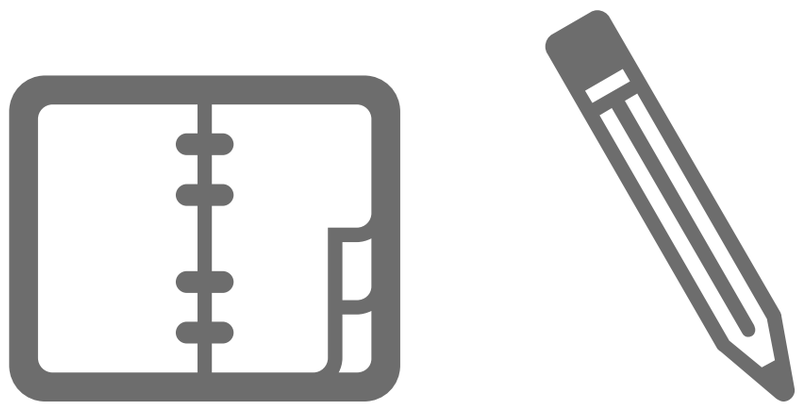
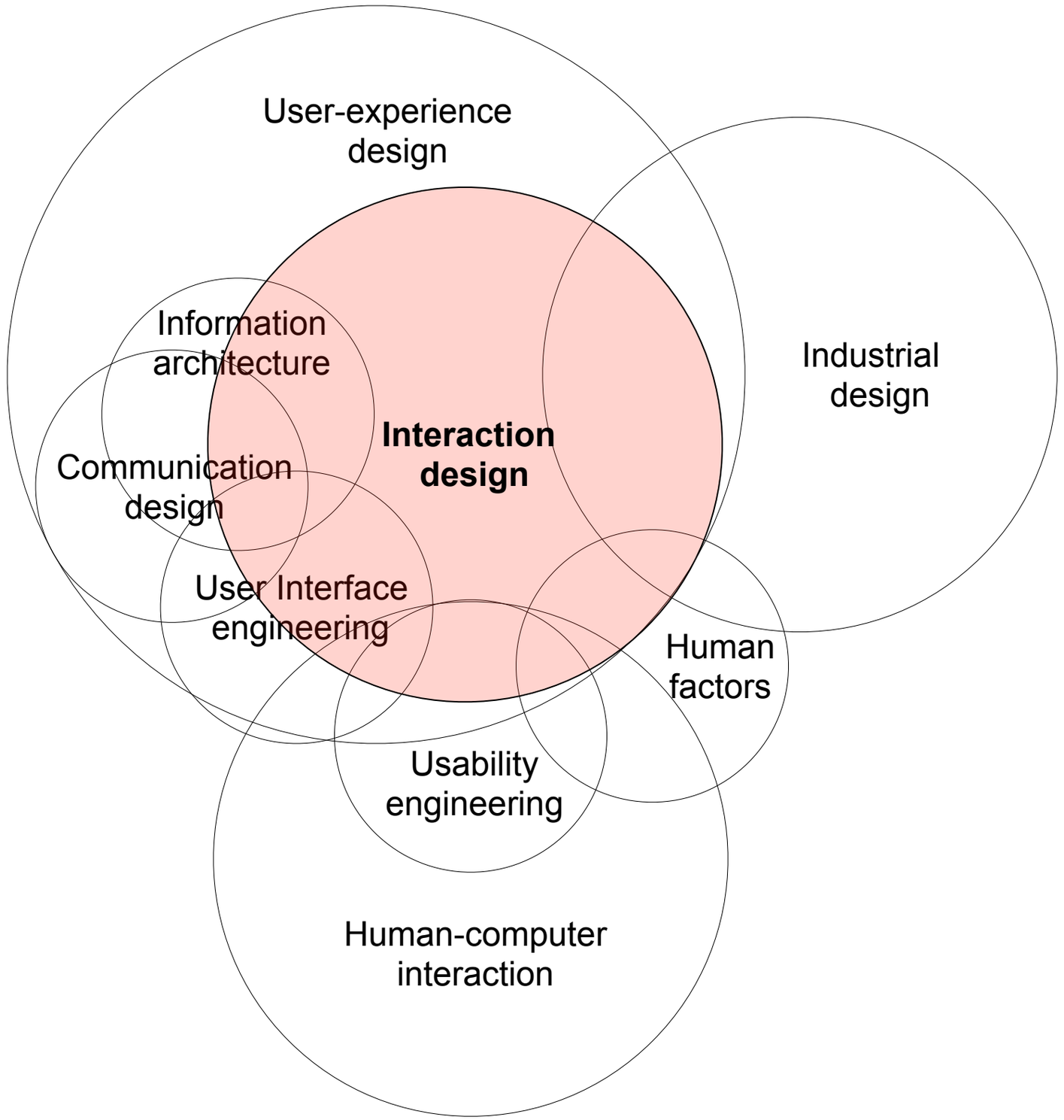
-designing the system using mental models user could refer to (metaphors+scenarios)

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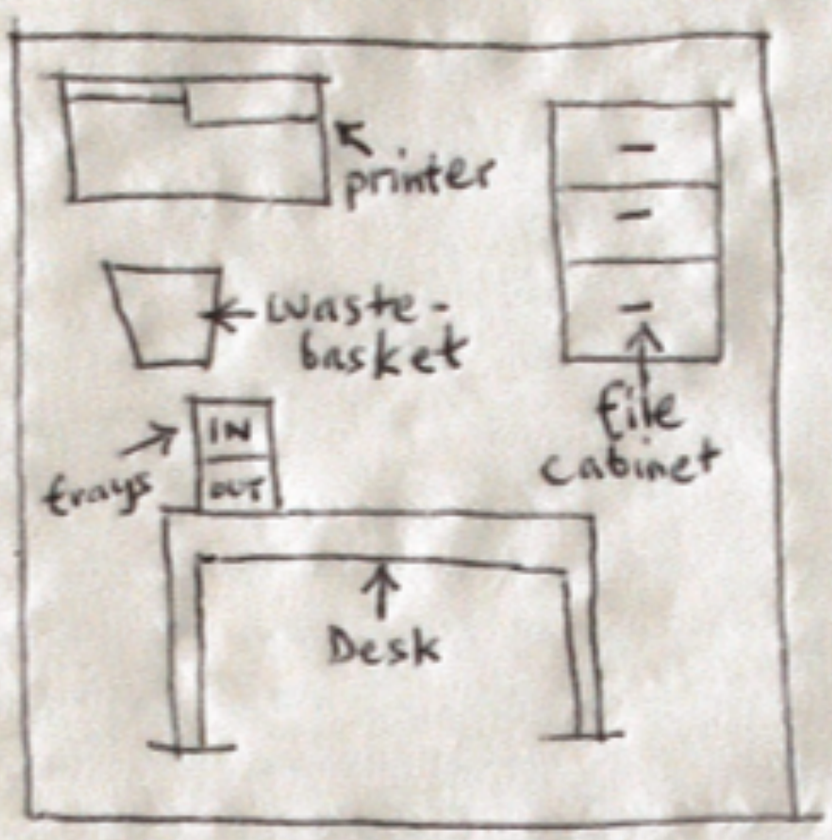


