






1







Scott Ksander

ksander@purdue.edu

- 40+ years in the IT field, 26 years at Purdue
- Wrote his first program (FORTRAN) when he was in 5th grade. Purdue degree in Computer Science.
- Areas of interest – systems development, networking, security
- In retirement, Scott writes a technology column for the Purdue Retirees Newsletter and does presentations for the Purdue Women’s Club
- Scott and Peggy enjoy life with their kids and grandkids – especially on trips to DisneyWorld
- Scott grew up in Chicago and Peggy grew up in Fish Lake, Indiana (city boy meets farm girl at Purdue story – and the adventure continues ...)

2






Current Topics

WeChat and TikTok

- It is all about the data
 - 700M TikTok monthly active users
 - 1.2B WeChat monthly active users
- “Chinese-owned” company ByteDance could represent a “national security risk”
- In my opinion, the Internet itself is just as much of a “national security risk” as any application
- Executive Order, August 6th
- Commerce Department Order, September 18th
- Federal Court temporary injunction, September 20th

3

Current Topics

TikTok

- Deal “in principle” announce September 20th
 - Oracle and Wal-Mart will hold a 20% share
 - 80% stays with ByteDance
 - 4 of 5 Board members will be American
 - \$5 billion fund for US education

WeChat

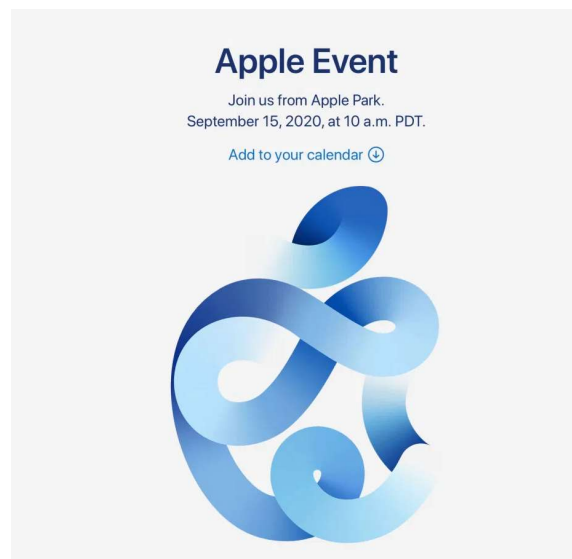
- Restrictions pushed back to September 27th

Likely more news to come

4

Current Topics

- Apple Announcement
 - iOS 14 – it is different!
 - Apple Watch Series 6
 - Apple Fitness+
 - Apple One
 - New iPad 8th generation



5



Current Topics

iOS 14

- Home Screen Widgets
- Picture-in-Picture support
- Orange and green status bar dots to show apps using microphone and camera
- App Library (just iPhone)
- Change default email and browser!! (big deal for Apple)
- Compact call interface
- Alarm changes
- Pin text messages

<https://9to5mac.com/2020/09/18/ios-14-how-to-use-popular-features/>

6

7

<p>Apple Watch Series 6 From \$399</p>	<p>Apple Watch SE From \$279</p>	<p>Apple Watch Series 3 From \$199</p>
<p>44mm or 40mm case size</p>	<p>44mm or 40mm case size</p>	<p>42mm or 38mm case size</p>
<p>Always-On Retina display</p>	<p>—</p>	<p>—</p>
<p>—</p>	<p>Retina display</p>	<p>Retina display</p>
<p>GPS + Cellular¹ GPS</p>	<p>GPS + Cellular¹ GPS</p>	<p>— GPS</p>

8

Select workouts by duration

5 min 10 min 20 min 30 min 45 min

Workout how and where you want

Track your workouts with onscreen metrics

10 different workout types

Powered by Apple Watch

Apple Fitness+

Feel competitive? Hit the Burn Bar

New workouts added every week

The world's top fitness trainers

Intelligent suggestions

Ready

Beginner program

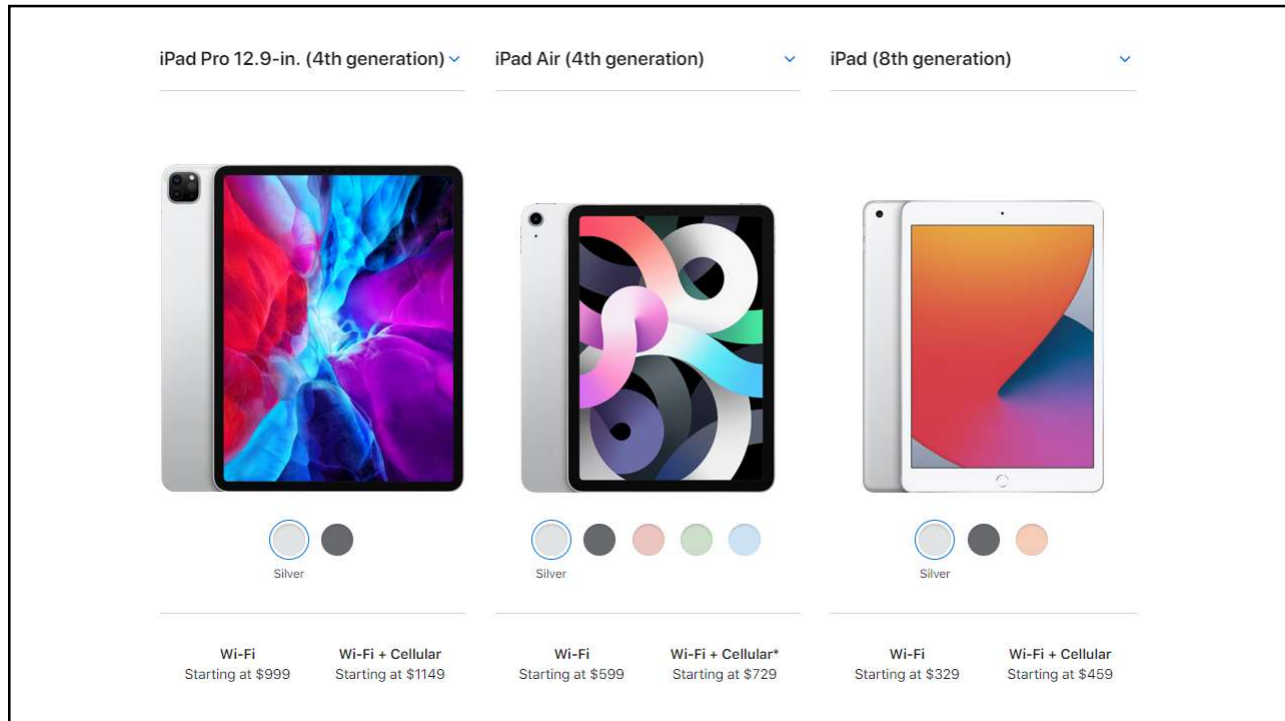
Integrated with Apple Music

9

Apple One

Individual	Family	Premier
\$14.95/month	\$19.95/month	\$29.95/month

10



11

Current Topics

SpaceX Starlink

- 750 Satellites currently heading to 12,000
- Filed for approval for 40,000
- Public Beta expected in Nov 2020

