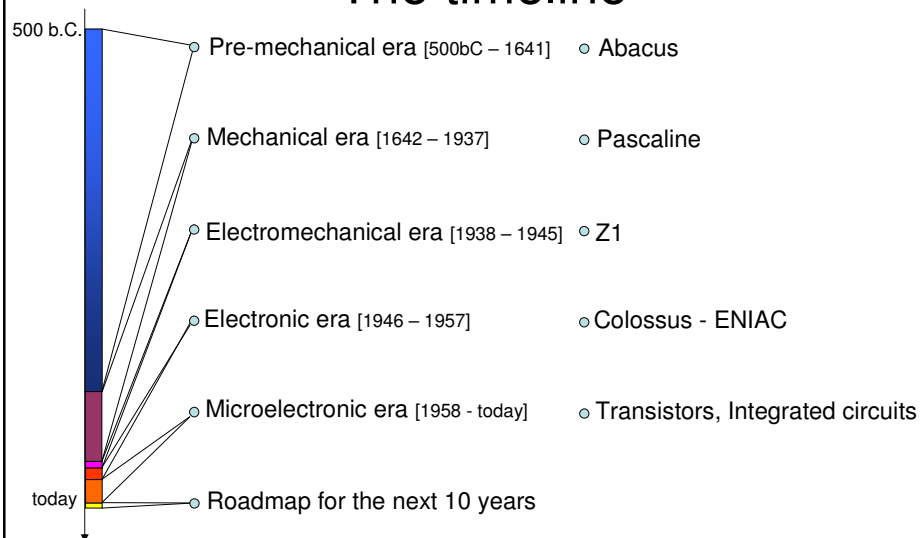


01 Introduction

01.02 Brief history of computing

- The timeline
- The pre-mechanical era
- The mechanical era
- The electromechanical era
- The electronic era
- The microelectronic era
- The roadmap for the next 10 years

The timeline



The timeline

Theoretical contributions

- Positional numbers [3000bC]
- Algorithm [Al-Khowarizmi, 800]
- Boolean algebra [Boole, 1847]
- Turing machine [Turing, 1936]
- Game theory [Von Neumann, 1944]
- Switching networks [Shannon, 1938]



The timeline

Technological contributions

- Electricity [Franklin, 1706]
- Light bulb [Edison, 1879]
- Relays [Henry, 1835]
- Vacuum tubes [1900]
- Transistors [1947]
- Floppy disk [1950]
- Hard disk [1952]
- Magnetic Core memory [1956]
- Integrated circuits [1958]
- Mouse [1965]
- DRAM memory [1968]
- SRAM memory [1970]
- Microprocessor [1971]
- CD Rom [1985]



Computer Architecture
01.02 Brief history of computing

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The timeline

Computer architecture and communication

Computer architecture	Communication
Von Neumann architecture [1940]	Arpanet [1969]
Harvard architecture [1944]	Ethernet, LAN [1973]
Virtual memory [1959]	Internet, TCP/IP [1983]
Memory caching [1966]	Domain Name server [1984]
Instruction pipelining [Intel 386, 1985]	World Wide Web [1989]
	Internet providers [1993]
	Netscape [1994]
	Yahoo [1995]
	Wireless LAN [1997]

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Computer Architecture
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The timeline

Software

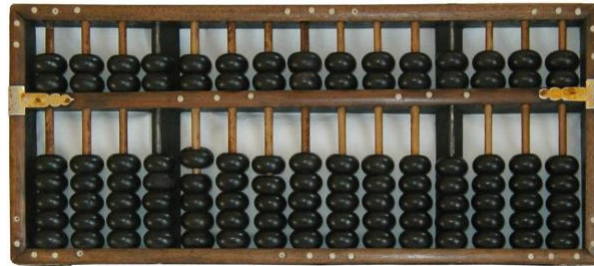
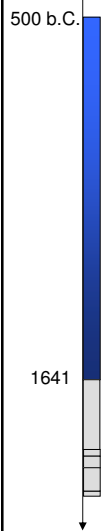
Operating Systems	Programming languages
Unix OS development [1970]	High-level language compiler [1951]
Unix OS marketing [1975]	Fortran [1954-1957]
MS-DOS [1980]	Lisp [1958]
MS Window [1985]	Cobol [1959]
Linux [1991]	Algol [1960]
MS Windows XP [2001]	Basic [1965]
	Pascal [1967-1971]
	Logo [1968]
	C [1972]
	Prolog [1973]
	BASIC for PC [Bill Gates, 1975]
	ADA [1979]
	C++ [1983-1985]
	Turbo Pascal [1984]
	Java [1991-1995]