Office Schematic

all are inter-doc

Office Schematic / Desktop Metaphor

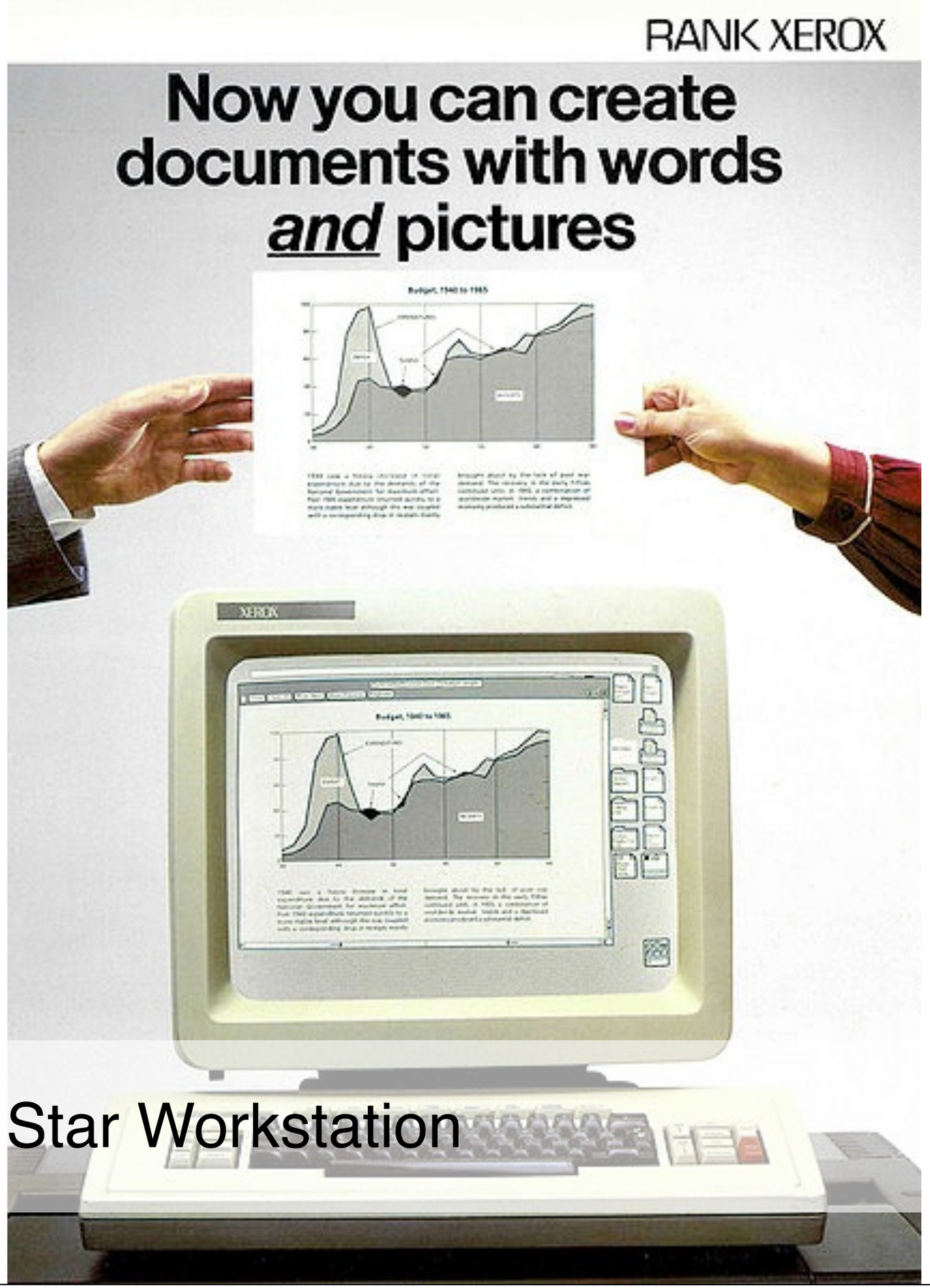
Xerox Alto 1973

http://dl.maximumpc.com/galleries/25oldpcs/xerox_alto_front_full.jpg

"There is no reason anyone would want a computer in their home."

Ken Olson,
president, chairman and founder of DEC, 1977

© Turner Communications



1981 Xerox Star Workstation

1981 Xerox Star Workstation Interface

History

- Course Overview (Timetable) + Organisational Stuff
- What is Interaction Design?
- The Story of the Mouse
- PARC
- The Desktop Metaphor
- The GUI

Larry Tesler

-involved users also in the software design process
-joined PARC in 1973
-moved to Apple in 1980
-was the core designer of Apples “Lisa” computer
-invented the “copy and paste” function

http://www.designinginteractions.com/interviews/LarryTesler

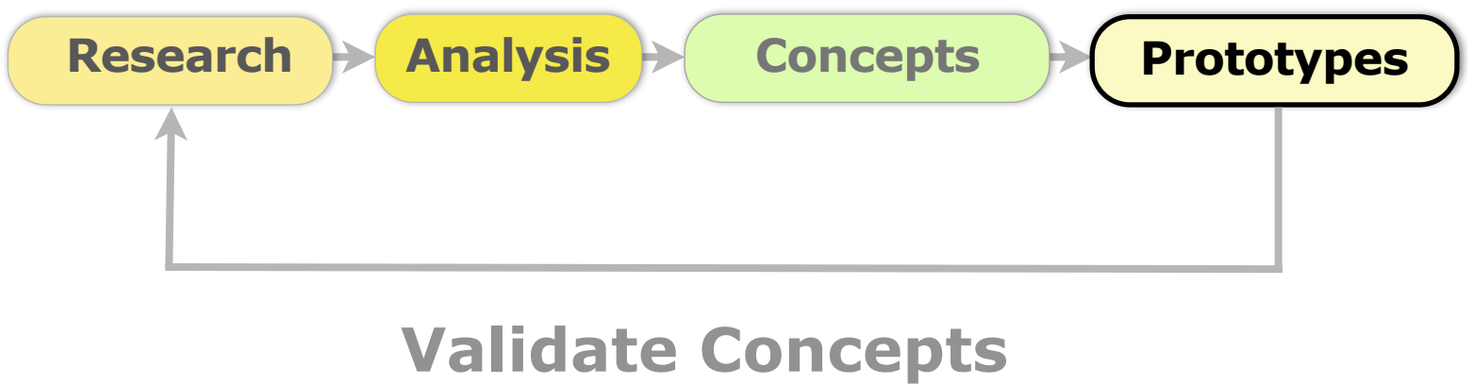
Text Selection

So it became a kind of contest. An unofficial and completely unacknowledged competition to see which of us was the toughest, the coolest, the hardest to get. (He was, but there were times when he didn't know that.) "Who is smarter, you or me?" he asked me again and again: once as he left the apartment in the morning, me wrapped in a towel; once over our whiskies at the King Cole Bar in the St. Regis. And that became the most important question.

