From ENIAC to iPad

Moments from IT history

Kaido Kikkas
SPEAIT, Spring 2019

In the beginning...

- ...depends on whose account to believe :)

- Still, pretty soon afterwards, some hairy dude started to compute using sticks and stones

- The abacus existed in Ancient Egypt in about 3000 BC (some suggest even 3500 BC)

If not stated otherwise, the pictures used are taken from the Wikimedia Commons (using CC BY-SA)

A tad later...

- Around 1500 AD – Leonardo's arithmometer (addition only; disputed)

- 1623 – Wilhelm Schickard of Tübingen builds a calculator reportedly able to add and substract six-figure numbers

- 1640 or 1645 – young Blaise Pascal aims to help his father (a clerk), building the Pascaline or 'arith-metical machine' (all four main arithmetical operations)
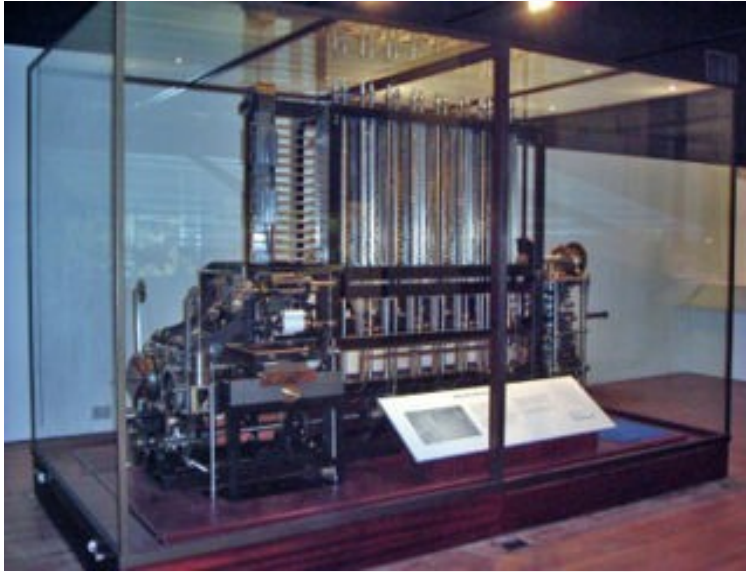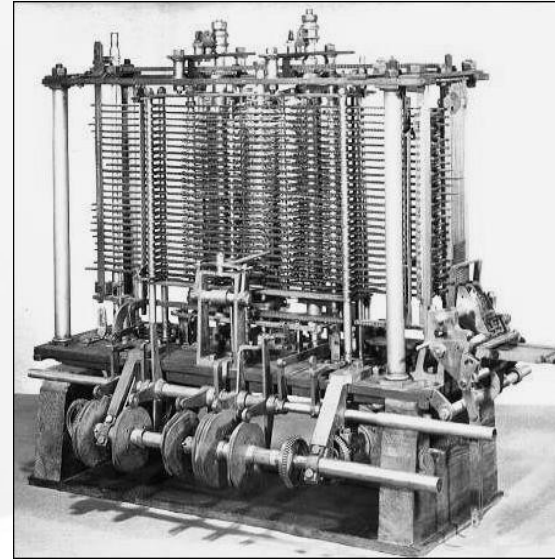
Some more time…

- 1632 – William Oughtred from Oxford builds the slide rule (the window was added in 1859 by Amedeè Mannheim)

- 1705 – G. Leibniz introduces binary numbers

- 1800/1801 – the Jacquard loom, an early programmable industrial machine

- The Babbage projects:

  - Difference Engine 1822

  - Analytical Engine 1830

The Babbage machines

Difference Engine
(reproduction at British Science Museum)
(source:
http://www.kerryr.net/pioneers/gallery/ns_babbage6.htm)

Analytical Engine

Before the modern computer

- 1857 – Sir Charles Wheatstone invents the telegraph tape

- 1874/78 - Willgodt Odhner builds an arithmometer - later known as "Felix"

- 1889 – Herman Hollerith patents the tabulating machine later used in the U.S. 1890 census

- 1926 – transistor invented at Bell

- 1936 – Dvorak keyboard

The first…?

