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Tech

DR JEFF SOFTWARE
INDIE APP DEVELOPER

Fall 2024 Rev7-17-24

News

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Chips 2Q23-1Q24

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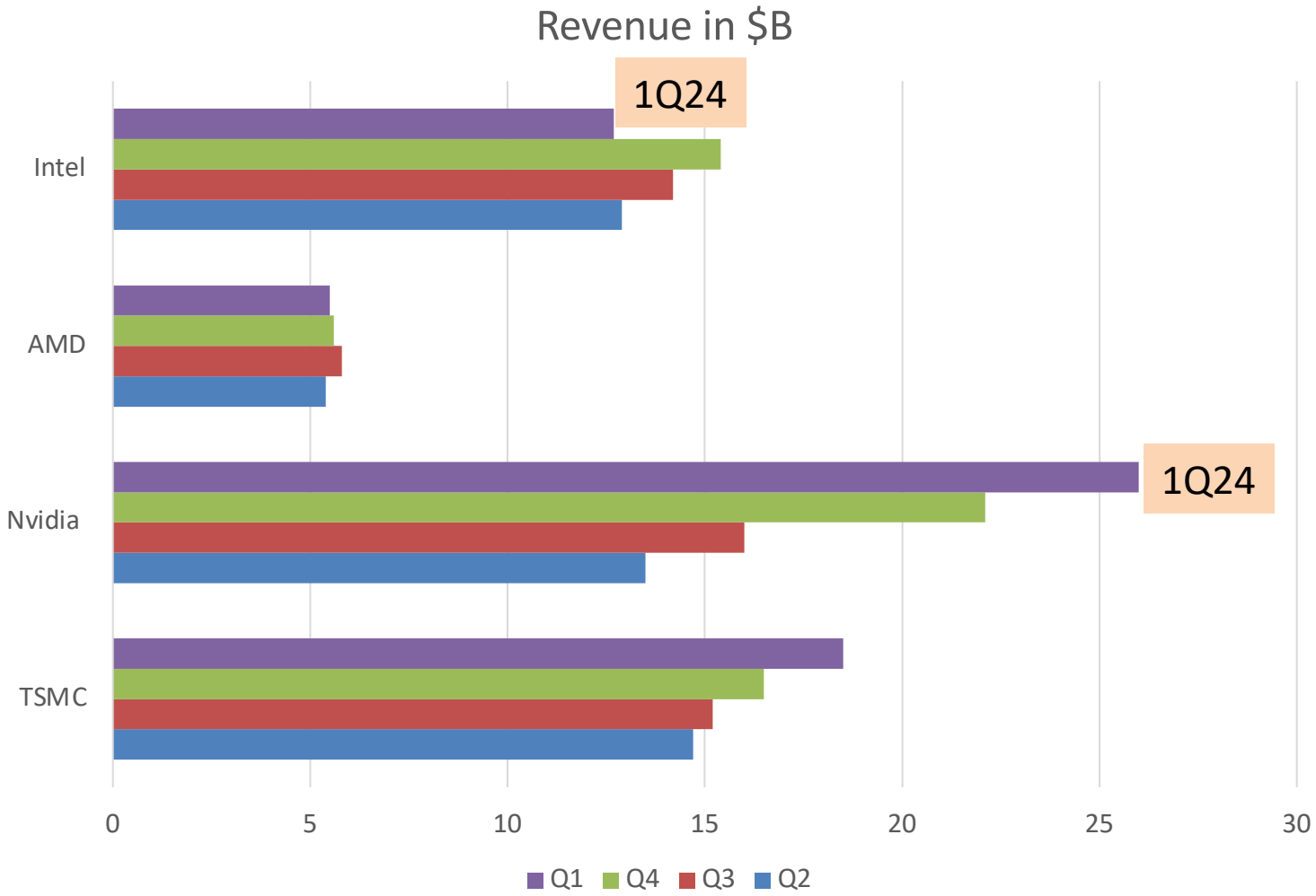

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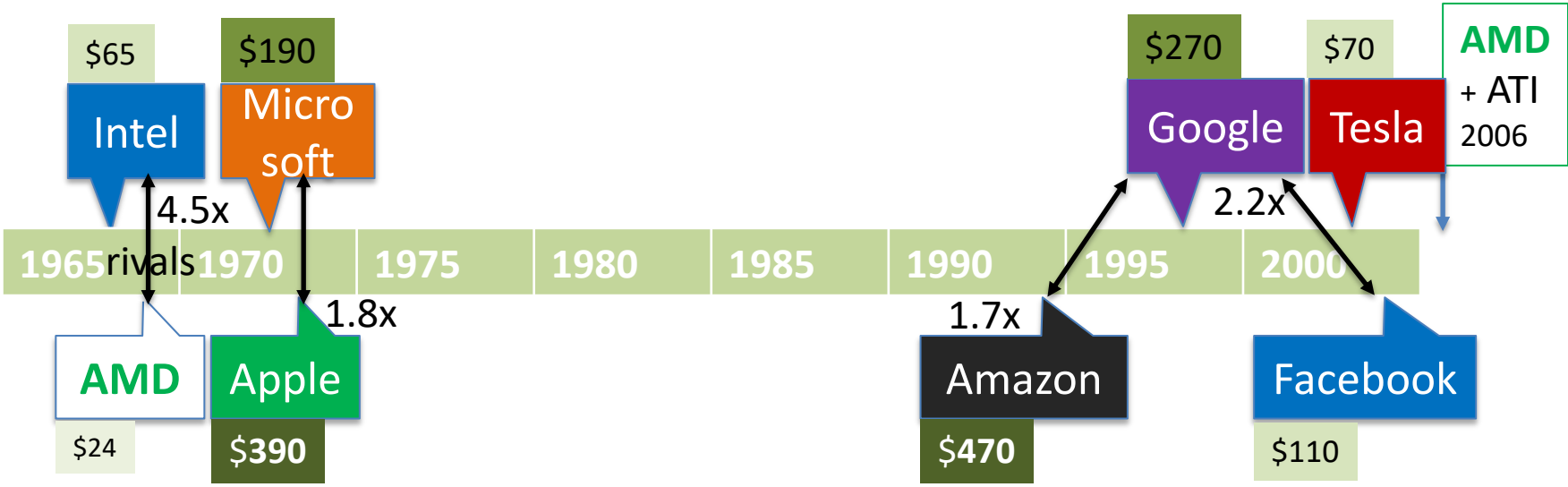
Tech Titan Timeline

Annual Revenue in $B | *Historical* Perspective | As of 3Q2022



Eras | chips | PCs | Sales | Search | Social

delivered

Internet
1969

→ 20 years →

WWW
1989

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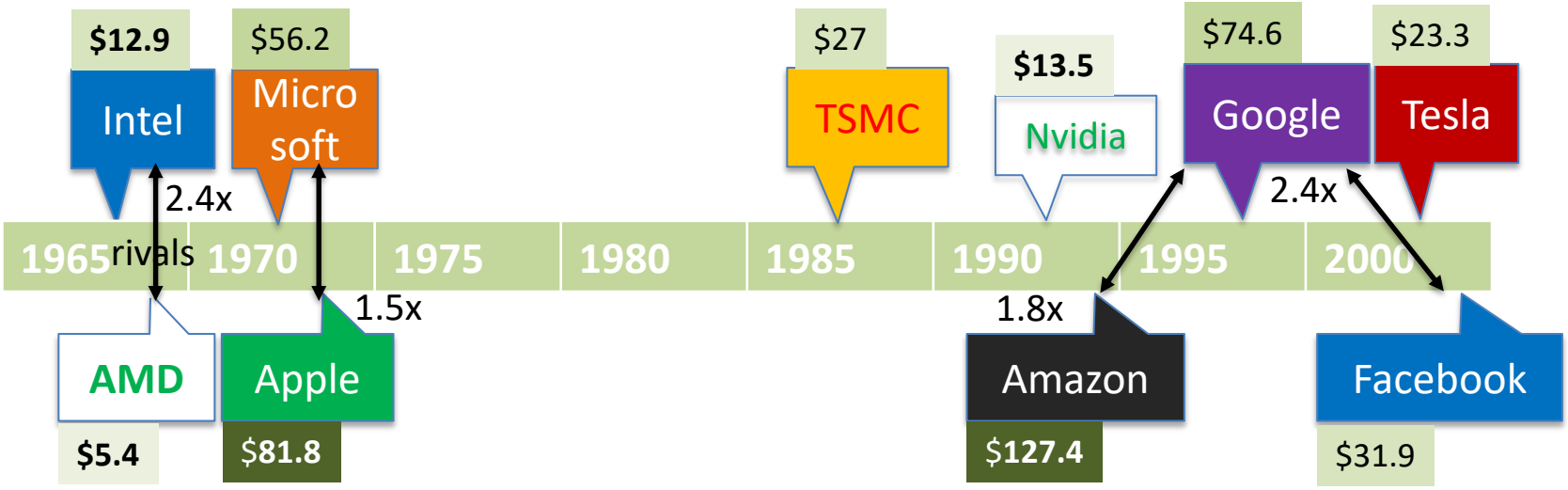
Tech Titan Timeline

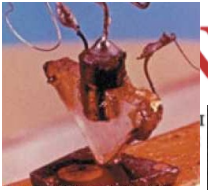
Qtr Revenue in $B | Current Perspective | **Q2** 2023



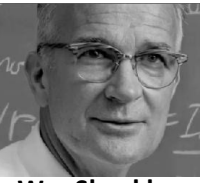
- Other *Industrials*
  - **GM** $40.0 → 2x Tesla
  - **Ford** $39.1
  - **IBM** $16.7 → ~Intel
  - QCOM $9.3
  - TI $4.2
  - NXPI $3.3

- Other *Services*
  - **Netflix** $8.2
  - Visa $8.1
  - **PayPal** $7.4

Founders HoF



Bell Labs

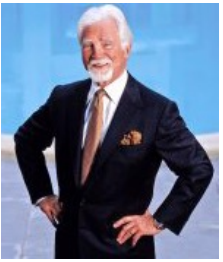


Wm Shockley

Fairchild founders (8)

Fairchild Chairman/CEO, LSI Logic founder

Wilf Corrigan



Jerry Sanders

CEO, AMD
1969–2002

Jack Gifford

AMD co-founder

In 1983, Gifford co-founded Maxim Integrated Products

Bob Noyce

Gordon Moore

Cypress Semi founder

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Tech Titan Founders/CEOs

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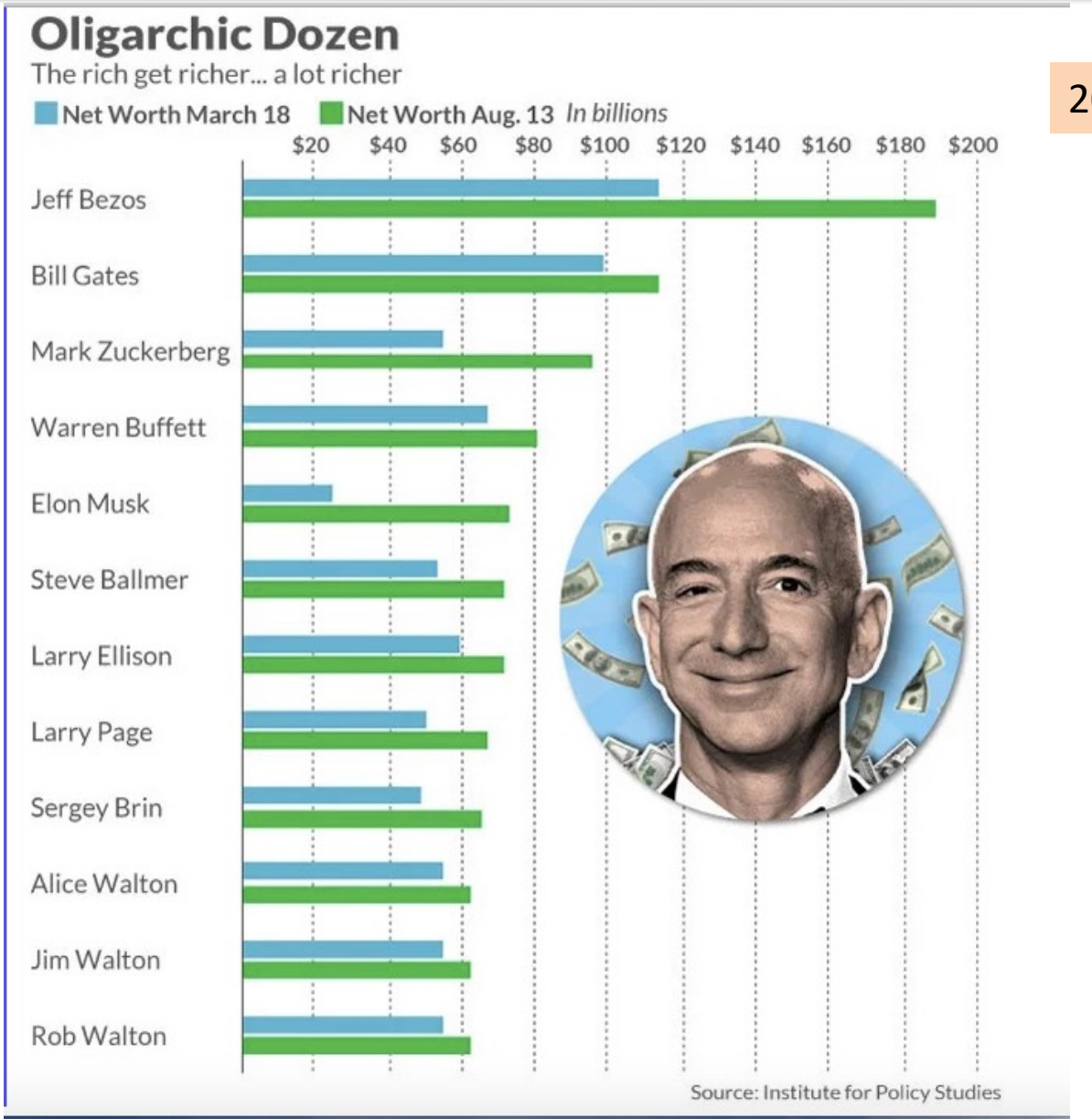
2020



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Troika Top $3T

The $3 Trillion Club—Microsoft, Apple, and Nvidia—Make Up 20% of the S&P 500

June 5, 2024,

Microsoft, Apple and Nvidia Make Up 20% of the S&P 500.
Credit: GETTY IMAGES

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Stock Prices 2020

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Section

Chip Industry News

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AMD Buys AI Co.

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7-11-24

Nvidia's Biggest Rival Agrees to Buy an AI Startup for Over Half a Billion Dollars in Cash

Sherin Shibu | July 11, 2024

AMD's deal is set to close later this year.

AMD disclosed on Wednesday that it will acquire Silo AI, a Finnish startup that calls itself "Europe's largest private AI lab." The all-cash deal is worth about $665 million and is expected to close in the second half of this year.

Microsoft News

6-12-24

Market Chatter: Microsoft to Develop Arm Chips With MediaTek

6:49 AM ET, 06/12/2024 - MT Newswires06:49 AM EDT, 06/12/2024 (MT Newswires) -- Microsoft (MSFT) has chosen Taiwanese chip design firm MediaTek to develop an AI-compatible Arm Holdings (ARM) personal computer chip that will run its Windows operating system, Reuters reported Wednesday, citing unnamed people familiar with the matter.

The MediaTek chip is scheduled to launch in 2025 after Microsoft's exclusive deal with Qualcomm for laptop chips expires, Reuters said.

The chip is based on Arm's AI-compatible designs. Rival Apple (AAPL) has incorporated Arm-based chips for its Mac computers for about four years, Reuters reported.

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Prices for Top CPU's

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THE BEST CPUS AT THE BEST PRICE

AMD Ryzen 7 2700X Processor with Wraith Prism LED Cooler – YD270XBGAFBOX

amazon.com

~~$329.00~~
$236.46

VIEW

Intel Core i5-8500 Desktop Processor 6 Core up to 4.1GHz Turbo LGA1151 300 Series 65W

amazon.com

$239.97

VIEW

Intel Core i9-9900K Desktop Processor 8 Cores up to 5.0 GHz Turbo unlocked LGA1151 300 Series 95W

amazon.com

$494.99

VIEW

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China Conf 2024

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6-7-24

AMD appearance at trade show

AI-related hardware could reach $640 billion by 2032 from less than $40 billion in 2022 and the report said that Microsoft (**MSFT**), Apple (**AAPL**), Alphabet (**GOOG**), Nvidia (**NVDA**) and Amazon (**AMZN**) are most exposed to the opportunity.

Nvidia is the current AI-chip champion, having recently crossed the $3 trillion market-capitalization threshold and surpassing Apple to become the world's second most valuable company, smack dab behind Microsoft.

Intel (**INTC**) is also looking for its piece of AI action. On Tuesday, the company unveiled Xenon, a data-center processor that Intel said would require fewer racks and less power while delivering better performance.

The Santa Clara, Calif., company also launched its Lunar Lake chip for AI computing, which it says will start shipping in the third quarter, as it looks to build on the expected demand for AI-powered laptops.

Section

Fab News

- TSMC
- Samsung

TSMC in Singapore

June 5, 2024, 6

TSMC-Backed Vanguard Plans $7.8 Billion JV to Build Chip Plant

Vanguard will own 60% of the joint venture and NXP the rest

Taiwan-based Vanguard, partially owned by Taiwan Semiconductor Manufacturing Co. and Dutch chip maker NXP will set up a joint venture and build a manufacturing facility to supply the automotive, industrial, consumer and mobile markets, the two companies said Wednesday in a statement.

A chip wafer displayed at Taiwan Semiconductor Manufacturing Co. (TSMC) facility in Tainan. Taiwan-based Vanguard, which is partially owned by TSMC, and Dutch chip maker NXP will set up a joint venture and build a new 300 mm semiconductor wafer manufacturing facility in Singapore. **Credit:** LAM YIK FEI/

TSMC in Singapore

Construction is slated to start in the second half of 2024, with initial production is expected to be available to customers in 2027.

Vanguard is a specialty contract chip maker that operates only 8-inch wafer fabs in both Taiwan and Singapore. NXP is one of the largest chip suppliers to the automotive industry, which accounts for more than half of the Dutch chip maker's revenue.

The new facility, which will be operated by Vanguard, will allow Vanguard to build its first, more advanced 12-inch fab by leveraging the technologies of TSMC, the world's largest contract chip maker.

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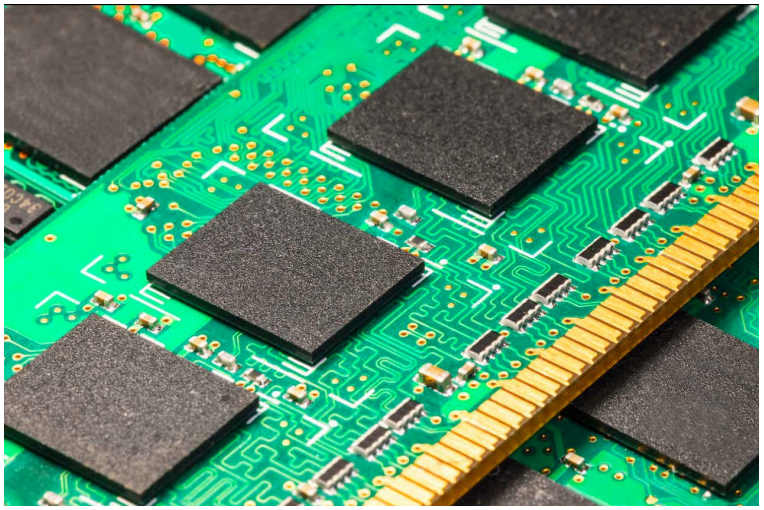
Micron Japan

5-30-24

Micron said to plan new DRAM chip factory in Hiroshima



May 28, 2024 2:39 AM ET | **Micron Technology, Inc. (MU)** | Jessica Kuruthukulangara, SA News Editor

Micron Technology (NASDAQ:MU) will build a new DRAM chip-making factory in Hiroshima, Japan by the end of 2027, Japanese daily Nikkan Kogyo reported.

The company is expected to invest around JPY 600B-JPY 800B ($3.83B-$5.10B) for the new plant.

Construction of the factory is slated to start in early 2026, and EUV systems will also be installed, according to the report.

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Micron Taiwan Fab

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4-11-24

Micron says Taiwan earthquake will have mid-single digit percentage impact on quarterly DRAM supply

By Ciara Linnane
Updated April 11, 2024, 12:30 pm EDT

Memory-chip maker says fab activity is recovering well after 7.4-magnitude earthquake

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Taiwan Earthquake

TSMC shutdown

- Intel
- AMD
- Nvidia
- Qualcomm
- Apple

Alibaba, Intel, AMD, Taiwan Semi, Super Micro, and Other Tech Stocks in Focus Today

Intel Foundry Biz lost **$7B**

Intel said its foundry business had an operating loss of $7 billion in 2023. **Credit:** DREAMSTIME

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More US $$ for TSMC

Samsung in Texas

Market Chatter: Samsung to Boost Its Semiconductor Investment in Texas to $44 Billion

$44B

08:19 AM EDT, 04/05/2024 (MT Newswires)

Korean electronics giant **Samsung** is planning to increase its semiconductor investment in **Texas** by more than two-fold to **$44 billion**, the Wall Street Journal reported on Friday, citing people familiar with the matter.

The investment will be concentrated in **Taylor, Texas**, where an event to announce the company's increased investment is expected to be held April 15, the report said.

Samsung said in November 2021 that it would invest **$17 billion** to build a semiconductor manufacturing facility in Taylor, Texas. The company said at the time that the facility will manufacture products for application in areas including mobile, 5G, high-performance computing, and artificial intelligence.

Samsung DRAM

12nm DDR5

Samsung stock rises on chip supply deal with Nvidia for use in AI - report

Sep 01, 2023 5:32 AM ET | **NVIDIA Corporation**

Last month, Samsung provided Nvidia with samples of its fourth-generation High Bandwidth Memory3 chips for quality check on Nvidia's A100 and H100 Tensor Core graphics processing units, or GPUs, the report added.

SK Hynix, reportedly, also said last month that it provided samples of a new high-performance chip HBM3E to Nvidia for evaluation.

The Korean tech giant also said that it has developed the industry's first and highest-capacity 32 gigabit (Gb) DDR5 DRAM, using the industry's leading 12-nanometer process technology, the report added.

GPU

- Nvidia **V100** (12nm in 2015)
- Nvidia **A100** (7nm in 2020)
- Nvidia **H100** (5nm in 2023)

Samsung DRAM

12nm

Nvidia makes GPUs used in generative AI services such as ChatGPT, developed by Microsoft (MSFT)-backed OpenAI. ChatGPT is known to use about 10,000 units of Nvidia's A100 chip and HBM3 DRAM is an important part in A100, the report added.

Nvidia V100 (12nm in 2015)

Samsung previously be supplying its HBM3 chips to Advanced Micro Devices (AMD) after a successful evaluation on AMD's Instinct MI300X accelerators, according to the report.

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Intel Fabs

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INDIE APP DEVELOPER

NEWS

Intel's Ohio plants delayed 2 years; will start production in 2027 or later

Published: Mar. 19, 2024

NEW ALBANY, Ohio — Construction on Intel's silicon chip factories just outside Columbus is under way, but a report sent to state officials shows that they'll start production at least two years later than

Intel Get $8B

How Intel won $8.5 billion in chipmaking cash from Biden

The award announced Wednesday will be the largest grant in the White House's push to restart semiconductor manufacturing in

Intel (INTC) CEO Pat Gelsinger has spent the last three years lobbying Washington to make billions available to American chipmakers, and on Wednesday that paid off for his company with news of up to $8.5 billion in US grants in the years ahead.

It "will be the single biggest announcement of a grant to any chips recipient," said Commerce Secretary Gina Raimondo in announcing the news.

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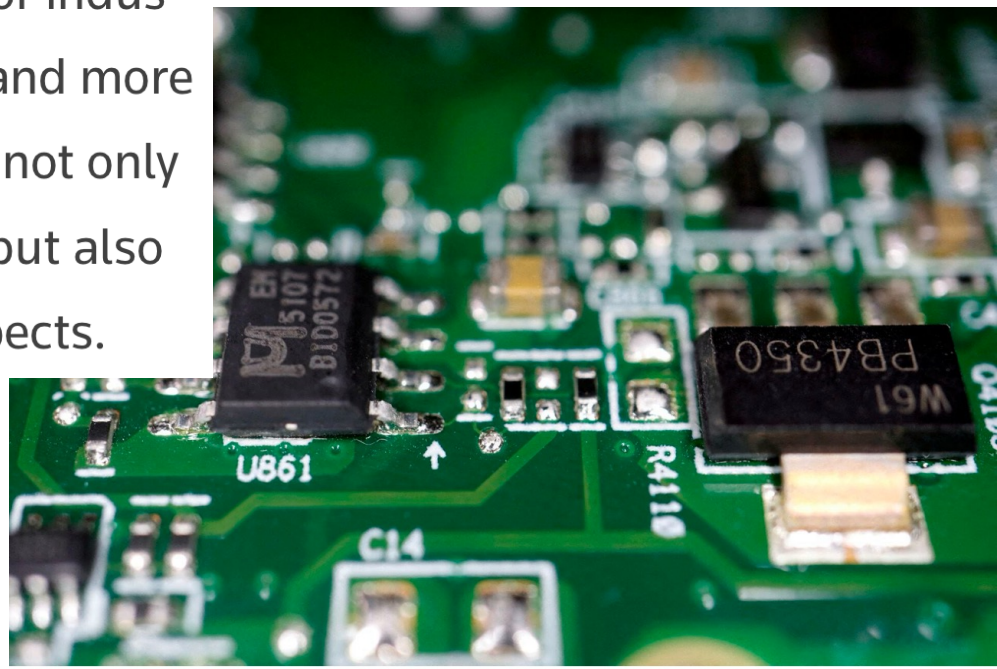
TSMC in Japan

February 21, 2024 11:00 PM UTC

Taiwan chip firms flock to Japan as China decoupling accelerates

Japan's efforts to rebuild its semiconductor industry are getting a shot in the arm as more and more Taiwanese chip companies expand here - not only to support a new TSMC **(2330.TW)** plant but also excited about the Japanese sector's prospects.



Semiconductor chips are seen on a printed circuit board in this illustration picture taken February 17, 2023. REUTERS/Florence Lo/Illustration/File Photo/File Photo

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Intel Foundry vs TSMC

DR JEFF SOFTWARE
INDIE APP DEVELOPER

February 22, 2024 8:19 AM UTC

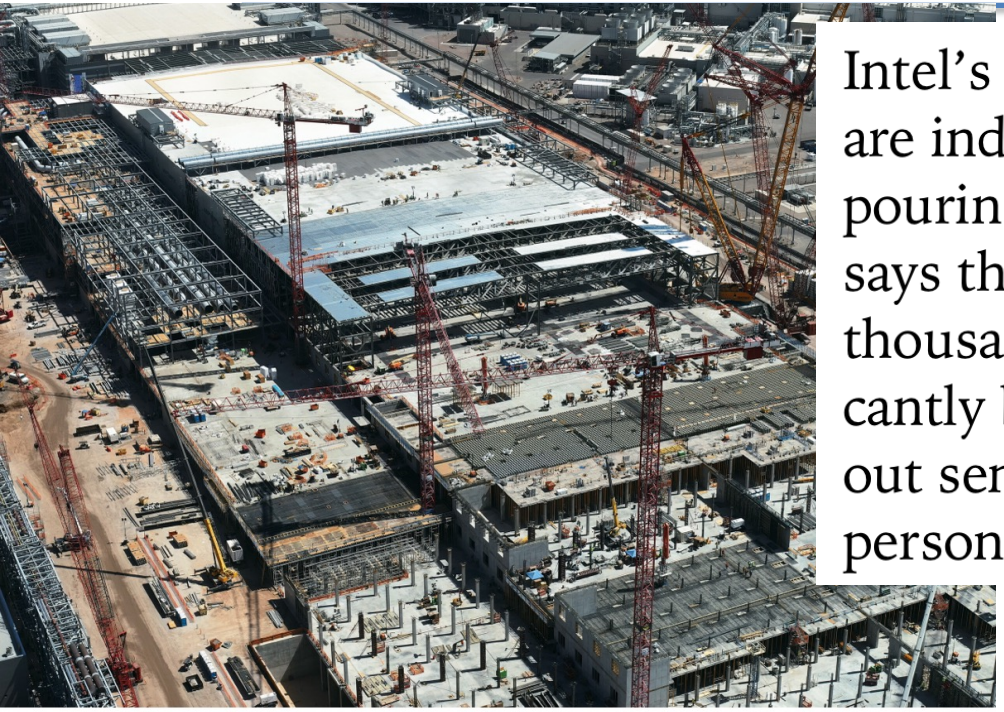
Intel signs Microsoft as foundry customer, says on track to overtake TSMC

By Stephen Nellis, Max A. Cherney

erform at an Intel Foundry semiconductor
ring event in San Jose, California, U.S. February 21,
ITERS/Max Cherney

Intel **(INTC.O)** said on Wednesday that Microsoft **(MSFT.O)** plans to use its services to manufacture a custom computing chip and that the company expects to beat an internal deadline of 2025 to overtake its biggest rival, Taiwan Semiconductor Manufacturing Co **(2330.TW)**, in advanced chip manufacturing.

