

A short history of Human-Computer Interaction

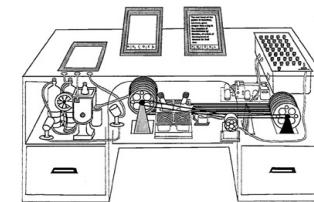
See Michel Beaudouin-Lafon, *40 ans d'Interaction Homme-Machine : points de repères et perspectives*, Journées ASTI 2001
Available at <http://interstices.info>

Memex - Vannevar Bush (1945)

Vision for a desktop information management system

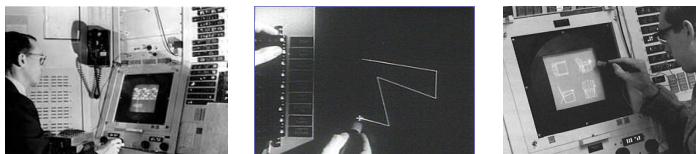
Electromechanical system

Seen as the ancestor of the notion of hypertext



Sketchpad - Ivan Sutherland (1963)

Direct manipulation geometric shapes
Geometric constraints, zoom, click-drag



NLS / Augment - Douglas Engelbart (1968)

Inventor of the mouse (1963)



Bimanual interaction



Hypertext, cooperative work,
document sharing, video-conferencing



Visicalc - Dan Bricklin (1979)

First spreadsheet (Apple II)

A screenshot of the Visicalc spreadsheet application on an Apple II computer. The title bar reads "120 <02 +H20+12". The main window displays a "HOME BUDGET, 1979" spreadsheet with data for various income and expense categories. The data is organized into columns for month (NOV, DEC) and total. The "INCOME" section shows a total of \$30,000.00. The "EXPENSES" section shows a total of \$28,775.00. The "REMAINDER" section shows a total of \$1,225.00. The "SAVINGS" section shows a total of \$30.00.

| | NOV | DEC | TOTAL |
|-----------|---------|---------|----------|
| SALARY | 2500.00 | 2500.00 | 30000.00 |
| OTHER | | | |
| | | | |
| INCOME | 2500.00 | 2500.00 | 30000.00 |
| FOOD | 400.00 | 400.00 | 4800.00 |
| RENT | 350.00 | 350.00 | 4200.00 |
| HEAT | 110.00 | 120.00 | 575.00 |
| REC | 100.00 | 100.00 | 1200.00 |
| TAXES | 1000.00 | 1000.00 | 12000.00 |
| ENTERTAIN | 100.00 | 100.00 | 1200.00 |
| MISC | 100.00 | 100.00 | 1200.00 |
| CAR | 300.00 | 300.00 | 3600.00 |
| | | | |
| EXPENSES | 2460.00 | 2470.00 | 28775.00 |
| REMAINDER | 40.00 | 30.00 | 1225.00 |
| SAVINGS | 30.00 | 30.00 | 30.00 |

Xerox Star - Xerox PARC (1981)

First commercial graphical workstation
Document-centric approach



A screenshot of the Xerox Star graphical user interface. The screen is filled with various windows and icons. One window shows a cartoon illustration of a person thinking. Another window displays a file list with entries like "COMMAND.COM", "ANALYSIS.SY", "BACKUP.COM", "CHMOD.COM", "COMP.EXE", and "DEBUT.COM". A third window shows a bar chart titled "Activity under the old and new Xerox". The interface is highly graphical and integrated, reflecting the "document-centric" approach of the time.

Macintosh - Apple (1984)

Graphical personal computer
Finder
MacPaint
MacWrite



Hardware + software design



World-Wide Web - Tim Berners-Lee (1990)

Networked hypertext Integrated browser + editor

The screenshot shows a window titled "Tim's Home Page" with the URL "My home page". The menu bar includes "WorldWideWeb", "Links", "Info", "Navigate", "Document", "Find", "Edit", "Links", "Style", "Print...", "Page layout...", "Windows", "Services", "Hide...", "Quit". A sub-menu under "Links" shows "Mark all", "Mark selection", "Link to marked", "Link to New", "Link to file", "Help", "Unlink", and "The World-Wide Web Virtual Library: Subject Catalogue". The main content area displays "The WWW Virtual Library CERN Experiments" with sections for "Experiments" and "See also". It lists experiments like ALEPH, LEP experiment; ALICE, A Large Ion Collider Experiment; ATLAS, A Toroidal LHC Apparatus; CHORUS, WAsS - Neutrino oscillations; and CMS, Compact Muon Solenoid.

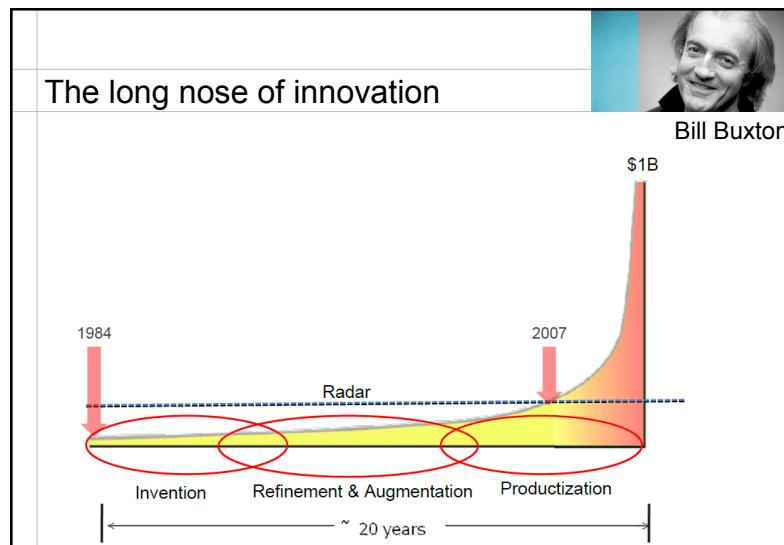
Are the visions getting more and more limited?

| | |
|-----------------------|---------------------------------------|
| <i>NLS/Augment</i> | « Augmenting human intellect » |
| ↓ | Cooperative work |
| <i>Xerox Star</i> | Personal use, network transparency |
| ↓ | Document-centric |
| <i>Macintosh</i> | Personal use, explicit network access |
| ↓ | Application-centric |
| <i>World-Wide Web</i> | Networked, but poor user interaction |
| | Browsing but not editing |

Distinction between invention and innovation

HCI does not follow Moore's law

| | |
|-----------------------|--|
| | |
| Original Macintosh | iMac 27" |
| January 1984 - \$2500 | x0.7 September 2012 - \$1700 |
| CPU 68000 - 0.7 MIPS | x214 000 CPU core i7 - 150 000 MIPS |
| RAM 128 kB | x31 250 RAM 4 GB |
| Floppy 400 kB | x2 500 000 Hard drive 1 TB |
| 9" n&b, 512x342 | x3 / x21 27" colors, 2560x1440 |
| Keyboard, mouse | same Keyboard, mouse |
| WIMP desktop | same WIMP desktop |



| |
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| <p>Visions are important</p> <p>Augmenting Human Intellect – Doug Engelbart</p> <p>Ubiquitous Computing – Mark Weiser</p>  <p>BUT a vision is more than just a video</p> <p>Knowledge Navigator – Apple</p> <p>Future Vision – Microsoft</p> |
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