SOURCE ~ SHUTTERSTOCK

12

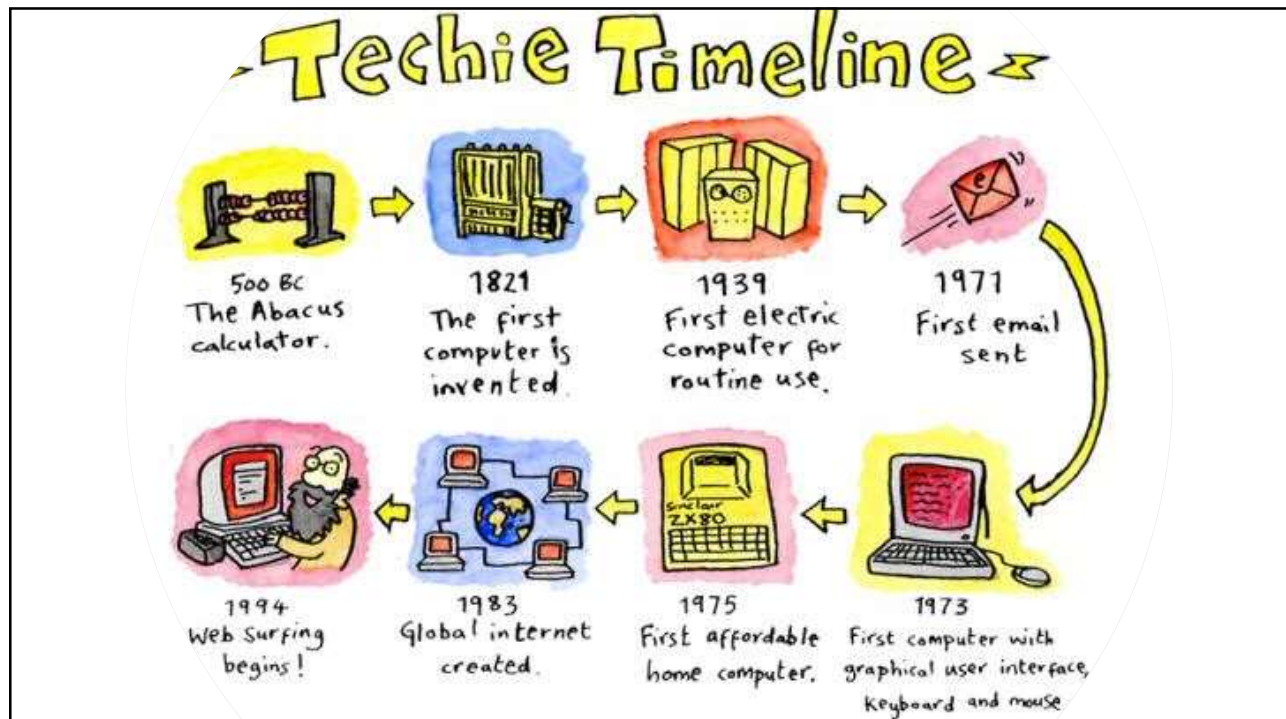
Current Topics

Oura Smart Ring

- Used by NBA “bubble”
- Originally marketed for sleep issues
- For Covid, watching temp
- Basically, a FitBit ring
- 5-7 day battery life
- \$300-\$400



13



14

Blaise Pascal

This famous French philosopher and mathematician invented the first calculator in 1645 to help with collecting taxes. It could add and subtract by rotating dials.



© Nichola Wilkin 2012

15

15

Gottfried Wilhelm von Leibnitz



Leibnitz invented a machine in 1674, around 30 years after Pascal invented his machine. He called it the "Stepped Reckoner" and it could not only add and subtract, but multiply and divide as well.

© Nichola Wilkin 2012

16

16

Joseph-Marie Jacquard

Joseph-Marie Jacquard was a weaver. In 1804, he got the bright idea of adapting the use of punched cards used in musical boxes to control his looms. His invention provided a model for the input and output of data in the electro-mechanical and electronic computing industry.



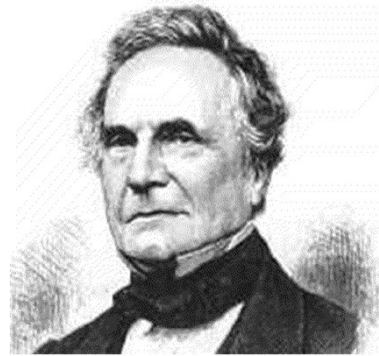
© Nichola Wilkin 2012

17

17

Charles Babbage

Charles Babbage designed the “Difference Engine” and “Analytical Engine” in the early 19th Century, which was the blueprint used in the invention of the modern electronic digital computer.



© Nichola Wilkin 2012

18

18

Lady Augusta Ada



She was the daughter of the famous romantic poet Lord Byron and she was a brilliant mathematician who helped Babbage in his work. She documented his work, which Babbage could never bother to do and also wrote programs to be run on Babbage's machines. She is recognised as the first computer programmer.

© Nichola Wilkin 2012

19

19

Bletchley Park

During World War 2, code breakers used computational analytical models to try and work out what enemy messages meant.



© Nichola Wilkin 2012

20

20

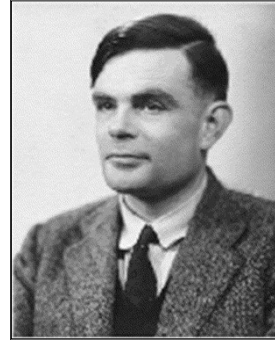
Bletchley Park

Two young engineers who met there were called...