EDIT: Copy Insert Delete Search Replace Font Undo

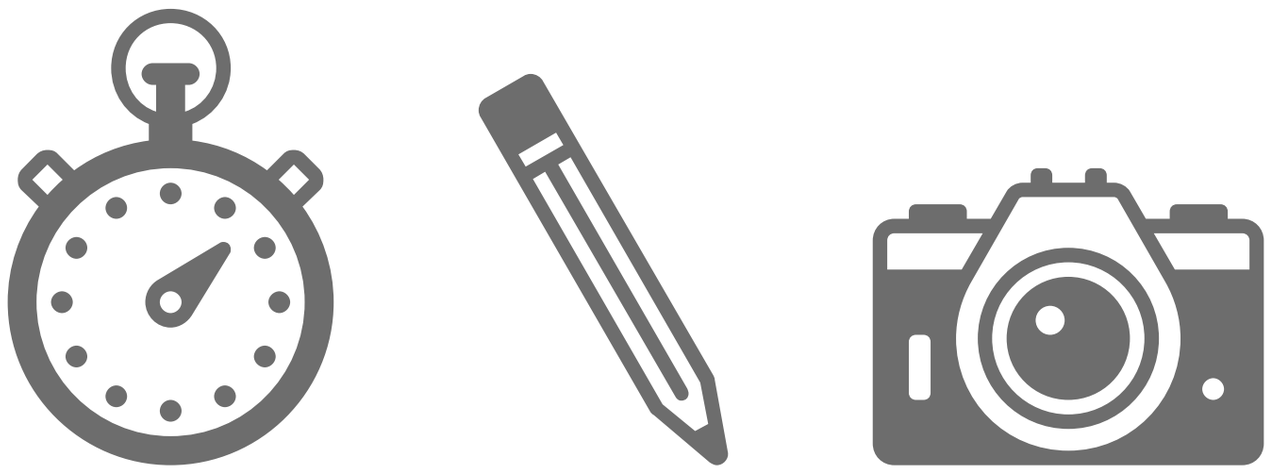
Looking back...

-brainstorming and iterative trying and testing (iterative design process)



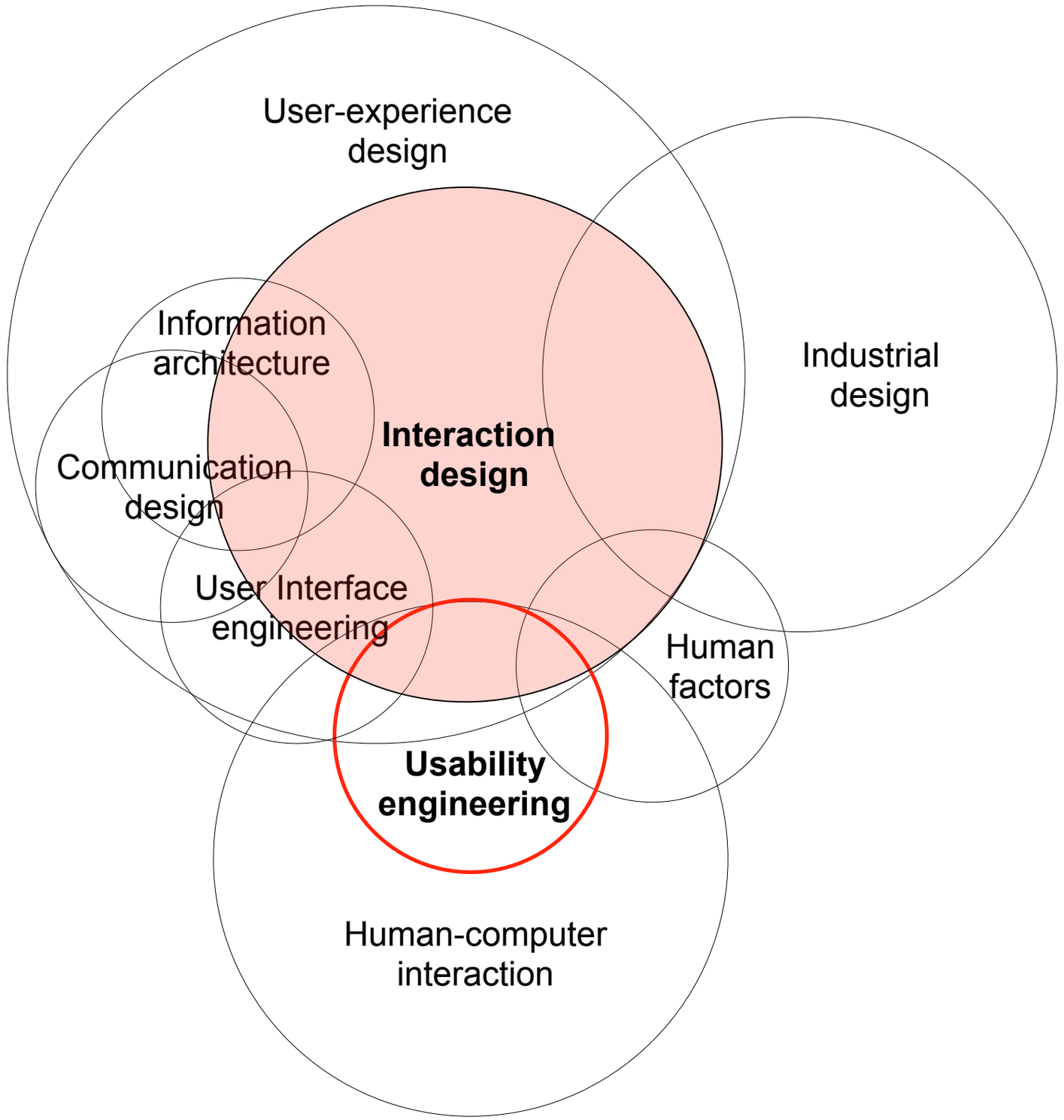
Looking back...