- There are four common candidates to the title of the first electronic computer

- The most known: ENIAC (Electronic Numerical Integrator and Computer) - John Mauchly and J. Presper Eckert, Univ. of Pennsylvania 1943
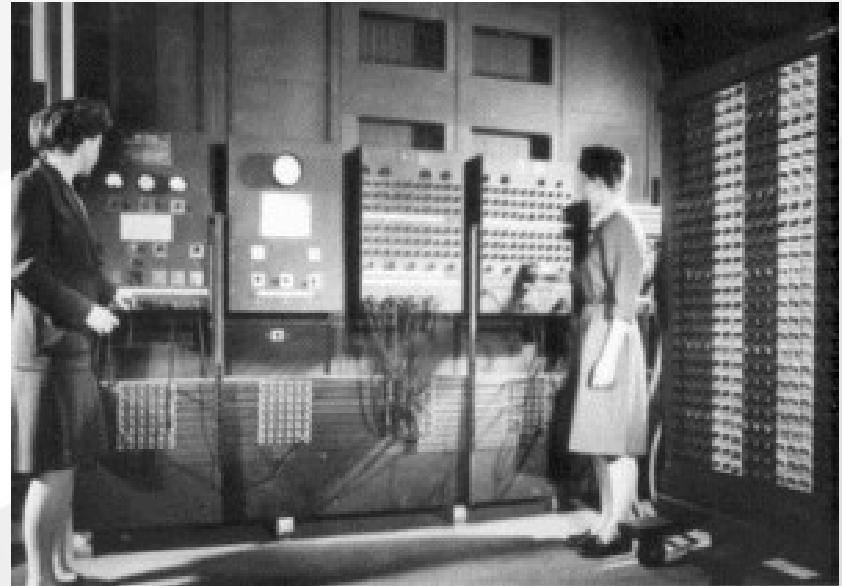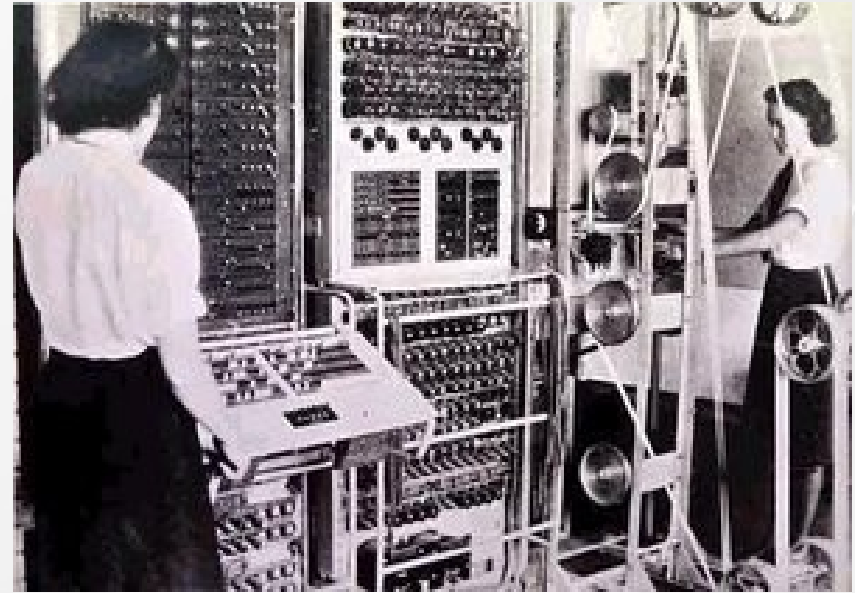
Or...?

- ABC (Atanasoff-Berry Computer) - John Vincent Atanasoff & Clifford Berry, Iowa State College 1943

- ABC won the 1973 court case, yet the issue is still disputed

Or rather…?