Tommy Flowers

and



Alan Turing

© Nichola Wilkin 2012

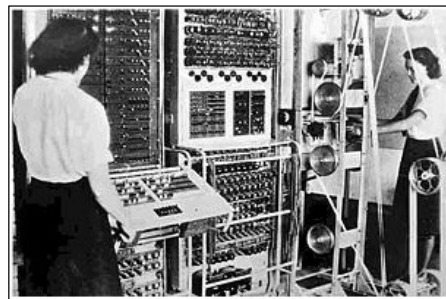
21

21

Tommy Flowers

Tommy Flowers invented a computer called Colossus which was the world's first electronic, digital, programmable computer.

It was HUGE.



© Nichola Wilkin 2012

22

22

Alan Turing

Alan Turing published a paper called *On Computable Numbers, with an application to the Entscheidungsproblem*. The paper proved that a machine capable of processing a stream of 1s and 0s according to programmed instructions would be capable of solving any problem.



© Nichola Wilkin 2012

23

23

Howard Aiken

In 1944, while a professor of physics at Harvard, Howard Aiken was supported by IBM to build the ASCC computer (Automatic Sequence Controlled Calculator). The computer had mechanical relays (switches) which flipped backwards and forwards to represent mathematical data. It was huge and weighed 35 tons with 500 miles of wiring.

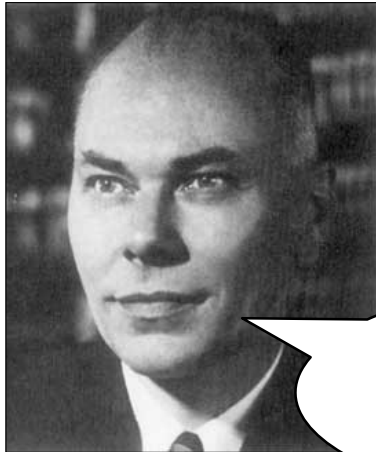


© Nichola Wilkin 2012

24

24

Howard Aiken



As computers were so large and were purpose built for each company, they tended to be very expensive. Howard Aiken was asked about the future of electronic computers. His answer was as follows...

I estimate that six electronic digital computers would be sufficient to satisfy the computing needs of the entire United States.

© Nichola Wilkin 2012

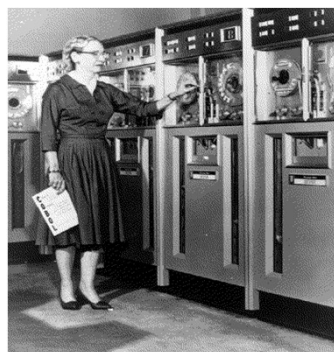
25

25

Dr. Grace Murray Hopper

Rear Admiral Dr. Grace Murray Hopper worked with Howard Aiken from 1944 and used his machine for gunnery and ballistics calculation for the US Bureau of Ordnance's Computation project.

Dr. Hopper greatly simplified programming by inventing the "COBOL" language which was the first programming language to use English for variable names and logical operations rather than machine code.

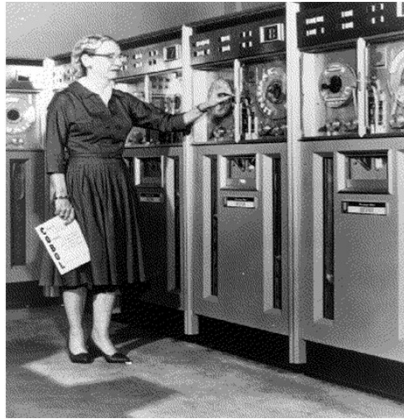


© Nichola Wilkin 2012

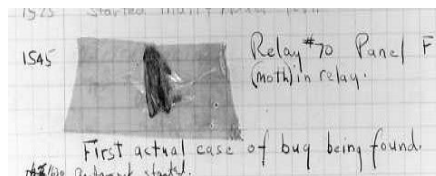
26

26

Dr. Grace Murray Hopper



She also invented the term “debugging” when a moth flew into the computer and caused an error.



© Nichola Wilkin 2012

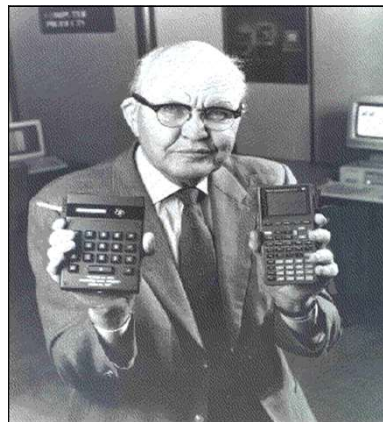
27

27

Jack Kilby

Jack Kilby invented the first integrated circuit in 1959, which meant computers could become smaller and more reliable.

These were first used inside calculators.



© Nichola Wilkin 2012

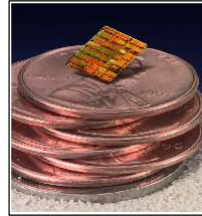
28

28

Microelectronics Revolution



The microelectronics revolution allowed the amount of hand-crafted wiring seen on the left to be mass-produced as an integrated circuit the size of your thumbnail.



© Nichola Wilkin 2012

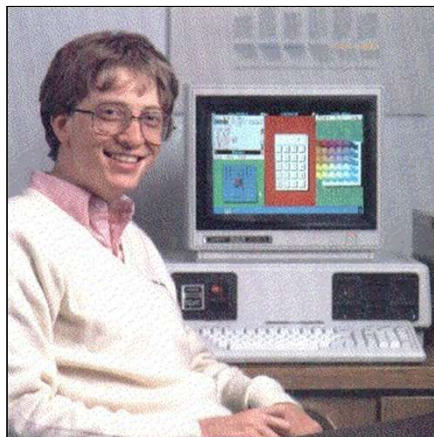
29

29

Bill Gates

At the age of 13 Bill Gates became interested in programming computers.

He sold a computer he built and programmed to Seattle to allow them to count their city traffic when he was still a teenager.



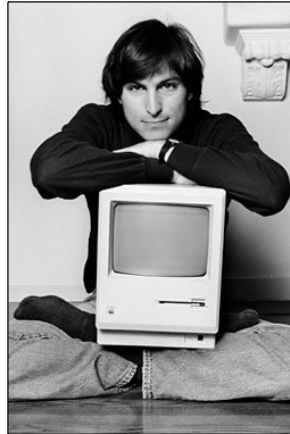
© Nichola Wilkin 2012

30

30

Steve Jobs

Steve Jobs also dropped out of university at the age of 21 to start his company Apple with another college dropout Steve Wozniak.



