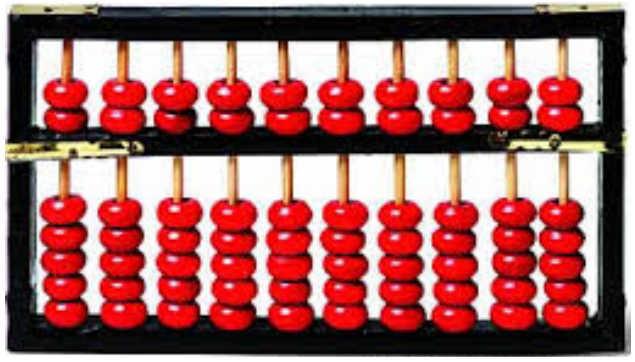
Dele af datalogiens historie

DM534

Rolf Fagerberg

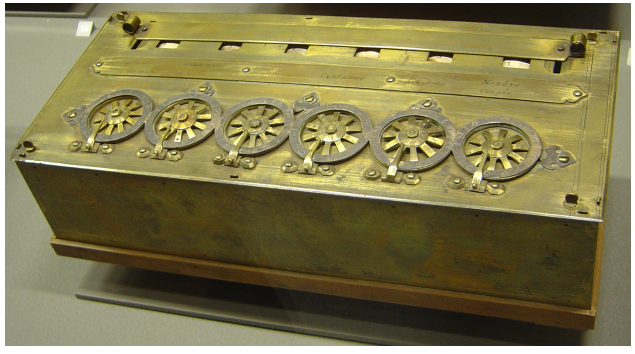
Teknologi

2000 BC



Kugleramme (abacus)

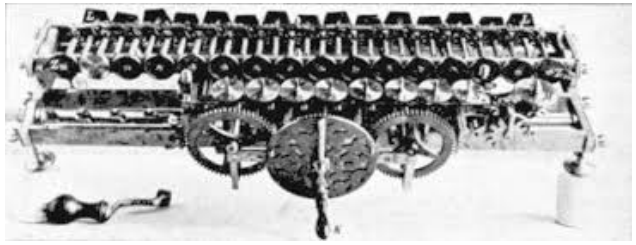
1642 AD



Pascals mekaniske additionsmaskine

Teknologi

1673



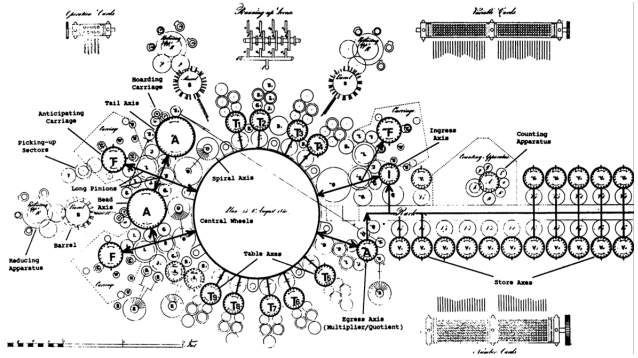
Leibniz' mekaniske maskine til plus, minus, gange, dividere

1801

Jacquards programmerbare væv med hulkort

Teknologi

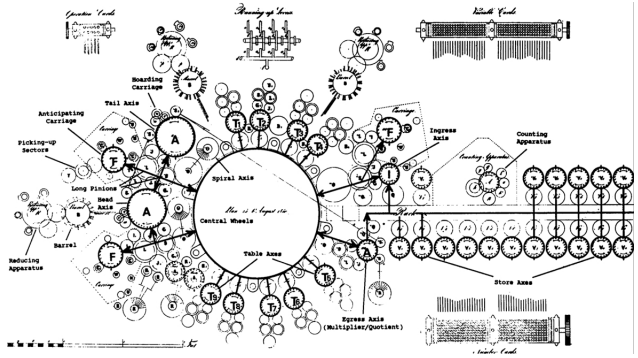
1837 (udtænkt)



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

Teknologi

1837 (udtænkt)



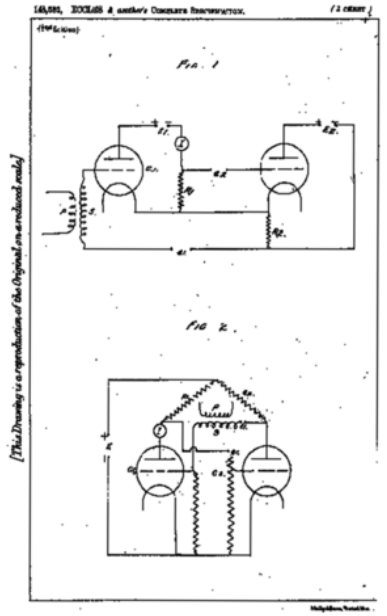
Babbage's "analytical machine"
General-purpose, programmerbar, digital, med hukommelse, input og output

1907

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

Teknologi

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).