Intel & Chips



Intel's plans for its campus near Phoenix are indeed remarkable: The chip giant is pouring $20 billion into the project, and says the new factories, or fabs, will create thousands of jobs, not to mention significantly boost its domestic capacity to churn out semiconductors used in products like personal computers and data center servers.

Intel is building two new chip plants near Phoenix, part of an industrywide building spree across the U.S.
Courtesy of Intel Corporation

On Sept. 24, 2021, Intel broke ground on two new computer chip factories in Chandler, Ariz., just one of many such projects companies are racing to complete across the country to fuel a seemingly bottomless demand for semiconductors. Amid the

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Intel & Chips

To be sure, onshoring chip production has many upsides, including bolstering supply chains and even making the U.S. safer—one of the federal government's stated reasons for implementing the CHIPS and Science Act, signed by President Biden in 2022. The legislation authorized nearly $53 billion in subsidies and tax credits to incentivize semiconductor companies to invest more in domestic research and manufacturing. So far, it appears to be working.

Since the CHIPS Act was enacted, a number of chipmakers have committed billions of dollars to building new plants. In addition to its new factories in Arizona, Intel has broken ground on fabs in Ohio. Meanwhile, Taiwanese chipmaker TSMC, which makes most of Nvidia's processors, is also expanding in Arizona with a $40 billion build-out, reportedly among the largest foreign investments in U.S. history. And memory chip manufacturer Micron has plans for a massive plant in Boise, where the company is based.

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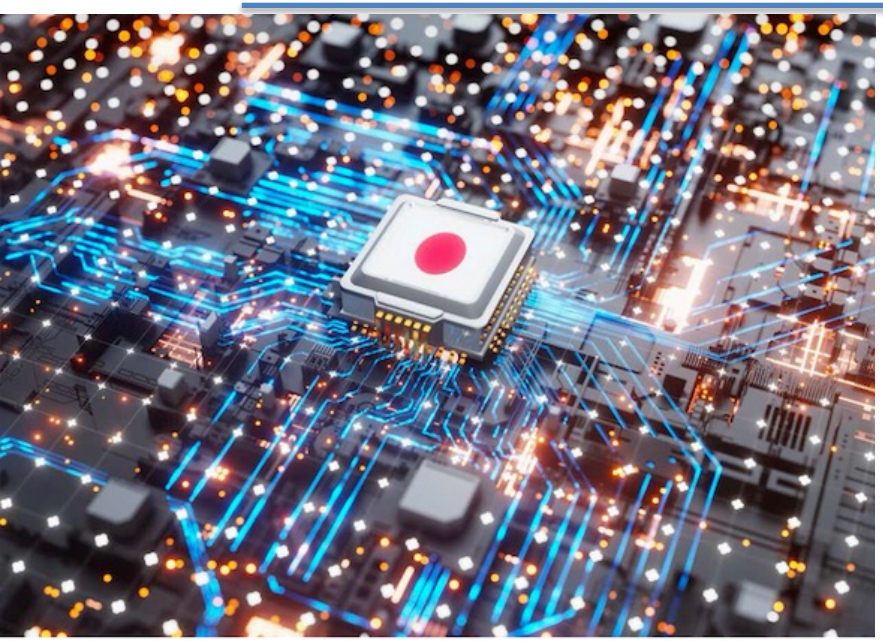
TSMC New Fab



Taiwan Semiconductor, Sony others team up to build 2nd chip facility in Japan

Feb 06, 2024 8:34 AM ET | **Taiwan Semiconductor Manufacturing Company Limited (TSM)** | Ravikash, SA News Editor

Taiwan Semiconductor Manufacturing (NYSE:TSM) will build a second chip fabrication facility in Japan with help from Sony (SONY), Denso, Toyota (TM) and the Japanese government.

Overall investment in Japan Advanced Semiconductor Manufacturing, or JASM — TSM's majority-owned manufacturing subsidiary, will exceed $20B.

TSMC

TSMC to launch chipmaking plant in Japan, but US plant to face delays

Taiwan's TSMC will open its latest chipmaking foundry on Japan's Kyushu island on February 24, but a plant in the United States will face further delays, the company said Thursday.

Taiwan Semiconductor Manufacturing Company -- which counts Apple and Nvidia as clients -- controls more than half the world's output of silicon wafers, used in everything from smartphones to cars and missiles.

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NV MRAM for IMC

DR JEFF SOFTWARE
INDIE APP DEVELOPER

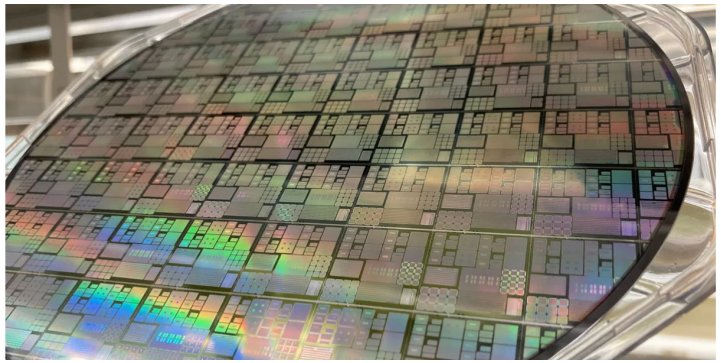
- NV = Non Volatile
- MRAM = Magnetic RAM
- IMC = In-Memory Computing

TSMC tandem builds exotic new MRAM-based memory with radically lower latency and power consumption

News

By Anton Shilov published January 19, 2024

TSMC and ITRI tout SOT MRAM for in-memory computing applications.



NV MRAM for IMC

TSMC and Taiwan's Industrial Technology Research Institute (ITRI) on Thursday announced that they had jointly developed co-developed a spin-orbit-torque magnetic random-access memory (SOT-MRAM) array chip, the result of a joint development program the tandem announced in 2022. The memory device can be used for computing in memory architectures and last-level cache, boasting non-volatility, low latencies, and power consumption that is 1% of that of spin-transfer torque (STT) MRAM.

"This unit cell achieves simultaneous low power consumption and high-speed operation, reaching speeds as rapid as 10ns," said Dr. Shih-Chieh Chang, General Director of Electronic and Optoelectronic System Research Laboratories at ITRI. "Its overall computing performance can be further enhanced when integrated with computing in memory circuit design. Looking ahead, this technology holds the potential for applications in high-performance computing (HPC), artificial intelligence (AI), automotive chips, and more."

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NV MRAM for IMC

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While SOT-MRAM offers lower standby power than SRAM, it needs high currents for write operations, so its dynamic power consumption is still quite high. Furthermore, SOT-SRAM cells are still larger than SRAM cells, and they are harder to make. As a result, while the SOT-SRAM technology looks promising, it is unlikely that it will replace SRAM any time soon. Yet, for in-memory computing applications, SOT-MRAM could make a lot of sense, if not now, but when TSMC

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New Euro Fabs

Kurt Sievers • 3rd+
President and Chief Executive Officer at NXP Semicon...
3w •

+ Follow •

Today, **NXP Semiconductors**, **TSMC**, **Bosch**, and **Infineon Technologies** announced a plan to jointly invest in European Semiconductor Manufacturing Company (**#ESMC**) GmbH, in Dresden, Germany to provide advanced semiconductor manufacturing services.

NXP is very committed to strengthening **#innovation** and supply chain resilience in Europe. The construction of this new and significant semiconductor foundry will add much needed innovation and capacity for the range of silicon required to supply the sharply increasing **#digitalization** and **#electrification** of the Automotive and Industrial sectors.

I encourage you to read the full press release at **https://lnkd.in/e5fsrXey**

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Intel

News

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Intel 4Q23 Results

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4Q23	Revenue = **$15.4B** on ?? cents/shr

1Q23	Revenue = **$11.7B** on -66 cents **LOSS**/shr
4Q22	Revenue = **$14.0B** on only 10 cents/shr

3Q22=> **$15.3B** on 59 cents/shr

Nvidia 4Q23 Rev = **$22.1B**

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Intel 1Q24 Results

1Q24 Revenue = **$12.7B** on 18 cents/shr

4Q23=> **$15.4B**
1Q23=> **$11.7B**
4Q22=> **$14.0B**
3Q22=> **$15.3B**

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Intel 4Q22 Results

Intel CEO Pat Gelsinger

Intel 4Q22 Results"On Intel 20A and Intel 18A, the first nodes to benefit from **RibbonFETs** and **PowerVia**, internal test chips and those of a major potential foundry customer have taped out with the silicon running in the fab. We continue to be on track to regain transistor performance and power performance leadership by **2025**."

"Additionally, we continue to make progress on Intel 18A, and I've already shared the engineering release of PDK0.5 with our lead customers and expect to have the final production release in the next few weeks."

"We will, one, deliver on five nodes in four years, achieving process performance parity in 2024 and unquestioned leadership by 2025 with Intel 18A.... and four, expand our **IFS** customer base to include large design wins on Intel 16, Intel 3 and 18A this year."

"**IFS** achieved record quarterly revenue of $319 million, up 87% sequentially and 30% year-over-year on increased automotive shipments."

1Q23 Foundry revenue declined to only $**118M**

Intel to Get EUV

September 29, 2023 4:13 PM UTC

Intel hails 'landmark' as high-volume EUV production begins at Irish plant

Summary

- Intel on track for technology delivery goal - executive
- To get next generation ASML chipmaking tool this year

Intel Patents

TECHNOLOGY

December 4, 2023 6:41 PM UTC

Intel wins US appeal to overturn $2.18 billion VLSI patent verdict

A U.S. appeals court on Monday threw out a $2.18 billion patent-infringement award won by patent owner VLSI Technology against Intel Corp (INTC.O), overturning one of the largest verdicts in the history of U.S. patent law.

The U.S. Court of Appeals for the Federal Circuit reversed the jury's 2021 verdict that Intel infringed one VLSI patent, and sent the case back to Texas for a new trial to determine how much Intel owes for infringing a second VLSI patent.

Intel News

1-25-24

We could not be prouder of the execution across our process technology roadmap in 2023 and we became the world's first high-volume manufacturer of logic devices using EUV, both the U.S. and Europe as we aggressively ramped Core Ultra on Intel 4 in both Oregon and Ireland. Intel 3 achieved manufacturing readiness in Q4 as committed with solid performance in year progression. Our two lead vehicles in Intel 3 are on track, and we look forward to launching Sierra Forest in first half '24 followed shortly thereafter by Granite Rapids.

Intel News

1-25-24

Sierra Forest has final samples at customers and the production stepping of Granite Rapids is running ahead of schedule well into power-on validation and very healthy. We are even more excited about breaking into the Angstrom era with Intel 20A and Intel 18A.

We are first in the industry to have incorporated both gate-all-around and backside power delivery in a single process node, the latter unexpected two years ahead of our competition. Arrow Lake, our lead Intel 20A vehicle will launch this year. Intel 18A is expected to achieve manufacturing readiness in second half '24, completing our five nodes in four year journey and bringing us back to process leadership. I am pleased to say that Clearwater Forest, our first Intel 18A part for servers has already gone into fab and Panther Lake for clients will be heading into Fab shortly.

Intel News

1-25-24

As we complete our goal of five nodes in four years, we are not satisfied nor are we finished. We have begun installation of the industry's first high NA EUV tool in our most advanced technology development site in Oregon aimed at addressing challenges beyond 18A. We remain focused on being good stewards of Moore's Law and ensuring a continuous node migration path over the next decade and beyond.

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Intel New German Fabs

6-20-23

Intel Signs Deal With Germany for Expanded Investment in Wafer Fabrication Site; Will Reportedly Get $10.9 Billion Subsidy

5:36 AM ET, 06/20/2023 - MT Newswires05:36 AM EDT, 06/20/2023 (MT Newswires) -- Intel (INTC) said Monday it has entered into an agreement with the German federal government to expand the scope of the company's wafer fabrication project in the city of Magdeburg.

The investment, which is now expected to be more than 30 billion euros ($32.79 billion), covers the establishment of two semiconductor facilities, with the first facility anticipated to start production in four to five years following European Commission approval of the associated incentive package, the chipmaker said.

The company and the German government have struck a deal for Intel to receive a larger subsidy package worth approximately 10 billion euros ($10.9 billion) for a semiconductor facility, Bloomberg reported, citing people familiar with the deal.

The company said it expects the site to support 3,000 permanent high-tech workers.

Intel at TSMC

Intel podcast

Gelsinger Fires back at Intel 3 and TSMC N3 delay rumors, Arrow Lake on 20A on track for 2024

"The 3nm programs are on track, both that with TSMC as well as our internal Intel 3 programs Granite Rapids and Sierra Forest in particular," said Gelsinger at the company's Intel Capital Allocation Update conference call. "I am somewhat amazed by some of these rumor mill discussions that come out. You might notice there were similar ones on Intel 4 a few months ago, and also with some of our other TSMC programs, which were patently false at the time as well."

Intel News

Hot Chips 2023

August 28, 2023 9:56 PM UTC

Intel says new 'Sierra Forest' chip to more than double power efficiency

At a semiconductor technology conference held at Stanford University in Silicon Valley, Intel said its "Sierra Forest" chip will have 240% better performance per watt than its current generation of data center chip, the

The company is for the first time splitting its data center chips into two categories: A "Granite Rapids" chip that will focus on performance but consume more power, and the more efficient "Sierra Forest" chip.

Intel APX

Sep 2023

Intel® APX adds conditional forms of load, store, and compare/test instructions, and it also adds an option for the compiler to suppress the status flags writes of common instructions. These enhancements expand the applicability of if-conversion to much larger code regions, cutting down on the number of branches that may incur misprediction penalties. All these conditional ISA improvements are implemented via EVEX prefix extensions of existing legacy instructions.

Application developers can take advantage of Intel® APX by simple recompilation – source code changes are not expected to be needed. Workloads written in dynamic languages will automatically benefit as soon as the underlying runtime system has been enabled.

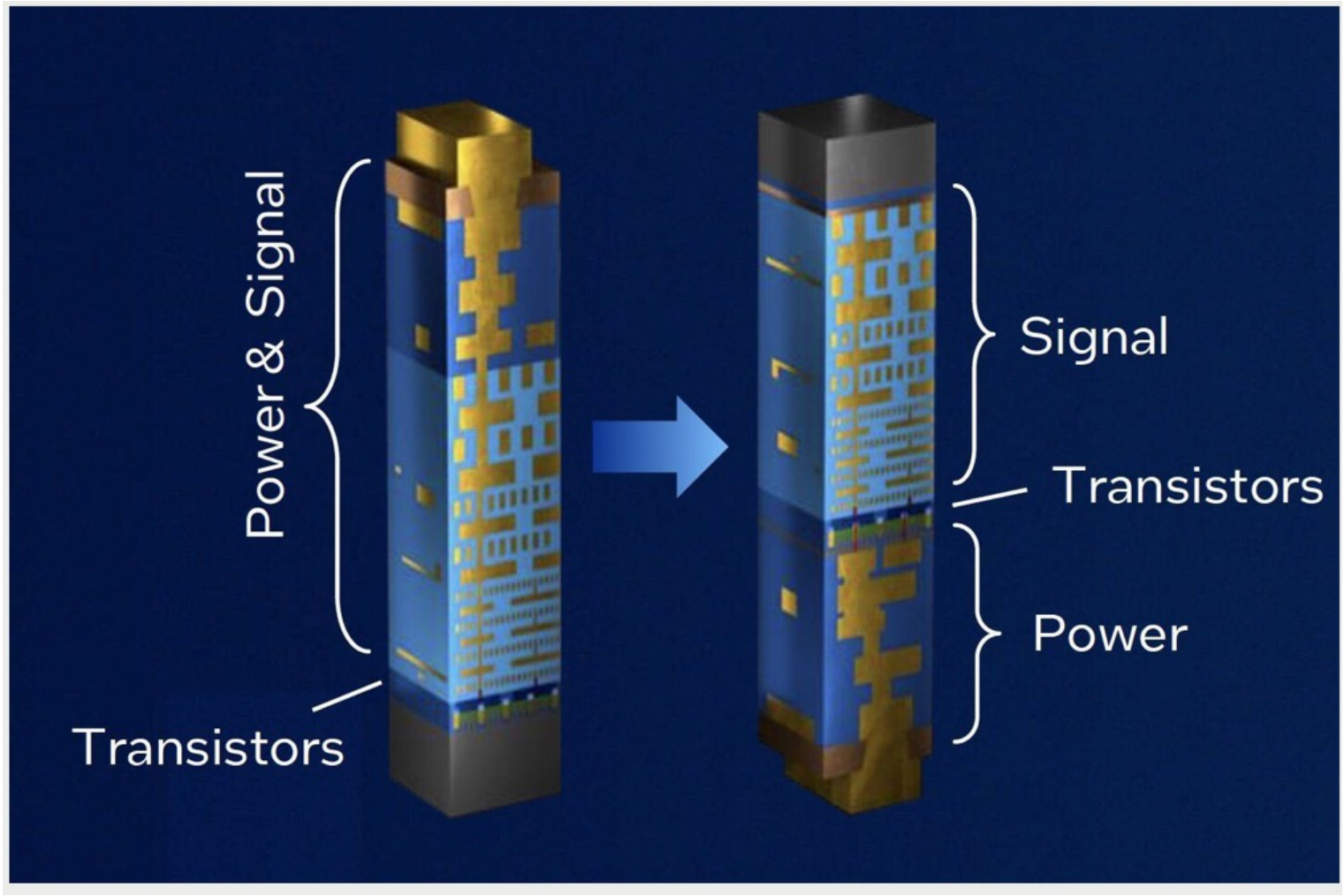
Intel® APX demonstrates the advantage of the variable-length instruction encodings of x86 – new features enhancing the entire instruction set can be defined with only incremental changes to the instruction-decode hardware. This flexibility has allowed Intel® architecture to adapt and flourish over four decades of rapid advances in computing – and it enables the innovations that will keep it thriving into the future.

Intel® APX doubles the number of general-purpose registers (GPRs) from 16 to 32. This allows the compiler to keep more values in registers; as a result, APX-compiled code contains 10% fewer loads and more than 20% fewer stores than the same code compiled for an Intel® 64

overhead, we are adding PUSH2/POP2 instructions that transfer two register values within a single memory operation. The processor tracks these new instructions internally and fast-forwards register data between matching PUSH2 and POP2 instructions without going through memory.

Intel iPower

June 2023



Intel Backside Power

Success would put Intel ahead of TSMC and Samsung, in offering both nanosheet transistors and back-side power. Samsung has already moved to a gate-all-around device, and it's unclear when it will integrate back-side power. TSMC is scheduled to offer gate-all-around devices in 2025, but it won't be adding back-side power delivery until at least 2026.

Intel Tiger Lake

digitaltrends

14nm → 10nm

End of 2020

- Improved transistor design *SuperFin*

Intel's Tiger Lake processors are still scheduled for launch before the end of 2020. Some laptops manufacturers, such as Acer, have already promised 11th-gen Tiger Lake laptops before 2021 as well.

Intel has an event scheduled on September 2, where the company is rumored to provide more details on specific Tiger Lake chips, including some concrete performance data and specific information on the processor lineup.

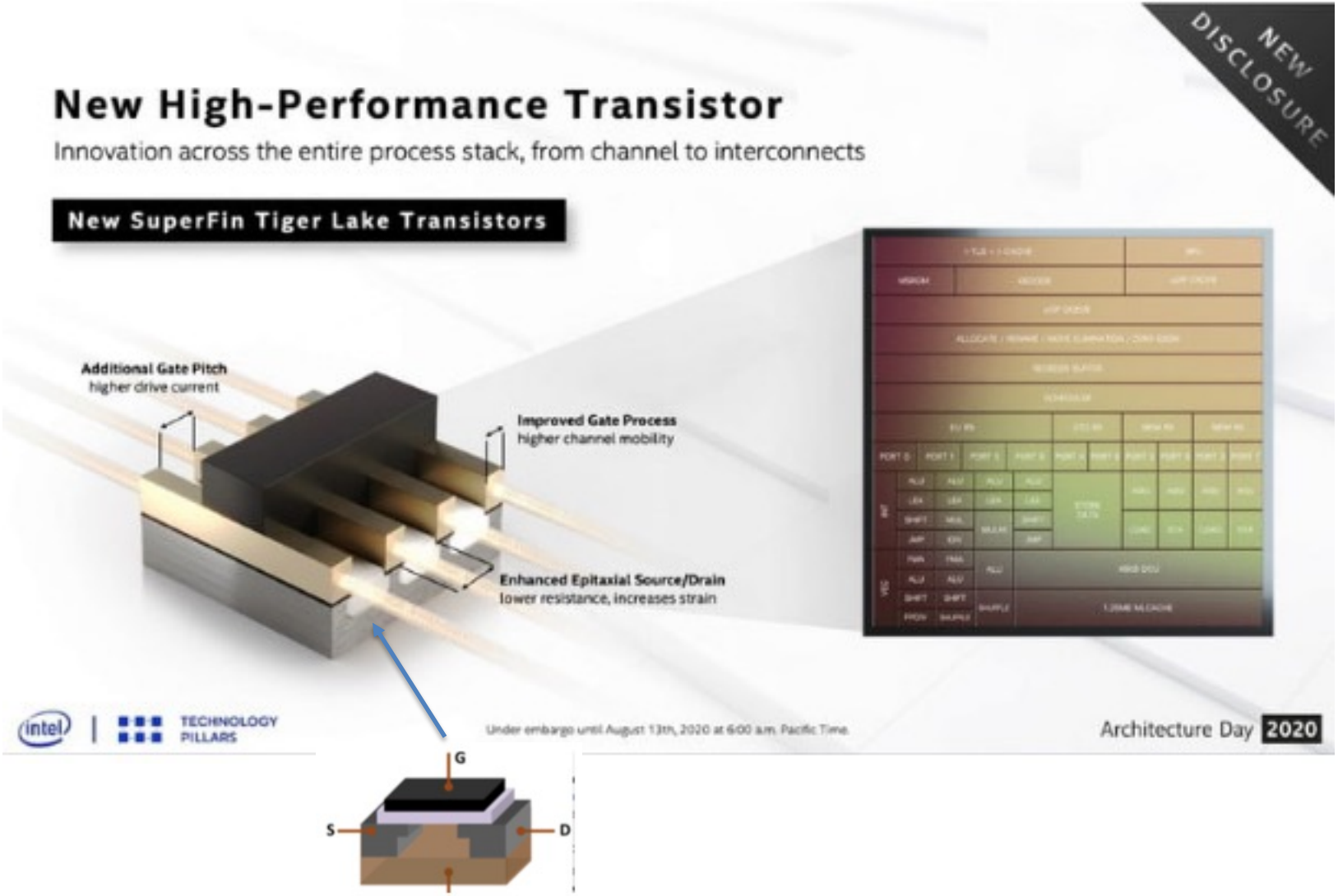
Ice Lake → Tiger Lake

Intel Tiger Lake

digitaltrends

14nm → 10nm | End of 2020

- Improved transistor design *SuperFin*



Intel Tiger Lake

digitaltrends

14nm → 10nm | End of 2020

- Improved transistor design *SuperFin*

Higher frequencies with Willow Cove

Intel Tiger Lake

digitaltrends

14nm → 10nm | End of 2020

- Improved GPU – Xe graphics

Xe graphics finally launch

The most exciting of the upgrades coming to Tiger Lake, by far, arrive in the graphics department. It's the first to use Intel's Xe GPUs, which promise a huge improvement to graphics, ranging from integrated graphics all the way up to the data center.

Tiger Lake graphics build on what was already a massive improvement in Ice Lake. Intel's integrated Gen11 "Iris Plus" graphics were offered in 10th-generation Ice Lake laptops, which doubled the performance of the terrible Intel UHD integrated graphics of yesteryear.

Intel Tiger Lake

digitaltrends

14nm → 10nm

End of 2020

- Improved GPU – Xe graphics

Tiger Lake takes it a step further, bumping up the number of EUs (execution units) from 64 up to 96. Intel emphasized the ability of these graphics even in restricted form factors, as low as 15 watts, which is the standard size for many 13-inch laptops. In *Battlefield 1*, the company showed how a 15-watt Tiger Lake system had smoother gameplay than a 25-watt Ice Lake system.

15-25W !

This increase in performance won't transform your laptop into a full-fledged gaming laptop — not by any means. But it looks to be a meaningful boost in frame rates, especially while playing games at low-quality settings (in 1080p, of course). Intel showed a number of games playing on Tiger Lake integrated graphics, including *Doom Eternal*, *Battlefield V*, and *PlayerUnknown's Battlegrounds*. Intel

Intel News

- Intel news:
  - The New York Times reported that technology setbacks from Intel delayed the production of the Argonne National Laboratory Aurora supercomputer, which was originally predicted to be installed in facilities near Chicago in 2021.
  - Intel director of quantum hardware, Jim Clarke, discussed the company's plans for the future of quantum computing.
  - Tom's Hardware reported a leak related to the upcoming Intel Core i7-1185G7, highlighting that the iGPU clocks up to 1.55 GHz, which is 36.3% faster than the Core i7-1065G7 that it will replace. The article also included leaked Geekbench 5 benchmarks for the Core i5-1135G7, which has a 2.4 GHz base clock and 4.19 GHz boost clock.
  - VideoCardz reported that press received another package from Intel this week about the Tiger Lake launch next week. The package included a JBL headset, another invitation to the September 2 event and a teaser for new branding, as posted on Twitter by Wccftech's Hassan Mujtaba.

Longtime Intel chairman Andy Bryant, near the end of four-decade career, says 'We have to take more risks'

Facinating article in the Oregonian (Intel is Oregon's largest employer) about attempting to correct the excesses of Grove's personality and choosing Intel's new leadership. This is a "subscriber only" article, but everyone gets one freeby.

> Bryant recalled one of his last, in-person meeting with Intel engineers before the pandemic hit last spring. Intel's next-generation development team was discussing its plan to catch up technologically. And while the group's leader (whom Bryant would not name) appeared uncomfortable, Bryant said, younger engineers had full command of the issues and a clear path to overcome Intel's setbacks.
>
> "'No doubt,' they said, 'we have this stuff, we're being held back,'" Bryant recalled. "It was quite a bold statement, in front of the boss, to say we're being held back. But by watching them you suddenly had the confidence we do still have the talent to solve this problem."