© Nichola Wilkin 2012

31

31

Apple

In 1976 this "Apple I" was one of the first home computers and was sold for \$600



© Nichola Wilkin 2012

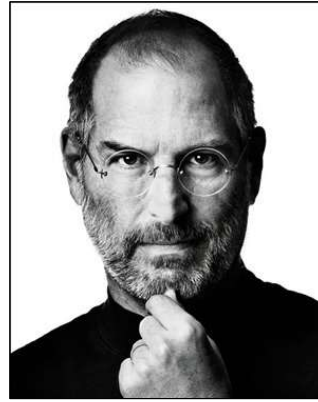
32

32

Steve Jobs

In 2000 digital music players were big and bulky or small but played terrible quality music.

Apple saw the opportunity and announced the release of the iPod in 2001, the first digital portable music player which changed the course of media entertainment and was followed with equal success by the iPhone and iPad.



1955 - 2011

© Nichola Wilkin 2012

33

33

Key points in modern computing history

1984: Apple introduces the Macintosh computer

1990: Microsoft introduces Windows 3.0

1992: Microsoft introduces Windows 3.1

1996: BackRub was created and launched onto Stanford University's servers

1997: BackRub given a new home and changed to the name Google.

2000: Bill Gates relinquishes his title as head of Microsoft and Microsoft Windows 2000 was released

2001: Wikipedia was founded

2001: Microsoft Windows XP is released

2005: Google purchases Android

2005: YouTube was founded and appears online

2006: Google buys YouTube

2006: Nintendo releases the Wii

2007: Apple introduces the iPhone

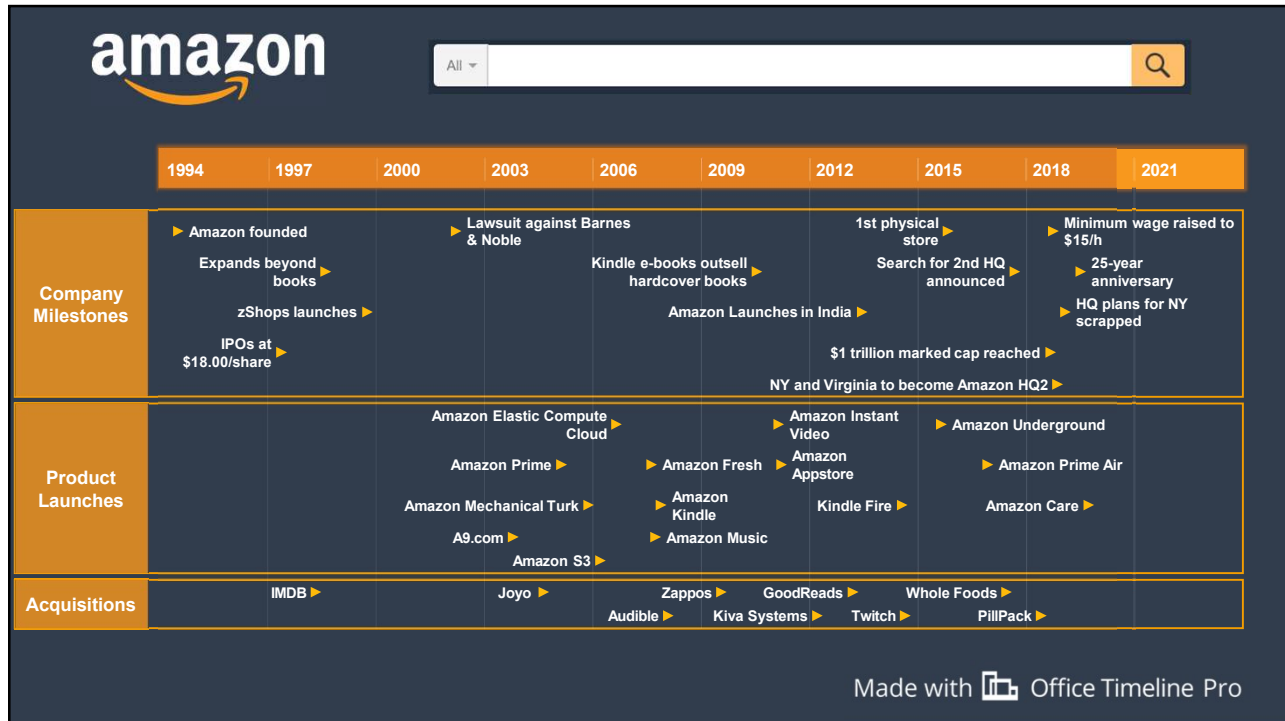
2007: Microsoft releases Microsoft Windows Vista and Office 2007