- Colossus and bombes -
  Alan Turing & Co,
  Bletchley Park, UK 1943

- Earlier than the previous two, but being the "real computer" is still contested

Or even…?

- The works by Konrad Zuse in Nazi Germany starting in 1936 (Z1, Z2, Z3). Binary!

- Zuse's Plankalkül programming language is a strong contender to the title of the first modern programming language (contained most elements of the later ALGOL)

The Stone Age

- 1945 – EDVAC, the binary computer (some consider it the first)

- 1945 (47?) - Grace Murray Hopper finds a bug

- 1948 – UNIVAC I, the first commercial computer. Bell Labs patents the transistor

- 1950 – MESM, the first Soviet computer. Alan Turing formulates the Turing test

- 1954 – transistors mass-produced

- 1956 – TX-O, the first computer built on transistors

- 1958 - Texas Instruments introduces integrated circuits

Example: IBM 650 (1954-62)

- Weight of computer: 900+ kg

- Weight of power supply: 1350 kg

- Both had boxes of 1.5 to 0.9 to 1.9 metres

- Approx. cost 500 000 USD (of the time!), monthly rent 3500 USD

- Drum memory for up to 2000 words with length up to 10

Sixties

- 1963 - Douglas Engelbart patents the computer mouse

- 1964 – Dartmouth College develops BASIC. First DEC minicomputer PDP-8

- 1966 – first disk drive (IBM)

- 1967 – first floppy disk (IBM)

- 1968 – First GUI developed by D. Engelbart in Stanford. Intel founded

Summer of '69

- AMD founded

- Unix born at AT&T

- Laser printer developed at HP

- Birth of Internet usually counted from here

- Plus

    - Man on the Moon

    - Linus Torvalds born in Helsinki :)

Seventies

- 1970 - Xerox PARC founded

- 1971 - 8-inch diskette by IBM. Niklaus Wirth creates Pascal

- 1972 - Intel 8008, the first 8-bit chip (200kHz). Atari founded => Pong. William H. Gates and Paul Allen start Traf-O-Data

- 1973 - Gary Kildall develops CP/M based on PL/M. Bob Metcalfe's thesis on Ethernet. IBM 3340 "Winchester" disk

- 1974 – Dennis Richie completes C language (started 1969)

- 1975 - Gates and Allen create Altair BASIC for MITS Altair and start to sell licenses – birth of Microsoft. Byte Magazine and Computer Store indicate some mainstreaming

- 1976 - Steve Jobs and Steve Wozniak found Apple, offering the 'Kit computer'. Intel and AMD make a compatibility deal. An Wang's Text Processor. Xerox Note-Taker, the first portable (so-and-so) computer

- 1978 - Intel introduces the 4.77-MHz 8086 chip

- 1979 – VisiCalc, the first spreadsheet. First laser printer by IBM. Motorola 6800, the first 16-bit chip. 3Com and Seagate

Eighties

- 1980

  – MS XENIX OS (in fact, Microsoft's Unix)

  – Microsoft-IBM deal to provide them with (then non-existing) operating system – a suitable candidate is found at Seattle Computer Products, named QDOS (Quick-And-Dirty Operating System). Somehow, it ends up with Microsoft

  – Sony introduces the 3.5-inch floppy and Seagate the 5.25-inch hard disk

  – CD audio standard (Philips, Sony)

- 1981 - MS fully obtains QDOS, renaming it to MS-DOS. IBM 5150 becomes "The PC". Novell creates the first networked filesharing system (later evolving to NetWare). Silicon Graphics founded. Osborne 1, the first laptop (sort of)

- 1982 - IBM switches PCs from CP/M to MS-DOS 1.1. "The Clone Wars". The PC Mouse from Mouse Systems. Intel 286 (6MHz). Sun and Adobe founded. SunOS 1.0 (later becoming Solaris)