Intel etc News

Semiconductors in Science and Industry

Semiconductor Industry News

- Intel news:
  - Notebookcheck and others reported System76 updated its Lemur Pro and Galago Pro laptops with 11th Gen Tiger Lake CPUs.
  - SemiAccurate reported Intel has delayed another mainstream server project, Ice Lake-SP. Noting that both dies, the HCC and XCC, are reportedly behind schedule, Demerjian stated "Intel is no longer a viable player in the server market, it is that bad."
  - The Wall Street Journal discussed Intel's past success and recent downfalls with creating its own chips.
  - Intel debuted its first discrete graphics processing unit (GPU) for the data center, based on the Xe-LP microarchitecture, and announced the gold release of Intel oneAPI toolkits coming in December.
- Nvidia news:
  - A supercomputer at Texas A&M University will be powered by Dell Technologies and come equipped with Intel Xeon Scalable processors, Nvidia A100 GPUs, Nvidia RTX 6000 GPUs and Nvidia T4 GPUs.
- Other semiconductor industry news:
  - TSMC's Board of Directors approved spending $3.5B on the company's upcoming fab in Arizona.

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Intel etc News

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INDIE APP DEVELOPER

Technology in Science and Industry

Intel Previews WiFi 7

Wi-Fi 7 will be an extension of Wi-Fi 6 and it will support current Wi-Fi bands. One key feature that Cordeiro highlighted was deterministic low latency for applications that require a quantifiable upper bound of low latency such as industrial and enterprise applications like augmented and virtual reality and VR.

He then pointed to a theoretical data rate when comparing Wi-Fi 6 to Wi-Fi 7: "We are talking about a data rate increase of almost five times [and]if you look at the client side [there is]an order of magnitude of two times," he said.

Semiconductors in Science and Industry

Micron Develops 176-layer NAND Memory

--Micron

Micron's 3D NAND Chip

> Eschewing floating gate in favor of a charge trap approach and combining it with its CMOS-under-array architecture enables Micron to significantly improve performance and density, said Derek Dicker, corporate vice president and general manager of Micron's storage business unit. The company's 176-layer NAND improves both read latency and write latency by more than 35% compared with the company's previous generation of high-volume 3D NAND and a layer count that is nearly 40% higher than its nearest competitor.

More: Micron Leapfrogs to 176-Layer 3D NAND Flash Memory

From EE Times -- Contributed by STEVE ZELENCIK "Z" on 17 November 2020

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AMD News

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AMD 3Q23 Results

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INDIE APP DEVELOPER

3Q23	Revenue = **$5.8 B** on $0.70/shr
2Q23	Revenue = **$5.4 B** on $0.58/shr
1Q23	Revenue = **$5.4 B** on $0.60/shr
4Q22	Revenue = **$5.6B** on 69 cents/shr

3Q=> **$5.6B** on 67 cents/shr

AMD 1Q24 Results

1Q24 Revenue = **$5.5 B** on ??/shr

3Q23=> **$5.8B**
2Q23=> **$5.4B**
1Q23=> **$5.4B**
4Q22=> **$5.6B**

AMD Embedded+

AMD Launches Embedded+ Architectural Solution for Energy-Efficient ODM Partners

11:07 AM ET, 02/06/2024 - MT Newswires11:07 AM EST, 02/06/2024 (MT Newswires) -- Advanced Micro Devices (AMD) said Tuesday it launched AMD Embedded+, an architectural solution to provide energy-efficient options for original design manufacturer partners.

AMD Embedded+ integrates AMD Ryzen Embedded processors with Versal adaptive system-on-chips, or SoCs, onto a single integrated board, the company said.

AMD said the platform will help original design manufacturer partners in developing products with low power consumption, small form factors, and extended lifecycles, specifically for applications in the medical, industrial, and automotive sectors.

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AMD New Chips

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SOFTWARE
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10-19-23

AMD rises as it unveils 'fastest' ever Radeon GPU, new Ryzen CPUs

Oct 19, 2023 9:32 AM ET | **Advanced Micro Devices, Inc. (AMD)** | Chris Ciaccia, SA News Editor

AMD (NASDAQ:AMD) shares rose nearly 2% on Thursday as the semiconductor company unveiled new GPUs and CPUs, including the "fastest" ever Radeon GPU.

AMD New CPU's

10-19-23

Three new CPUs were unveiled as part of the Threadripper line, the AMD Ryzen Threadripper 7960X, AMD Ryzen Threadripper 7970X and the AMD Ryzen Threadripper 79780X. The 7960X will set consumers back $1,499, while the 7970X and 7980X cost $2,499 and $4,999, respectively.

Radeon PRO

Aug 2023

AMD launches new Radeon PRO W7000 series graphics cards

Aug 03, 2023 10:33 AM ET | **Advanced Micro Devices, Inc. (AMD)** | Ravikash, SA News Editor

Advanced Micro Devices (NASDAQ:AMD) made two additions to its AMD Radeon PRO W7000 Series product line — W7600 and W7500 workstation graphics cards.

The new graphics cards use the break-through AMD RDNA 3 architecture and feature 8GB of high-speed GDDR6 mem-ory.

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AMD in AI

Ryan Sagare • 2nd
Meet the Experts Host & Producer @ AMD | Non-profit...
1w • Edited •

+ Follow •••

🤖 I'm thrilled to share that **AMD** is taking a giant leap into the AI future! 🌟 AMD announced our acquisition of **Nod.ai**, an open-source AI software pioneer! 🌐 This is a testament to AMD's commitment to lead in the rapidly growing AI chip market, which is poised to reach a whopping $383.7 billion by 2032! 💰

Nod.ai is renowned for its cutting-edge compiler-based techniques, leaving behind the age-old handwritten kernels. 🚀 They've pioneered the SHARK Machine Learning Distribution, a powerhouse built on LLVM, MLIR, OpenXLA's IREE, and their unique tuning expertise. 🤖✨ This incredible software turbocharges the deployment of AI models across a wide array of platforms, all fueled by AMD's state-of-the-art architectures! 💻🔥 From Instinct data center accelerators to Ryzen AI processors, EPYC processors, Versal SoCs, and Radeon Graphics, **Nod.ai**'s impact knows no bounds! 🌐👏

#AMD #AI #Innovation #TechNews #VentureBeat #ProudEmployee 🏢🔥💪

AMD Update

Kif Leswing

Tuesday, 13 Jun 2023 02:46 PM EDT

AMD reveals new A.I. chip to challenge Nvidia's dominance

❖ GPU for AI

MI300X

- AMD said its forthcoming most-advanced GPU for artificial intelligence, the MI300X, will start shipping to some customers later this year, the company said on Tuesday.
- AMD's announcement on Tuesday represents the strongest challenge to Nvidia, which currently dominates the market for AI chips.

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AMD Update

Kif Leswing
Tuesday, 13 Jun 2023 02:46 PM EDT

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- GPU for AI

MI300X

GPUs are chips used by firms like OpenAI to build cutting-edge AI programs such as ChatGPT.

GPU for artificial intelligence, the MI300X, will start shipping to some customers later this year.

If AMD's AI chips, which it calls "accelerators," are embraced by developers and server makers as substitutes for Nvidia's products, it could represent a big untapped market for the

AMD Update

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❖ **GPU** for AI

MI300X

"At the center of this are GPUs. GPUs are enabling generative AI," Su said.

RDNA → CDNA

AMD said that its new MI300X chip and its CDNA architecture were designed for large language models and other cutting-edge AI models.

38-bit address → 256GB

The MI300X can use up to 192GB of memory, which means it can fit even bigger AI models than other chips. Nvidia's rival H100 only supports 120GB of memory, for example.

Nvidia A100 → **H100**

AMD Update

Kif Leswing
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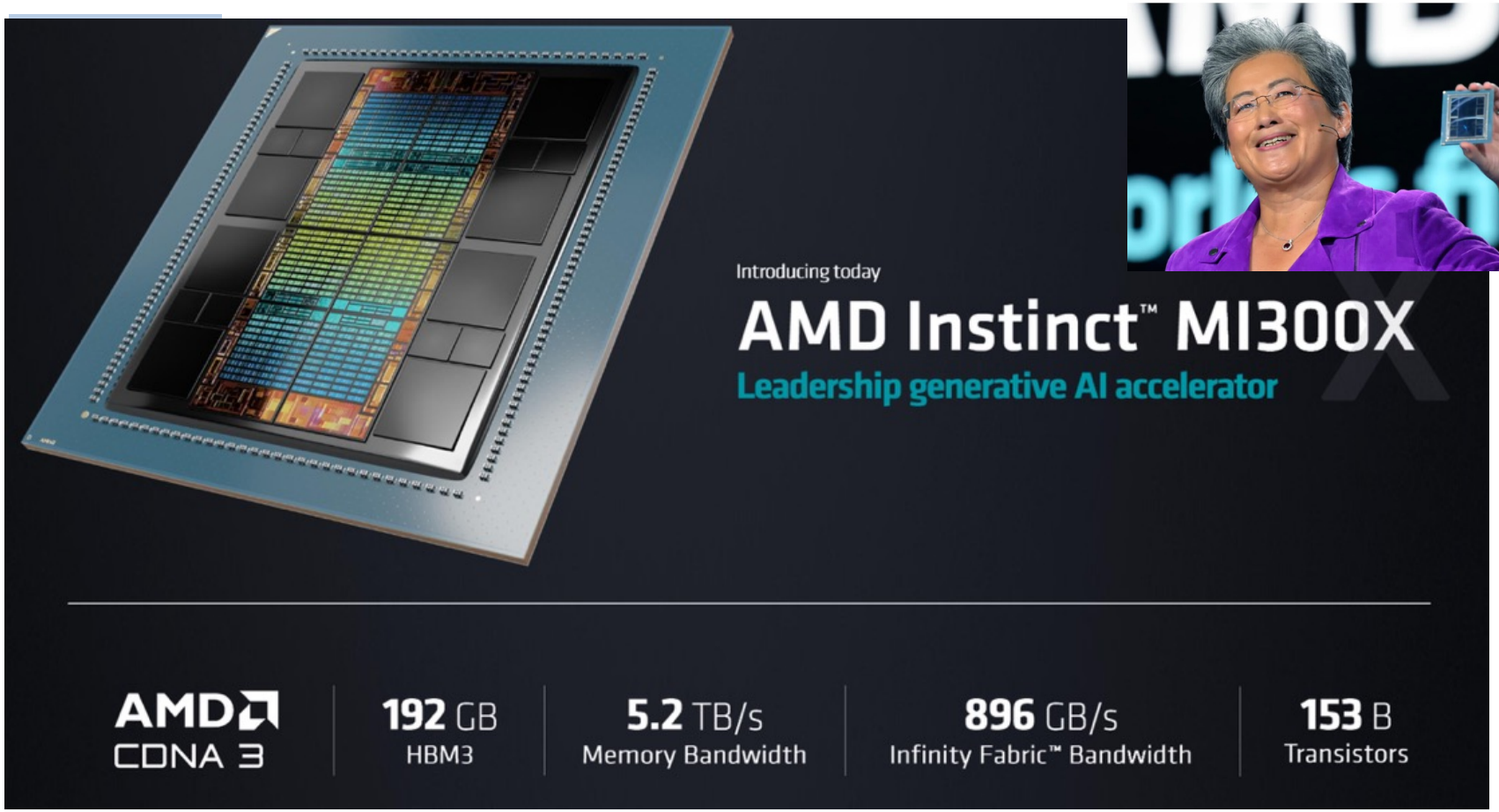

AMD Update

Kif Leswing

Tuesday, 13 Jun 2023 02:46 PM EDT

❖ GPU for AI

MI300X

Infinity

AMD also said it would offer an Infinity Architecture that combines eight of its M1300X accelerators in one system. Nvidia and Google have developed similar systems that combine eight or more GPUs in a single box for AI applications.

Nvidia CUDA

Software API

One reason why AI developers have historically preferred Nvidia chips is that it has a well-developed software package called CUDA that enables them to access the chip's core hardware features.

AMD ROCm

AMD said on Tuesday that it has its own software for its AI chips that it calls ROCm.

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AMD Z1

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INDIE APP DEVELOPER

April 2023

AMD Introduces Ryzen™ Z1 Series Processors, Expanding the "Zen 4" Lineup into Handheld Game Consoles

Zen 4 CPU + RDNA 3

AMD Ryzen Z1 and AMD Ryzen Z1 Extreme processors bring ultimate portability and battery life to handheld PC gaming consoles

SANTA CLARA, Calif., April 25, 2023 (GLOBE NEWSWIRE) -- Today, AMD (NASDAQ: AMD) introduced the new Ryzen Z1 Series processors, the ultimate high-performance processor for handheld PC gaming consoles[1]. The Ryzen Z1 Series features two high performance processors, the Ryzen Z1 and Ryzen Z1 Extreme, both offering industry-leading gaming experiences, uncompromising battery life, and featuring AMD RDNA™ 3 architecture-based graphics. AMD is partnering with Asus to launch the first Ryzen Z1 Series device with the Asus ROG Ally, a premium handheld PC console, featuring up to a Ryzen Z1 Extreme processor.

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AMD Epyc 4th Gen

DR JEFF SOFTWARE
INDIE APP DEVELOPER

April 2023

AMD

AMD Reimagines Cloud Performance with 4th Gen AMD EPYC Processors with AWS

— Previewing new Amazon EC2 M7a instance based on 4th Gen AMD EPYC processors —

Next Generation of AMD and AWS Instances

The new Amazon EC2 M7a instances, using 4th Gen AMD EPYC processors are now available in preview. Amazon revealed EC2 M7a instances also offer new processor capabilities, such as AVX3-512, VNNI, and BFloat16, and allow customers to get up to 50 percent more compute performance than M6a instances and bring an even broader range of workloads to AWS.

AVX3-512

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AMD Buying Xilinx?

DR JEFF
SOFTWARE
INDIE APP DEVELOPER

Old News

- AMD buys Xilinx for $30B!

Xilinx

Xilinx

From Wikipedia, the free encyclopedia

Xilinx, Inc. (/ˈzaɪlɪŋks/ *ZY-links*) is an American technology company that develops highly flexible and adaptive processing platforms. The company invented the field-programmable gate array (FPGA), programmable system-on-chips (SoCs), and the adaptive compute acceleration platform (ACAP). It is the semiconductor company that created the first fabless manufacturing model.[4][5] Xilinx's products are used across many industries and technologies, including the data center, wired & wireless communications, AI/ML, automotive, industrial, consumer, aerospace and defense and Broadcast & Pro-AV.

Co-founded by Ross Freeman, Bernard Vonderschmitt, and James V Barnett II in 1984, the company went public on the NASDAQ in 1989.

AMD announced its acquisition of Xilinx in October 2020.[6]

Xilinx

Xilinx, Inc.

XILINX®

Xilinx headquarters in the United States

Type	Public
Traded as	NASDAQ: XLNX NASDAQ-100 Component S&P 500 Component
Industry	Integrated circuits
Founded	1984; 36 years ago[1]
Founder	Jim Barnett Ross Freeman Bernie Vonderschmitt
Headquarters	San Jose, California, U.S.
Area served	Worldwide
Key people	Dennis Segers (chairman of the board) Victor Peng (president, CEO) Brice Hill (CFO)[2] Ivo Bolsens (senior vice president, CTO) Kevin Cooney (senior vice president, CIO) Catia Hagopian (senior vice president, general counsel) Vincent L. Tong (executive vice president, global operations and quality) Liam Madden (executive vice president, hardware and systems product development) Matt Poirier (senior vice president, corporate development and investor relations) Salil Raje (executive vice president, software and IP products) Marilyn Stiborek Meyer (senior vice president, global human resources) Mark Wadlington (senior vice president, global sales)
Products	FPGAs, CPLDs
Revenue	▲ US$ 3.16 billion (2020)[3] ▲ US$ 3.06 billion (2019)[3]
Operating income	▼ US$ 791.888 million (2020)[3] ▲ US$ 956.799 million (2019)[3]
Net income	▼ US$ 792.721 million (2020)[3] ▲ US$ 889.750 million (2019)[3]
Total assets	▼ US$ 4.693 billion (2020)[3] ▲ US$ 5.151 billion (2019)[3]

AMD News

AMD News in AMD

AMD News Report WW47

- Announcements:
  - AMD and IBM announced a joint development agreement to advance confidential computing and artificial intelligence for the cloud. The announcement was covered by multiple outlets including Anandtech, Marketwatch, ZDnet and others.
  - AMD announced the new Ryzen Embedded V2000 processor. Coverage has appeared in outlets including CNX Software, HotHardware, Serve The Home, Tom's Hardware and others.

- Press continued to cover the launch of the Ryzen 5000 Series desktop processors and post review content, praising the new processors' overall performance, the architectural advancements of "Zen 3" and AMD's dominance in the CPU market. New coverage included Gamers Nexus, Hardware Canucks, MMORPG, SemiAccurate and others, with SemiAccruate concluding, "The 19% IPC uplift means that AMD wins at everything now."

- Tom's Hardware and others reported that the Ryzen 9 5950X set an overclock world record, hitting 6.362 MHz on all 16 cores.

- A number of press, including HEXUS, PCWorld, TechRadar and Tom's Hardware, discussed the availability of the Ryzen 5000 Series given how quickly many of the SKUs sold out. Most press argued that just because the CPUs had high demand does not mean this was a "paper launch."

- PCMag reviewed the ASUS TUF gaming A17 highlighting how the system is "a welcome change from low-cost gaming laptops with a skimpy 256GB of storage, and its Ryzen 7 processor is a real powerhouse."

- ServeTheHome reviewed the AMD EPYC 7H12 processor, naming it "the fastest CPU you can get in 2020" for raw computational power.

News

AMD News in AMD

AMD News Report WW46

- Announcements:
  - Following the reviews embargo lift of the AMD Ryzen 5000 Series desktop processors, sentiment has been overwhelmingly positive, with press praising the lineup's performance, the improvements of the "Zen 3" architecture and AMD's dominance at the top of the CPU market in gaming and content creation. Coverage appeared in AnandTech, Forbes, HEXUS, Linus Tech Tips, PCWorld, TechRadar, TweakTown and more.
    - PCWorld: "many will see today as an historic shift in computing power…AMD has finally knocked Intel to the floor, and is raising its boxing gloves in victory as the flash bulbs pop and the ref declares a winner."
    - ExtremeTech: "'Zen 3' is an unparalleled success for AMD," as the new architecture "has literally redefined what kind of performance is possible within a given desktop power envelope."
    - JayzTwoCents: "the 5900X is quite honestly the best CPU you could possibly buy right now…for gaming, content creation, productivity, value – it's all there!"
  - Lawrence Livermore National Labs announced the new AMD EPYC-based "Mammoth" supercomputer system for memory intensive research workloads, including COVID-19 simulations and analysis. News appeared on The Next Platform, HPC Wire and Silicon Angle.
  - The reviews embargo lifted on Xbox Series X and S consoles, harnessing the power of "Zen 2" CPU cores and RDNA-based graphics to usher in the next generation of high-performance console gaming. AMD coverage sentiment has been positive, with press positioning the all-AMD hardware consoles as leaders in both raw performance and stunning, high fidelity visuals. Coverage appeared in IGN, WIRED UK, PCMag and more.
  - Reviews of the PlayStation 5 began to appear, with positive sentiment around AMD hardware and press praising the faster load times, better frame rates and gorgeous visuals enabled by the all-AMD console platform. Coverage appeared in The Verge, PCGamer, CNN and more.

News

Science and Industry

Semiconductors in Science and Industry

Semiconductor Industry News

Semiconductor company news:

- Intel news:
  - Intel announced the launch of Intel Iris Xe MAX graphics and Intel Deep Link Technology. Coverage was neutral and factual in nature, focusing on which systems and markets Xe MAX and Deep Link are currently available in. Coverage appeared in AnandTech, CNET, Forbes, PCWorld, The Verge and others.
  - HotHardware, PC Gamer, Wccftech and others reported on leaked images of Intel's upcoming processors. YuuKi_Ans at Bilibili posted alleged photos of Intel's 11th Gen Rocket Lake Desktop CPUs, while Videocardz posted supposed shots of an Intel 12th Gen Alder Lake processor.
- Nvidia news:
  - VideoCardz shared photos of a GIGABYTE RTX 3060 Ti Eagle OC, claiming the card will feature 4864 CUDA cores, 182 Tensor Cores, 38 RT Cores and 8GB of GDDR6 clocked at 14Gbps. VideoCardz noted it can't confirm if Nvidia will offer an FE variant, but expects AIB cards to launch on December 2 for around $400 USD.
    - According to VideoCardz, ASUS RTX 3060 Ti cards have been recently submitted to the Eurasian Economic Commission website. The outlet notes that the EEC listings appear "weeks before the graphics cards are ready for launch," which is allegedly Dec. 2.
    - TechRadar reported that RTX 3060 Ti cards are on sale in Saudi Arabia, the only retailer market that has "ignored the official release scheduled" for the cards. A Twitter user shared a video clip of the GIGABYTE 3060 Ti Eagle graphics card packaging, which "would be difficult to fake."
  - VideoCardz claimed Nvidia will move forward with an RTX 3080 Ti, despite the card supposedly being cancelled about a month ago, as Nvidia looks "to counter the AMD Big Navi series." The card is expected to feature 10496 CUDA cores – mirroring the RTX 3090, so it "will certainly not be cheap" – and be supported by 20GB of GRR6X VRAM.
- Other semiconductor industry news:
  - Arm has launched the Arm Cortex-A78C CPU, a new CPU that can support up to eight cores and eight MB of cache to meet compute-intensive workloads.

AMD News

WW36

AMD News Report WW36

- EnterpriseAI reported on the AMD EPYC-powered Google Confidential VM, discussing how security is embedded through hardware and how the two companies' security approach enables the keys to be managed on-chip, "meaning only a user can view them."
- ServeTheHome reviewed the Dell EMC PowerEdge C6525 2U4N system, which features up to 512 AMD EPYC cores.
- CSO Online detailed the different routes to hardware-based encryption that AMD, IBM and Intel are taking. The article notes Google Cloud was the first cloud provider to offer AMD EPYC-powered confidential computing VMs with the launch in July.
- The U.S. Department of Defense announced a significant investment in data analytics and AI computing with the procurement of new HPC systems, two of which will feature 2nd Gen AMD EPYC processors and Nvidia V100 GPUs.
- Notebookcheck and PCWorld published reviews of the Ryzen-powered Lenovo IdeapPad Slim 7.
  - Notebookcheck concluded the "results are insane for a 14-inch subnotebook to the point where it'd be tough to recommend an Intel counterpart when given the same price."
  - PCWorld stated "like a prize fight weigh-in, the AMD Ryzen 7 4800U in Lenovo's IdeaPad Slim 7 just flexed like no other ultrabook CPU we've ever seen," adding, "the early results we're seeing are gobsmackingly impressive."
- HotHardware reviewed the AMD-powered ThinkPad X13, concluding the "Ryzen 5 PRO 4650U processor delivers outstanding performance in this size class."
- Linus Tech Tips and Wccftech reported that Yuri Bubliy unveiled a new performance-boosting tool for AMD Ryzen 3000 CPUs called ClockTuner for Ryzen (CTR), which will be free to the public and aims to deliver increased performance and improved efficiency. Linus Tech Tips, which was able to test the tool early, concluded that, though "mileage may vary," based on the specific processor, CTR makes it easier to fine tune Ryzen performance the way enthusiasts do.
- AMD released AMD Battle Arena, a Fortnite Creative Islands multiplayer map in collaboration with modder MAKAMAKES. Alongside these maps, AMD and MAINGEAR announced a contest for Fortnite gamers to win a Ryzen- and Radeon-based MAINGEAR TURBO PC.

AMD News

EPYC/Ryzen

Aug 21, 2020

- Amazon launched the extension of its Amazon EC2 C5a series based on 2nd Gen AMD EPYC processors, the Amazon EC2 C5ad instances. Phoronix posted benchmarks of the new lineup also based on 2nd Gen AMD EPYC processors, calling the initial tests "promising" and "indeed offering better value than the comparable Intel Xeon instances."

- Microsoft Azure announced a new lineup of virtual machines aimed at "supercomputer-class AI," the NDv4 VM instances. The new instances are powered by 2nd Gen AMD EPYC processors and Nvidia A100 'Ampere' GPUs.

- AnandTech and Notebookcheck covered the AMD Ryzen 4000 APU Hot Chips 2020 presentation, with Notebookcheck highlighting how AMD engineers originally designed Ryzen 4000 Series Desktop Processors to top out at six cores, but, "thanks to the significant efficiency gains made possible by TSMC's advanced 7nm process, AMD was able to implement a complete, 8-core Zen 2 design."

- Tom's Hardware reported on details of the 10nm Intel "Ice Lake" Xeon processors revealed at Hot Chips 2020, highlighting the approximate 18% IPC improvement and noting the new processors are "a badly needed addition," as the company seeks to compete with the 2nd Gen AMD EPYC processor.

- Forbes provided more details and insight into the Nvidia Selene supercomputer, which is powered by the DGX A100 system that uses 2nd Gen AMD EPYC processors.

IBM Q

Today marks an important milestone in the emerging world of quantum computing. IBM has accomplished the historic feat of a Quantum Volume of 64 on a 27-qubit client-deployed system, a first on a universal superconducting quantum computer, making it the most powerful system available to users.

AMD PR

EPYC/Ryzen

- AMD announced three new 2nd Gen AMD EPYC processors that deliver per-core performance leadership for database, commercial high-performance computing and hyperconverged infrastructure workloads. Coverage included:
  - Initial reviews from Anandtech, Hexus, Phoronix, Serve The Home, Storage Reviews and others highlighting per core performance leadership and capabilities for workloads needing high frequency, low core count processors.
  - Coverage from outlets including CRN, The Street, Tom's Hardware, ZDNet and others highlighting the growth of the EPYC ecosystem and the workload leadership of the AMD EPYC 7Fx2 processors.
- Lenovo announced a number of new gaming notebooks, including the Ryzen Mobile-powered Legion 5, which will be available in May 2020. The company also noted the IdeaPad Gaming 3, IdeaCentre Gaming 5, and Legion Tower 5 will offer AMD processor options later this year. Coverage appeared in CNET, Engadget, Gizmodo, Laptop Mag, Liliputing, The Verge and others.
- HP announced several updated notebook systems, including the HP Envy x360, featuring Ryzen 4000 Series Mobile Processors. Coverage appeared in Laptop Mag, Liliputing, Neowin, PCMag, The Verge and others.

AMD PR

EPYC/Ryzen

- Janet Morss of Dell Technologies wrote a piece for insideHPC about a new flagship supercomputer powered by Dell EMC PowerEdge servers, 2nd Gen AMD EPYC processors and Nvidia V100 Tensor Core GPUs.

- CRN shared that AMD has released the AMD EPYC Server Virtualization TCO Estimation Tool, which allows partners and customers the chance to compare the total cost of ownership for server virtualization workloads between AMD EPYC processors and Intel Xeon processors.

- Engadget posted a positive review of the ASUS Zephyrus G14 praising its all-around performance and design, giving the laptop a score of 90/100, calling it a "strong debut for AMD [and the] powerful Ryzen 4000 series chips."

-- Contributed by AMD Communications

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Section

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ARM News

Intel + ARM

Latest News

Intel and Arm Team Up to Power Startups

Intel and Arm create the Emerging Business Initiative to help startups bring their bold ideas to life.

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New ARMs

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2-21-24

Seeking Alpha$^{\alpha}$

Arm flexes its two new compute subsystems for powering an AI future

Feb 21, 2024 12:43 PM ET | **Arm Holdings plc (ARM)** |
Brandon Evans, SA News Editor

Arm Holdings (NASDAQ:ARM) unveiled two new Neoverse Compute Subsystems on Wednesday that can reduce the time required to develop custom-made data center processors to under a year.

These include the Arm Neoverse CSS V3, which has a 50% performance-per-socket improvement over CSS N2, and the Arm Neoverse CSS N3 that delivers 20% higher performance-per-watt than is predecessor. They are built on the new, third-generation Neoverse IP.