2010: Apple introduces the iPad

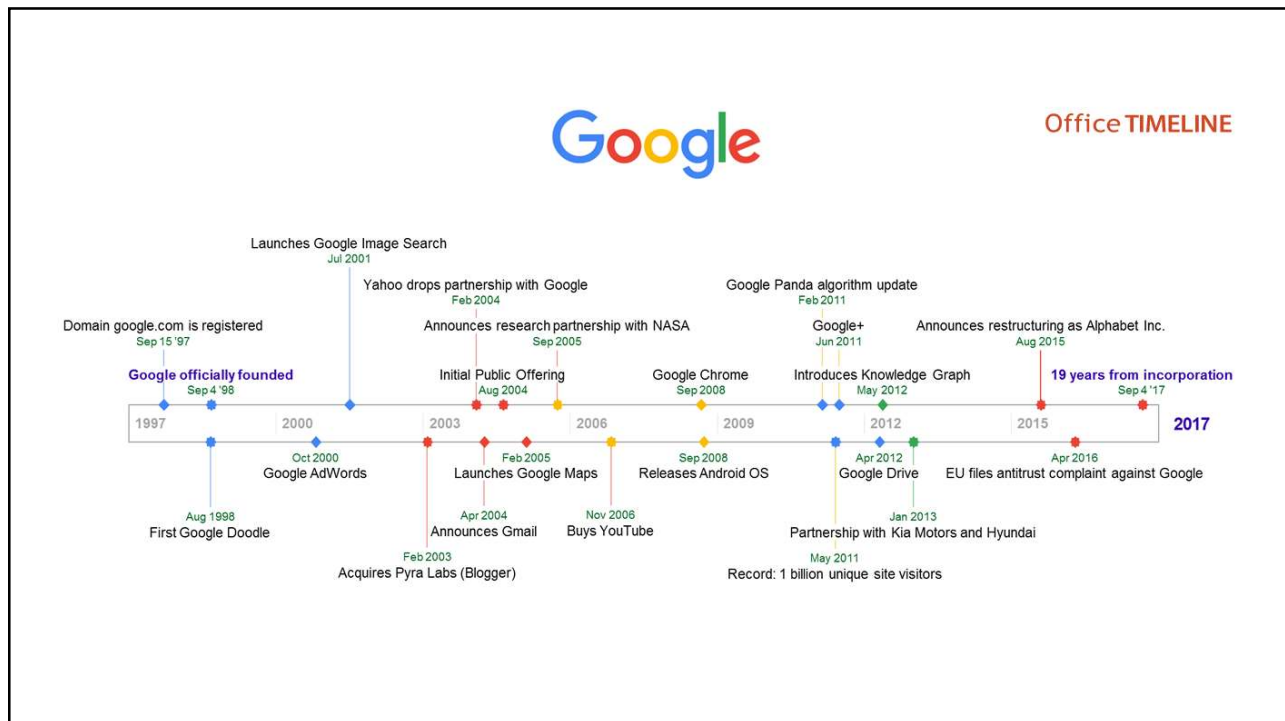
© Nichola Wilkin 2012

34

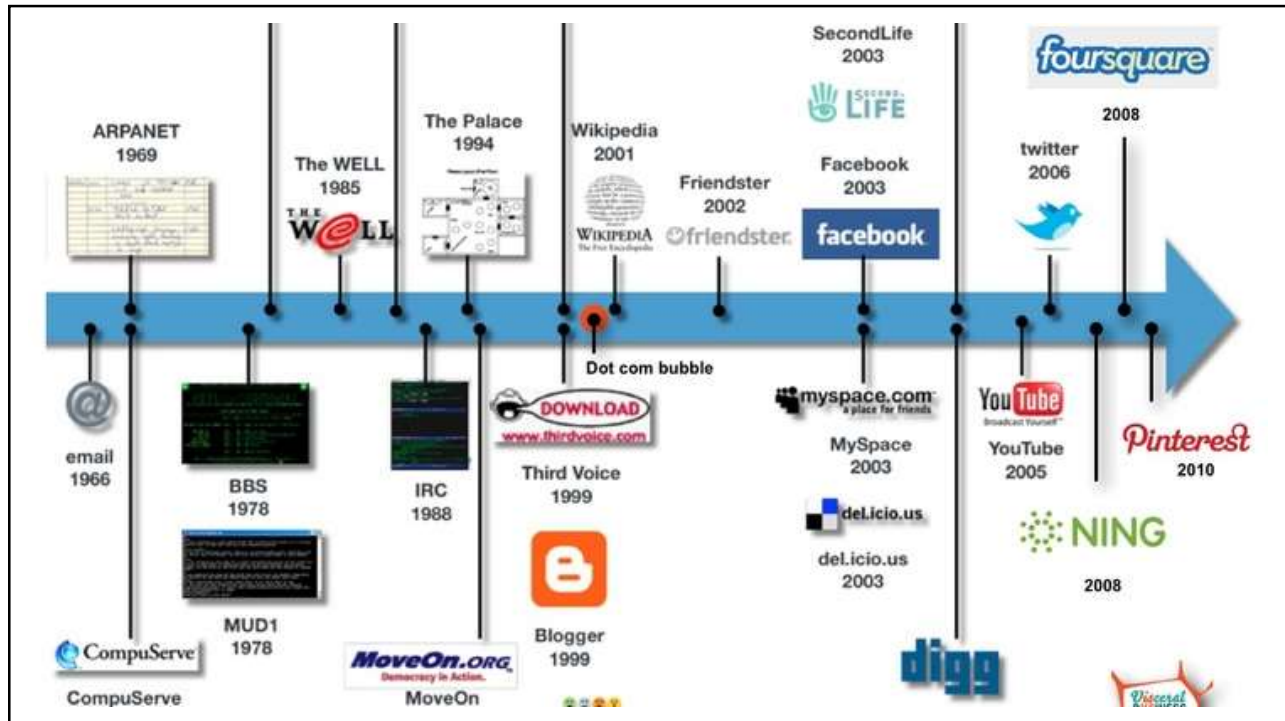
34



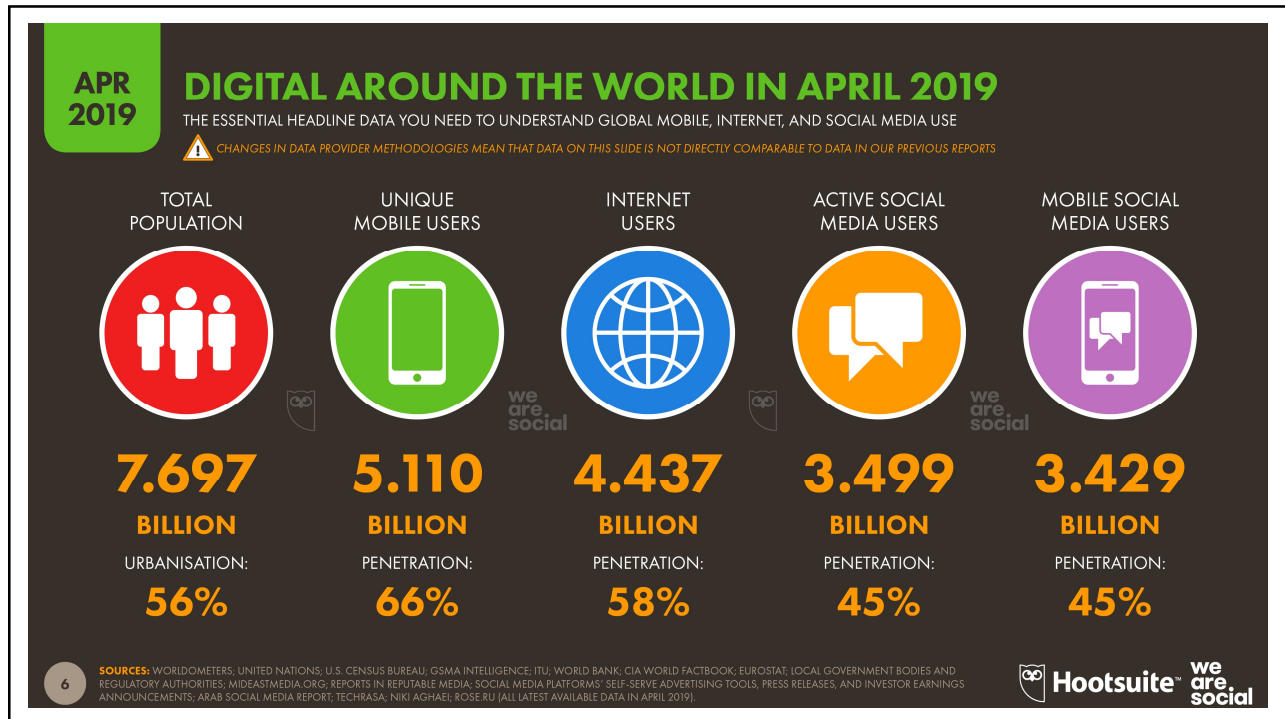
35



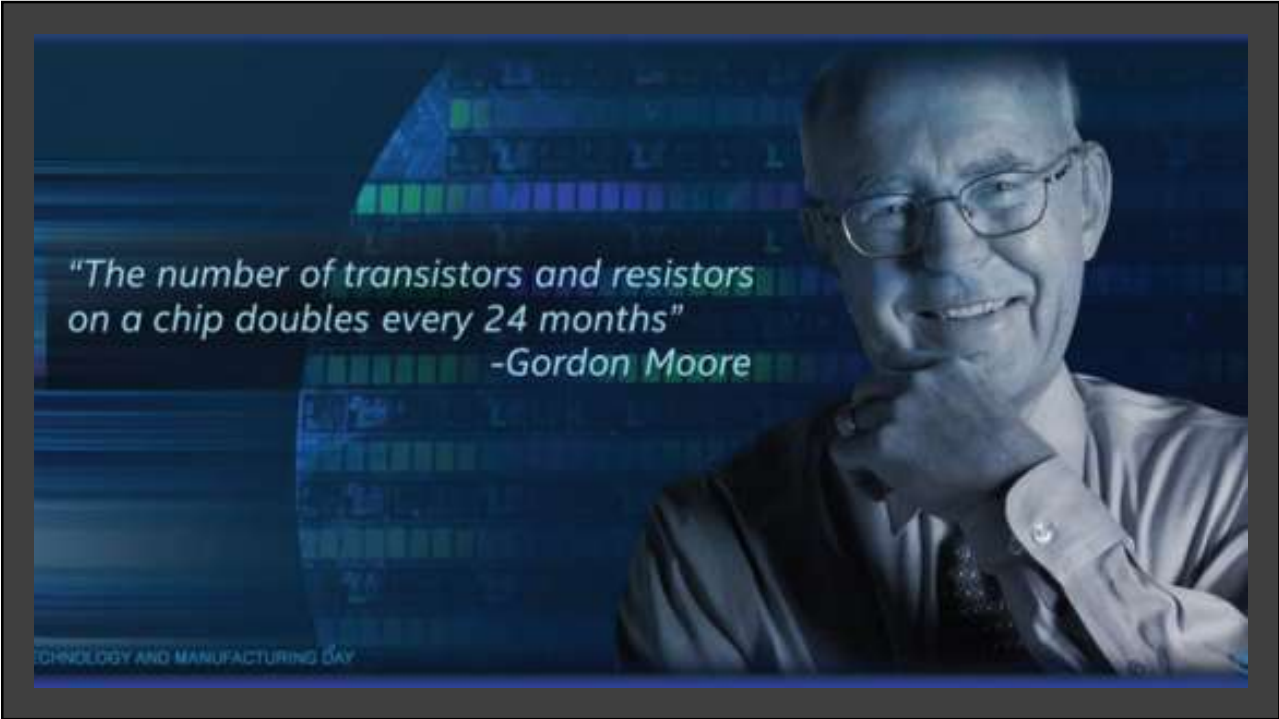
36



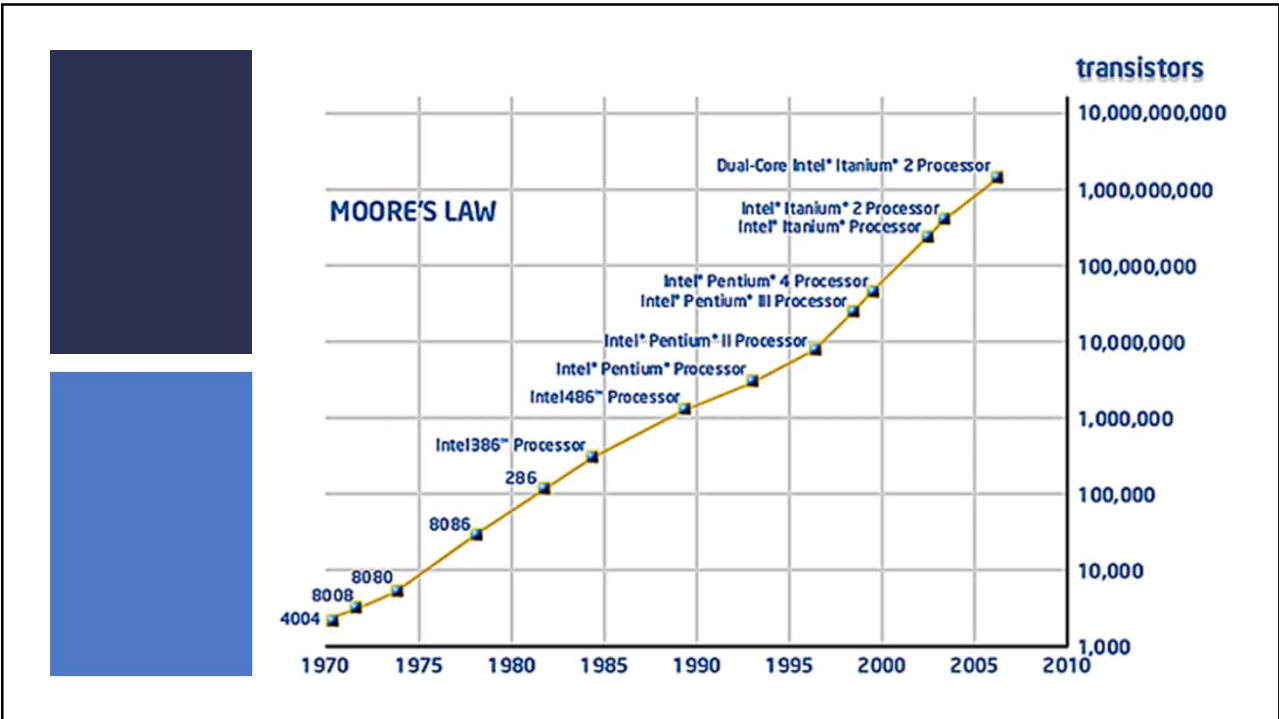
37