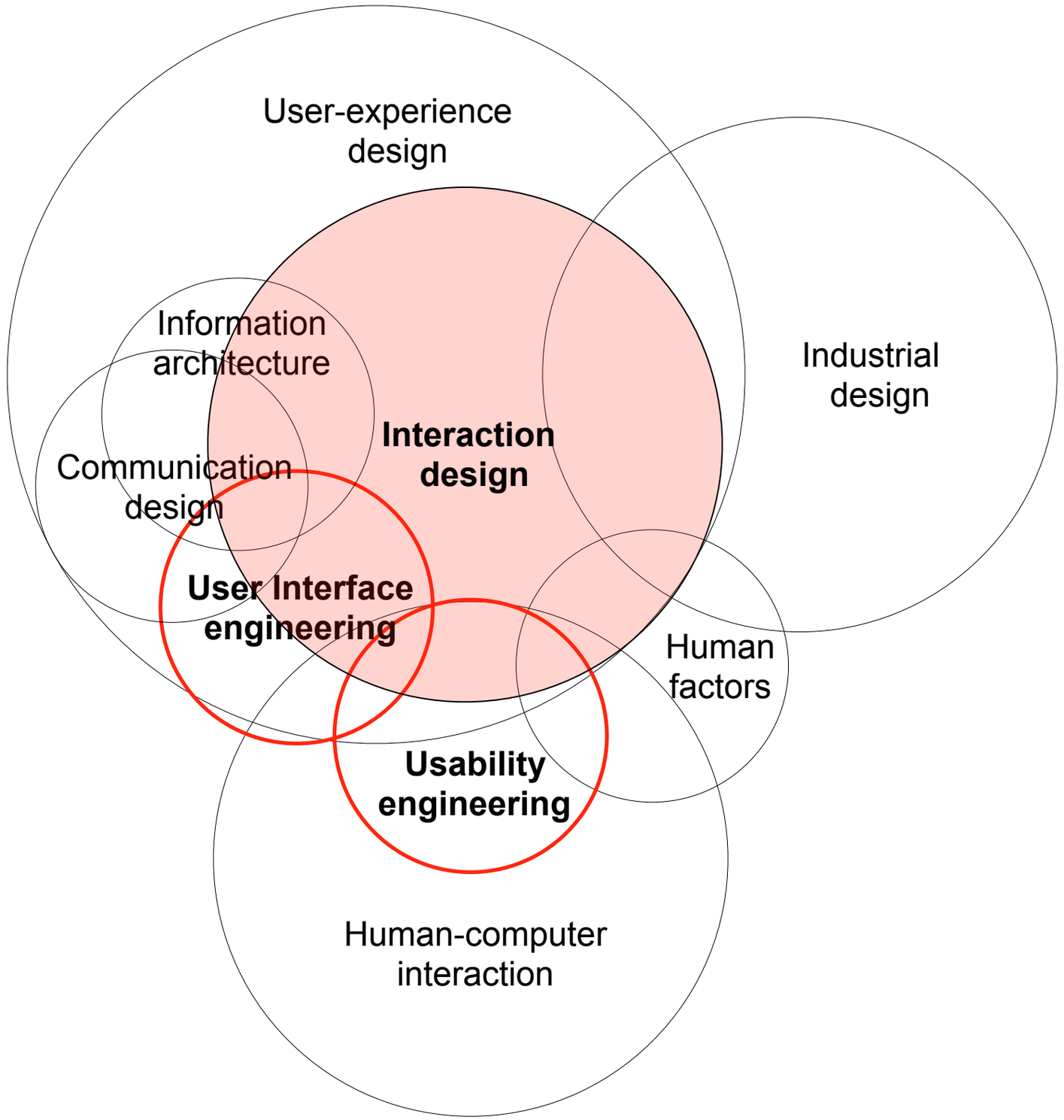
-brainstorming and iterative trying and testing (iterative design process)
-constant, quick and efficient tests with users to improve the system (experience prototyping)



Looking back...

-brainstorming and iterative trying and testing (iterative design process)
-constant, quick and efficient tests with users to improve the system (experience prototyping)
-developing products for the users´core needs (user centred design process)