New ARMs

2-21-24

These new compute subsystems are also designed to handle the high loads of processing required to run artificial intelligence software.

"Within infrastructure, commodity general-purpose CPUs are no longer sufficient," said Mohamed Awad, Arm's senior vice president and general manager of infrastructure business.

"We are seeing technology giants like [Amazon (AMZN) Web Services], Microsoft (MSFT) and NVIDIA (NVDA) re-design and optimize their entire stack, from silicon to software and systems, to meet the performance, efficiency and ultimately TCO requirements of this demanding new workload," Awad added.

Arm is working with more than 20 partners to develop computing components capable of handling the high demands of AI. Microsoft Cobalt was built using the Neoverse CSS.

ARM Buys Stake in RPi

11-2-23

Arm takes minority stake in accessible computing company Raspberry Pi

Nov 02, 2023 3:05 PM ET | **Arm Holdings plc (ARM)** | Christiana Sciaudone, SA News Editor

Arm Holdings (NASDAQ:ARM) acquired a minority stake in Raspberry Pi, extending a partnership between the two companies to deliver solutions for the Internet of Things (IoT) developer community.

Raspberry Pi 5

9-28-23

Today, we're delighted to announce that Raspberry Pi 5 is coming at the end of October, and we wanted you to be one of the first to know. Priced at $60 for the 4GB variant, and $80 for its 8GB sibling, virtually every aspect of the platform has been upgraded, delivering a no-compromises user experience.

Introducing: Raspberry Pi 5!

We're delighted to announce the launch of Raspberry Pi 5, coming at the end of October. It's over twice as fast as its predecessor, and it features silicon designed in-house here at Raspberry Pi.

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ARM IPO

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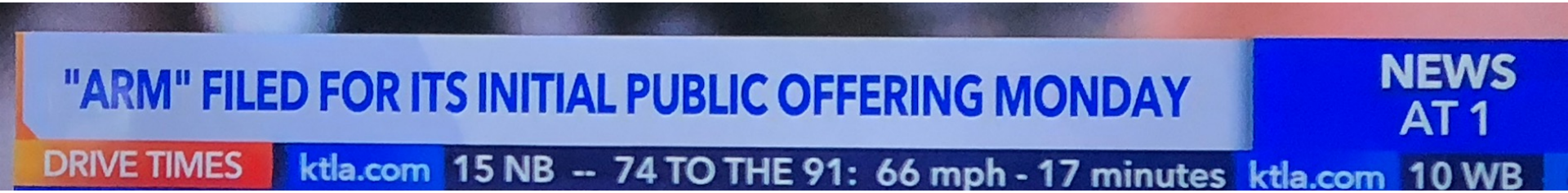
8-21-23

Softbank of Japan is current owner



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ARM IPO

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Quora

What is the significance of SoftBank-backed chip designer Arm Holdings also filing for an IPO?

Jeff Drobman
Lecturer at California State University, Northridge (2016–present) · Just now ·

Apple and ARM were partners in ARM Holdings, and they sold that business to Softbank in 2018. First, Qualcomm tried to buy that ARM unit, but was denied on antitrust concerns. Next, Nvidia the same. Apparently, SoftBank wants to sell it, so an IPO is the only avenue to sell "ARM", which holds all the patents and licensing rights to its considerable core, architecture and ISA IP. Apple still licenses the ARMv8 instruction set, but has its own rights to its own CPU and GPU cores.

DARPA – ARM

Technology in Science and Industry

DARPA's Near-zero Power Program

DARPA has been working since 2015 on a program to build sensors that can be deployed with "coin" batteries and run for years. Arm chips also have the capability to run for decades on one set of batteries, as their power consumption is so low.

> The N-ZERO program established asleep-yet-continuously-alert sensing capabilities for untethered, unattended systems that are triggered by specific physical or radio frequency [RF] signatures,

...

> One move in a positive direction was the development of an ultra-low-power Arm processor. The Arm M0N0 processor achieved a 10-nW sleep power and 20- to 60-μW/MHz active power level, depending on the application.

- Other semiconductor industry news:

  - Arm unveiled updates to its Neoverse roadmap, revealing two next-generation server CPU designs, the V1 core for maximum performance and the N2 core for scale-out performance, that are said to deliver significantly higher performance than x86 processors currently made by AMD or Intel. CRN reported Neoverse V1 is designed for 7nm and 5nm process technologies and will be the first design core from Arm to support Scalable Vector Extensions (SVE), with two vectors of 256-bit width. The N2 core, previously code-named Perseus, will be designed for 5nm process technologies and provide more than a 50% performance improvement over N1, in addition to supporting SVE and bfloat16. Both designs will also support PCIe 5.0 and DDR5.

  - Silicon Valley Business Journal reported that chip startup Nuvia secured $240M in funding to "produce chips that make data center processors faster, more power efficient and more secure than what currently exists from its giant neighbors in Santa Clara."

  - GlobalFoundries is planning to go public in 2022.

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Nvidia Buys ARM

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Nvidia Buys ARM

$40B

What will be the ramifications on ARM's business if NVIDIA acquires ARM from SoftBank?

Jeff Drobman · just now
Lecturer at California State University, Northridge (2016–present)

my guess is that the DOJ will lay a heavy hand (or arm) on this deal: permitting it only if Nvidia agrees to an "arms-length" (puns intended) management. Nvidia will likely have to agree to continue licensing its many core designs and ISA's, especially ARMv7 and ARMv8.

Actually the UK equiv

- Japanese conglomerate Softbank bought ARM Holdings in 2016 for $32B

What does Nvidia say?

Nvidia boss Huang has sought to allay such fears, promising to keep the Arm brand and expand its Cambridge HQ.

"We will expand on this great site and build a world-class artificial intelligence research facility, supporting developments in healthcare, life sciences, robotics, self-driving cars and other fields," he said.

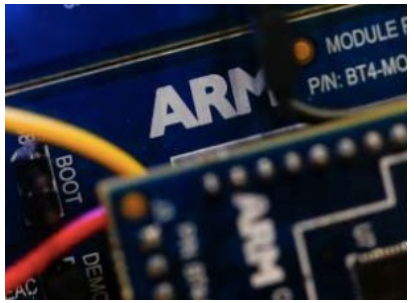
AI

ARM History

1990 joint venture

Cambridge-based Arm Ltd was founded in 1990 as a joint venture between Apple, Acorn Computers and VLSI Technology. It designs software and semiconductors – components of electrical circuits that are used to manage the flow of current.

It is not just the UK's largest tech company but a genuine global powerhouse that has, in the space of 30 years, grown into a $40bn (£31bn) business with more than 6,000 employees.



What's so great about it?

Its semiconductor chips are the building blocks of a string of consumer favourites. Apple uses them in its iPhone, iPad and Apple Watch products, but you'll also find Arm chips in the Playstation Vita and Nintendo DS and Wii gaming devices and Garmin satnavs, as well as Sony Ericsson and Samsung Galaxy phones. Its chips are increasingly used in the rapidly-expanding web of connected devices known as the "internet of things".

News

Nvidia

Nvidia 4Q22 Results

Revenue = **$6.1B** on 88 cents/shr

3Q=> **$5.9B**

21% y/y

Nvidia 1Q24 Results

Revenue = **$26.0B** on $6.12/shr

Nvidia Super Chip

Quora

Zaheer Iqbal · Follow
BS from Hazara University

Grace 100 + A100 TPU

The announcement of the Isambard 3 supercomputer for medical and scientific research is a significant development that has the potential to accelerate progress in a wide range of fields. The system, which will be built by Hewlett Packard Enterprise using Nvidia silicon, is expected to be one of the most energy-efficient supercomputers in Europe. This will make it ideal for use in research applications that require large amounts of computing power, such as drug discovery, climate modeling, and astrophysics.

The Isambard 3 supercomputer will be based on Nvidia's Grace CPU Superchip, which is a new generation of processor designed specifically for high-performance computing. The system will also feature Nvidia's A100 Tensor Core GPUs, which are the world's most powerful AI accelerators. This combination of hardware will give researchers access to a powerful tool that can be used to tackle some of the most challenging problems facing humanity.

News

Micron

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Micron

July 2023

Micron Delivers Industry's Fastest, Highest-Capacity HBM to Advance Generative AI Innovation

First in industry to launch 8-high 24GB HBM3 Gen2 with bandwidth over 1.2TB/s and superior power efficiency enabled by advanced 1β process node

News

TSMC

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TSMC 1Q24 Results

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1Q24	Revenue = **$18.5B** on ??/shr

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Media Tek

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MEDIATEK

Products Technology I

MediaTek successfully develops first chip using TSMC 3nm process

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SemiWiki The open forum for semiconductor professionals

Fab News

9-28-23

DR JEFF SOFTWARE INDIE APP DEVELOPER

TSMC Revenue Can Hit $100 Billion by 2025 After Rebound, Says Analyst

by Daniel Nenni on September 29, 2023

New Street Research says investors should overlook near-term softness in Taiwan Semiconductor Manufacturing's business and focus on the company's sizable long-term growth opportunity. On Friday, analyst Pierre Ferragu reiterated his Buy rating on TSMC's (ticker: TSM) Taiwan-traded shares, and reaffirmed... Read More

Intel Starts High-Volume EUV Production in Ireland

by Daniel Nenni on September 28, 2023

Intel will celebrate the arrival of its Intel 4 technology and the use of extreme ultraviolet technology in high-volume manufacturing in Europe. Intel engineers work in Fab 34, the newest Intel manufacturing facility in Ireland. On Sept. 29, 2023, Intel... Read More

TSMC is hiring thousands. What are the salaries for roles at the semiconductor facility?

by Daniel Nenni on September 28, 2023

Taiwan Semiconductor Manufacturing Co. will hire nearly 4,500 people to work at its new facility in north Phoenix, with about half of those jobs already filled. The chip manufacturing giant has been lauded by business advocates and government officials, from... Read More

Globalfoundries wants to invest eight billion dollars in Dresden

by Daniel Nenni on September 28, 2023

DÜSSELDORF. The chip manufacturer Globalfoundries wants to expand its factory in Dresden: capacity is to be almost doubled by the end of the decade. The US group will invest eight billion dollars for this, said CEO Thomas Caulfield to the... Read More

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TSMC

Apr 2023

BY AMY EDELEN | PHOENIX BUSINESS JOURNAL

Taiwan Semiconductor Manufacturing Co. is seeking up to **$15 billion** in tax credits and grants from the federal government to support its **Arizona semiconductor plants** amid concerns about subsidy criteria, the Wall Street Journal reported Wednesday.

TSMC expects to receive $7 billion to $8 billion in tax credits under the **CHIPS Act**, in addition to $6 billion to $7 billion in grants for its Arizona plants, according to the WSJ, citing people familiar with the matter.

TSMC is investing more than **$40 billion** in building **two fabs** in north Phoenix, marking one of the largest foreign direct investments in the state and U.S. history. It plans to employ more than **4,500 workers** at its Arizona campus where it will produce **3-and-4 nanometer** chips, the Phoenix Business Journal previously reported.

TSMC has expressed concern about CHIPS Act subsidy criteria,

TSMC 1st US Fab

1996

TSMC originally brought the pure-play foundry business to the United States in 1996 through a joint venture with customers Altera, Analog Devices, ISSI, and private investors (no government money). Altera is now part of Intel but ADI is still a top TSMC customer and enthusiastic supporter. I have seen the ADI CEO Vincent Roche present at recent TSMC events and his TSMC partnership story is compelling. This joint venture was part of TSMC's customer centric approach to business, responding directly to customer requests.

The WaferTech fab was established in Camas Washington (just North of the Oregon/Washington border) in 1996 with an investment of more than $1B which was a huge amount of money at the time. Production started two years later at .35 micron which was part of the Philips technology transfer that TSMC was founded upon. In 2000 TSMC bought out the partners and private investors, taking full control of the Washington fab. It is now called TSMC Fab 11 but clearly this fab was ahead of its time, absolutely.

Industry News

Business News in Science and Industry

Russians Attempt Heist At Tesla

> According to an FBI complaint, the feds thwarted Russian hackers from undertaking a massive ransomware hack and data breach at Tesla's Nevada Gigafactory. The plot involved reaching a Russian-speaking employee and offering him $1 million to introduce malware into the company's internal computer systems.

- TSMC has reportedly manufactured 1B defect-free 7nm chips.
- TSMC announced that it expects its advanced 3nm process to enter mass production in H2 2022. The firm also announced plans to open a new R&D center focused on developing 2nm technology in Hsinchu next year.

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TSMC on Moore's Law

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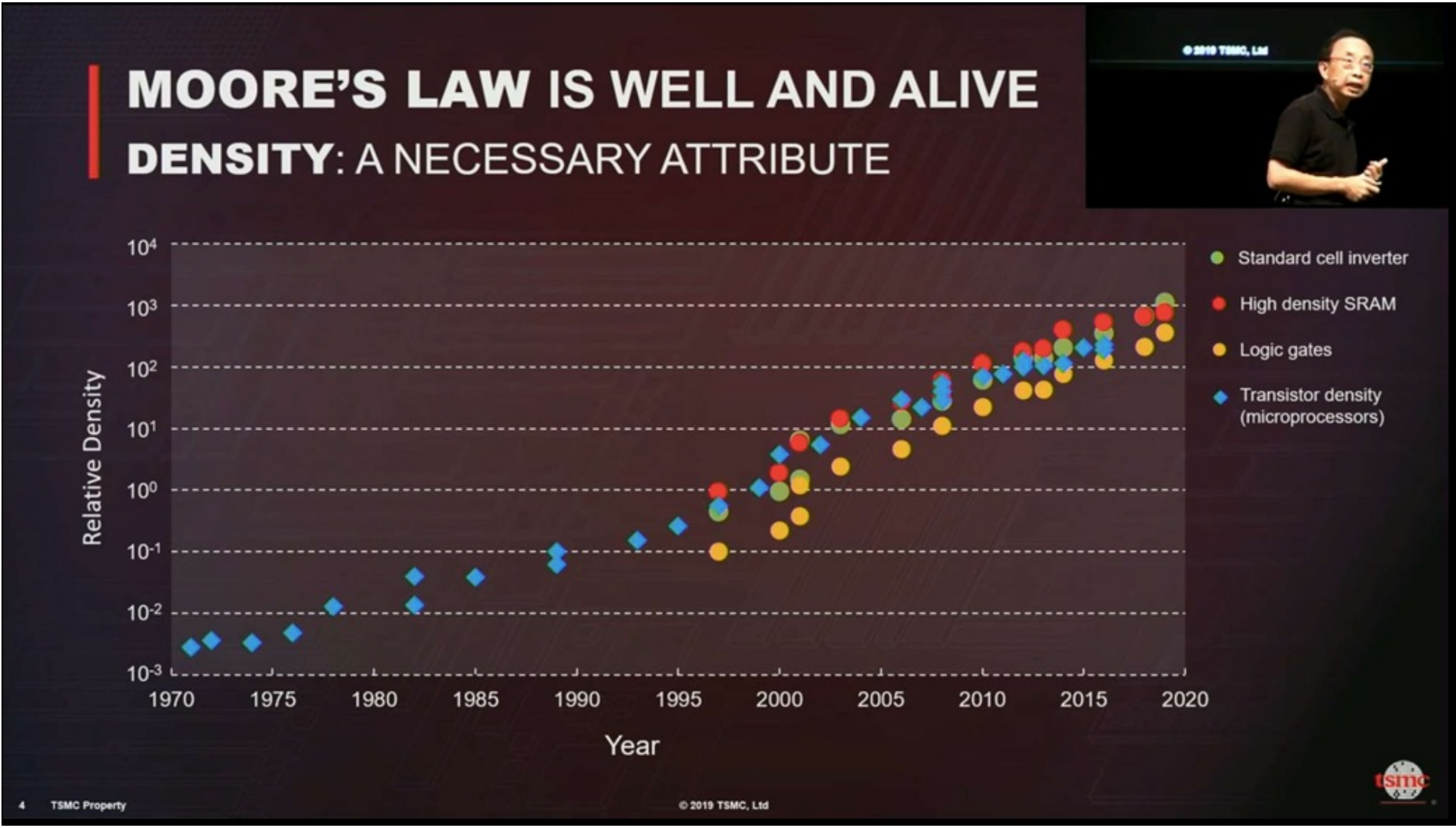
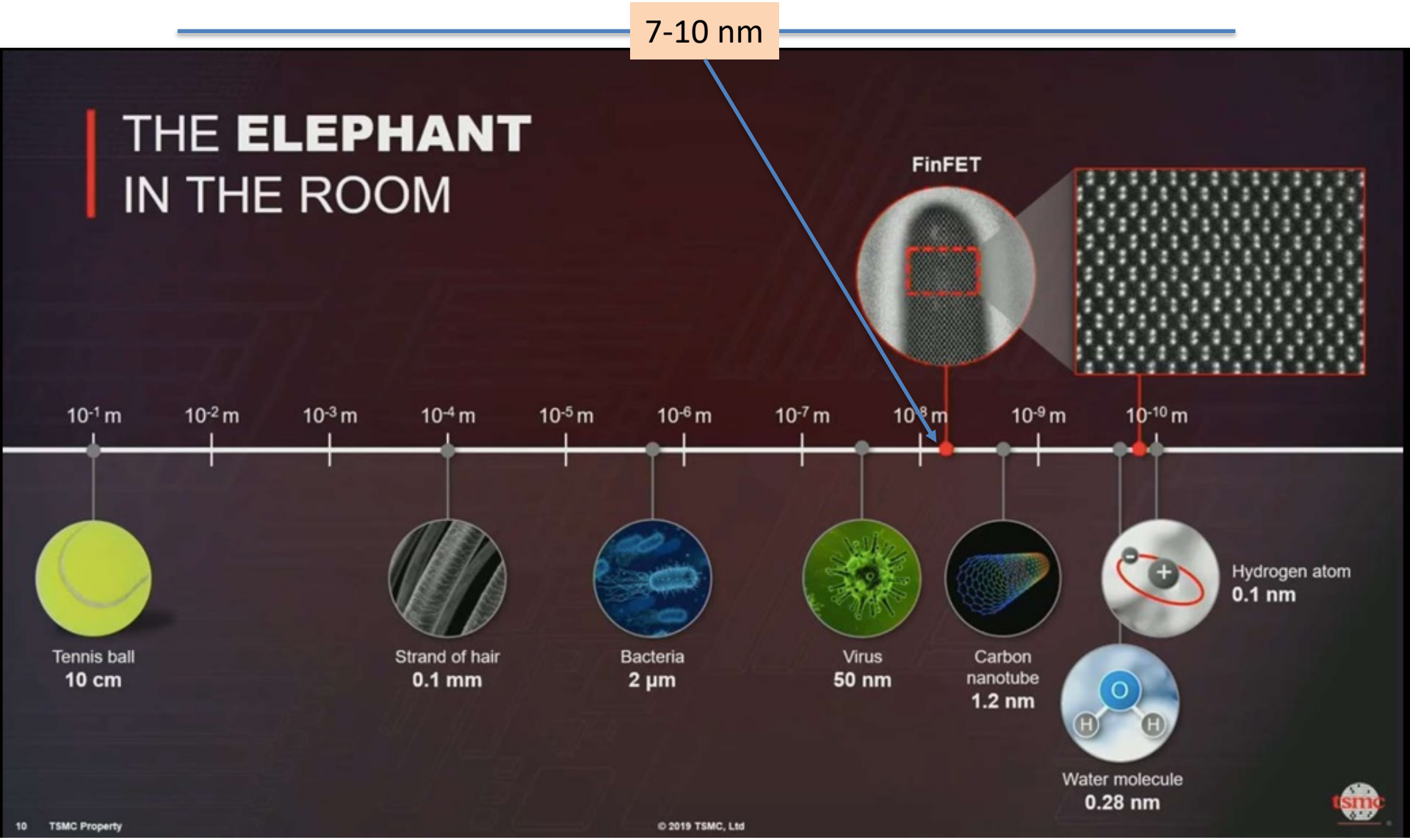
INDIE APP DEVELOPER



TSMC on Moore's Law



News

Apple

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Apple 2Q23 Results

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INDIE APP DEVELOPER

2Q23	Revenue = **$81.8B** on $1.26/shr
4Q22	Revenue = **$117.2B** on $1.88/shr

3Q22=> **$90.1B**

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Apple 1Q24 Results

1Q24	Revenue = **$90.8B** on $1.53/shr

2Q23=> **$81.8B**
4Q22=> **$117.2B**
3Q22=> **$90.1B**

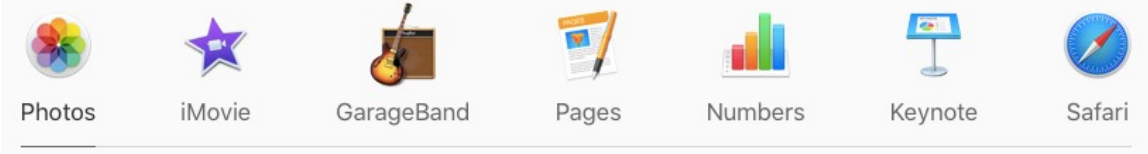
Apple

$266B

Tech Titan 2019

Apple Park in Cupertino, California, April 2018

Formerly	Apple Computer Company (1976–1977) Apple Computer, Inc. (1977–2007)
Founded	April 1, 1976; 43 years ago
Founders	Steve Jobs Steve Wozniak Ronald Wayne
Number of employees	132,000[2] (2018)
Revenue	▲ US$265.595 billion[1] (2018)
Operating income	▲ US$70.898 billion[1] (2018)
Net income	▲ US$59.531 billion[1] (2018)
Industry	Computer hardware Computer software Consumer electronics Cloud computing Digital distribution Fabless silicon design Semiconductors Financial technology Artificial intelligence
Products	Macintosh · iPod · iPhone · iPad · Apple Watch · Apple TV · HomePod · macOS · iOS · iPadOS · watchOS · tvOS · iLife · iWork · Final Cut Pro · Logic Pro · GarageBand · Shazam · Siri
Services	App Store · Apple Arcade · Apple Card · Apple Music (Beats 1) · Apple News+ · Apple Pay (Cash) · Apple Store (Genius Bar) · Apple TV+ · iBooks Store · iCloud · iMessage · iTunes Store · Mac App Store
Subsidiaries	Braeburn Capital · Beats Electronics · FileMaker Inc. · Apple Energy, LLC · Apple Sales International[3] · Apple Services[4] · Apple Worldwide Video[5] · Anobit · Beddit



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Apple Facetime Bug

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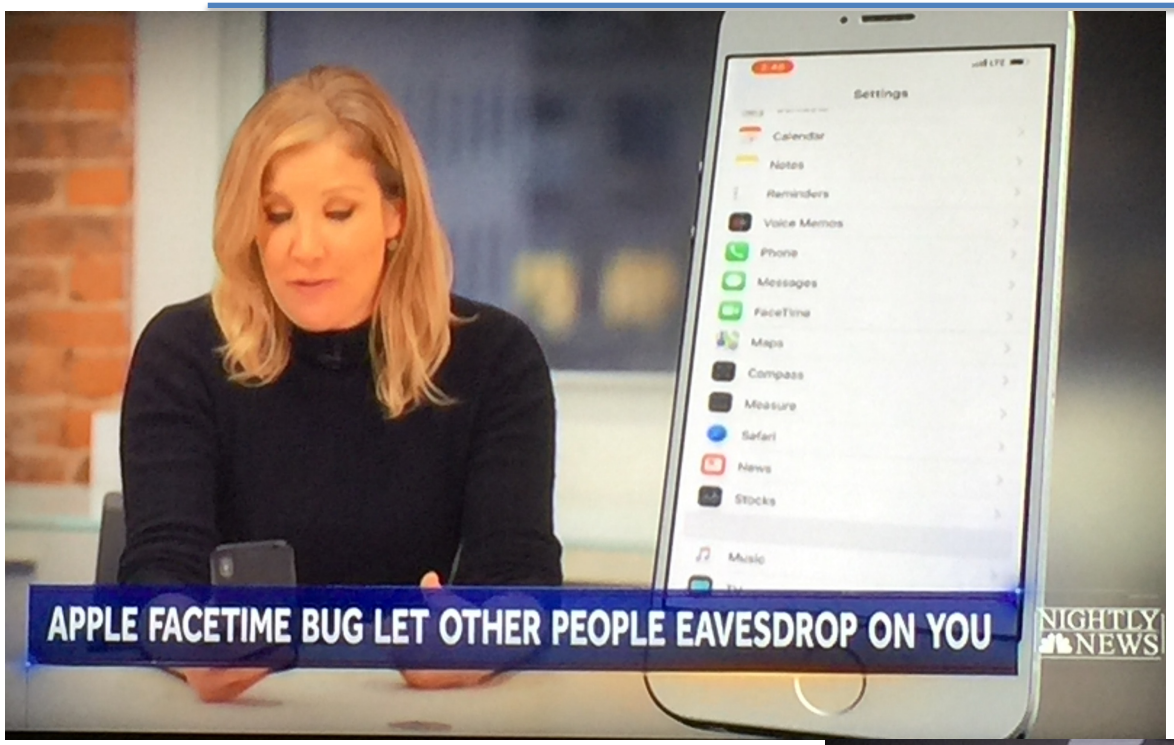
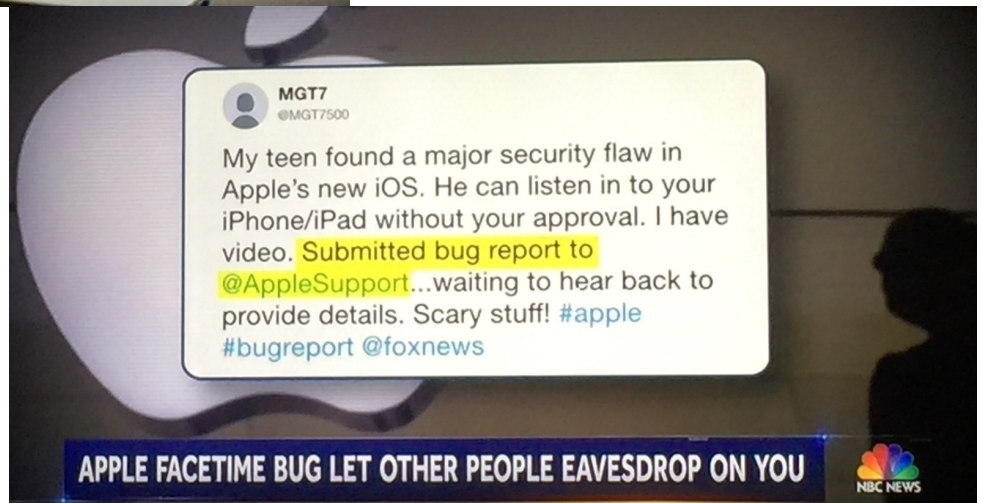


- Apple will issue a software update

- ✓ **SDLC** stages 4-6



News

Qualcomm

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Qualcomm 1Q23 Results

DR JEFF SOFTWARE
INDIE APP DEVELOPER

1Q23	Revenue = **$9.3B** on $2.15/shr
4Q22	Revenue = **$9.5B** on $2.37/shr

3Q=> **$11.4B**

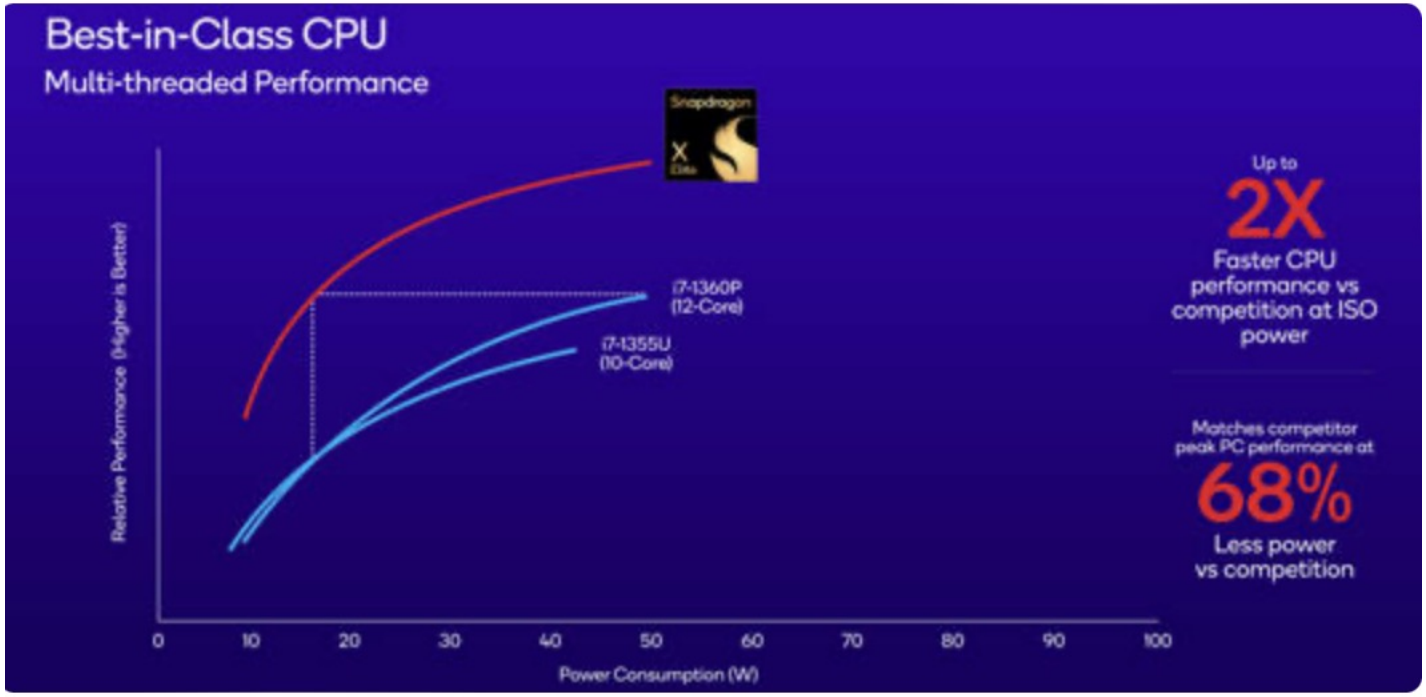
Qualcomm CPU's

The Verge + Follow

Snapdragon claims its new X Elite processor will beat Apple, Intel, and AMD

Qualcomm has announced its new Snapdragon X Elite platform, which looks to be its most powerful computing processor to date. The chips (including the new Qualcomm Oryon, announced today) are built on a 4nm process and include 136GB/s of memory bandwidth. PCs are expected to ship in mid-2024.