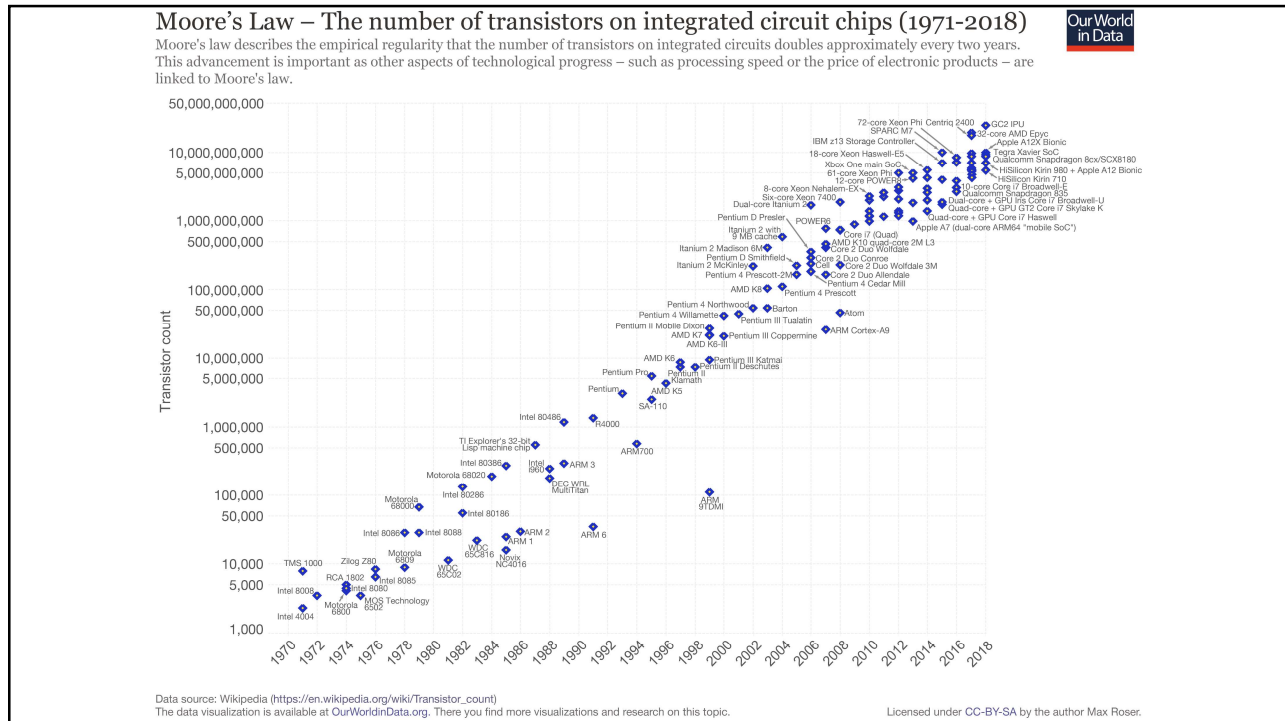
38



39



40



41

Machine learning controller

New 6-core CPU

5 nanometer process

11.8 billion Transistors

Next-generation ML accelerators

Apple A14

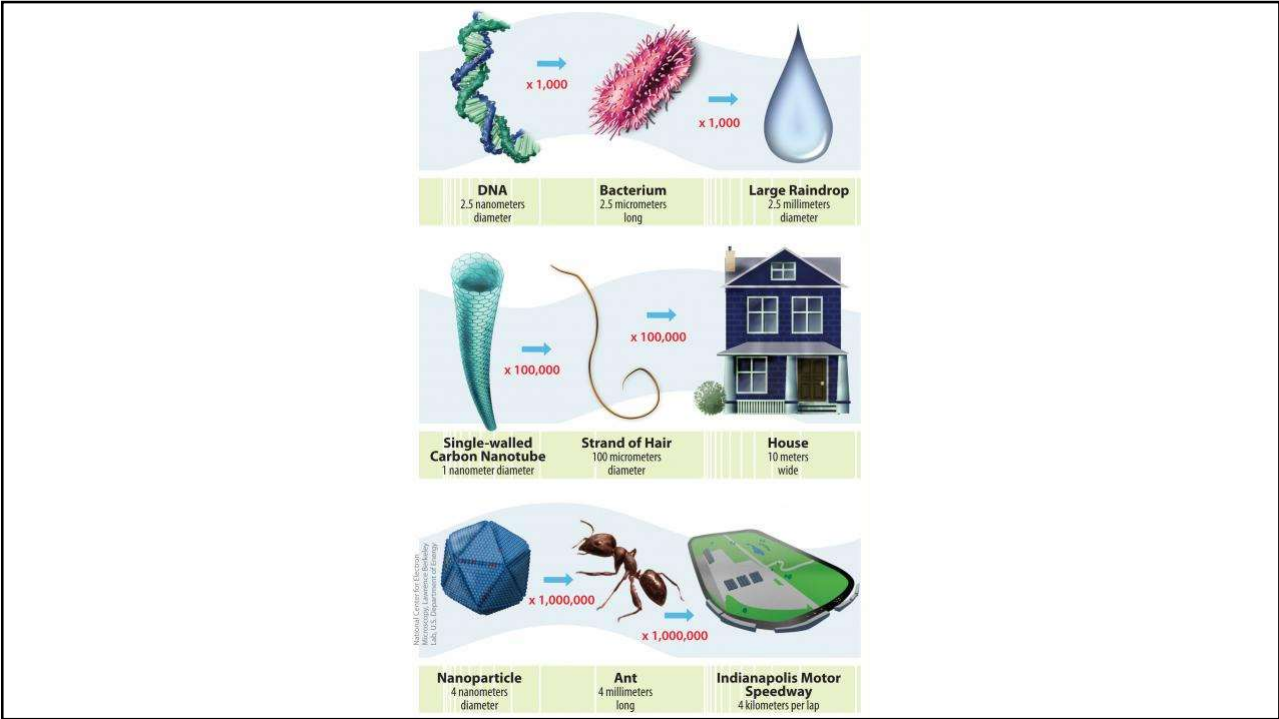
16-core NEURAL ENGINE

Advanced image signal processor