User-experience design
Information architecture
Industrial design
Interaction design
Communication design
User Interface engineering
Human factors
Usability engineering
Human-computer interaction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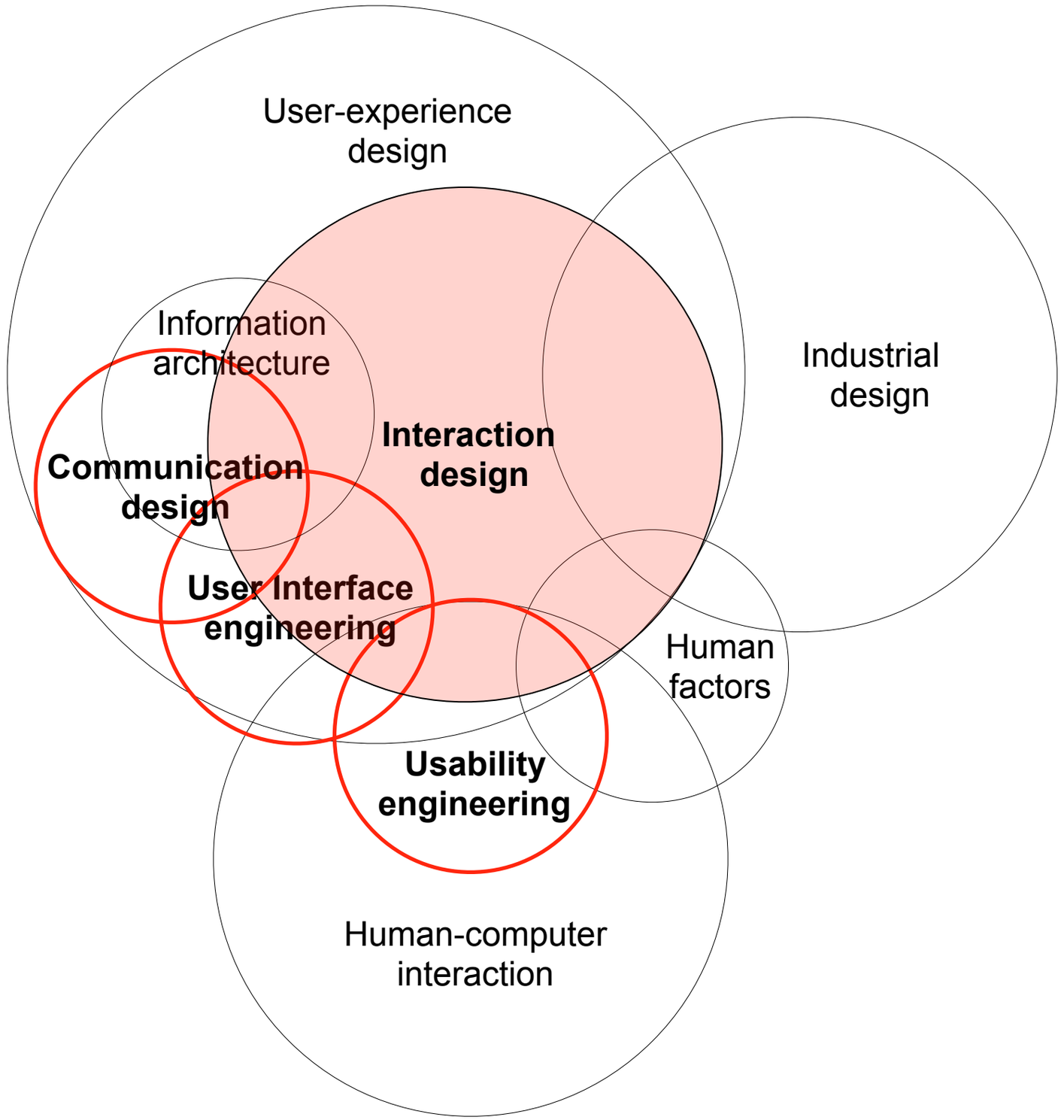
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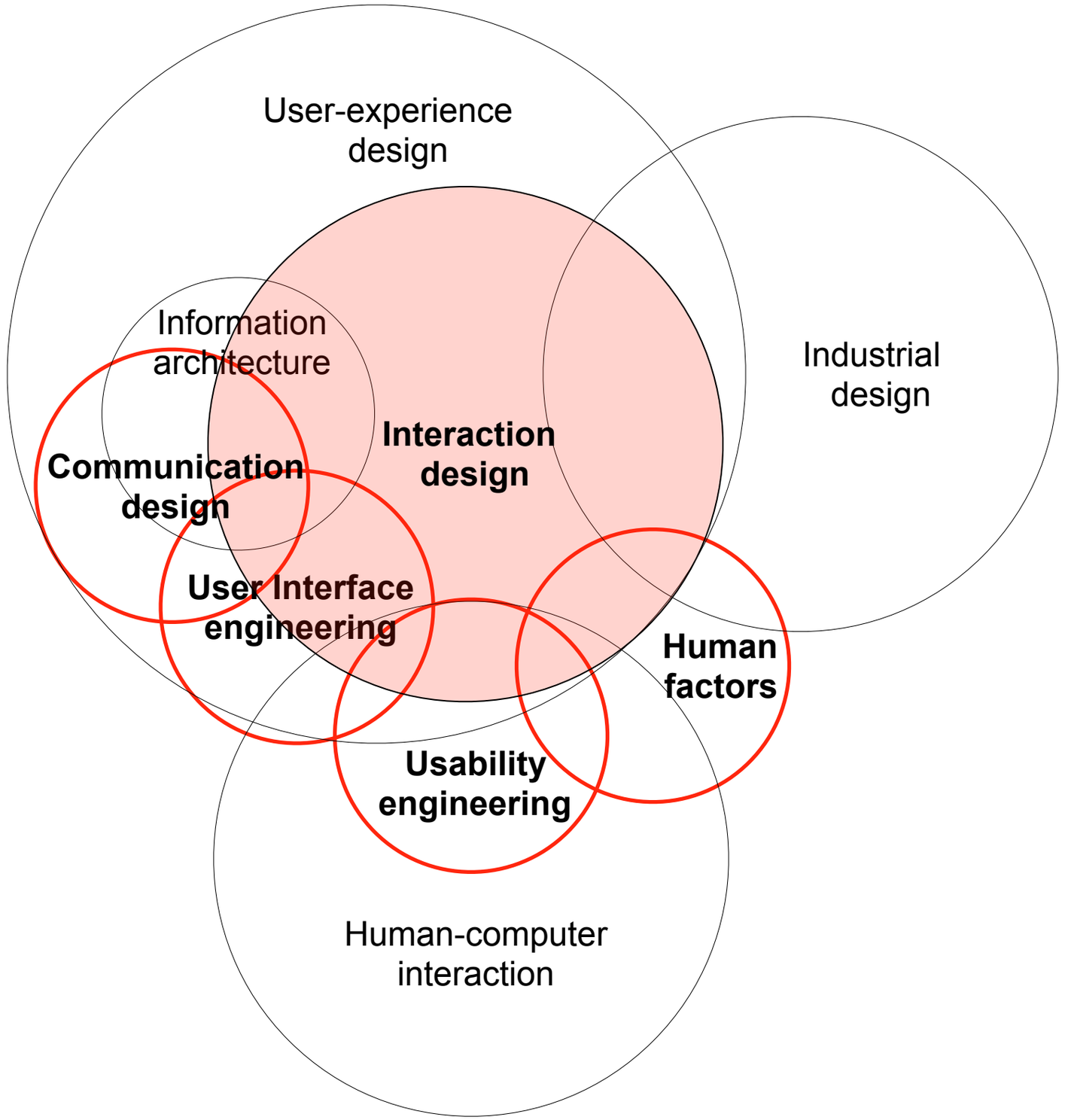

User-experience design
Information architecture
Industrial design
Interaction design
Communication design
User Interface engineering
Human factors
Usability engineering
Human-computer interaction

Bill Atkinson

-was hired by Apple as the “Application Software Department”
-invented the “pull down” menu structure
-was the lead designer of the “Lisa” and the initial “Mac”

http://www.designinginteractions.com/interviews/BillAtkinson

Looking back...

-alternative designs in a variety (sketches & prototypes)

Looking back...

-alternative designs in a variety (sketches & prototypes)
-proposal of a participatory design approach, creating better UIs