Qualcomm CPU's



Oh, Qualcomm also claims that its chip will deliver "50% faster peak multi-thread performance" than Apple's M2 chip. This is just a funny claim; the X Elite has 50 percent more cores than the M2 and sucks down much more power, so of course it is going to do better on Geekbench at "peak multi-thread performance." That's like a

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News

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Tesla

Tesla AI Computers

6-5-24

"For building the AI training superclusters, Nvidia hardware is about two-thirds of the cost," Musk said Tuesday, adding that Tesla would spend between $3 billion and $4 billion on hardware purchases from Nvidia this year.

Tesla has been working on its own supercomputer as part of efforts to develop driverless-car technology. During April's first-quarter earnings call, Musk said Tesla would increase the number of active H100s from 35,000 to about 85,000 by the end of this year.

Tesla Computers

Tesla designs

It began developing its own chips in 2016, before its first self-driving computer chip debuted in 2019. Tesla then looked to improve the chip with TSMC [Taiwan Semiconductor Manufacturing Co], using the manufacturer's 7nm process. New information has just surfaced to reveal Tesla has partnered with Samsung to develop a 5nm FSD chip.

Elon hits the genius Pete Bannon with a First Principle design opportunity, and Pete comes up with a chip that's 21 times faster, uses only 70 watts, and costs less to produce than what's out there, off the shelf.

Hardware 3 [edit]

According to Tesla's director of Artificial Intelligence Andrej Karpathy, Tesla had as of Q3 2018 trained large neural networks that works very well but which could not be deployed to Tesla vehicles built up to that time due to their insufficient computational resources. HW3 provides the necessary resources to run these neural networks.[138]

HW3 includes a custom Tesla-designed system on a chip. Tesla claimed that the new system processes 2,300 frames per second (fps), which is a 21x improvement over the 110 fps image processing capability of HW2.5.[139][140] The firm described it as a "neural network accelerator".[135] Each chip is capable of 36 trillion operations per second, and there are two chips for redundancy.[141] The company claimed that HW3 was necessary for "full self-driving", but not for "enhanced Autopilot" functions.[142]

The first availability of HW3 was April 2019.[143] Customers with HW2 or HW2.5 who purchased the Full Self-Driving (FSD) package are eligible for an upgrade to HW3 without cost.[144]

Tesla claims HW3 has 2.5× improved performance over HW2.5 with 1.25× higher power and 0.2× lower cost. HW3 features twelve ARM Cortex-A72 CPUs operating at 2.6 GHz, two Neural Network Accelerators operating at 2 GHz and a Mali GPU operating at 1 GHz.[145]

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Tesla SoC

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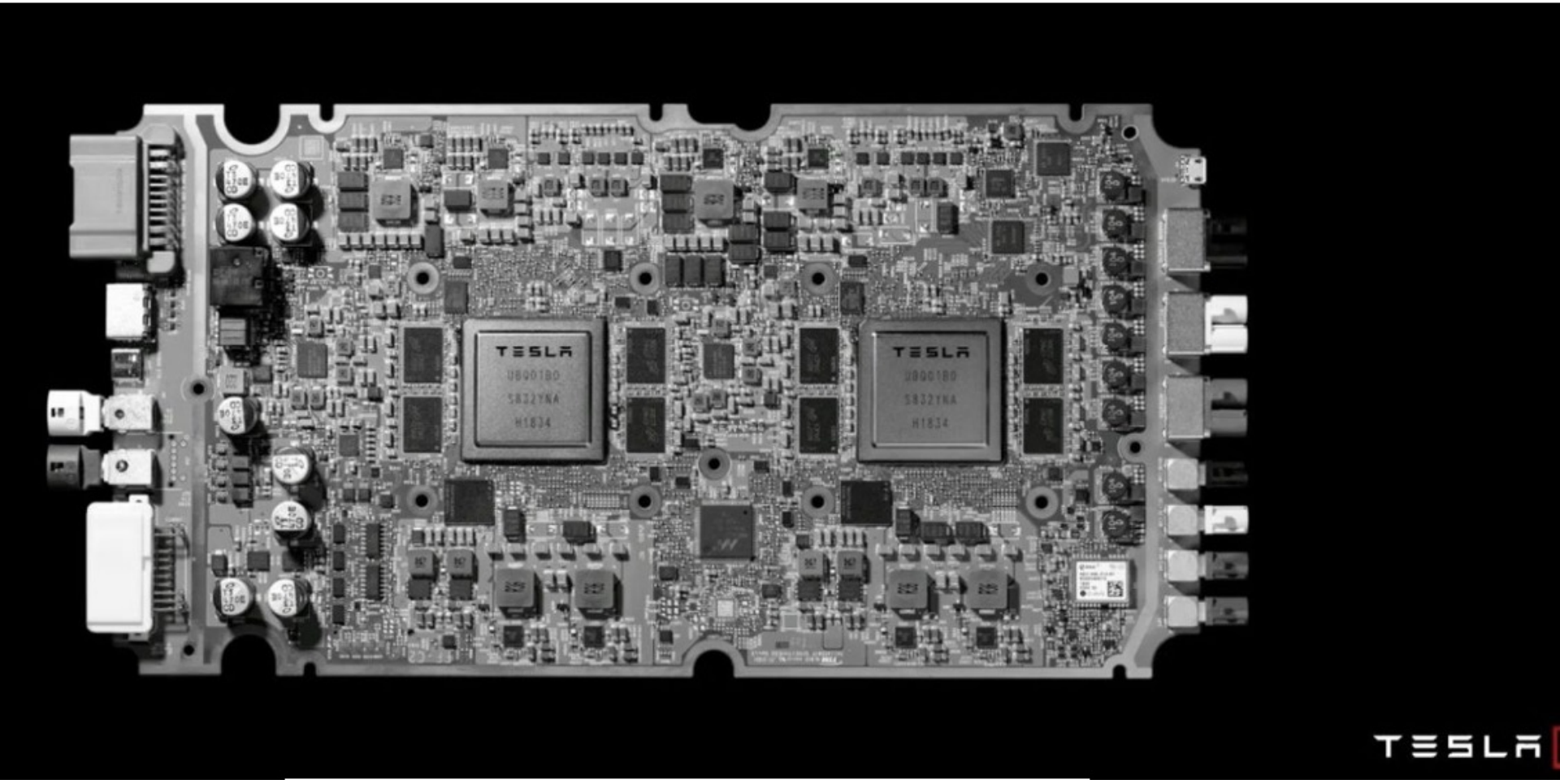
electrek Exclusives Autos Alt. Transport Autonomy Energy



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Autonomous Cars

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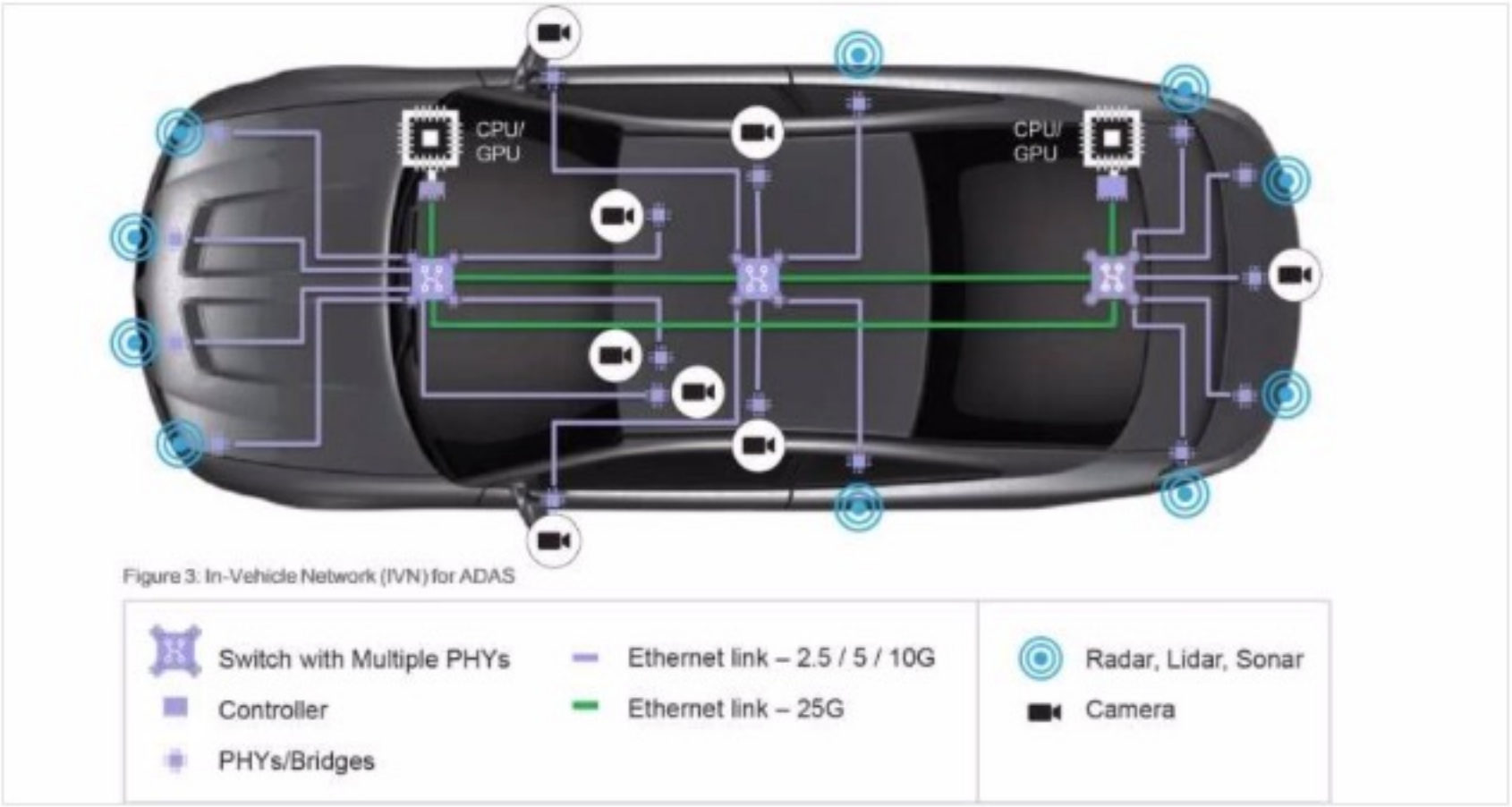

Figure 3. In-Vehicle Network (IVN) for ADAS

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Autonomous Cars

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In-Vehicle Network Demands

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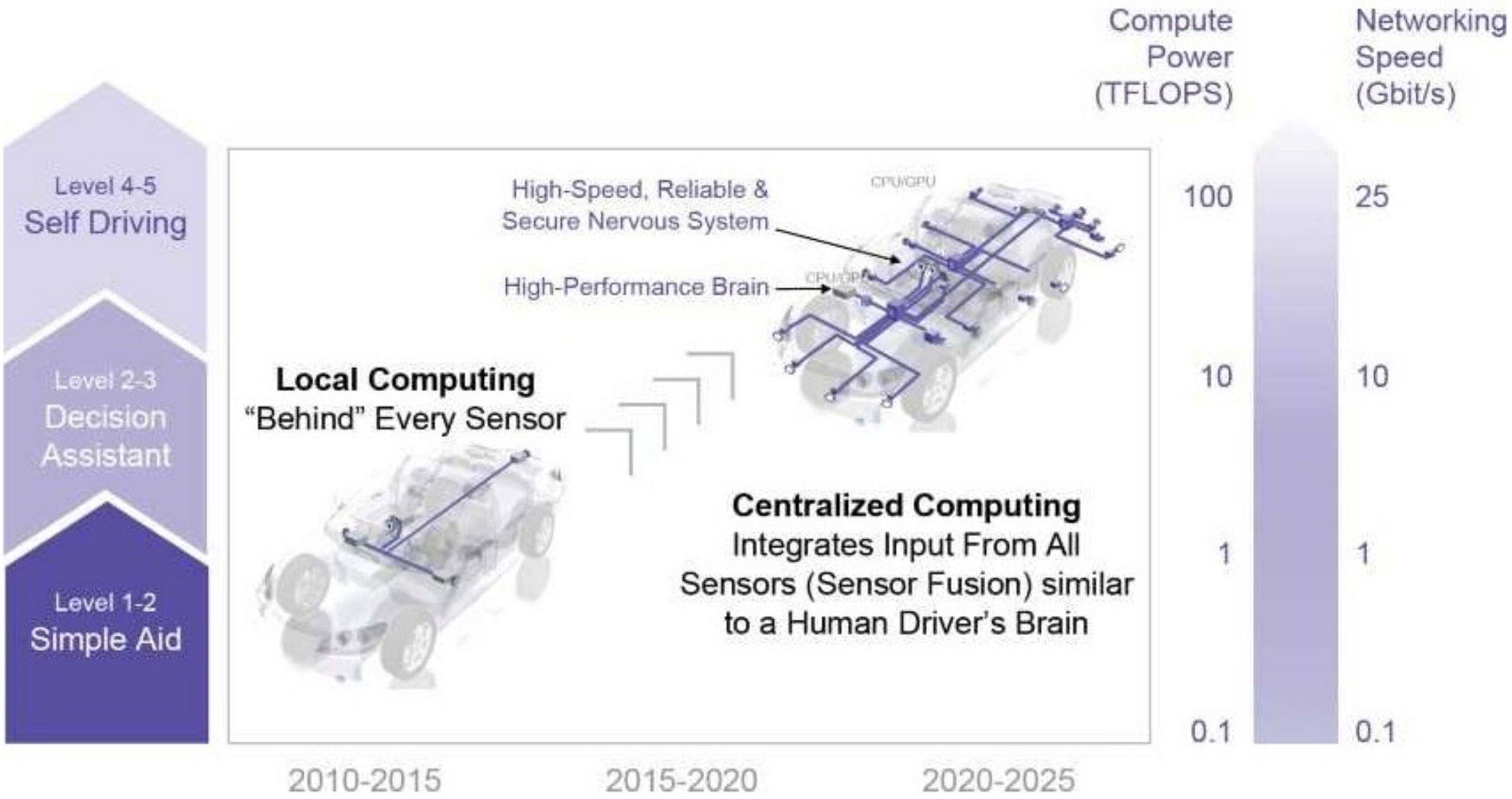

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News

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Microsoft

Microsoft 1Q24 Results

1Q24	Revenue = **$61.9B** on $2.94/shr

MS Security Processor

Microsoft Develops Chip-to-Cloud Security Technology for PCs

1:31 PM 11/17/2020 - MT Newswires01:31 PM EST, 11/17/2020 (MT Newswires) -- Microsoft (MSFT) said Tuesday it developed a chip-to-cloud security technology to boost the security advancements of future Windows PCs.The ***Pluton*** security processor will provide **hardware security** protection from cyber and physical attacks through future chips from Advanced Micro Devices (AMD), Intel (INTC) and Qualcomm (QCOM).Intel and AMD said chips with the new technology will be ready "within the next few **years**." However, Qualcomm declined to say if it will incorporate the design in its chips while expressing support for the new technology,

Microsoft's New PC's

Microsoft's Surface Laptop 3 is 3x more powerful than a MacBook Air

See this

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Microsoft's New PC's

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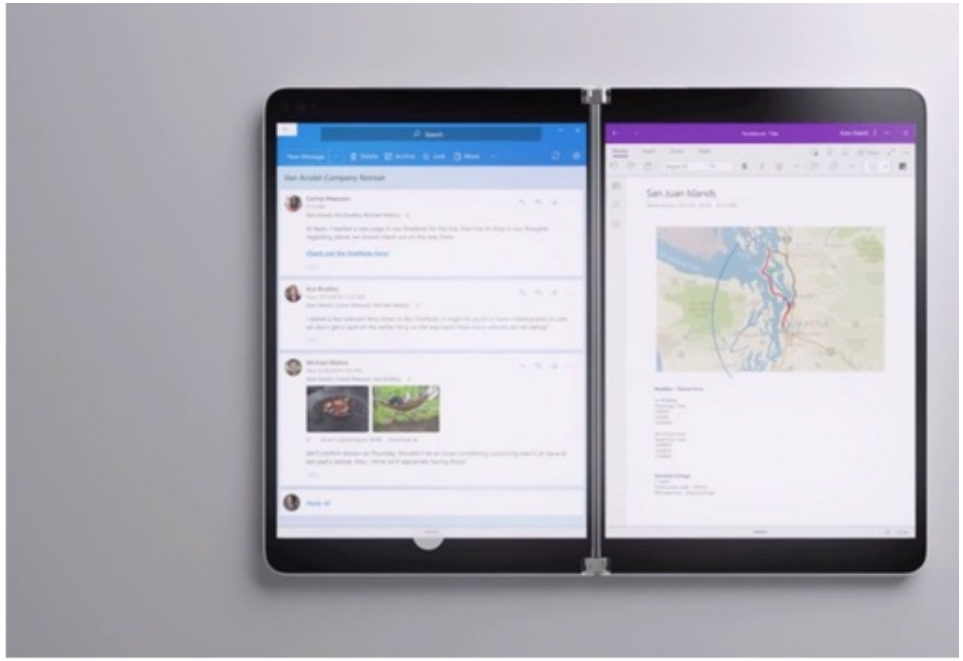
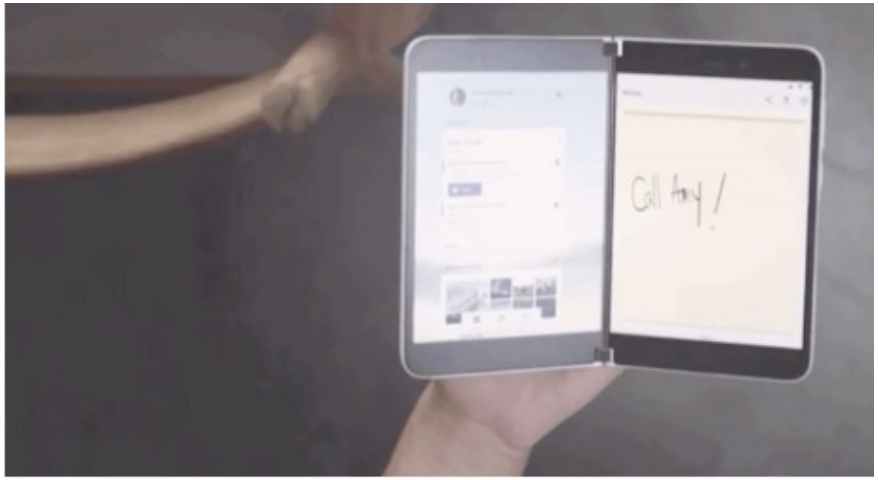


'This is Surface Duo': Yes, Microsoft will release a dual-screen phone



The new Microsoft phone, the Surface Duo.

Microsoft

Microsoft is making a phone. Again.

Microsoft's New PC's

Microsoft is making a phone. Again.

The tech giant, which stopped producing phones years ago, is hoping to stage a comeback with the Surface Duo. As the name suggests, the device has two screens, connected by a hinge. (Here's how the Surface Duo compares to the Galaxy Fold.)

"This product brings together the absolute best of Microsoft, and we're partnering with Google to bring the absolute best of Android in one product," said Microsoft Product Chief Panos Panay. "This is industry-pushing technology."

Now playing: Microsoft unveils Surface Duo, a foldable Android phone

4:58

The whole thing is a bit of a surprise, considering Microsoft eventually gave up making phones after its troubled 2014 purchase of phone giant Nokia for more than $7 billion. This time, Microsoft says its new innovations, like the dual-screen folding display and special technology it built for the Google Android software that powers the gadget, will help make the difference. We won't know for sure until the Surface Duo is released next year.

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Microsoft's New PC's

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Everything announced

- **Surface Duo**: Microsoft is making a dual-screen Android phone called Surface Duo. Yes, that Microsoft.
  The company known for its Windows operating system is getting back into smartphones by embracing its rival's ecosystem.
- **Surface Neo**: Dual-screen Microsoft Surface Neo is coming, eventually.
  Like other Windows 10 X systems, this dual-screen Surface isn't likely to be in stores till the 2020 holiday season.
- **Windows 10 X**: Windows 10 X OS will work with new dual-screen Surface Neo devices.
  The dual-screen Surface Neo gadgets will be out next year, says Microsoft.
- **Surface Laptop 3**: Microsoft announced a laptop 3x more powerful than the MacBook Air.
  Microsoft's Surface Laptop 3 has USB-C, a bigger screen and a modular design. It comes in 13.5- and 15-inch models and starts at $999.
- **Surface Pro X and Surface Pro 7**: Microsoft unveils $999 Surface Pro X, a tablet with a phonelike Windows experience.
  We also got a minimal update for the Surface Pro 7, now with USB-C.
- **SQ1 custom Arm chip**: Microsoft tries Windows on Arm chips again with the SQ1-powered Surface Pro X.
  The chips are designed to consume less power than those from Intel, Microsoft's traditional partner.

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Microsoft's New PC's

The Surface Laptop 3 has a custom Ryzen Surface Edition processor on the 15-inch model, while the Surface Pro X goes the ARM-powered route with a new SQ1 processor co-engineered with Qualcomm. It's a big change for the Surface line, even if Intel will still power the Surface Pro 7 and the smaller 13-inch Surface Laptop 3 models.

ARM ⟸ New Windows!

AMD Ryzen

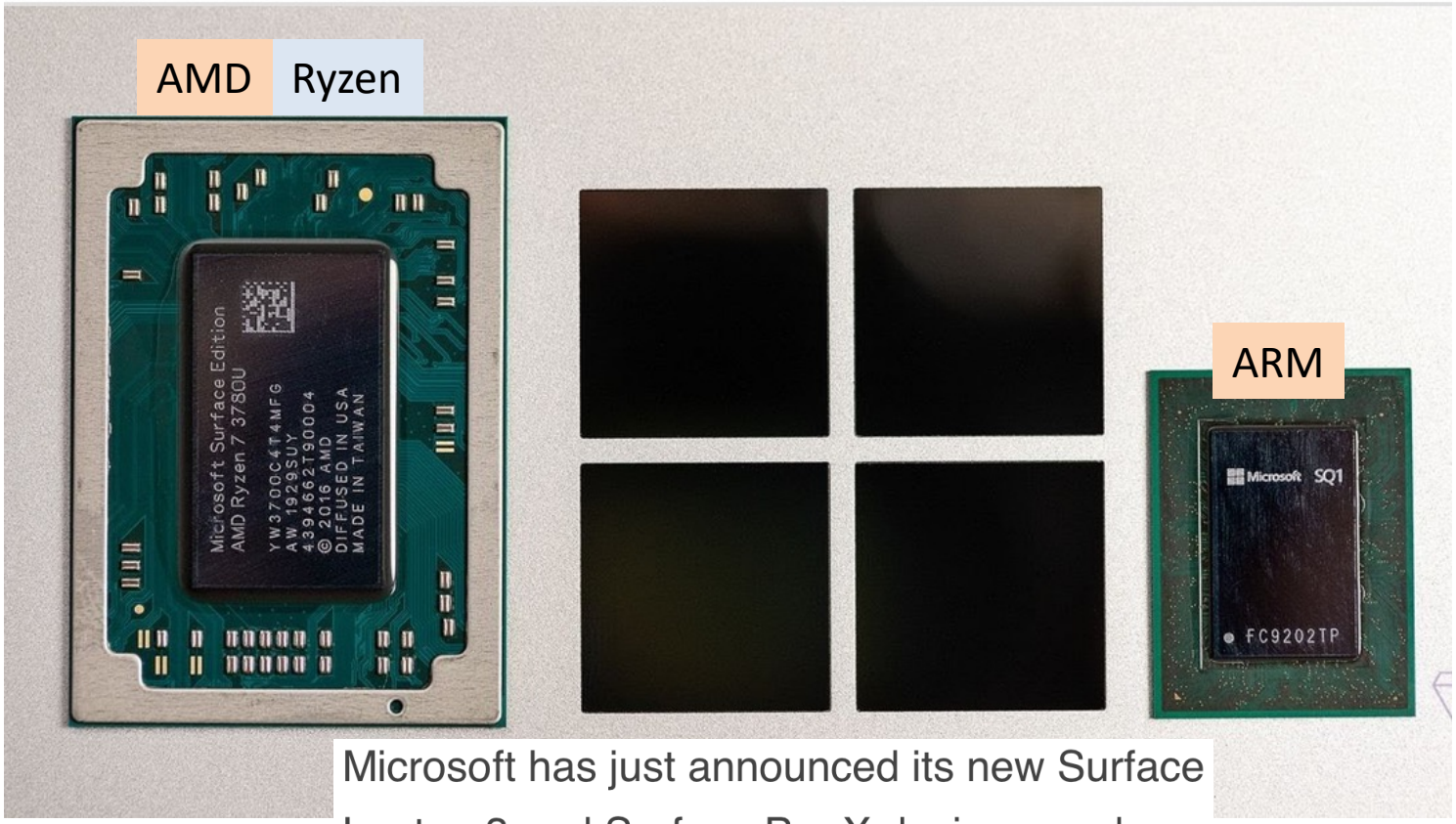
On the AMD side, this Ryzen processor will be available exclusively in the 15-inch model of the Surface Laptop 3, a notebook that also has a metal finish instead of the fabric we've seen on previous Surface Laptop models. Microsoft has worked closely with AMD to add an additional graphics core on the 12nm Ryzen 5 and Ryzen 7 Surface parts that are built on Zen+, and to optimize the chip to fit inside the slim-and-light chassis it uses for the Surface Laptop 3.