- 1983 -IBM PC XT, Apple IIe and Lisa (Macintosh?). First "windoze"... Borland, Compaq and Electronic Arts. An Wang introduces SIMM memory module. Bjarne Stroustrup develops C++. Multi-Tool Word, WP 3.0 and Lotus 1-2-3. Richard Stallman starts GNU

- 1984 - IBM PC AT and EGA video. First CD-ROM by Philips. HP LaserJet 1. X Window System written in MIT and Tetris in Moscow (Alexey Pajitnov on Elektronika-60)

- 1985 - official Windows 1.0. Steve Jobs founds NeXT

- 1987 - Sun SPARC, PC 386/20. Windows 2.0 and Win/386. MS and IBM cooperate on OS/2. VGA graphics

- 1988 - 386DX and SX chips. SCSI specification. HP DeskJet inkjet printers. Creative Labs founded (the makers of SoundBlaster sound cards)

Nineties

- 1991 – Business ban lifted on Internet. A guy named Linus - "a new Unix-like operating system". Microsoft fuses Windows to OS/2 know-how and gets NT 3.0. SunOS becomes Solaris. PCI bus standard. First colour scanner from HP

- 1992 - Win 3.1. Bill G. becomes the wealthiest person in the US

- 1993 - Intel Pentium. CD-R by Pinnacle Micro. MS NT 3.1. Plug-and-Play. FreeBSD, OpenBSD and NetBSD

- 1994 - Win 3.11, NT 3.5 (workstation + server) and the final MS-DOS - 6.22. Netscape 1.0. IBM, Apple and Motorola conspire against MS. ZIP disk from Iomega. The Pentium bug in 2 M chips. First working draft (0.7) of USB

…

- 1995 – The Browser Wars start (MS proposal to Netscape). Intel P6 (Pentium Pro). MS Win 95, Office 95 and NT 3.51. DVD

- 1996 – Office 97 and NT 4.0. First usable IE - 2.0

- 1997 – first monopoly related court cases for Microsoft

- 1998 - Pentium II, Win 98. Netscape loses the war against MS, bought by AOL. Browser source opened → Mozilla etc. iMac brings Apple to profit again. USB 1.1. The dotcom boom

- 1999 - Pentium III and Athlon. MS court battles go on. Win 2000

- 2000 – Chips pass 1GHz. Win ME. DivX. WordPerfect Office for Linux. USB 2.0. DVD drives spread. No Apocalypse…

New century

- 2001 – Chips pass 2 GHz. MS Windows XP, Office XP and "Licensing v6" aka "your software is not yours". Linux starts to challenge Windows in some places. OS X restarts the Apple. Openoffice.org created from StarOffice.

- 2002 - Wireless boom. Intel Macs. Developing countries discover FLOSS. In Estonia, an arrogant campaign by BSA creates many new Linux users. The next Windows started (planned for 2003)

2003

- Windows 2003 Server, Longhorn (later Vista) delayed

- Rapid spread of both wired and wireless networks, but also its dark side starts to show

- 2 years old OO.o challenges MS Office in public sector (also in Estonia)

- Skype founded in Tallinn. The SCO court case starts. A short-lived GPRS boom in Estonia. Linux 2.6 kernel series, a large step ahead

2004

- Software patent wars in EU. New cheaper broadband. Linux distros move to 2.6 kernel

- Windows XP SP2 has issues, still no Longhorn

- Cybersecurity problems widen, emergence of Internet racket and other "user hacking" phenomena

2005

Software patents defeated in EU

- Longhorn promised for early 2006

- Ubuntu takes the Linux world by storm

- Google buys a small company named Android Inc and launches YouTube

- Firefox starts to bypass IE

2006-7

- 2006 – another patent war in EU (defeated again), Microsoft cooperates with Novell (Linux users alarmed). OLPC by Nicholas Negroponte. MacBook Pro and iMac from Apple. Vista is still delayed