Apple Lisa 1983

http://media.arstechnica.com/images/gui/11-Mac1.gif

File Edit View Special

Mac System Software

3 items 227K in disk 173K available

System Folder

Empty Folder

SysVersion

System Folder

5 items 211K in folder 173K available

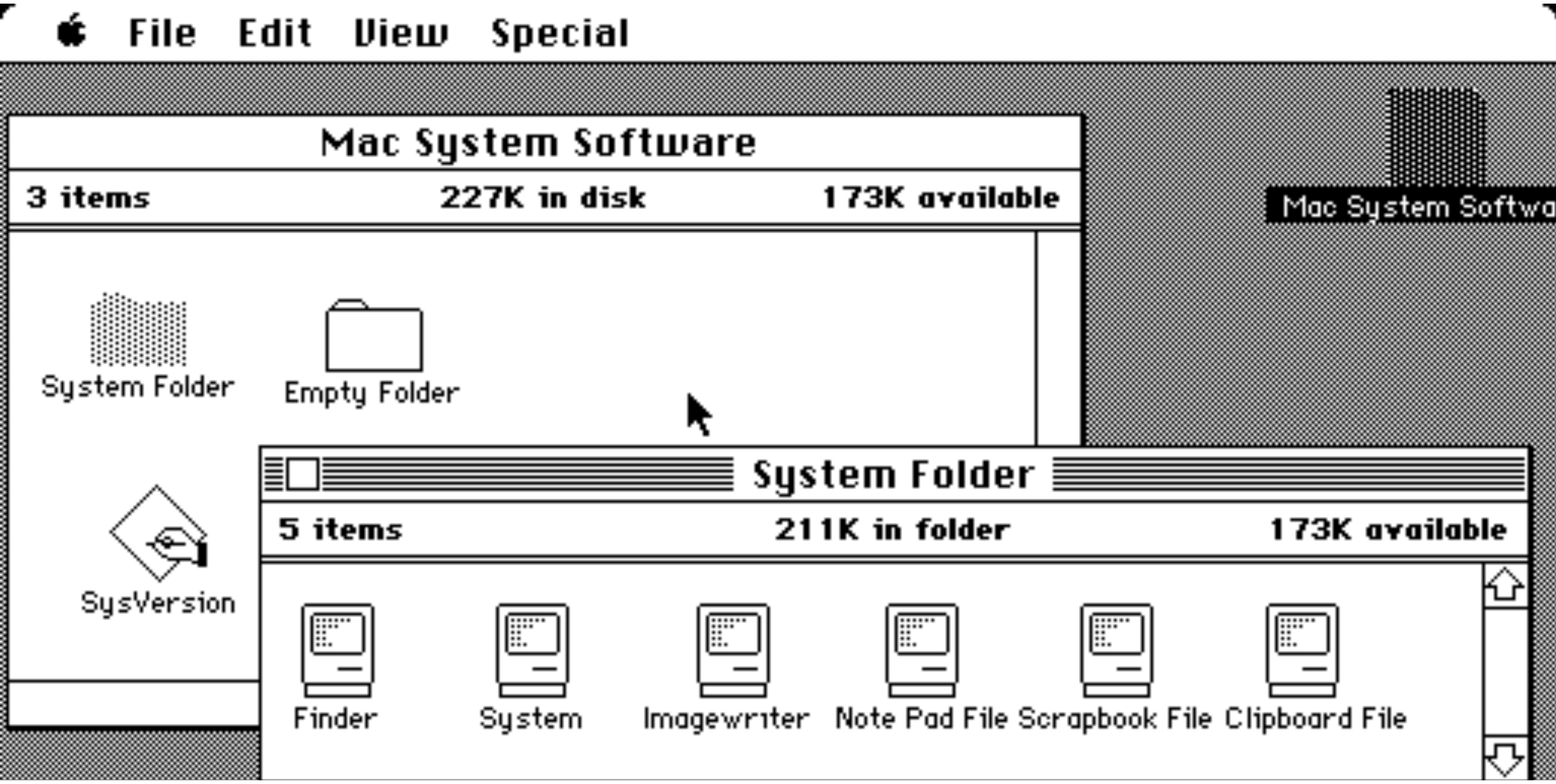
Finder System Imagewriter Note Pad File Scrapbook File Clipboard File

Mac System Softwa

Trash

Macintosh System 1.0. January 1984

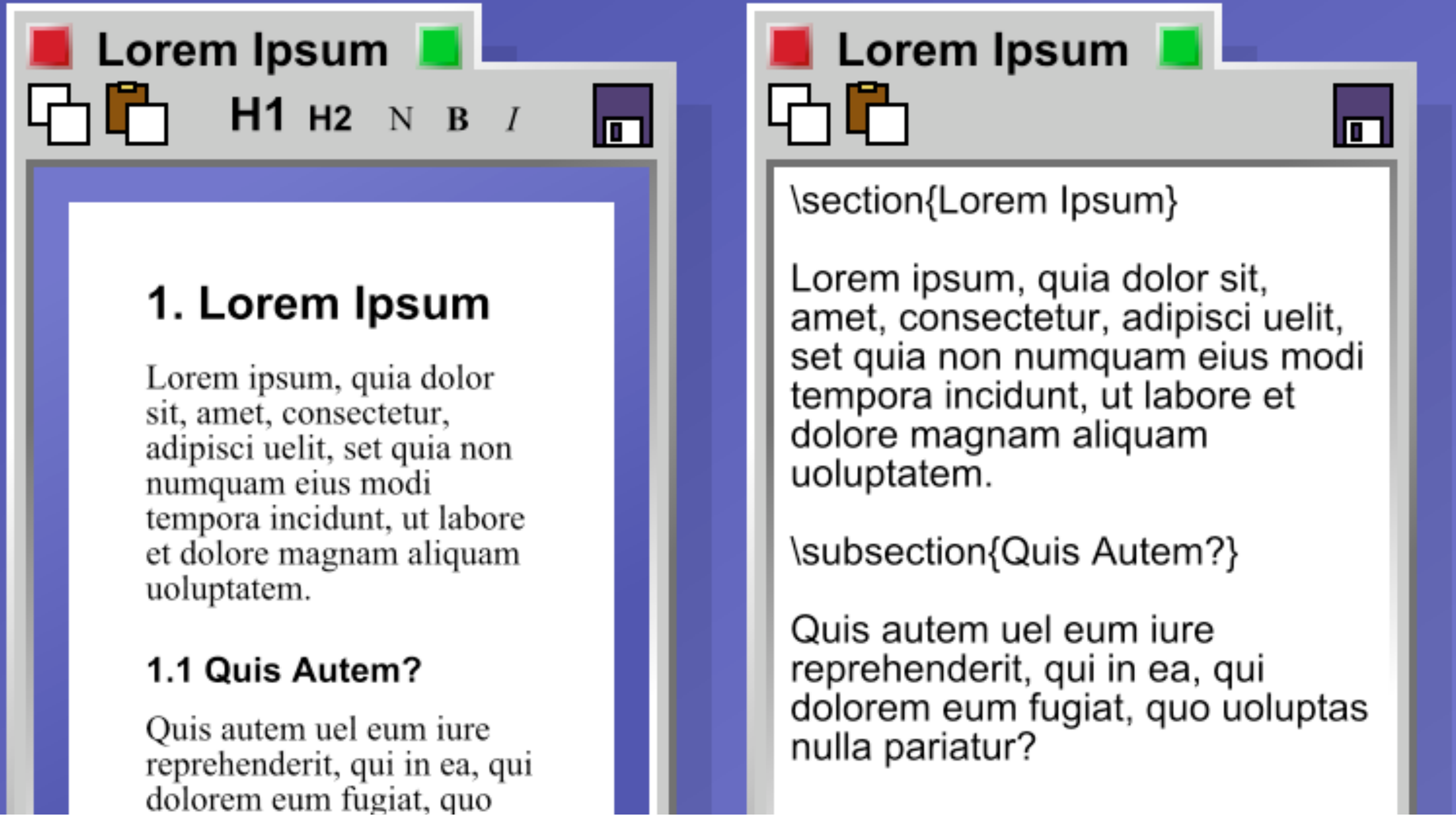
http://media.arstechnica.com/images/gui/11-Mac1.gif



