

CS449/649: Human-Computer Interaction

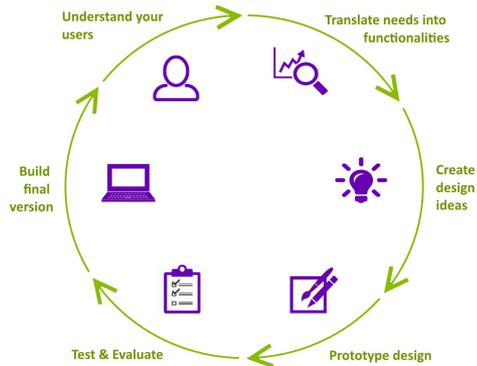
Spring 2017

Lecture XVI

Anastasia Kuzminykh

User Centered Design Process

May 1 - June 14



History of user centered design in HCI

June 19, June 21



Academic HCI

June 26, June 28



Special topics in HCI

July 5, July 10



Course Review

July 12, July 17



Presentation 2

July 19



Last class

July 24



History

Waterfall Model

GUI and WIMP

Agile Development

User Centered Design in Computer Systems

HFE and Ergonomics

Socio-Technical Systems Design

Cognitive Psychology

Cooperative Design

Interaction Design



History

Waterfall Model

The first mentioning:

Herbert D. Benington,
Symposium on advanced programming
methods for digital computers, 1956

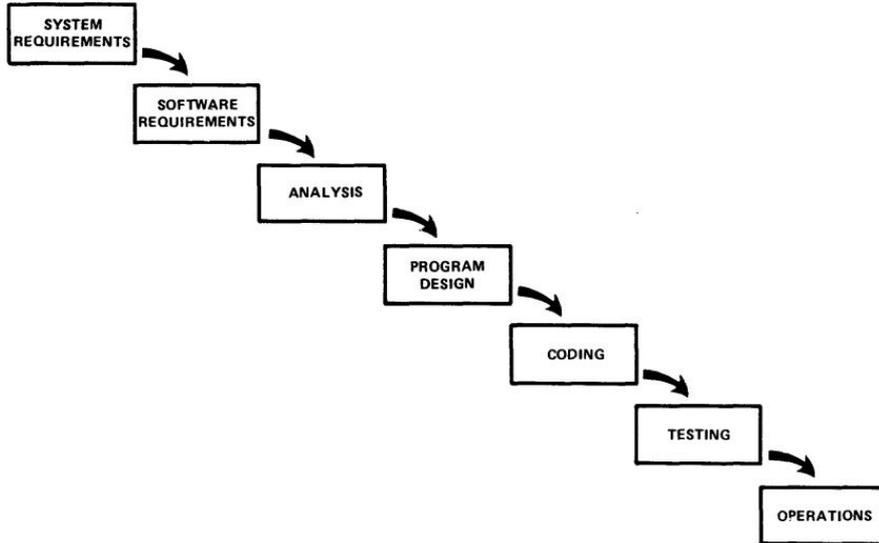
The first formal description:

Winston W. Royce,
"Managing the Development of Large
Software Systems", 1970



History

Waterfall Model

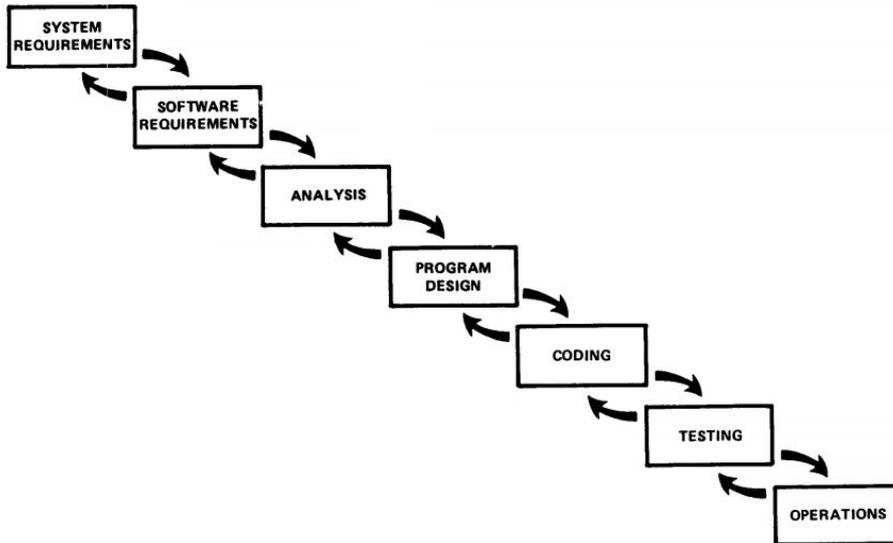


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History

Waterfall Model



The first formal description:
Winston W. Royce,
"[Managing the Development of Large Software Systems](#)", 1970

- Additional requirements:
1. Program design comes first
 2. Document the Design
 3. Do it twice
 4. Plan, Control and Monitor Testing
 5. Involve the Customer



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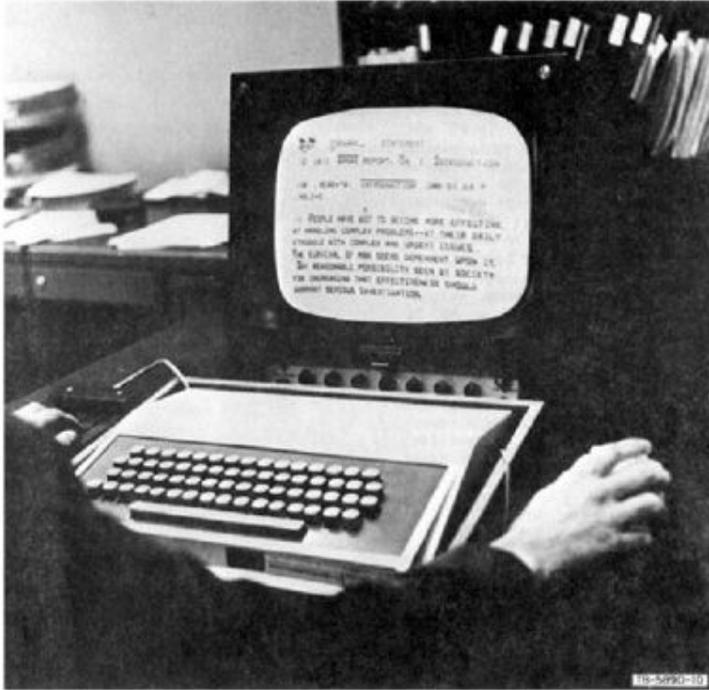
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History



NLS demo (1968) Image source: [UXPlus](#)

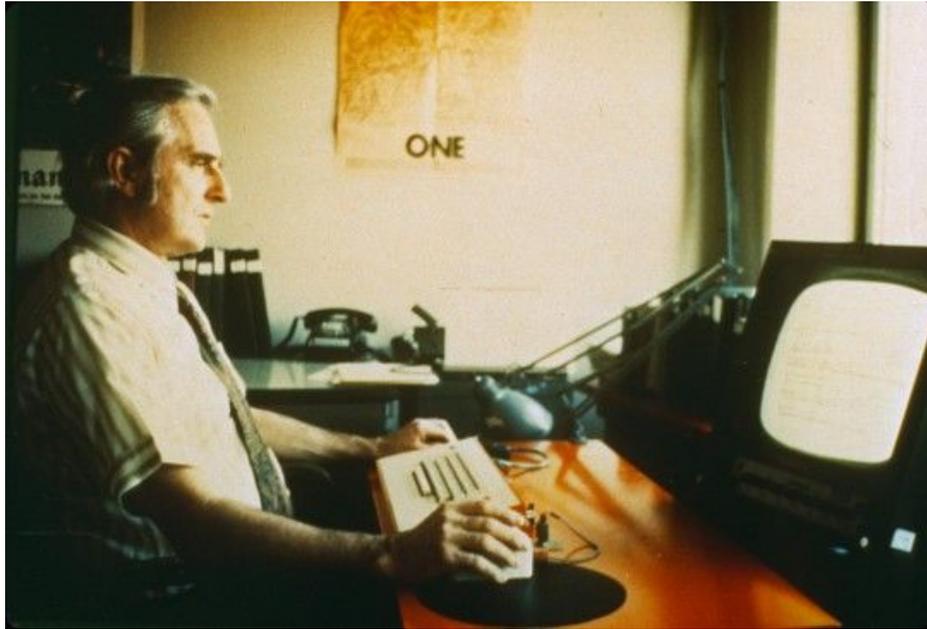
NLS - on-Line System - developed by Douglas Engelbart and his colleagues at the Augmentation Research Center, SRI