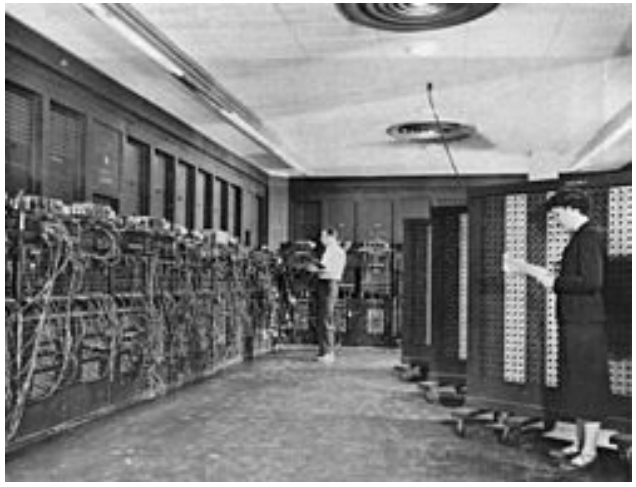
Eksempler:

1941

Konrad Zuse's Z3

Teknologi

1946



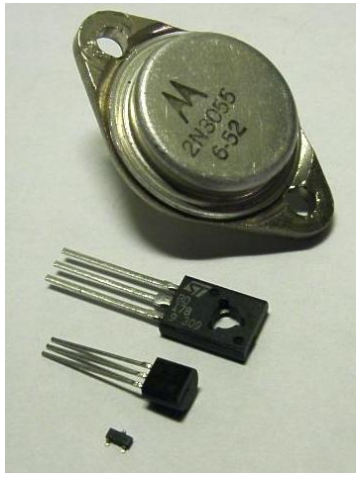
ENIAC, Univ. of Pennsylvania

1948

Manchester Univ. “Baby”

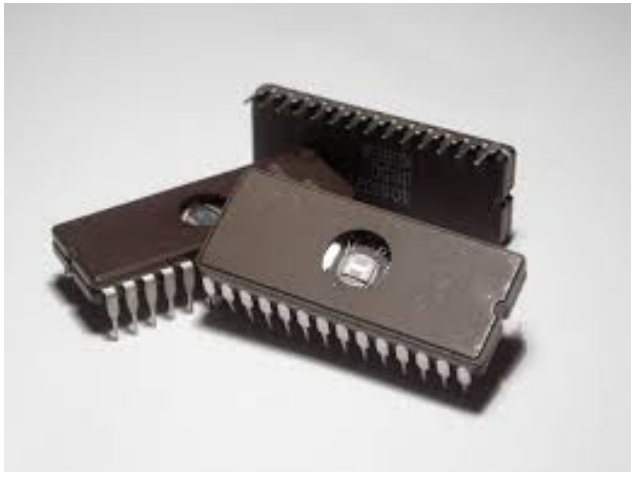
Teknologi

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

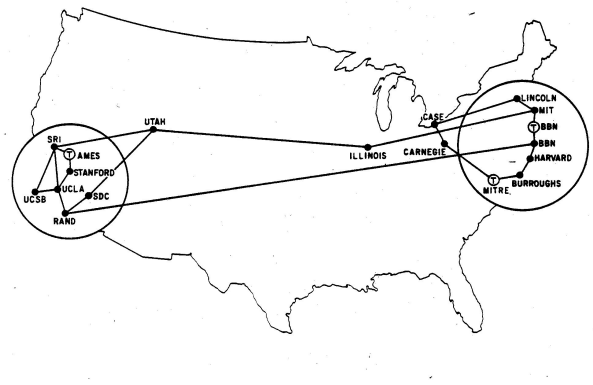
1975

Xerox PARC Alto

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

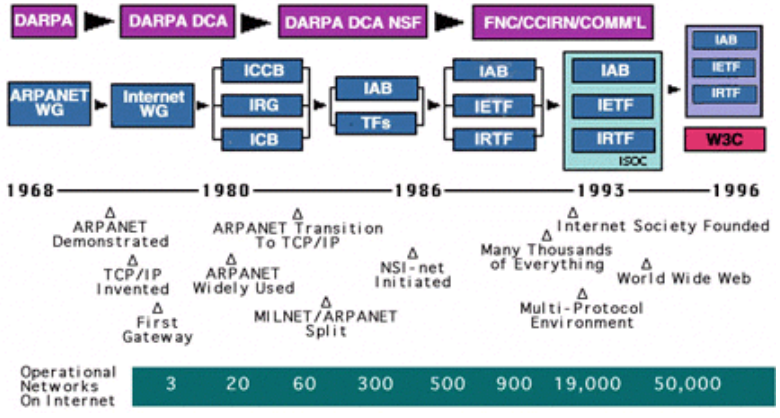
Teknologi

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 Borůvka)
- 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: Kompleksitetsteori (Juris Hartmanis, 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.