

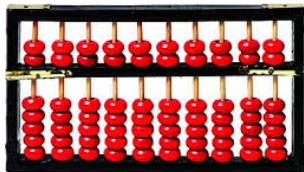
Dele af datalogiens historie

DM534

Rolf Fagerberg

Teknologi

2000 BC



Kugleramme (abacus)

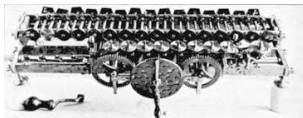
1642 AD



Pascals mekaniske
additionsmaskine

Teknologi

1673



Leibniz' mekaniske
maskine til plus, minus,
gange, dividere

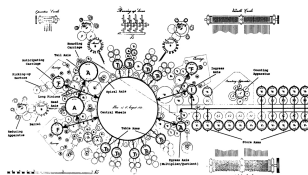
1801



Jacquards programmerbare
væv med hulkort

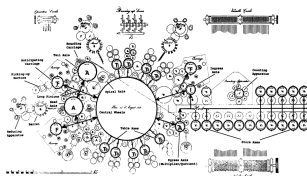
Teknologi

1837 (udtænkt)



Babbage's "analytical machine"
General-purpose, programmerbar,
digital, med hukommelse, input
og output

1837 (udtænkt)



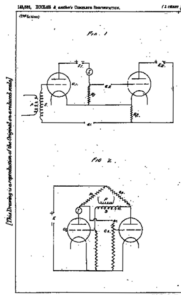
Babbage's "analytical machine"
General-purpose, programmerbar,
digital, med hukommelse, input
og output

1907



De forest's radiorør –
strøm kan styre strøm.
Heraf kan bygges logiske
gates (AND, OR,..).

1918



Første elektroniske flip-flop
(1-bit hukommelse),
Eccles-Jordan

Alle teknologier og ideer nødvendige for at lave en general-purpose, programmerbar, digital, elektronisk computer nu til stede.

Teknologi

Men beregningsmaskiner var stadig mekaniske, specialiserede (og i nogle tilfælde analoge) i 1930'erne (og stadig i brug langt efter).

1931



MIT Differential Analyzer
(Vannavar Bush)

Teknologi

De første general-purpose, programmerbare, digital computere: 1941 (delvis elektromekaniske) til 1948 (fuldt elektronisk, program i hukommelse).

Eksempler:

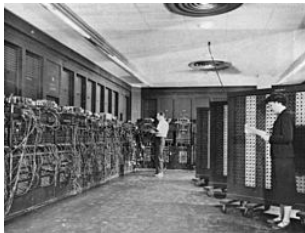
1941



Konrad Zuse's Z3

Teknologi

1946



ENIAC, Univ. of
Pennsylvania

1948



Manchester Univ. "Baby"

Teknologi

1947



Transistor (Bardeen, Brattain,
Shockley)

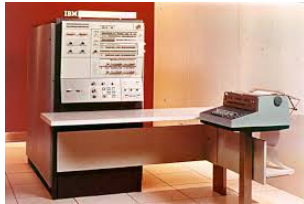
1958



Integrated circuits (Kilby)

Teknologi

1960-nu



Mainframes (her IBM 360)

Teknologi

1960-nu



Mainframes (her IBM 360)

1974-nu: Personlige computere.

Her: Altair, Apple I, Apple II, Commodore PET, ZX80, IBM PC (1981).



Teknologi

1964



Engelbart's mus

1975

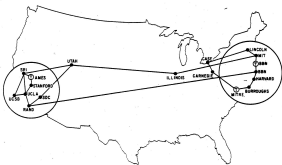


Xerox PARC Alto

1980-nu: laptops, tablets, smartphones, spillekonsoller.

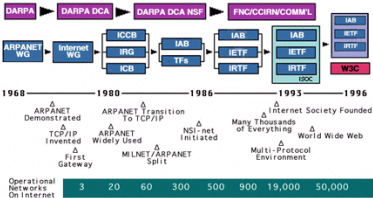
Teknologi

1969



ARPANET

Senere



Internettet

Teori

- ▶ 300 BC: Euclids algoritme (analyse 1844 AD, Gabriel Lamé)
- ▶ 1837: Plan for programmerbar computer (Charles Babbage)
- ▶ 1854: Boolean algebra (George Boole)
- ▶ 1901: Radixsort algoritme
- ▶ 1926: Minimum Spanning Tree algoritme (Otakar Boruvka)
- ▶ 1936: Turingmaskiner (Alan Turing)
- ▶ 1936: Uberegnelige problemer (Alonzo Church, Alan Turing)
- ▶ 1945: Mergesort algoritme (John von Neumann)
- ▶ 1955±: Højniveau sprog og compilere (John W. Backus, Grace Hopper, ...).
- ▶ 1959: Korteste veje algoritme (Edsger Dijkstra)
- ▶ 1961: Quicksort algoritme (Tony Hoare)

Teori

- ▶ 1961: Packet switching networking (Paul Baran)
- ▶ 1965: Komplexitetsteori (Juris Harmanis, Richard E. Stearns, Jack Edmonds)
- ▶ 1968: Første lærebøger i datalogi (Donald Knuth)
- ▶ 1971: NP-fuldstændighed, $P=NP?$ (Stephen Cook, Richard Karp)
- ▶ 1976: Public-key krypteringsprincip (Whitfield Diffie, Martin Hellman)
- ▶ 1977: RSA krypteringsalgoritme (Ron Rivest, Adi Shamir and Leonard Adleman)
- ▶ 1989: WWW (HTTP/HTML) (Tim Bernes-Lee [1945, Vannavar Bush])
- ▶ 1996: PageRank algoritme (Larry Page, Sergey Brin)
- ▶ 2002: PRIMTAL algoritme (Manindra Agrawal, Neeraj Kayal, and Nitin Saxena).

Morale

Datalogi er:

- ▶ Ideer skabt af mennesker.
- ▶ Dynamisk, ikke statisk.