**First demonstrated December 19, 1968 at the Fall Joint Computer Conference, San Francisco.
Was called “The mother of all demos”**

“We were not just building a tool, we were designing an entire system for working with knowledge.” [Douglas Engelbart](#)



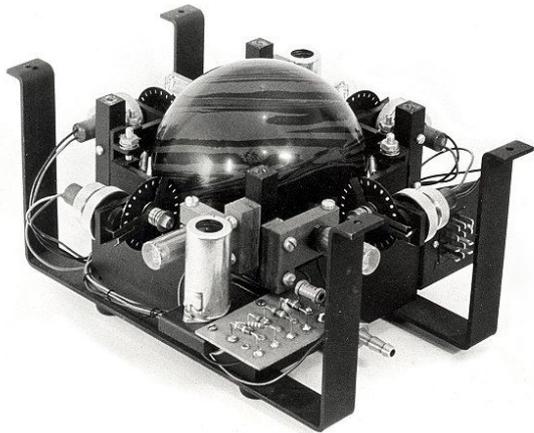
History



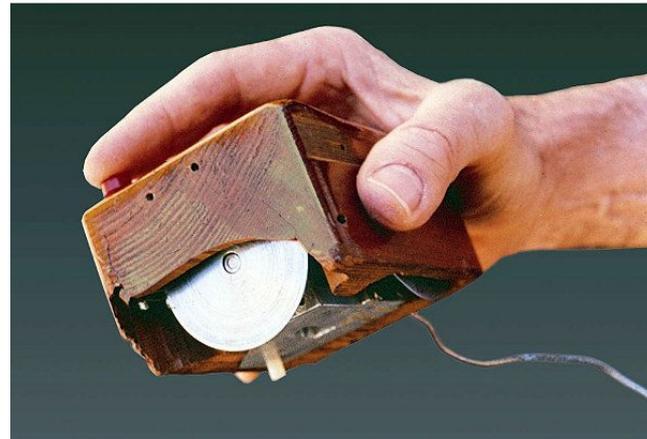
Doug Engelbart at an NLS workstation



Bill English with several ergonomic setups for the oNLine System (NLS); late 1960s



DATAR Trackball, 1952



Doug Engelbart's mouse prototype, 1968



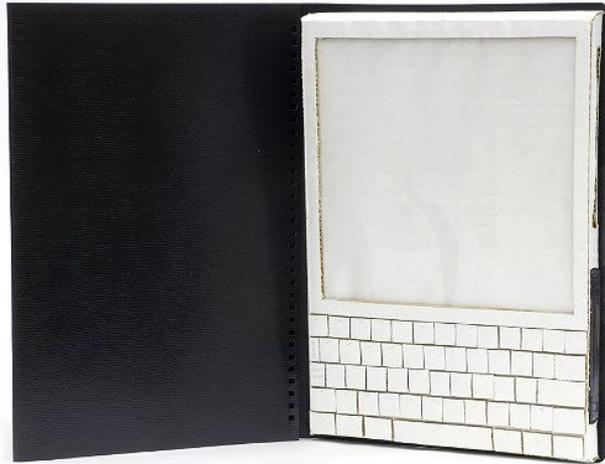
Hypertext Editing System (HES) console, 1969



PARC 5-key Chord Keyboard



History



Model of the Dynabook

Dynabook by Alan Kay, "A personal computer for children of all ages", 1972

Concept of a portable educational device. Target audience was children.