- 2007- Windows Vista and MS Office 2007. April riots and cyber attacks in Estonia. SCO defeated in court. The worst competitor for Vista is… XP . Open Handset Alliance founded by Google

2008

- MS OOXML vs ODF document wars. MS announces ODF support in Office 2007 SP2

- Bill Gates gives up full-time work in Microsoft. XP gets several extensions but is finally drawn from the market – but Vista gets increasing comparison to ME

- The Georgian War with a lot of cyberattacks. Apple creates iPhone OS (later iOS), iPhone is a huge hit

2009

- Microsoft releases Windows 7. Rise of Android. OSX drops support to earlier PowerPC architecture

- Bitcoin introduced

- Another attempt to revive the SCO case

- IT College goes to Estonian software: Estobuntu in the labs

2010

- Apple iPad defines the tablet. Google "hacked by Chinese", threatens to leave. Denmark mandates free file formats in government

- Microsoft promotes CodePlex. Oracle obtains Sun, free projects forked (LibreOffice, MariaDB). Android becomes No 1 in mobile systems

2011

- Windows XP finally drops under 50%. Microsoft partners with Nokia. Death of Steve Jobs

- Linux world has problems with new user interfaces (Unity, Gnome 3). LibreOffice 3.4 released, Oracle drops OO.o (finally goes to Apache Foundation)

2012

- IT world also hit by economic crisis. Quad-core chips. Microsoft introduces Windows 8 and Surface. Samsung-Apple duel

- Mint passes Ubuntu in Linux world (largely due to MATE and Cinnamon). UEFI boot creates problems for Linux

- 1 billion users of Facebook

- Curiosity reaches Mars

  - Still no Apocalypse...

2013

- New buzzwords: cloud, Big Data and infosec
- Windows 8 continues the trend "every second Windows version is (somewhat) usable"
- End of MSN. Steve Ballmer resigns from MS
- Sometime around here, Google Chrome acquires the top position in the browser market
- Estonians go to space (ESTCube)

2014

- Microsoft develops Windows 9 (8 and 8.1 are considered disappointments)

- Year of Big Bugs (Heartbleed, Shellshock, POODLE)

- Steam returns Linux as a gamng platform

- The world is restless, cybersecurity rules

2015

- Windows 10 released (for many, for free) – but manages to raise so many privacy issues that many people consider moving away

- Apple Watch, the most successful smart watch so far

- The U.S. decides for Net Neutrality

2015-6

- Windows 10 reaches the first anniversary… and decides to blow up dual-boot machines. A lot of angry geeks

- MIT scientists create a five-atom quantum computer assumed to be able to overcome modern security schemes

- All over the world, sizable numbers of (seemingly) normal people wander around, hunting Pokemons

2017

- Cyberwar in Ukraine (Petya, NotPetya)
- Internet of Things ==> Internet of Bad Things
- Net Neutrality revoked in the U.S. (the fight goes on)
- WannaCry ransomware grabs more than 230 000 Windows machines
- Equifax breach, 143M accounts leaked
- The first serious public questioning of the Estonian ID card
- FUBAR @ IT College, resulting in SNAFU

2018

- Meltdown and Spectre vulnerabilities discovered in Intel processors

- Cambridge Analytica and Facebook

- EU and GDPR

- Net Neutrality fights continue in the U.S.

- Github => Microsoft, Red Hat => IBM

- Cryptocurrency mining is a rising trend in malware

- Hot topics include security, privacy, (Big) data mining, and artificial intelligence

For additional reading

- Levy, *Hackers: the Heroes of the Computer Revolution*

- Freiberger & Swaine, *Fire in the Valley: the Making of Personal Computer*

- Gates & Myrhvold, *The Road Ahead*

- Carlton, *Apple*

- Vise, *The Google Story*

- Moody, *Rebel Code: Inside the Open Source Revolution*

- Dear, *The Untold Story of the PLATO System and the Dawn of Cyberculture*

Thanks