Inside Microsoft's new custom Surface processors with AMD and Qualcomm

Surface Ryzen Edition and SQ1 processors have been co-engineered

By Tom Warren on October 2, 2019 11:30 am

Microsoft's New PC's



Microsoft has just announced its new Surface Laptop 3 and Surface Pro X devices, and neither will come with an Intel processor. The software giant is diversifying its silicon for Surface this year by partnering closely with AMD and Qualcomm, respectively, to create custom processors for its Surface line.

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Microsoft Undersea Servers

DR JEFF SOFTWARE
INDIE APP DEVELOPER

Sep 15, 2020

Microsoft Retrieves Its Sea Floor Data Center After 2 Years

PCMag Follow
Sep 15, 2020 · 2 min read ★

Microsoft Undersea Servers

By Matthew Humphries

In May 2018, Microsoft Research decided to test how well a self-sustaining underwater data center would work: The company sealed 12 racks of servers in a cylinder and dropped them in the ocean off Scotland's Orkney Islands. Two years later, the cylinder has been retrieved.

The experiment is called Project Natick, and as the BBC reports, it looks to have been a success. In total, 864 servers were contained in the cylinder, and only eight of them failed. According to project lead Ben Cutler, "Our failure rate in the water is one-eighth of what we see on land." As to why the failure rate was so much lower, Cutler speculates that, "We think it has to do with this nitrogen atmosphere that reduces corrosion and is cool, and people not banging things around."

One of the main reasons for attempting to run an underwater data center is the potential for huge energy savings, because cooling is naturally provided by the cold water surrounding the cylinder. But it seems that wasn't the only advantage, and the significantly lower failure rate is just another tick in the box for this type of data center being taken seriously in future.

2 New Undersea Cables

News Story

Market Chatter: Facebook Teams Up With Google, Regional Companies for 2 New Undersea Cables

7:03 AM 3/29/2021 - MT Newswires07:03 AM EDT, 03/29/2021 (MT Newswires) - **Facebook** (FB) has entered into a partnership with **Alphabet** (GOOGL) unit **Google** and regional telecommunication companies for two new undersea cables to connect Singapore, Indonesia and North America, Reuters reported Monday, citing an official statement. The undersea cables, called Echo and Bifrost, are expected to increase overall subsea capacity in the **trans-pacific by about 70%,** Facebook Vice President of Network Investments Kevin Salvadori reportedly said in a statement. Salvadori said Echo is being built in partnership with Google and Indonesian telecommunications' company XL Axiata. The cable is set to complete by **2023**.Bifrost is being developed in partnership with Indonesia's Telkom unit Telin, and Singapore's Keppel, with completion scheduled by **2024**.

(Market Chatter news is derived from conversations with market professionals globally. This information is believed to be from reliable sources but may include rumor and speculation.)

News

Google

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Google 2Q23 Results

2Q23	Revenue = **$74.6B** on $1.44/shr
1Q23	Revenue = **$69.8B** on $1.17/shr
4Q22	Revenue = **$76.1B** on $1.05/shr

3Q22=> **$69.1B**

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Google 1Q24 Results

DR JEFF
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INDIE APP DEVELOPER

1Q24 Revenue = **$80.5B** on $1.89/shr

2Q23=> **$74.6B**
1Q23=> **$69.8B**
4Q22=> **$76.1B**
3Q22=> **$69.1B**

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Google QC

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INDIE APP DEVELOPER

Sep 2019

FORTUNE

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TECH • QUANTUM COMPUTING

Google Claims 'Quantum Supremacy,' Marking a Major Milestone in Computing

Robert Hackett September 20, 2019

Google QC

Sep 2019

The Google team, which first wrote about their goal in a *Nature* article two years ago, appears to be more hopeful about the short-term prospects of its findings. "As a result of these developments, quantum computing is transitioning from a research topic to a technology that unlocks new computational capabilities," the researchers write.

"We are only one creative algorithm away from

applications." He added, "Quantum computers will never reign 'supreme' over classical computers, but will rather work in concert with them, since each have their unique strengths."

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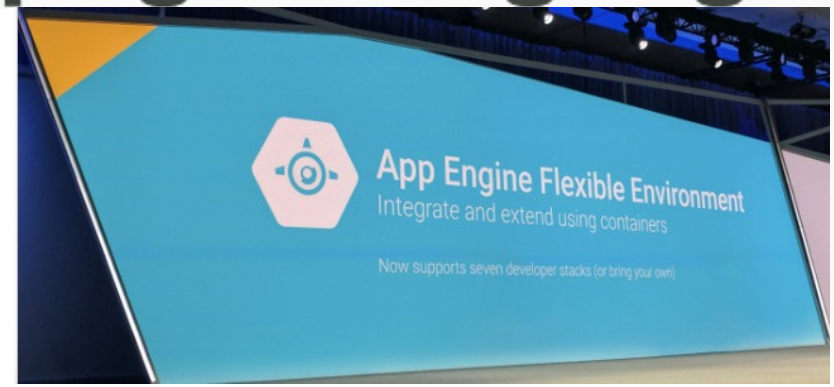
Google Cloud Apps

DR JEFF SOFTWARE
INDIE APP DEVELOPER

New version of Google App Engine supports all programming languages



Initially, it supports supports 7 languages including Java 8, Ruby, Go, Python 2/3, C#, PHP 5/7 and Node.js. But it also allows programmers to bring their own language runtimes, frameworks, and third party libraries and App Engine handles all the management for the developers giving them that flexibility to bring the tools they like to work with without having to deal with the management, the biggest advantage of using a cloud service in the first place.

Finally, the company will let developers bring a programming package (binary) to App Engine as a Docker image.

News

Amazon

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Amazon 2Q23 Results

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2Q23	Revenue = **$134.2B**
1Q23	Revenue = **$127.4B**
4Q22	Revenue = **$149.2B** on $0.03/shr

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Amazon 1Q24 Results

DR JEFF
SOFTWARE
INDIE APP DEVELOPER

1Q24	Revenue = **$143.3B** on $0.98/shr

2Q23=> **$134.2B**
1Q23=> **$127.4B**
4Q22=> **$149.2B**

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Amazon Chips

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News

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Graphics
Animation

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Algorithms: Animation

We have rescheduled Dr Teran's IRIS seminar to November 7 (Thursday); 11:00 to noon in Nordhoff Hall (NH) 209.

Title: Snow Business: Scientific Computing in the Movies and Beyond

*Speaker: Dr. Joseph Teran (Department of Mathematics, UCLA)

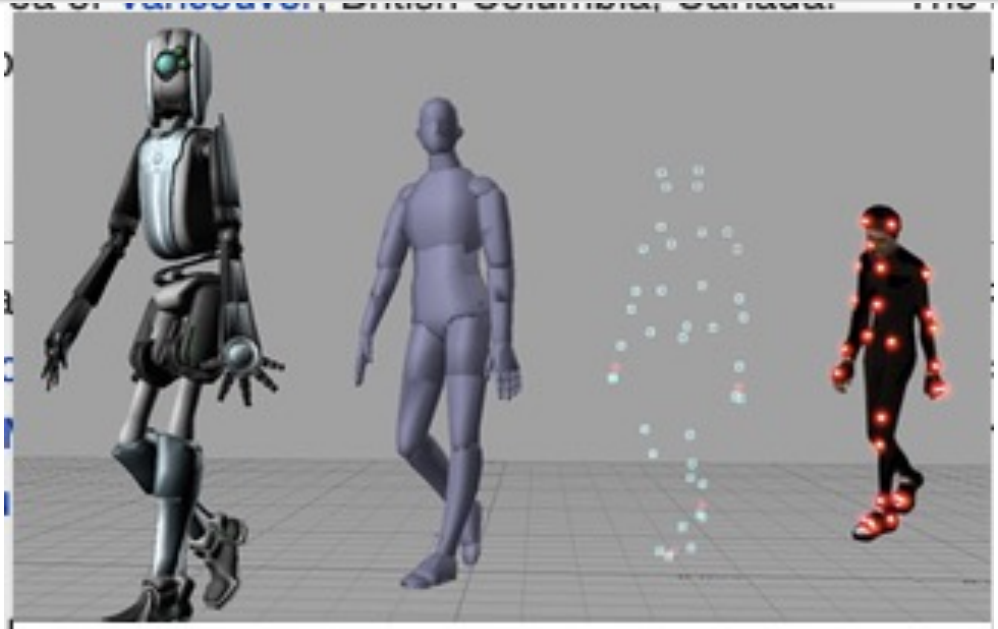
- Simulation
- Animation

*Abstract: *New applications of scientific computing for solid and fluid mechanics problems include simulation of virtual materials in movie visual effects and virtual surgery. Both disciplines demand physically realistic dynamics for materials like water, smoke, fire, and soft tissues. New algorithms are required for each area. Teran will speak about the simulation techniques required in these fields and will share some recent results including: simulated surgical repair of biomechanical soft tissues; extreme deformation of elastic objects with contact; high resolution incompressible flow; and clothing and hair dynamics. He will also discuss a new algorithm used for simulating the dynamics of snow in Disney's animated feature film, "Frozen".

Frozen

Animation

- CGI



Computer animation is the process used for digitally generating animated images. The more general term computer-generated imagery (CGI) encompasses both static scenes and dynamic images, while computer animation *only* refers to moving images. Modern computer animation usually use

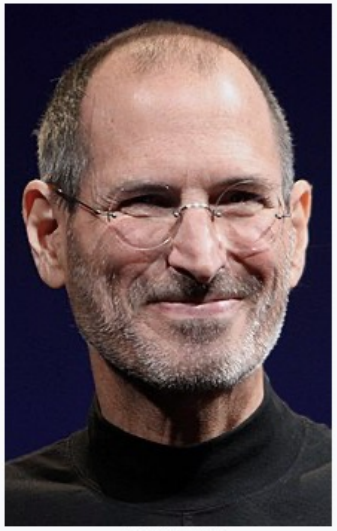
Animation Studios

- Disney
  - Disney Animation
  - Cal Arts
  - **Pixar**
    - Steve Jobs
    - John Lasseter
- ILM
  - LucasFilm
  - Skywalker Ranch
  - Presidio
    - George Lucas

"There is no TRY … there is only DO!"

Animation Studios: Pixar

Steve Jobs



Jobs in 2010

Born	Steven Paul Jobs February 24, 1955 San Francisco, California, U.S.
Died	October 5, 2011 (aged 56)

The Steve Jobs Building at the Pixar campus in Emeryville

PIXAR
ANIMATION STUDIOS

Pixar's headquarters in Emeryville, California

Type	Subsidiary
Industry	Computer animation, motion pictures
Predecessor	The Graphics Group of Lucasfilm Computer Division (1979–1986)
Founded	February 3, 1986; 33 years ago in Richmond, California, United States
Founders	Steve Jobs Edwin Catmull Alvy Ray Smith
Headquarters	1200 Park Avenue, Emeryville, California, United States

Titles	Movies	First release
Toy Story	4	November 22, 1995
Monsters, Inc.	2	November 2, 2001
Finding Nemo	2	May 30, 2003
The Incredibles	2	November 5, 2004
Cars	3	June 9, 2006

John Lasseter

Lasseter in 2011

Born	John Alan Lasseter January 12, 1957 (age 62) Hollywood, California, U.S.
Residence	Glen Ellen, California, U.S.
Alma mater	California Institute of the Arts (BFA)
Occupation	Animator, film director, screenwriter, producer, voice actor
Years active	1978–present
Employer	Walt Disney Animation Studios

John Lasseter appears with characters from *Up* at the 2009 Venice Film Festival.

Animation Studios: ILM

George Walton Lucas Jr. is an American filmmaker and entrepreneur. Lucas is known for creating the *Star Wars* and *Indiana Jones* franchises and founding Lucasfilm, LucasArts and Industrial Light & Magic. He served as chairman of Lucasfilm before selling it to The Walt

- San Rafael
  - Lucas Valley Road

- Presidio

INDUSTRIAL LIGHT & MAGIC

SKYWALKER RANCH

Skywalker Ranch, located 40 minutes north of San Francisco, is the pastoral home to Lucasfilm's celebrated sound design, mixing and audio post-production facility, Skywalker Sound.

Skywalker Sound occupies the 153,000-square-foot Technical Building, which features a world-class scoring stage, six feature mix stages, 15 sound design suites, 50 editing suites, an ADR stage, two Foley stages, and the 300-seat Stag Theater. The property also includes the iconic Main House and the beautiful Lake Ewok.

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Animation Studios: ILM

LUCASFILM Ltd

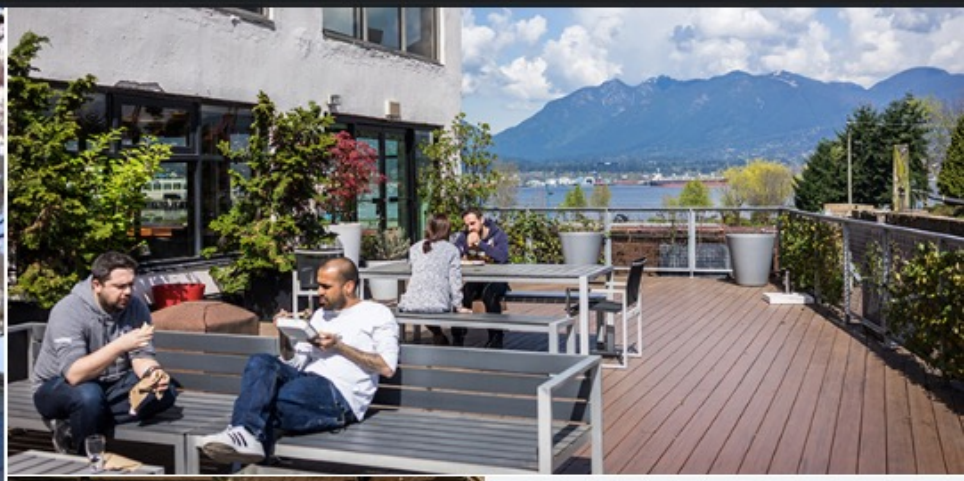
WHO WE ARE | WHAT WE DO | PRODUCTIONS | CAREERS

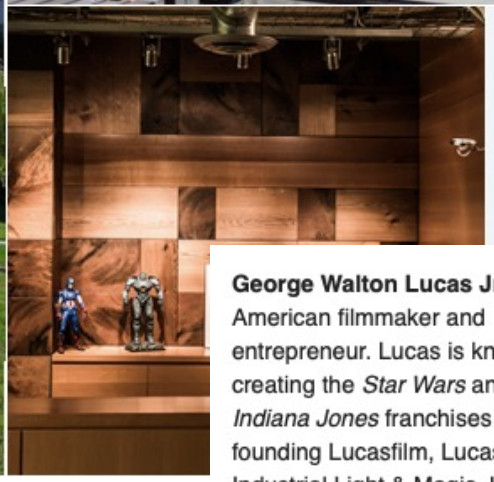
SAN FRANCISCO

Located in San Francisco's historic Presidio National Park, the Letterman Digital Arts Center is the...

- Presidio

[MORE]





VANCOUVER

In 2013, ILM planted roots in Vancouver, eventually expanding into a new 30,000 square-foot studio space...

INDUSTRIAL LIGHT & MAGIC

George Walton Lucas Jr. is an American filmmaker and entrepreneur. Lucas is known for creating the *Star Wars* and *Indiana Jones* franchises and founding Lucasfilm, LucasArts and Industrial Light & Magic. He served as chairman of Lucasfilm before selling it to The Walt

News

History

CHM

CHM Launches New Website

(Click image for link.)

Hello World! Our New Digital Portal

CHM launches website with new visual identity and fresh content

We are excited to announce the launch of our new website! This will be the first redesign of the Museum's site in nearly a decade and we are thrilled to share the result of this first phase with you. As CHM has grown over the past 10 years, we have created new online content—from exhibits to blogs, expanded our live events and educational programming capacity, and broadened our research and archival efforts. Our new website will give audiences the opportunity to better engage with our content, programming, and collections, and will give CHM a state-of-the-art platform to explore topics at the intersection of technology and humanity on a global scale.

https://computerhistory.org

Timeline of Computer History

https://www.computerhistory.org/timeline/computers/

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Section

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SOFTWARE
INDIE APP DEVELOPER

Software

News

IBM

Red Hat supplies our Linux

$34B

Women in Computing

Debugging

The Eniac women were among the first coders to discover that software never works right the first time — and that a programmer's main work, really, is to find and fix the bugs. Their innovations included some of software's core concepts. Betty Snyder realized that if you wanted to debug a program that wasn't running correctly, it would help to have a "break point," a moment when you could stop a program midway through its run. To this day, break points are a key part of the debugging process.

Gender Aware Software

acm LEARNINGWebinar

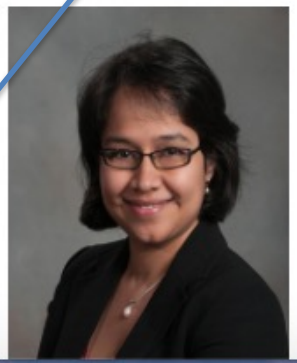
April 25 ACM SIGSOFT Talk, "Gender-Inclusivity Software Engineering" with Margaret Burnett and Anita Sarma

Register now for the next free ACM SIGSOFT Learning Webinar, **"Gender-Inclusivity Software Engineering"** presented live on **Thursday, April 25 at 12 PM ET** by **Margaret Burnett**, Distinguished Professor at Oregon State University and **Anita Sarma**, Associate Professor at Oregon State University. **Alexander Serebrenik**, Associate Professor of software evolution at Eindhoven University of Technology, will moderate the questions and answers session.

(*If you'd like to attend but can't make it to the virtual event, you still need to register to receive a recording of the webinar when it becomes available.*)

Note: You can stream this and all ACM SIGSOFT Learning Webinars on your mobile device, including smartphones and tablets.

- Inclusivity bugs



Gender inclusiveness in software companies is receiving a lot of attention these days, but it overlooks a potentially critical factor: software itself. Research shows that different people often work differently with software, and that some of these differences statistically cluster by gender. In this talk, we'll begin by presenting a method we call GenderMag, which can be used to find and fix "inclusivity bugs" — gender biases in software that support people of one gender less well than people of another gender. As we'll explain, at the core of the method are five facets of cognitive style differences that are also statistically gender differences, drawn from a large body of foundational

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Agile (PM/SE)

DR JEFF SOFTWARE
INDIE APP DEVELOPER

August 2018

Seventeen years ago agile began as a simple manifesto. Now, with all the methods and frameworks formulated in its name, it has become fat and flabby. We have reached a point where what we set out to change (big prescriptive methods) has returned, but now under the banner of being agile. The Heart of Agile is an attempt to return to agile's real core. But are the four words collaborate, deliver, reflect, and improve enough to get practitioners to implement the true heart of agile?

Essence, a new common ground for software engineering, is an attempt to find a middle ground between the very core of agile and all the multitude of competing implementations of agile. In this presentation you will learn how Essence can strengthen the Heart of Agile without getting into particular ways of doing agile.

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Fed Govt Open Source

OMB launches Code.gov repository for open source projects

Library of Reusable Code

After issuing policy encouraging agencies to release more custom-developed software for use by other agencies, OMB launched a new website to facilitate that all in one place.

The Obama administration launched Thursday Code.gov, a new repository for government open source code now featuring nearly 50 open source projects from more than 10 agencies.

Coders can expect to see more projects on the site in the coming months as agencies implement the recently released Federal Source Code Policy, U.S. CIO Tony Scott said in a blog post announcing the launch.

The Federal Source Code Policy seeks to get agencies to release more of their custom-developed software. The policy notably establishes a pilot program requiring agencies to release at least 20 percent of new custom-developed code as open source software.

Data-Oriented Dev

Around 2008 I was being interviewed for a job in the finance industry. The guys at the interview were asking me to design classes for Animal/Dog/Cat and methods like Animal.Speak, etc. The classical OOP example. I was trying to explain them that you can do OOP, but if you're going to have thousands of objects it would make more sense to proceed DOD (data-oriented-development) and procedural programming, because that will run faster and will be more thread friendly in the end. I didn't get the job. As a feedback I was told that they thought that I didn't ***get*** OOP :) I laughed and I was glad to find a job elsewhere. I was coming from game development where DOD was a new trend (at least at DICE/Electronic Arts). If you wanted your game to work fast on PS3 you had to think about your data layouts. You had to slice up your data into minimal streams that are processed in one go in order to avoid jumping all over the memory. Writing code in procedural way goes hand in hand with that. It's much easier to parallelise your code if it's written in procedural, rather than OOP way.

I don't think this DOD and procedural programming will be a new trend. It never became one in mainstream development, because such top notch high-performance is not an issue in 99% of applications.

However, if anything were to replace OOP it can't be other than DOD. Nonetheless, I would highly recommend to familiarise yourself with DOD and procedural programming if you're interested in high performance computing.

Alan Kay on OS's

Alan Kay, Have designed a few programming languages

Answered 4h ago · Upvoted by David Vandevoorde, Ph.D. Computer Science, Rensselaer Polytechnic Institute

A fabulous super-efficient elegantly designed HW/OS was "Project Genie", an ARPA Project at Berkeley in the mid to late 60s. Project Genie - Wikipedia

It is most famous for three big uses of it. The first was that it turned out so successfully that ARPA wanted more, and more or less forced SDS to build a commercial version (the Wikipedia article is sanitized and inaccurate). This was used to form the Tymshare Corp, the first commercial time-sharing company.

The second was that this machine and OS was the basis for the Engelbart NLS system and was the computer that sustained "The Mother of All Demos" in 1968.

The third was that the design of the OS was copied by BBN and used to make the Tenex OS for the DEC PDP-10.

Alan Kay on OS's

A few notes here. They had a small SDS 930 computer (64K 24bit words, 0.5MIPs) and modified it to add their own home built memory projection and page relocation hardware, etc. Mel Pirtle was the main factor for this. Chuck Thacker (of later Parc and Turing Award fame) was one of the builders of the HW.

The OS was quite ingenious for any day, and was primarily the design of Butler Lampson (also of later Parc and Turing Award fame). Peter Deutsch (of Lisp and later Parc fame), did much of the critical programming.

It had several features that encouraged programmers to let the system know in advance — when they could — their intentions, and in return they would be rewarded by having their program run on the fast queue (and if they violated their predictions, they were punished by being put on the slow queue).

Alan Kay on OS's

— when they could — their intentions, and in return they would be rewarded by having their program run on the fast queue (and if they violated their predictions, they were punished by being put on the slow queue).

A unique feature (I don't know of any exceptions) is that the working set given to any process was only about 1/4 the available physical memory. This allowed the OS to bring in the next three processes from the disc/drum secondary storage and thrashing was pretty much eliminated.

Another interesting wrinkle to the design is that Butler "designed the system to crash" — meaning: there were crashes of computers in those days, so instead of pretending that all was well, Butler took the opposite tack and set things up so that a crash could be recovered and resumed in a few seconds or minutes. One of the schemes was to mark pages as dirty or clean and to use a few percents of the scarce resources to preemptively write out dirty pages, so that there was almost always enough clean storage to bring pages in.

There were many other interesting features for inter-process protection and communication, and the particular way the "user machine illusion" was presented to programmers.

Jeff Drobman · Just now

I was a user of the Tymshare system, writing programs in Basic, 1969–71, working for Bechtel on nuclear power plant simulations. We used Teletype machines for typing with paper tape for program storage.