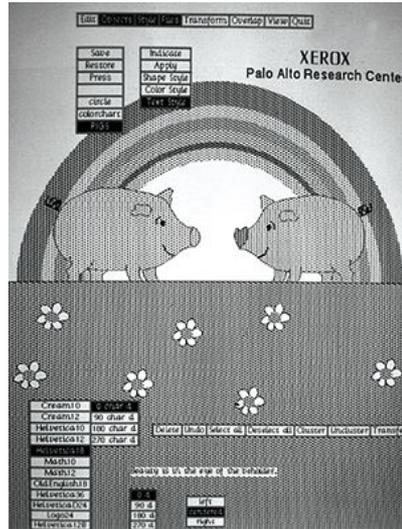
"If the computer is to be truly 'personal', adult and child users must be able to get it to perform useful activities without resorting to the services of an expert. Simple tasks must be simple, and complex ones must be possible." Alan Kay



History



PARC's Alto computer, 1973



Xerox Alto GUI

Developed at Xerox PARC,
inspired by NLS and Dynabook

First computer to support operating
system using GUI, used bitmap display,
first to use an early version of the
desktop metaphor

“If our theories about the utility of cheap,
powerful personal computers are correct,
we should be able to demonstrate them
convincingly on Alto,” Butler Lampson

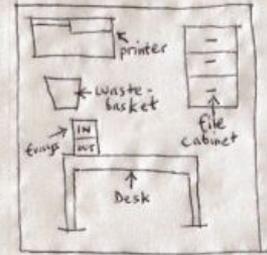


History

Bravo - the first WYSIWYG document preparation program, 1974

Gypsy - the first document preparation program to use mouse as a point-and-click interface tool, 1975

Tim Mott and Larry Tesler



Office Schematic

⊙ ⊠ ⋯⋯⋯
PRINT, FILE, DELETE, MAIL
↓
all are inter-doc actions
—||—
INTRA-doc we cut & paste
physical metaphor
What's analog for
INTER-doc?
↓
Grab & Move !!!

Tim Mott's sketch of a desktop on a bar napkin,
From: Bill Moggridge and Bill Atkinson. Designing interactions.



History



Apple Lisa (1983)



Apple Macintosh (1984)



History



Texas Instruments Silent 700, 1973



Osborne 1 computer, 1981



History



GRiD Compass 1101, 1982

Designed by Bill Moggridge and John Ellenby

First laptop computer, clamshell design,
easy-to-read screen, allowing full 80x24 text,
used graphical GRID-OS, no mouse



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**Agile
Development**

**The Manifesto for Agile
Software Development, 2001**

**Focus on Individuals
and Interactions**

**Continues process of
Customer Collaboration**

Presenting Working Software

**Responsiveness to Changes
and Continuous Development**



History

Agile Development Principles

- Customer satisfaction by early and continuous delivery of valuable software
- Welcome changing requirements, even in late development
- Working software is delivered frequently (weeks rather than months)
- Close, daily cooperation between business people and developers
- Projects are built around motivated individuals, who should be trusted
- Face-to-face conversation is the best form of communication (co-location)
- Working software is the principal measure of progress
- Sustainable development, able to maintain a constant pace
- Continuous attention to technical excellence and good design
- Simplicity—the art of maximizing the amount of work not done—is essential
- Best architectures, requirements, and designs emerge from self-organizing teams
- Regularly, the team reflects on how to become more effective, and adjusts accordingly



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Week 8 take-away

- Stages of the development of a technology
- Concept of digital natives and immigrants
- Ergonomics: history and influence
- Socio-Technical Systems Design: history and principles
- Cognitive psychology influence
- Cooperative (participatory) design approach
- Interaction Design
- Waterfall model
- NLS and “The Mother of all demos”
- Dynabook
- Xerox Alto, Lisa, Mac
- Personal portable computers
- Agile development values and principles

Names:

- Douglas Engelbart
- Bill Moggridge
- Winston Royce
- Alan Kay
- Butler Lampson
- Tim Mott
- Larry Tesler