WIMP

-stands for "window, icon, menu, pointing device"
-coined by Merzouga Wilberts in 1980
-is often incorrectly used as an approximate synonym of "GUI".

http://media.arstechnica.com/images/gui/11-Mac1.gif

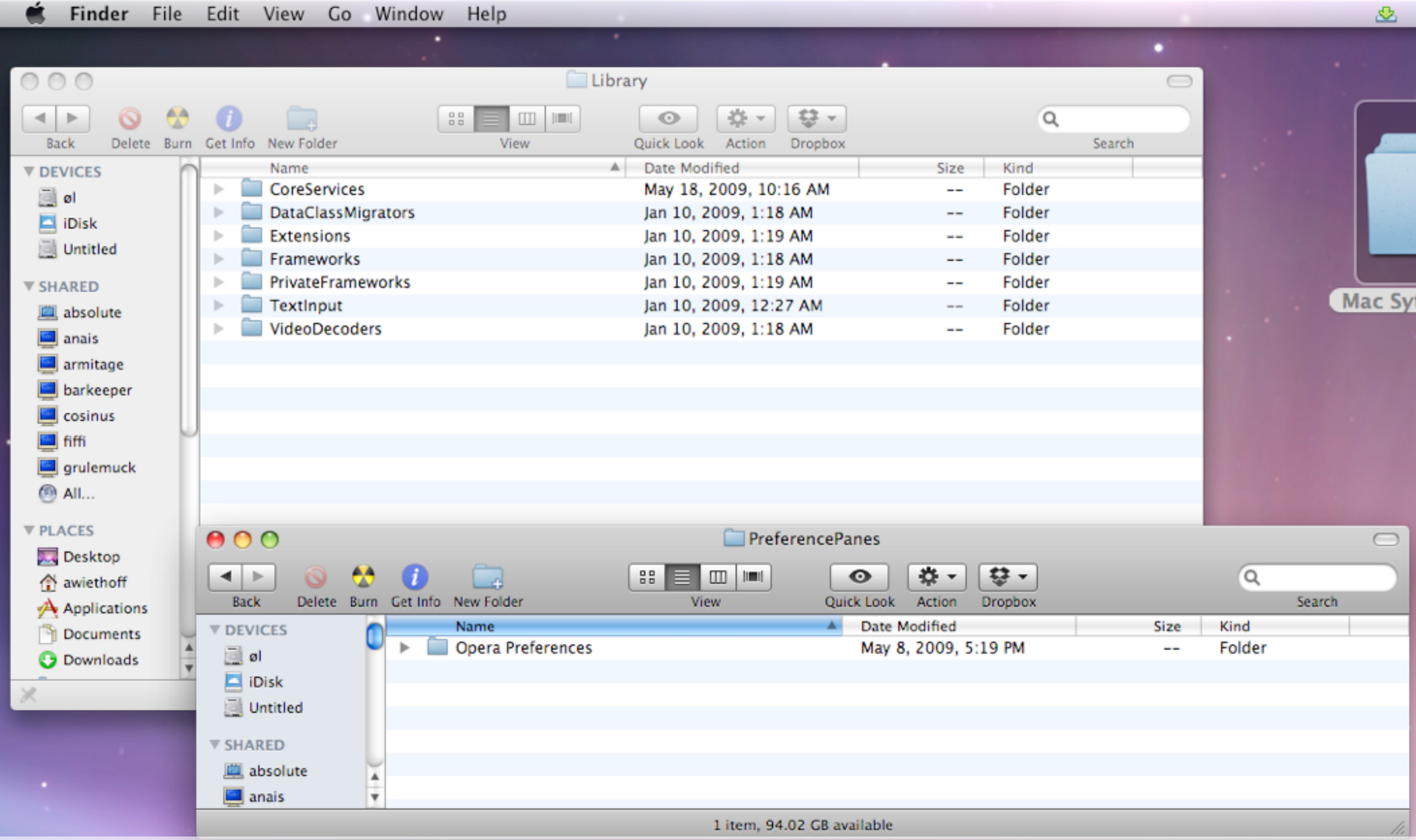


WYSIWYG

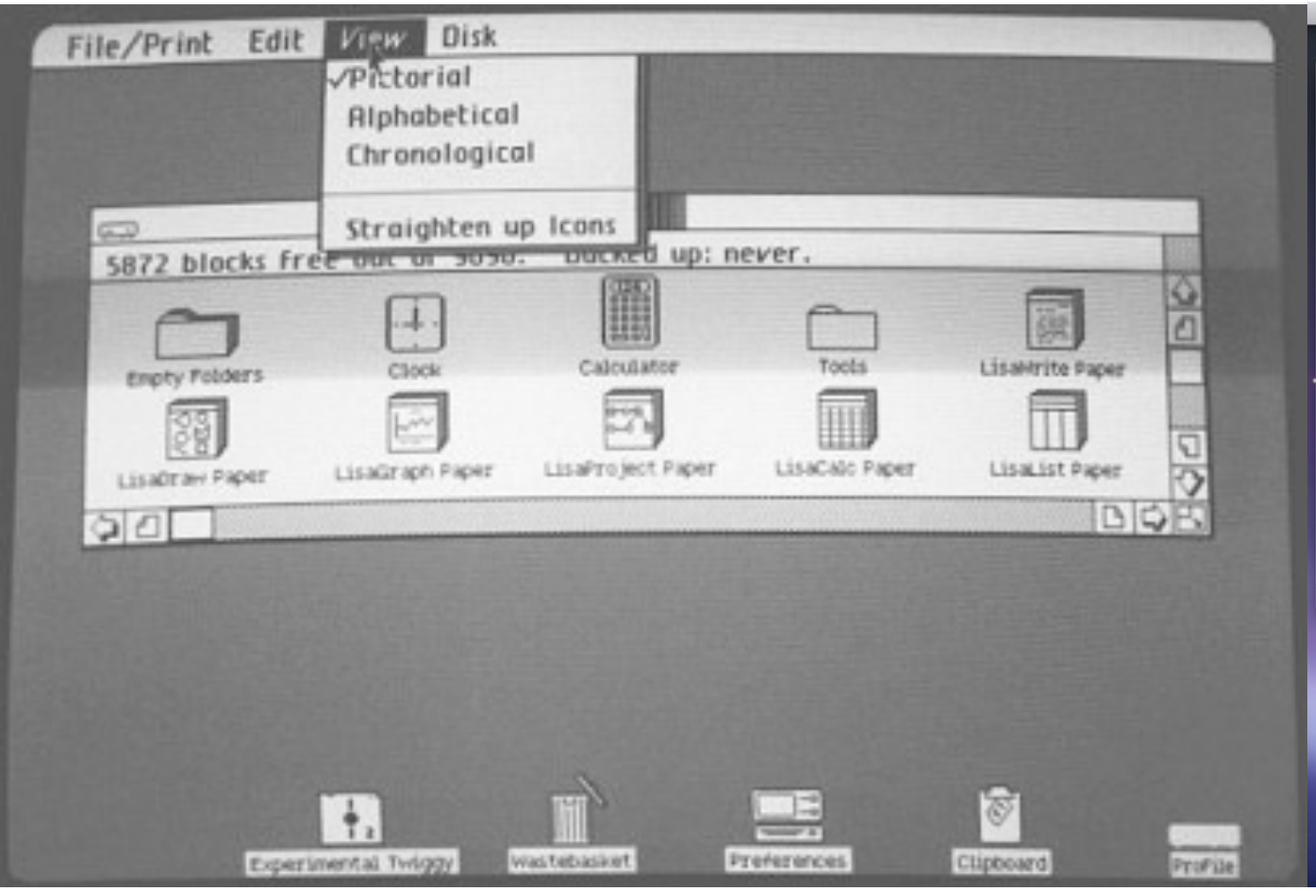
-user interface that allows the user to view something very similar to the end result