Section

China

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Chinese Classroom Cameras

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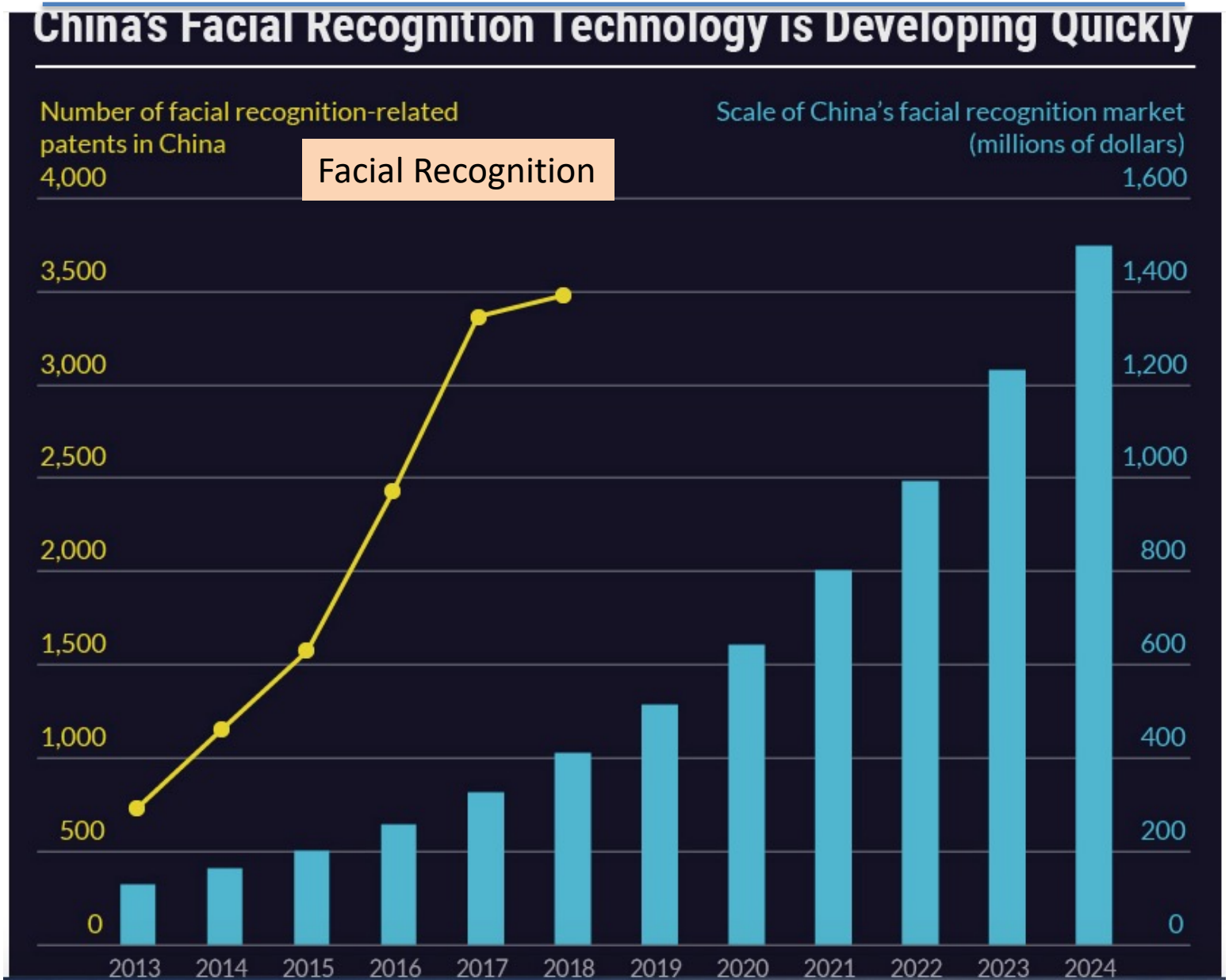

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Chinese Classroom Cameras

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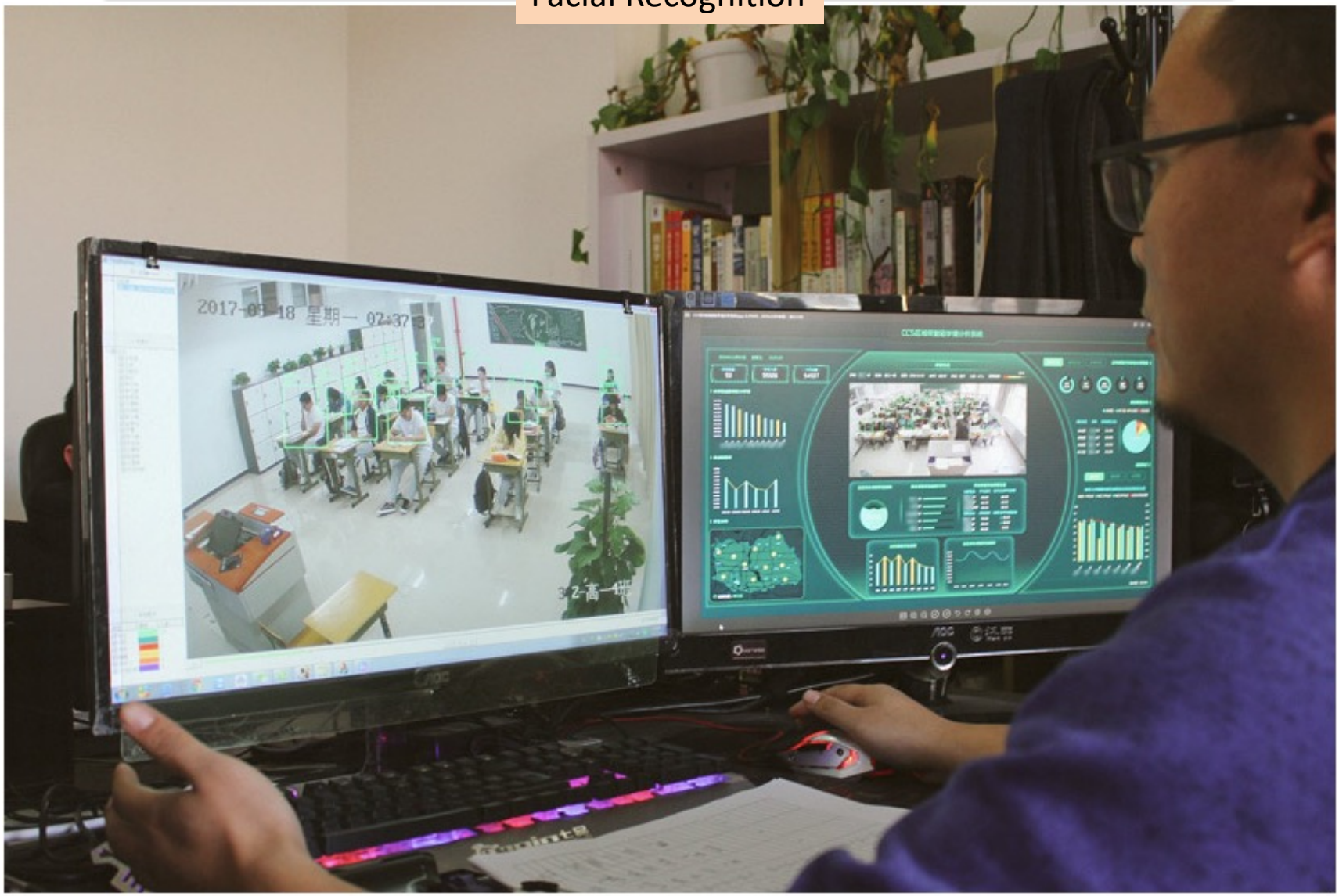
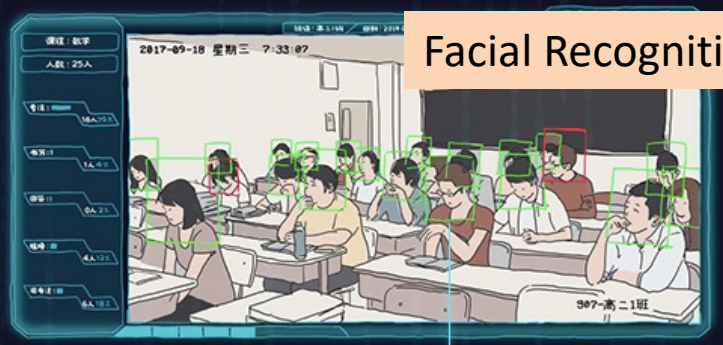
Facial Recognition



A programmer at Hanwang Education's research center demonstrates the company's "Class Care System" in Beijing, Jan. 2, 2019. Xue Yujie/Sixth Tone

HOW "CLASS CARE SYSTEM" WORKS

Facial Recognition



PTURING

nwang's camera takes a photo of the entire class once per second and sends the footage to a server housed elsewhere in the school.

SCANNING

The server analyzes the footage and identifies each student's face

STORING

The facial data is encrypted and stored in Hanwang's server

CLASSIFICATION

Students' in-class behaviors are placed into five categories, powered by deep-learning neural networks

Hanwang's deep-learning algorithms then analyze each student's behavioral data and score each student between 0 to 100 every week. The scores are sent to teachers, parents, and school leaders through a mobile app.

SIXTH TONE
Fu Xiaofan

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Chinese Classroom Cameras

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Facial Recognition

There are four stages in modern-day facial recognition:

DETECTION
Identify faces in photos or videos

ALIGNMENT
Standardize detected faces for qualities like orientation and size

REPRESENTATION
Compute a "face signature" for each detected and aligned face, which is a "string of numbers that represent a particular image of a face."

CLASSIFICATION
Run face signatures through a stored database of user "face templates" to look for matches

Airports | Public transportation | Banks & financial instituitions | Shopping malls | Stadiums | Educational instituitions

WHERE FACIAL RECOGNITION SYSTEMS ARE USED IN CHINA

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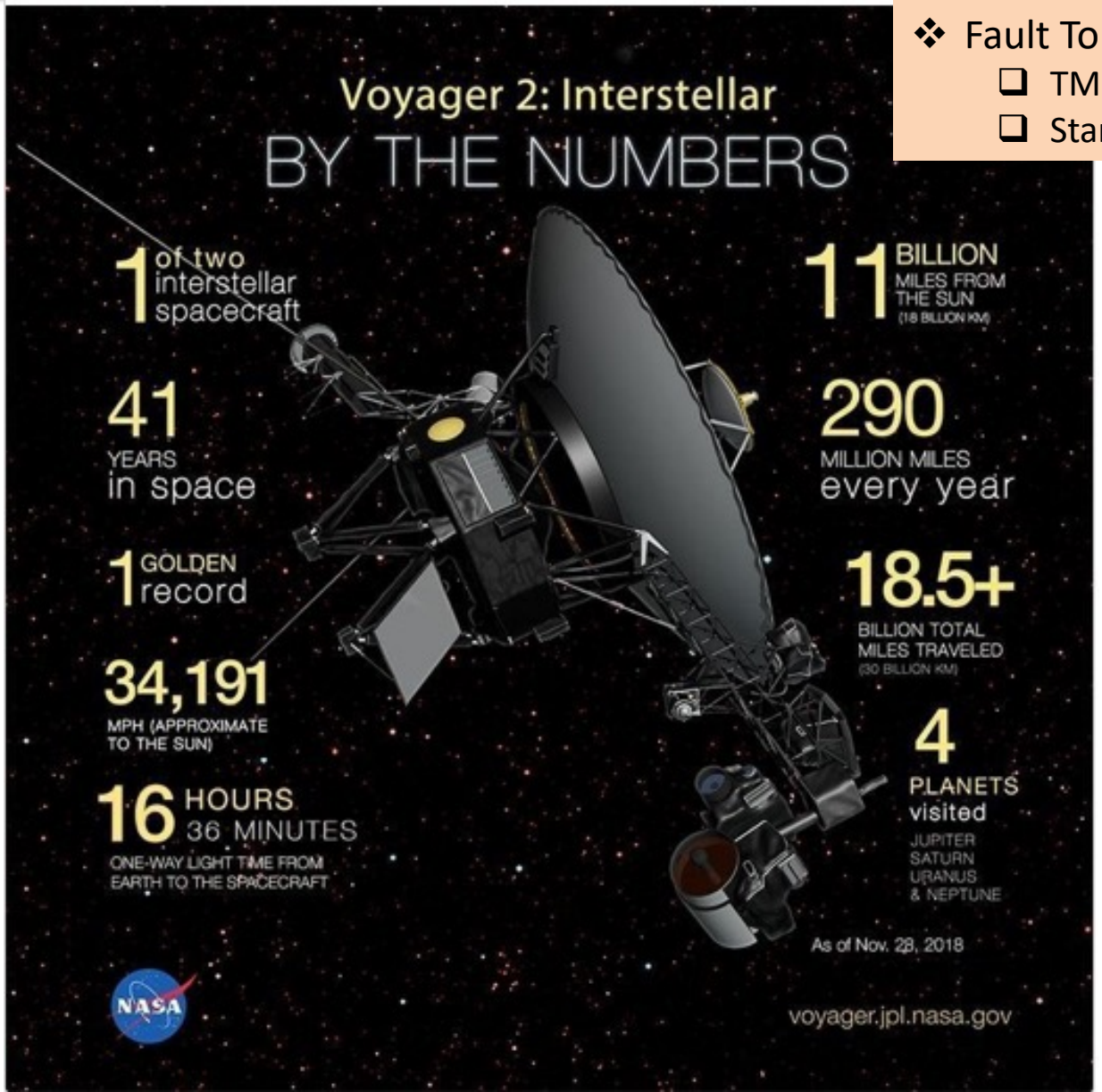
Chinese Classroom Cameras

Facial Recognition

Everyone I talked to at Hangzhou No. 11 Middle School and Niulanshan First Secondary School expressed skepticism about the accuracy and reliability of facial recognition technology. As part of their smart campus initiative, Hangzhou No. 11 uses Hikvision's facial recognition cameras to record the students' attendance rate and for on-campus payments, but it doesn't seem to work very well. A female student told me that Hikvision's system is particularly inaccurate for girls. "Once we change our hairstyles or wear glasses, the camera won't recognize [us] anymore," she says through text. The different lighting and angles of their faces also slow down the recognition process, making the lines during lunch extremely long.

"The technology is not perfect yet," admits Professor Wang Shengjin, "but you can't always wait for technology to become perfect before using it." Wang believes that practice makes perfect: The more we use facial recognition technology, the more problems we discover and solve, ultimately leading to perfected facial recognition systems.

Hi-Rel Spacecraft



- Fault Tolerance
  - TMR
  - Standby spares

Another Crash

CRASH RENEWS BOEING JETLINER WORRIES

Ethiopian Airlines accident involves a 737 Max, the same as in Indonesian failure.

By Ralph Vartabedian

The crash of an Ethiopian Airlines Boeing 737 Max jetliner on Sunday, which killed all 157 aboard, had uncanny similarities to a fatal accident in Indonesia five months earlier, raising disturbing questions about a mainstay aircraft that airlines have bought by the hundreds.

The flight left Ethiopia's capital, Addis Ababa, about

EPA/Shutterstock

RESCUE WORKERS remove debris from the site where an Ethiopian Airlines Boeing 737 Max crashed near Bishoftu, Ethiopia, killing all 157 aboard. Another 737 Max crashed after takeoff from Jakarta in October.

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Airplane Automation

DR JEFF SOFTWARE
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Milestones in aviation automation

HW

1917 — Sperry Corp. develops the first rudimentary autopilot that uses gyroscopes to reduce pilot workload.

1932 — First instrument landing at Berlin-Tempelhof Central Airport, using the Lorenz beam system.

1949 — Bill Lear wins the Collier Trophy, aviation's most coveted award, for development of the Automatic Pilot and Automatic Approach Control System at Santa Monica. Two years earlier a U.S. Air Force C-54 made a transatlantic flight, including takeoff and landing, completely under the control of the Lear autopilot.

1964 — First fully automatic landing using an instrument landing system, at Bedford Airport, United Kingdom.

1982 — The first modern flight management system, including an autothrottle that operates like cruise control in a car, is introduced in the Boeing 767.

1987 — The first use of a fly-by-wire system on a passenger jet on the Airbus 320. Fly-by-wire takes pilot input and calculates the control-surface movements required to deliver the result.

1995 — Boeing's new 777 has a fly-by-wire system with flight envelope protection, which is supposed to prevent stalls or excessive stressful movements, though a pilot can override.

2016 — Boeing introduces the 737 Max, which incorporates the maneuvering characteristics augmentation system, or MCAS. It helps control an aircraft's tendency to pitch up in certain conditions.

SW

2018 — Boeing announces a program to research a pilotless commercial jetliner.

Crash!

But automated flight systems are also implicated in a series of incidents in which they made the wrong decisions and pilots did not fully understand the complex software that adjusts flight controls constantly during automated takeoffs, landings and high-altitude cruising.

The two accidents also highlight the potential risks of basing automated flight control decisions on readings by only two sensors — which can create uncertainty when one fails.

"A lot of the optimization that the computer is doing is not made clear to the pilot," said Douglas Moss, an instructor at USC's Viterbi Aviation Safety and Security Program. He is a former United Airlines captain and before that, an Air Force test pilot, as well as an attorney. "The pilot is sitting there for 10 or 15 seconds trying to figure out why the computer is pitching up the nose or adjusting the throttle. I can think of thousands of times when the autopilot or flight management system would do something that caught me by surprise. Almost always, it is the right thing to do, but it is the pilot who is responsible for the safety of the flight."

Another Crash

KCAL9/CBSLA

SEVERAL U.S. airlines said the upgrades to the 737 Max announced by Boeing appeared to be adequate. Above, Southwest 737 Max jetliners in Victorville.

Boeing says it'll update key 737 Max software

In response to crashes, it will also boost pilot training, make air flow data display standard.

mated features in the 737 Max's flight control system may have contributed to two fatal crashes: a Lion Air flight in Indonesia that killed 189 people in October and an Ethiopian Airlines flight in March that killed

slow response, one aviation safety expert said.

"Had all these mitigations that are now being identified been implemented in the initial release of the aircraft, then we would not be here," said

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Perspective

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Industry News

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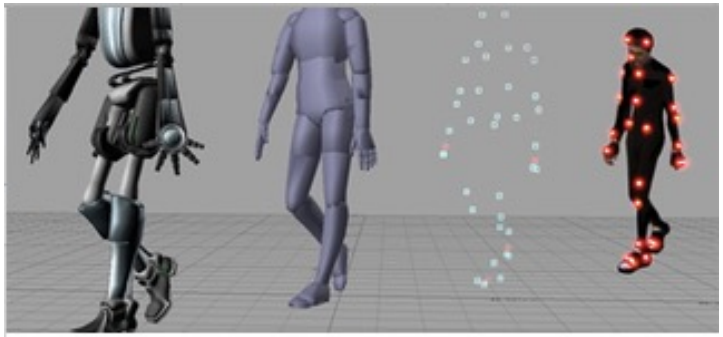
2020 Turing Award

- **Edwin Catmull** *(pictured)* and **Pat Hanrahan** are awarded the Turing Award for their work on computer-generated imagery.



Computer-generated imagery (**CGI**) is the application of computer graphics to create or contribute to images in art, printed media, video games, films, television programs, shorts, commercials, videos, and simulators. The visual scenes may be dynamic or static and maybe second-dimension (2D), thou

Patrick M. Hanrahan is a computer graphics researcher, the Canon USA Professor of Computer Science and Electrical Engineering in the Computer Graphics Laboratory at Stanford University. His research focuses on rendering algorithms, graphics processing units, as well as

Edwin Catmull

Edwin Earl Catmull is a retired American computer scientist and former president of Pixar and Walt Disney Animation Studios. As a computer scientist, Catmull has contributed to many important advances in 3D computer graphics.

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Smartphones

- Samsung Galaxy Note 7
  - ➢ ON FIRE!
  - Biometrics for authentication
    - Fingerprints
    - **Iris scan**

- Apple iPhone 8/X
  - Wireless headphones
  - Biometrics for authentication
    - Fingerprints
    - **Facial scan**
  - iOS 11
    - **11.2.2**

Apple intros totally wireless AirPods that use new W1 chip

http://www.cnet.com/news/apple-unveils-new-iphone-7-is-a-familiar-phone-for-unfamiliar-challenges/?ftag=CAD-04-10aac3a&bhid=23599471486470272123438436875388&ftag=CAD-04-10aac3a

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Tech Worker Pay

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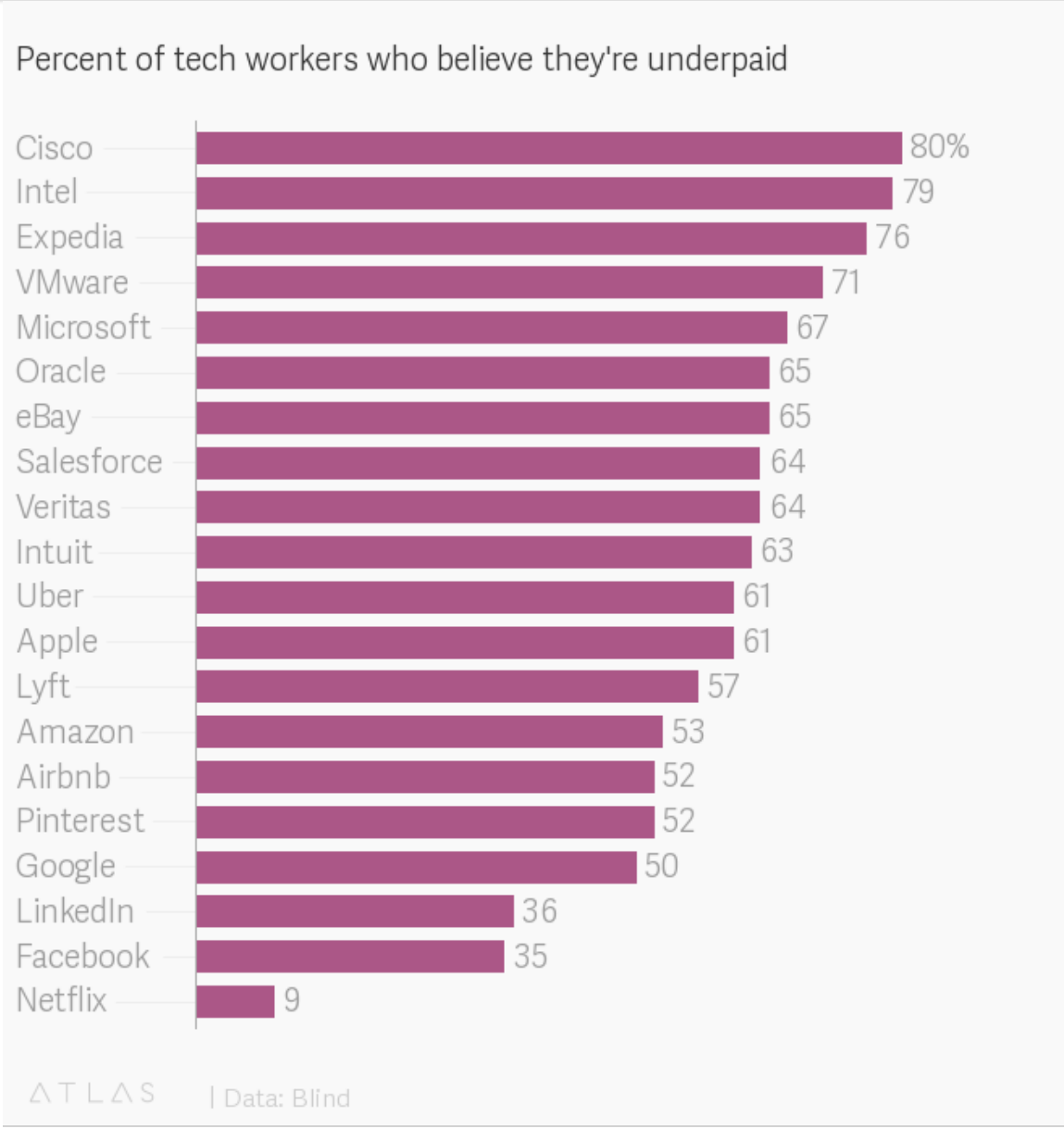

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Engineering Salaries

Business News

Engineering Salaries growing slowly

New projections from the Bureau of Labor Statistics reveals lukewarm growth for engineering salaries and job growth.

Overall job prospects over the coming decades varies by engineering discipline. Some disciplines are expanding at a good clip, while others are declining. Overall employment of engineers is projected to grow 3% over the decade, adding about 67,200 new jobs.

The employment growth rate for engineers is slower than the average for all occupations, in part because several occupations in the group are projected to decline as improvements in technology, such as design software and plant automation, make workers more productive.

The median annual wage for engineers is currently $76,870. That's more than twice the median annual wage for all occupations in the economy, which is $36,200.

Source: Design News (2016-09-07) Engineering Salaries and Job Prospects Are Growing Slowly

CS Ed Globally

Who Would Win the Coding Olympics?
The Washington Post (08/30/16) Karen Turner

U.S. programmers landed in 28th place among their international peers in a HackerRank compilation of the results of 1.4 million coding challenges by approximately 300,000 developers. China topped the list of the most accomplished coders, followed by Russia, Poland, Switzerland, and Hungary. The ranking found China's top coding category was algorithms, while Russia's was data structures. A key factor in these nations' coding success is likely the introduction of math and computer education at a much earlier age than occurs in the U.S., says HackerRank CEO Vivek Ravisankar. "In my opinion, the U.S.'s position here mirrors a lot of the other world ranking reports, such as STEM (science, technology, engineering, and math) education performance, or even other international coding competitions," he says. Last year's Pew Research Center analysis of STEM test scores found U.S. students were middle-of-the-pack underperformers compared to those in Singapore and South Korea. Moreover, this year's International Olympiad in Informatics was led by Chinese, Russian, and Eastern European contestants, while the highest-scoring U.S. coder came in 15th place. The Chinese and Russians also scored victories at the ACM International Collegiate Programming Contest, and at Google Code Jam.

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Standards

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NIST

This just in …

NIST Search NIS

NEWS

Historic Vote Ties Kilogram and Other Units to Natural Constants

November 16, 2018

The U.S. delegation at the 26th General Conference of Weights and Measures where more than 55 countries voted to redefine four of the seven base units for the International System of Units (SI). L-to-R: Eric Lin, director, Material Measurement Lab, NIST; Claire Saundry, director of International and Academic Affairs Office, NIST; Willie May, U.S. member of the International Committee on Weights and Measures and former NIST director; NIST Director and Undersecretary of Commerce Walter Copan; Barbara Cordero, finance analyst, Office of Management Policy and Resources, IO, Department of State and James Olthoff, Acting Associate Director of Laboratory Programs, NIST.

Credit: G. Porter/NIST

Undersecretary of Commerce for Standards and Technology Walter G. Copan votes yes on the resolution to redefine the International System of Measurements at the 26th General Conference on Weights and Measures today in Versailles, France. Delegates representing 60 nations passed the resolution unanimously.

Credit: Hans Michel/Courtesy BIPM

NIST

This just in …

Quantum Advantages

Scientists have dreamed of having an accurate and precise measurement system that could be realized anytime, anywhere, since the 1700s. Scientific advances in quantum science, many of which have occurred at NIST and other NMIs around the world, have finally made this possible.

Quantum phenomena that are identical everywhere are already used to define the second, which is the SI unit for time, and the meter, the SI unit for distance. The second is defined as 9,192,631,770 natural oscillations of microwave radiation released by the element cesium and the meter is defined as the distance traveled by light in vacuum in 1/299,792,458th of a second. These revised definitions, implemented in 1967 and 1983, respectively, were necessary for the invention of GPS and many other modern technologies.

In May 2019 when the revised definition of the kilogram is implemented, it will be based on three fundamental constants: the Planck constant, the speed of light and the cesium atom's natural microwave radiation. The Planck constant describes the size of the packets of energy or quanta that atoms and other particles use to absorb and emit energy.

Kg

The current kilogram mass exerts a specific amount of force in Earth's gravity. The revised definition replaces this determination of mechanical force with an electromagnetic measurement tied to the Planck constant and based on electrical current and voltage. Using an instrument called a Kibble balance, after its inventor Bryan Kibble, an electric current is generated in a coil to produce a magnetic field strong enough to balance a mass of one kilogram. The method requires a precision measurement of local gravity, which varies depending on elevation and several other factors. It also requires moving the coil through a magnetic field of known strength and and at a known speed, hence the tie as well to constants used to determine time and frequency.

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Atomic Clocks

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What are the advantages of an atomic clock over a normal clock?

Jeff Drobman, works at Dr Jeff Software

Answered just now

confusion abounds here. probably what you are thinking of as an "atomic clock" is one you can buy for <$100 that is a "radio controlled" clock that tunes to the US NIST time signal on AM radio. NIST in Fort Collins, CO transmits its real "atomic clock" signal both over AM radio and also to GPS satellites, where we get our accurate and reliable cellular and cable TV clocks. (In case you wonder why we never have to set these clocks.)

the actual cesium-laser atomic clock used at NIST has multiple levels of accuracy, with the highest level called "Stratum 1". other levels are derived from this. Stratum 2 is transmitted to the GPS satellites. the AM radio signal is probably Stratum 4 or 5 — good enough for our cheap clocks and watches. most data and telecom networks use a Stratum 3 or 4e system clock.

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Mars Clocks/Weather

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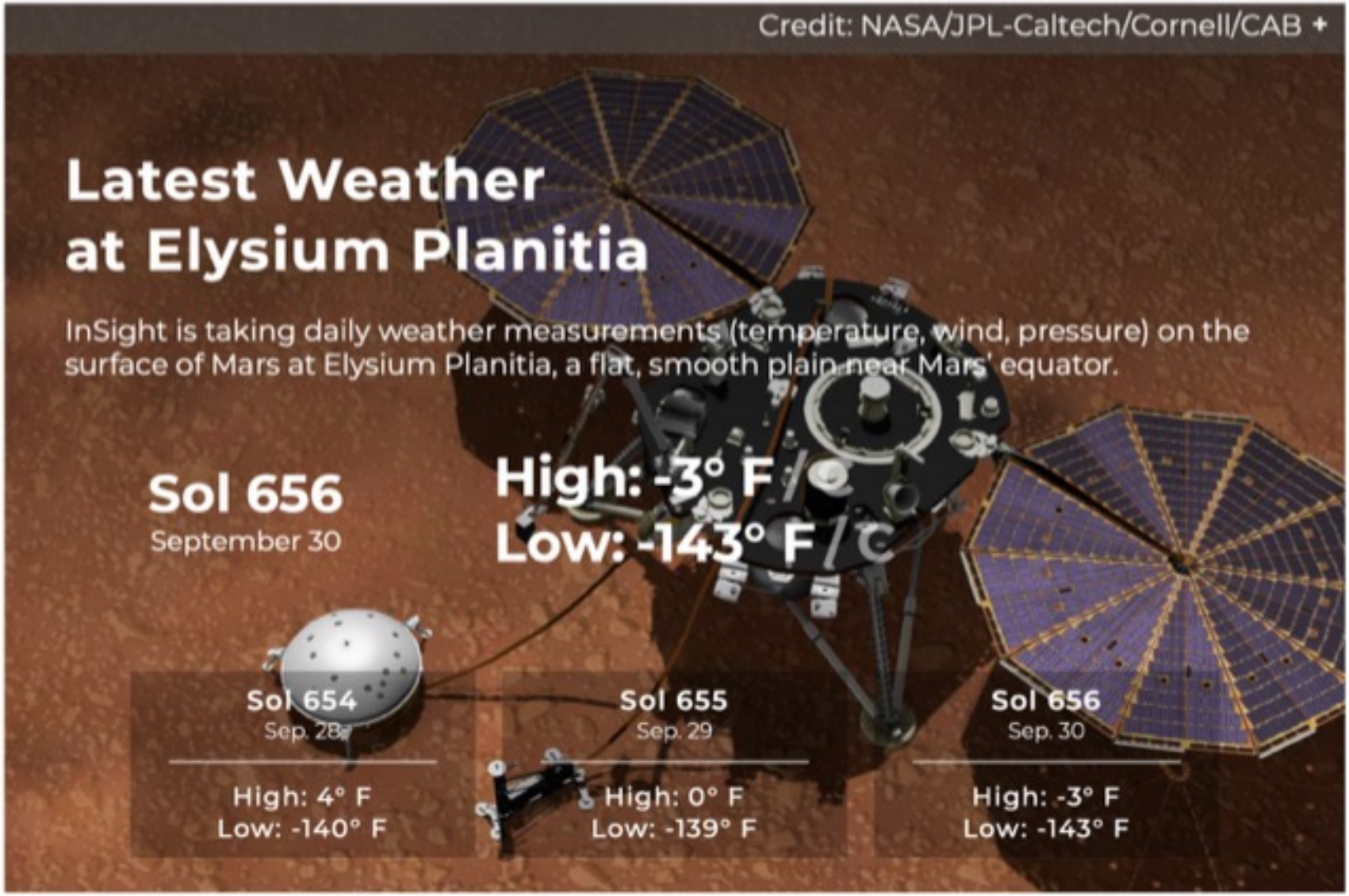

Phil's Mars Weather page shows seasonal trends since March 2019.