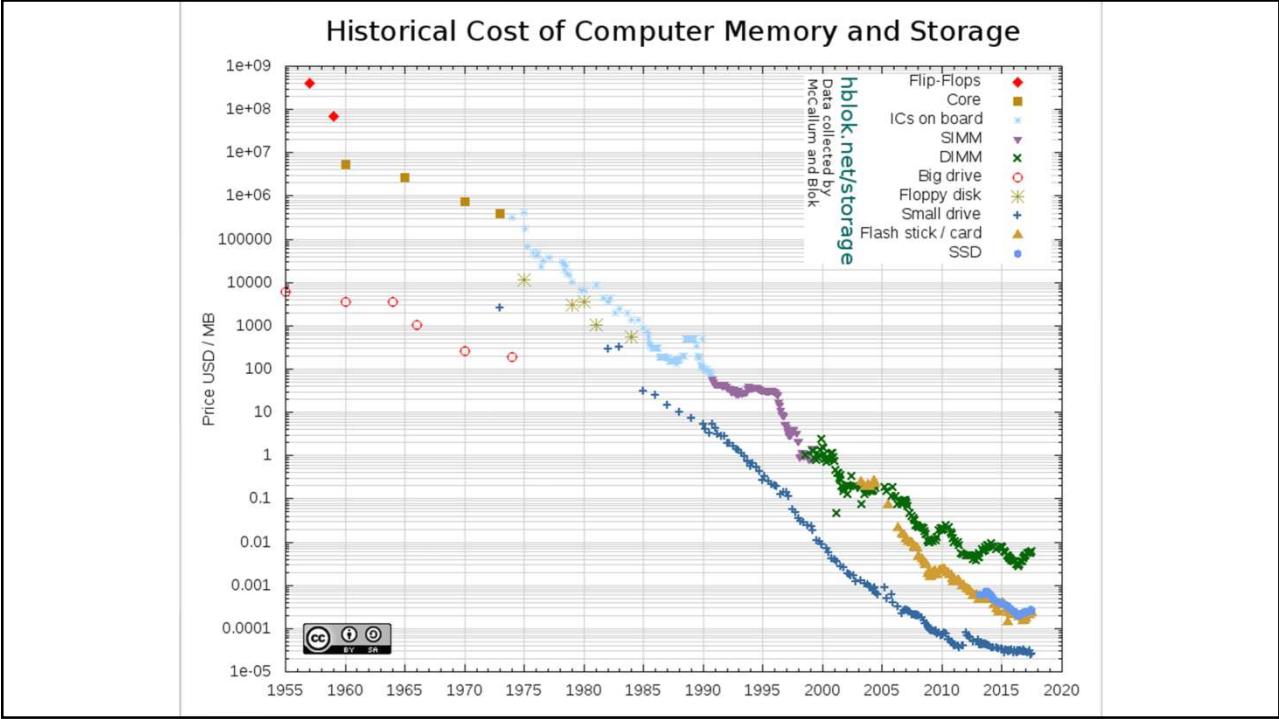
New 4-core GPU

Secure Enclave

42



43



44



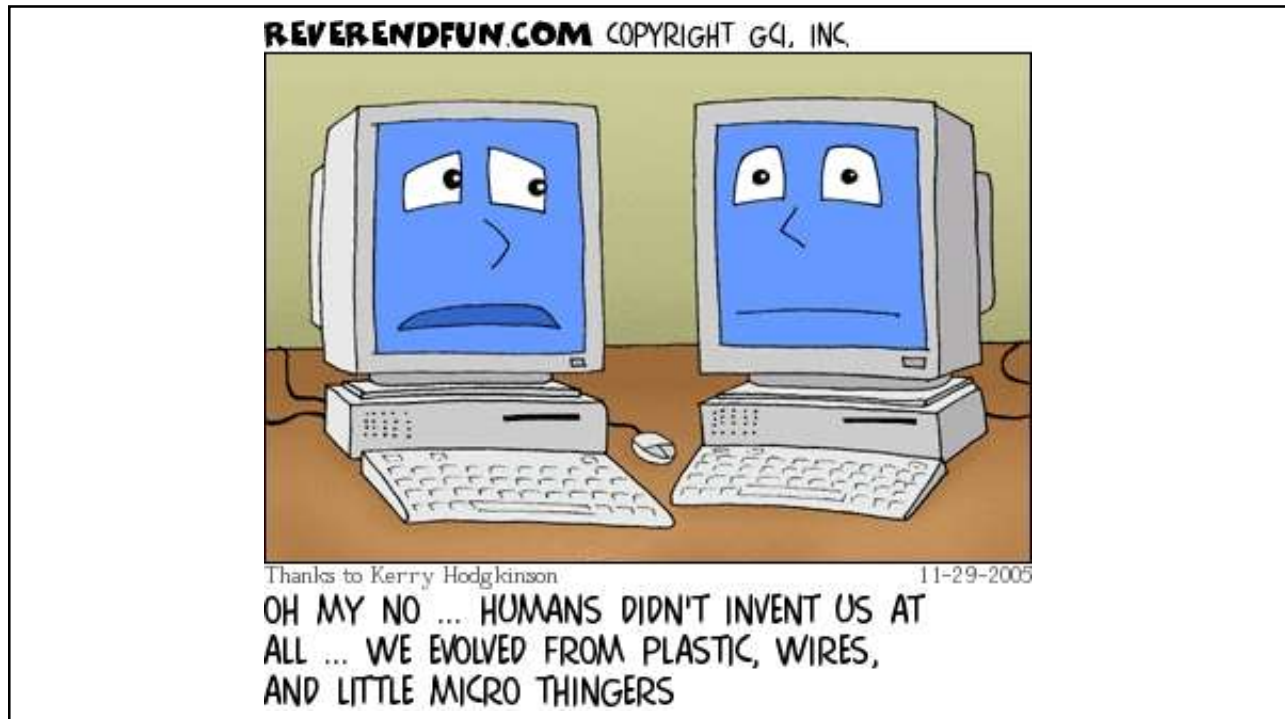
A Final Thought

- When I graduated from Purdue in 1974 it never occurred to me that I would own my own computer
- Apple II+ was introduced in June 1979 and I purchased mine in early 1980
- In 1981, I purchased my first "hard drive". Size 5 megabytes for \$500 (\$100/MB)
- Last month I purchase a 16-terabyte drive for \$460 on Amazon (\$28/TB, \$2.8/GB, \$0.28/MB)
- My home router has 44 network connected devices

We have come a long way

What's next

45



46