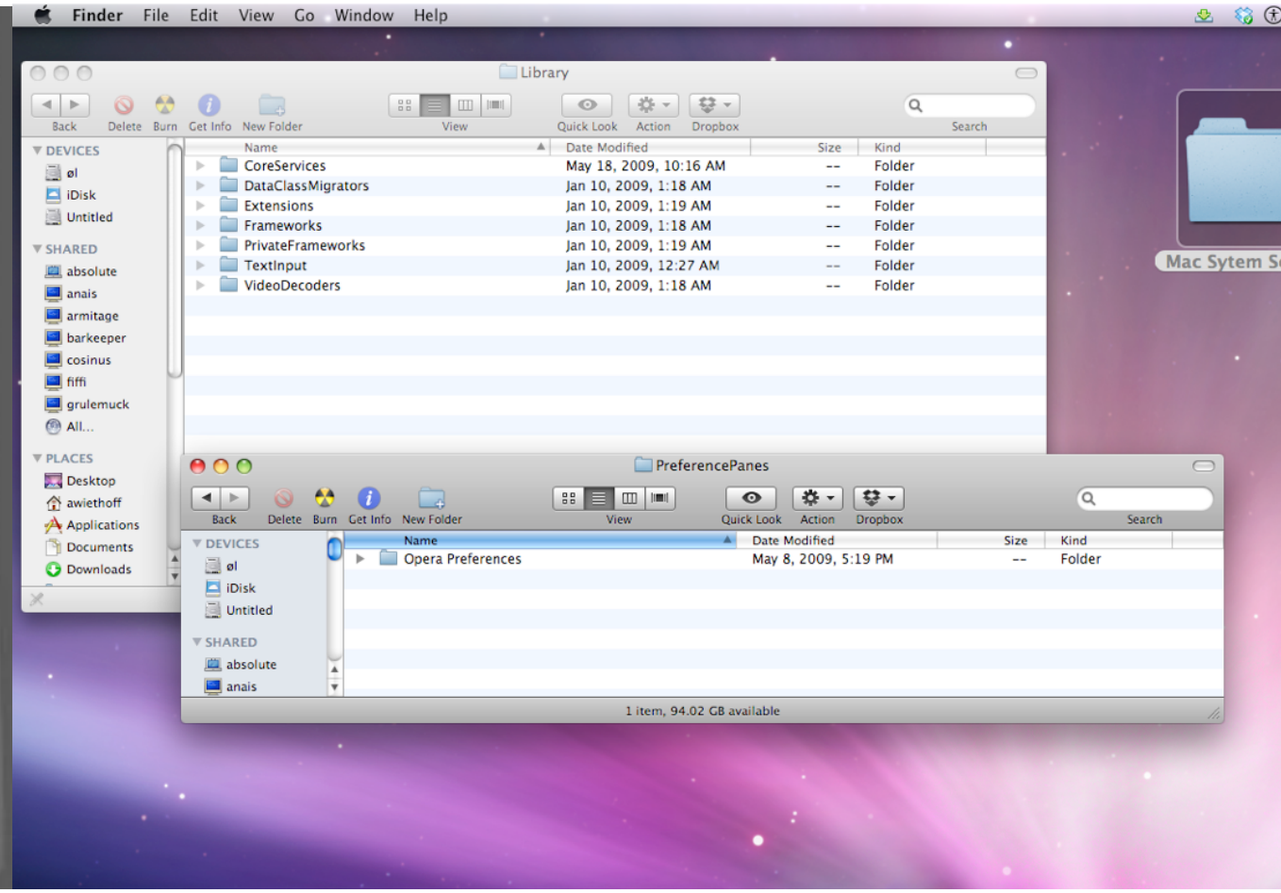
-implies the ability to directly manipulate the layout of a document/presentation/3D model without having to type or remember names of layout commands.

http://en.wikipedia.org/wiki/File:Lorem_Ipsum_-_WYSIWYG_en_Latex_-_tekst_als_paden.svg



October 2007: Mac OS X 10.5





over 25 years in between....

INTERACTION DESIGN

photo credits © bill verplank

“There is an objectivity in the process of letting the user decide, the value of which is a recurring theme in this story of designing the desktop and the mouse. **Come up with an idea, build a prototype, and try it on the intended users.** That has proved, time and time again, to be the best way to create innovative solutions.”

Bill Moggridge - Designing Interactions

References (Books):

[1] Buxton, W. Sketching User Experiences, *Morgan Kaufmann 2007.*
[2] Moggridge, B. Designing Interactions, *MIT Press, 2006.*
[3] Saffer, D. Designing for Interaction, *New Riders 2009.*

References (Papers):

[4] Sanders, E. An Evolving Map of Design Practice and Design Research. *In ACM Interactions 15,6 2008*
[5] Sanders, E. Stepping Stones Across the Gap.Essay in DAIM – Rehearsing the Future, *DKDS Press 2010.*

Articles:

[6] http://www.businessweek.com/innovate/next/archives/2008/12/what_apple_lear.html