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Mars Clocks

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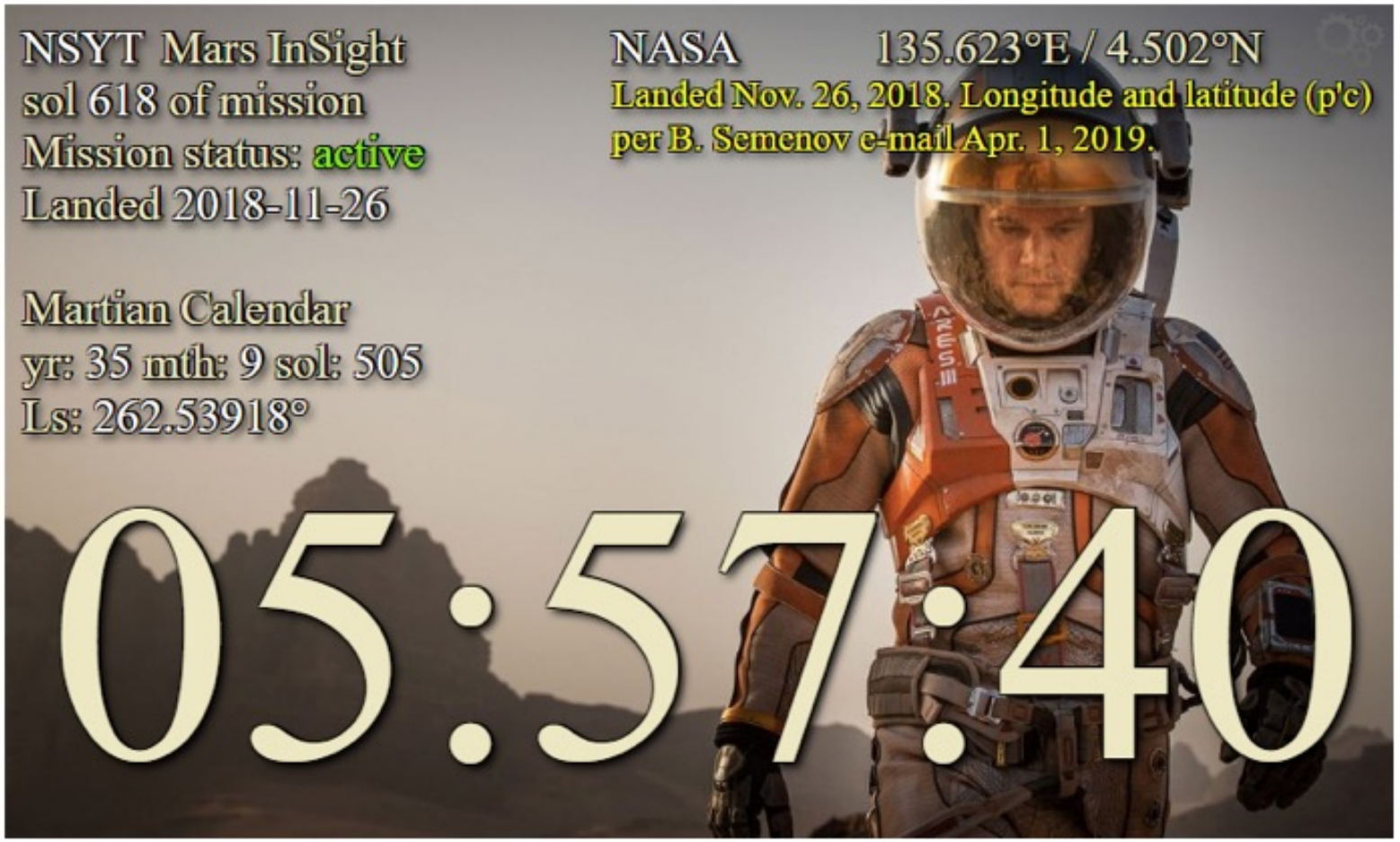
Phil wrote most of the software himself, with the exception of libraries for the keyboard and FTP which he pulled from GitHub. Here's **all the code**.



The Mars Clock's various skins show details of missions to Mars, as well as the location's time and date

Section

Neural Chips

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Neuralink

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Technology

Interfacing The Brain To A Computer

https://www.youtube.com/watch?v=0jOjn6Iwp9w&feature=youtu.be&fbclid=IwAR1f6hb65is2zqKDJJ-xDuPnlqm7-O8vcRXX0q4dcFTMPUTgHIhaG-2Fqx4

Neuralink

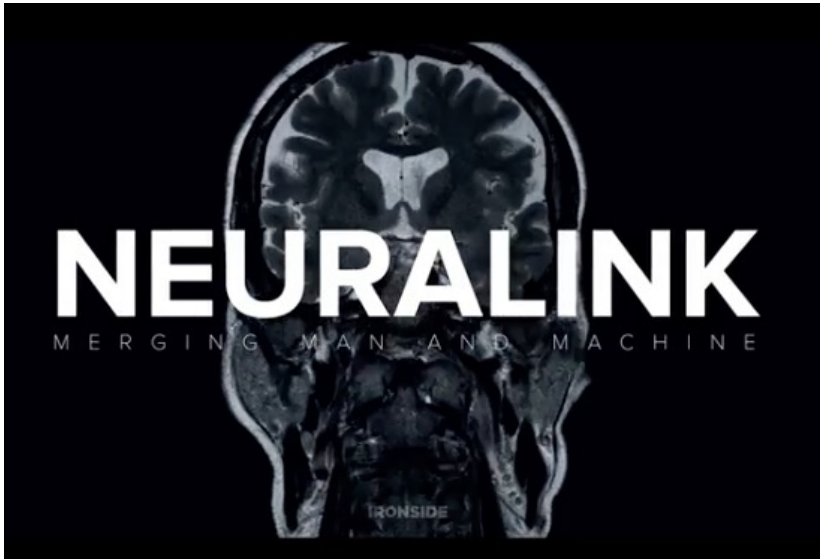
The brain-machine interface

(Click image for link.)

Neuralink is a company set up by Elon Musk in 2016 that is exploring the human brain and how it can be connected to a computer interface. Operating at a much smaller scale than Tesla or SpaceX, this conceptual startup aims to use this brain-machine interface to integrate humans with artificial intelligence by surgically implanting processors into our brains with a procedure that is said to be no more invasive than something like LASEK surgery.

Neuralink

Source: Interesting Engineering (26 Mar 2020)



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Election Systems

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Voting

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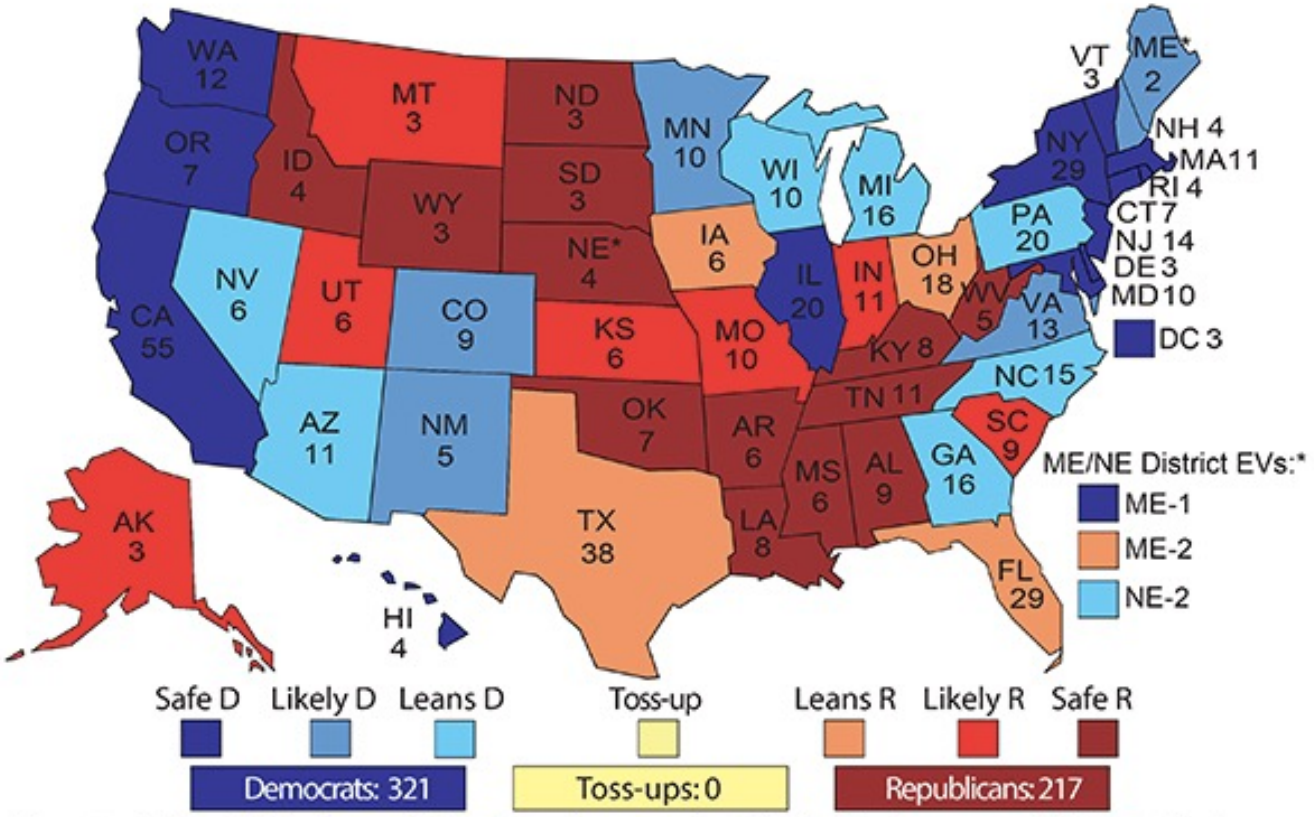
Presidential EC

2020 Electoral College Ratings

Updated: Nov. 2, 2020



*Two states, Maine and Nebraska, award electoral votes by congressional districts (all others are awarded winner-take-all statewide). Nebraska's two statewide electoral votes, and two of its three districts, are rated Safe Republican. Maine's statewide votes are rated Likely Democratic. The ratings for Maine's two districts, and Nebraska's one competitive district, are listed separately.

Vote Counting

Slow!

still counting ballots in several states. it is tedious, slow and error prone as so many tired people handle each vote. and then they still rely on machines to count and computer software to check validity, eligibility and prevent double voting and counting.
as Secretary of State, i would offer online voting as a superior option: instantaneous and infallible counting with instantaneous voter authentication.

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Elections – Voting

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- New Vote Centers
- New Voting Machines

↓

Online Voting!

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Elections – Voting

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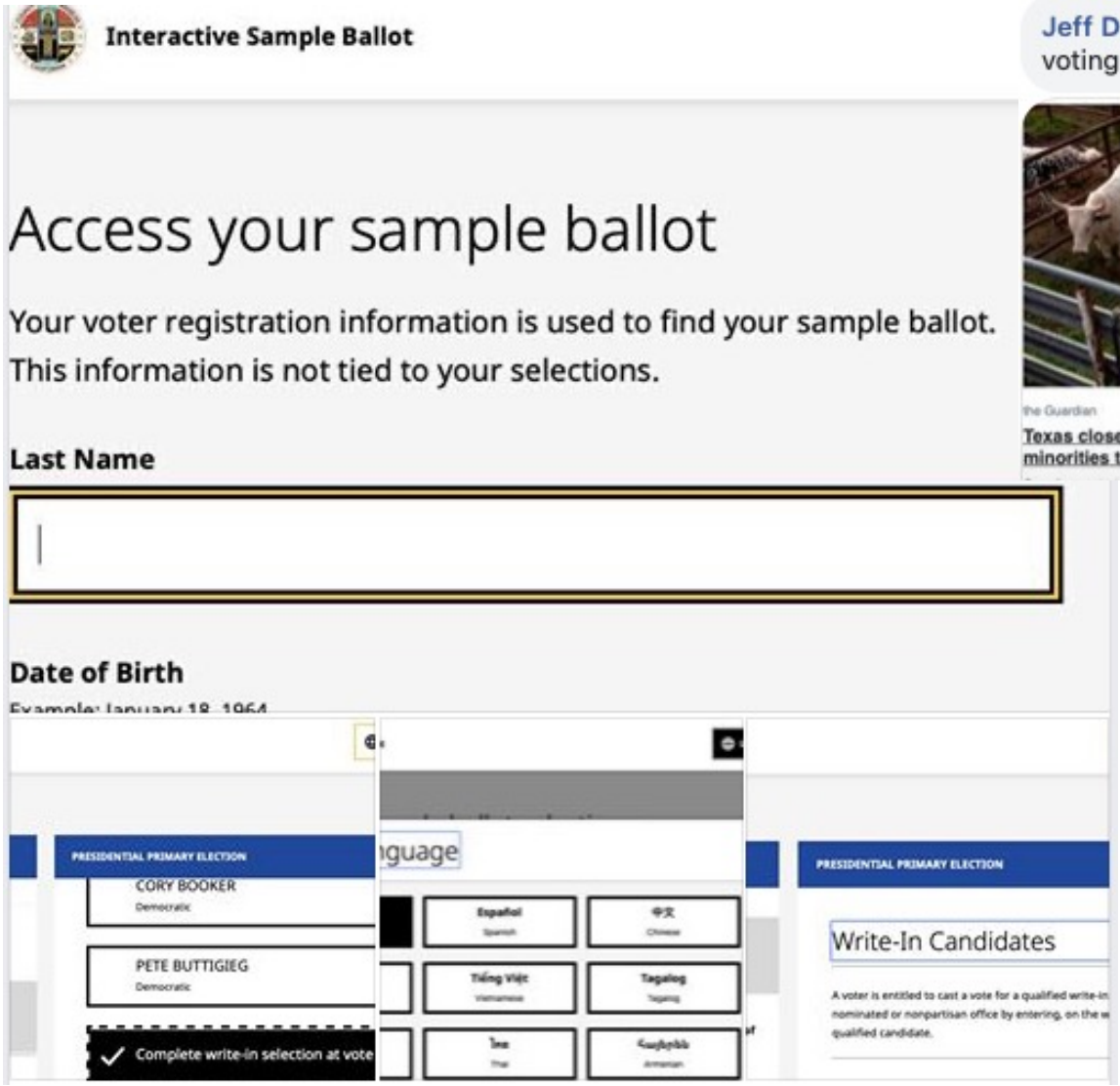

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UCLA

News

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UCLA New Chancellor

Julio Frenk

July 2024

Dear Bruin Community:

Julio Frenk — current president of the University of Miami and a renowned public health leader whose career has spanned the United States and Mexico — has been named UCLA's seventh chancellor.

CSUN Biz School

From Justin Tay to Everyone:

Website: csunentrepreneurs.com

Email: entrepreneurs@my.csun.edu

The "Essential Eight" technologies that matter most for business today

- Artificial intelligence
- Augmented reality
- Blockchain
- Drones
- Internet of things
- Robotics
- Virtual reality
- 3-D printing

Source: The Essential Eight technologies: PwC | pwc.com/gx/en/issues/technology/essential-eight-technologies.html

CSUN NAZARIAN COLLEGE

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Student Housing

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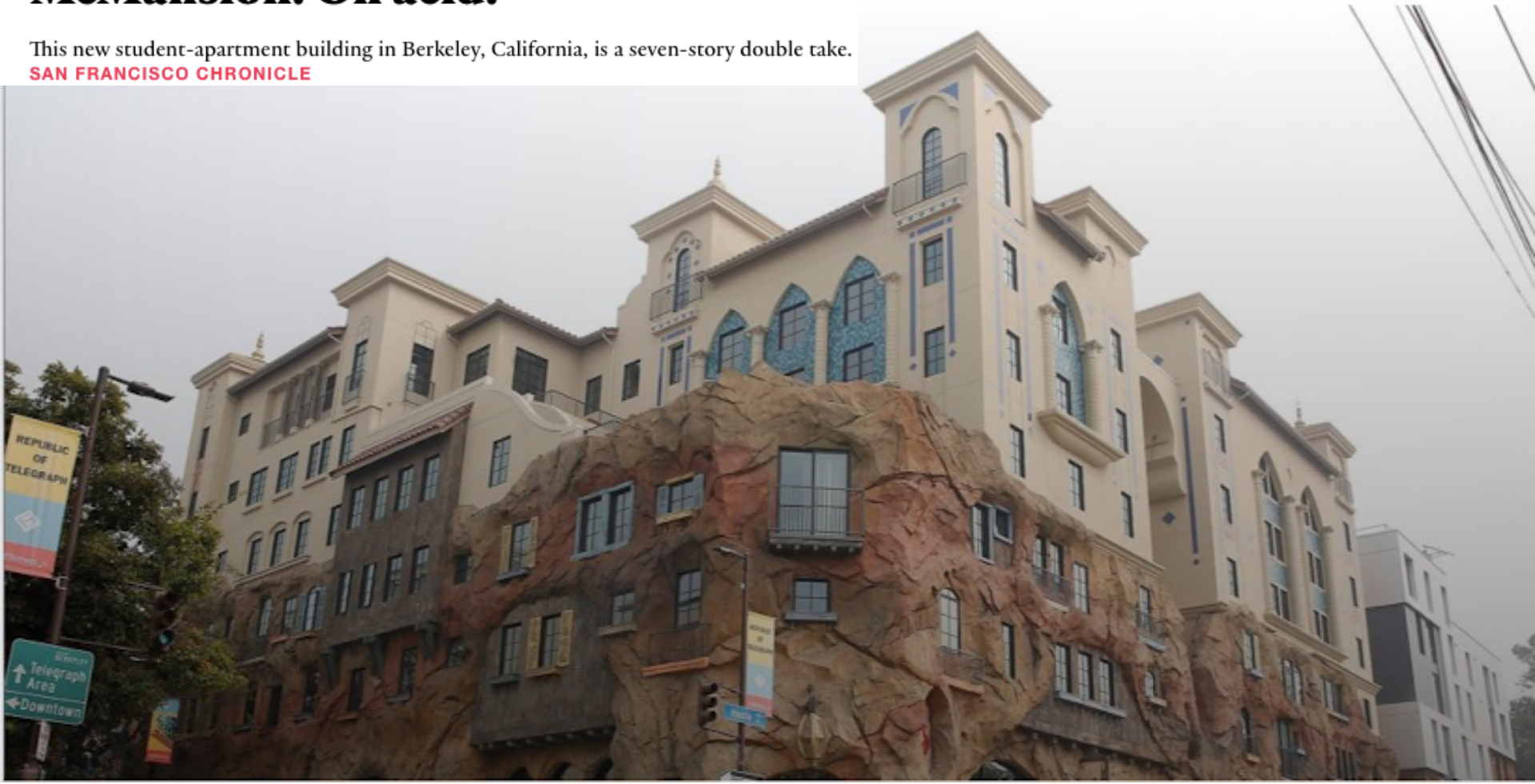
News+

"It's as if Harry Potter and Fred Flintstone decided to build a McMansion. On acid."

Chronicle

This new student-apartment building in Berkeley, California, is a seven-story double take.
SAN FRANCISCO CHRONICLE



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Networks

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Ethernet at 50

Bob Metcalf of Xerox PARC

Meet the newest Turing Award winner

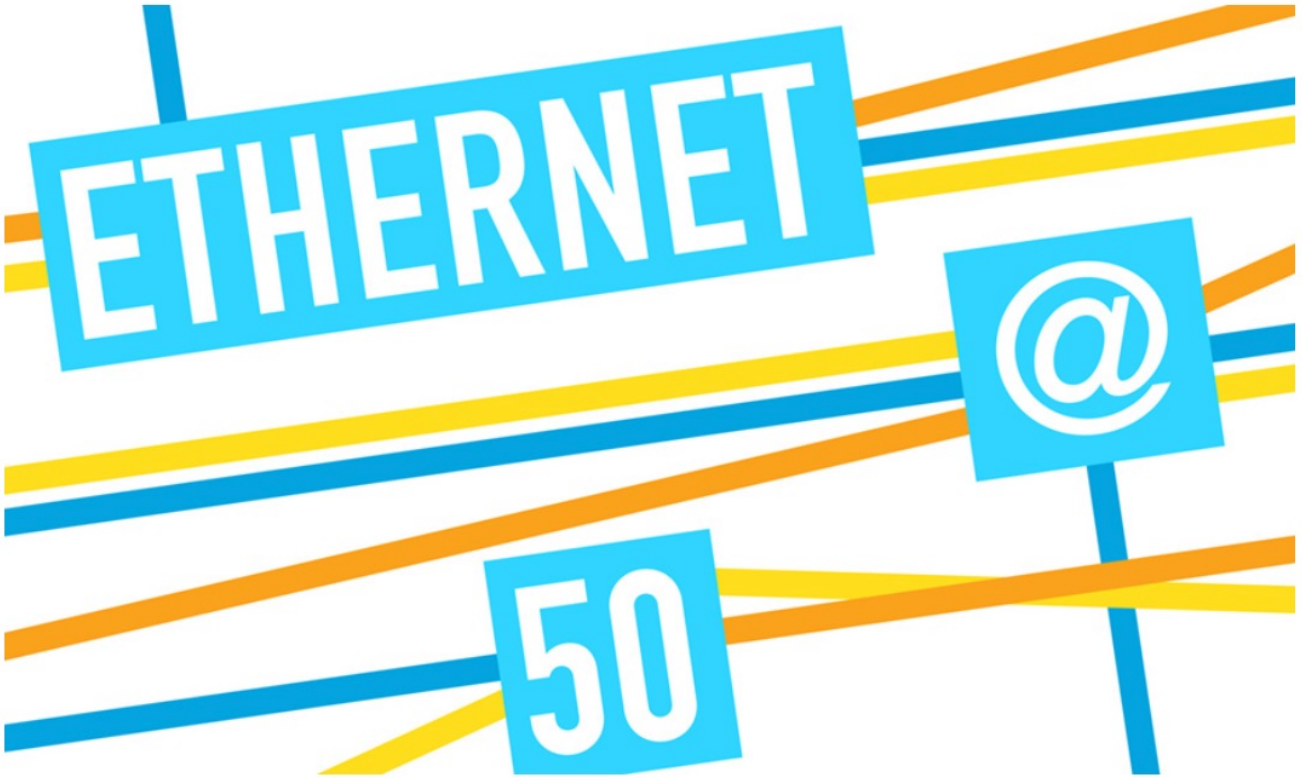
C

CHM <marcom@computerhist...

Thursday, April 27, 2023 at 1:46

To: Drobman, Jeffrey H

10/100/1000 BASE-T



Ethernet@50

Born May 22, 1973

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47th Internet Anniversary

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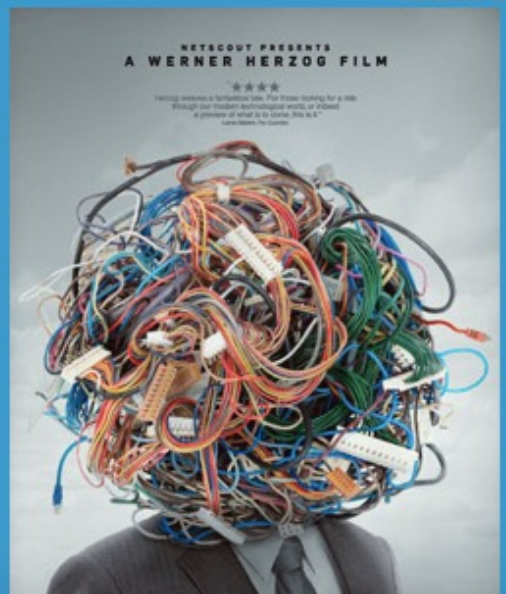
UCLA ENGINEERING
Henry Samueli School of Engineering and Applied Science
Birthplace of the Internet

Happy Birthday, Internet!

To help us celebrate the birthday of the Internet
you and a guest are invited to attend a special screening of

LO and BEHOLD

Featuring a Q&A session with
Leonard Kleinrock
Emeritus Distinguished Professor of Compute



DATE
Saturday, October 29, 2016

TIME
2:30 p.m.
Doors open at 2:00 p.m.

LOCATION
Boelter Hall 3400
UCLA Henry Samueli School
of Engineering and Applied Science
Los Angeles, CA 90095

Movie snacks will be provided.

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Internet 50 – UCLA Medal

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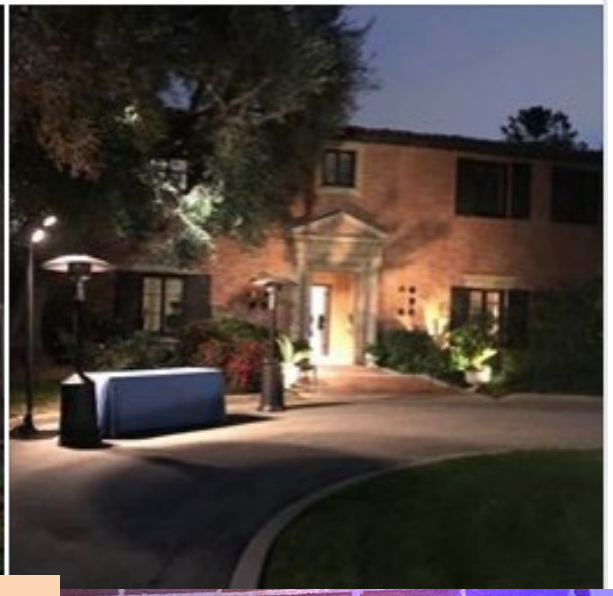
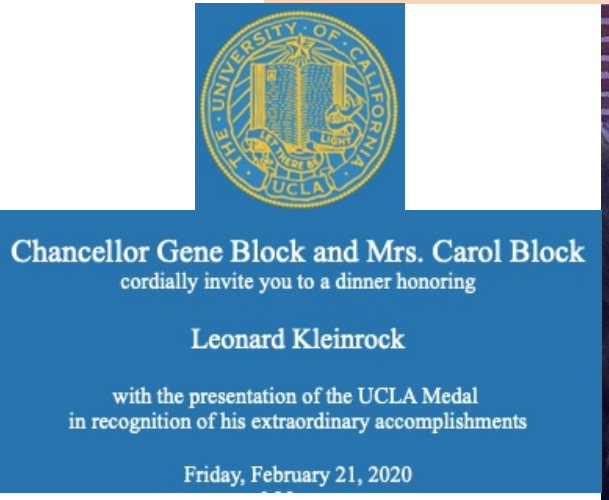


Chancellor Block



Prof. Leonard Kleinrock