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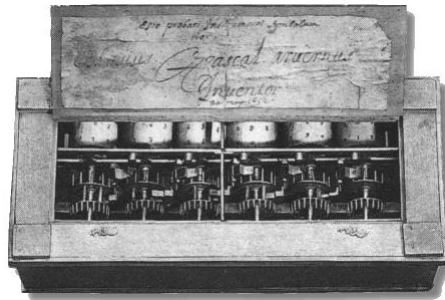
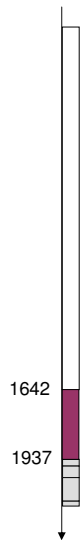
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Pre mechanical era

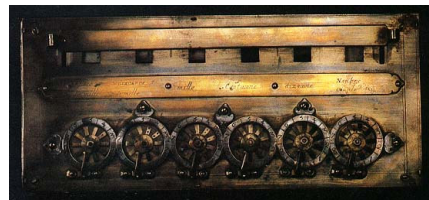


http://www.histoire-informatique.org/musee/1_2_2.html

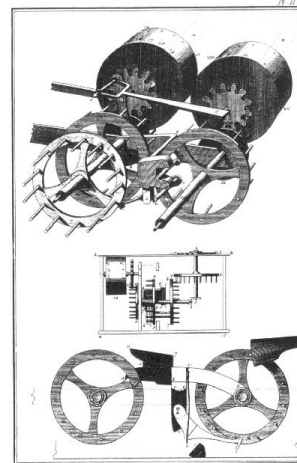
Mechanical era



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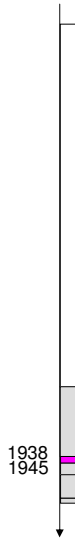


<http://www.tcf.ua.edu/courses/jbutler/T389/ITHistoryOutline.htm>

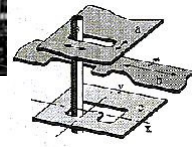


Diderot and Alambert, *Encyclopedie*

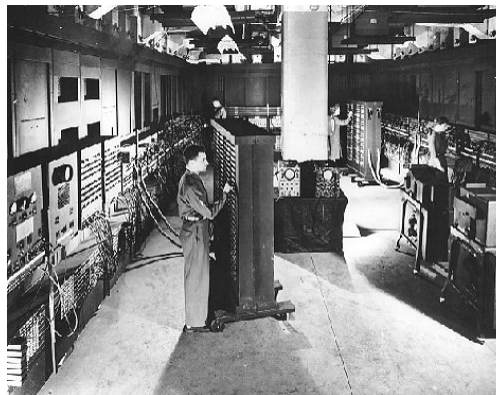
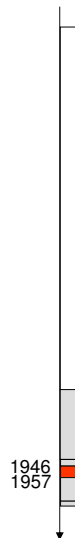
Electromechanical era



Horst Zuse, *The Life and Work of Konrad Zuse*, <http://www.epemag.com/zuse/>



Electronic era



http://www.histoire-informatique.org/musee/2_3_4_1.html

Microelectronic era



Texas Instruments, *History of innovation*,
<http://www.ti.com/corp/docs/company/history/tihistory.htm>



<http://www.cedmagic.com/history/dec-pdp-1.html>

1958
today

Roadmap for the next 10 years

2000/2001 SIA Roadmap Summary

Year	Unit	1993	1995	1999	2001	2003	2005	2008	2011	2014	2016
Feature Size	microns/ <i>nm</i>	0.50	0.35	180	130	100	80	70	50	34	22
Internal Clock (high performance)	<i>Mhz/Ghz</i>	200	300	750	1.68	2.31	5.17	6.74	11.5	19.3	28.7
Logic transistors	million/ <i>cm²</i>	2	4	6.6	13	24	44	109	269	664	
Microprocessor	million transistors/ <i>chip</i>	5.2	12	23.8	47.6	95.2	190	539	1523	4308	
DRAM size	<i>Mbit/Gbit</i>	16	64	256	512	1	2	6	16	48	
SRAM size	<i>Mbit/Gbit</i>	1	4	16	64	256					
Voltage	<i>V_{dd}</i>	5	3.3	2.5	1.2	1.0	0.9	0.7	0.6	0.5	0.4

<http://www.aeiveos.com/~bradbury/petalops/siardmap.html>

today

International technology roadmap for semiconductors, <http://public.itrs.net/>
Semiconductor Industry Association, <http://www.sia-online.org/home.cfm/>

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