

Tech Curiosity  
Session 6 of 6  
*The Grand Finale*

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# Welcome

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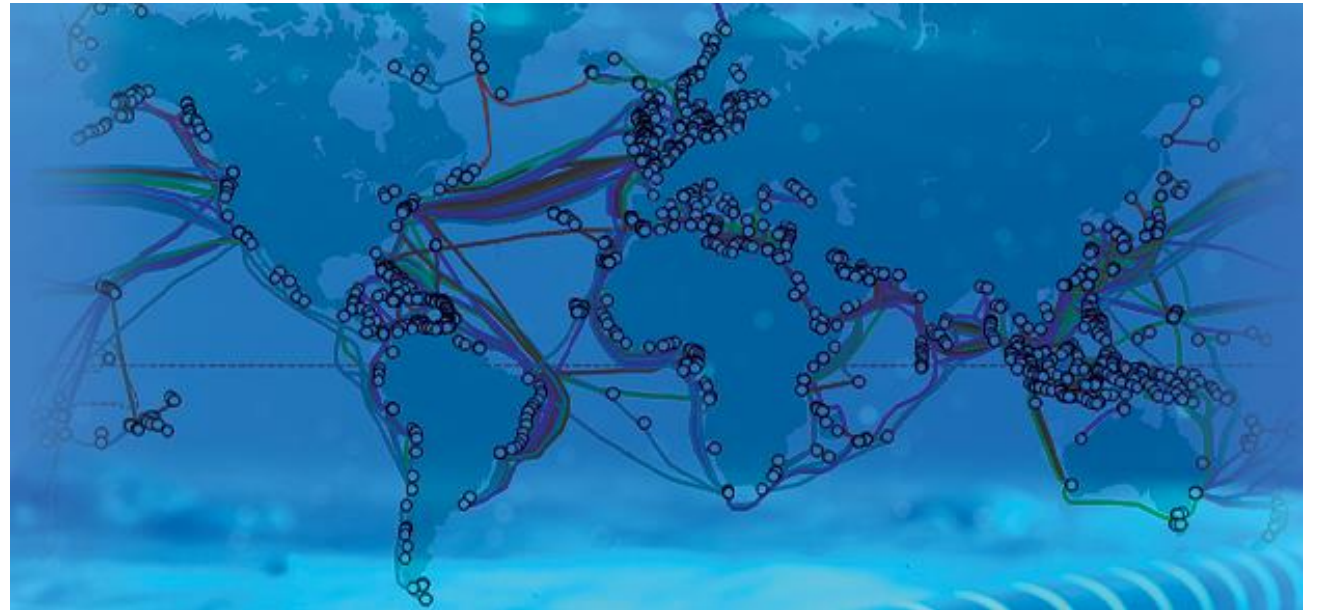
[computerlanguage.com](http://computerlanguage.com)

Let's talk about

Subsea fiber optic cables and deep-ocean science

# Subsea fiber optic cables now enable deep-ocean science

- Today, there is a network of more than one million submerged kilometers (621k miles) of fiber optic cables in the world's oceans
- Oceans "govern the health of our planet" Along with new power systems, "Fiber optic cables are really transforming how we do oceanography."



# Subsea fiber optic cables now enable deep-ocean science

- "You have the possibility of turning the existing submarine telecommunication infrastructure into a giant detector for underwater earthquakes and seismology in general," Marra says.
- The technique works by turning submarine networks into giant interferometers. How this works:
  - Using an instrument connected to a cable on land, a laser pulse is sent down a fiber optic cable line. If there is an earthquake along the cable line, it will put a strain on the cables, causing a disturbance in the signal. When the light pulse loops back, this effect can be seen as a phase change when compared to a laser signal that remained locally on land. One such measurement can identify a line where the earthquake may have occurred, and measurements from multiple cables can be used to triangulate its epicenter.

# Subsea fiber optic cables now enable deep-ocean science

- Other groups are using fiber optics with a technique called distributed acoustic sensing. How this works:
  - In a similar manner by looking for changes in light signals caused by strain to the fiber optic cables. But instead of looking for returned signals, it probes backscattered signals.
  - Fibers in cabling are designed to be perfect so they can transmit light with the highest efficiency. But there are always small imperfections and in fiber optic cables, and these imperfections cause light to be scattered backwards by Rayleigh scattering. Looking for changes in this backscattered light, scientists can pinpoint locations where the fibers have been strained—such as by earthquakes.

# Subsea fiber optic cables now enable deep-ocean science

- Then there's a technique called distributed temperature sensing, which uses Raman (back)scattering that can probe strains on fiber optic cables caused by changes in temperature.
- Because a backscattered signal is inherently weak, distributed acoustic sensing can only probe out about 50 km offshore, though some think that could be extended up to 100 km. In comparison, disturbance sensing using interferometry has almost no limits.
- Early in 2021, a group of researchers at the California Institute of Technology and Google found multiple earthquakes and pressure changes due to ocean swells along a cable stretching 10,000 km from Los Angeles, California, to Valparaiso, Chile. In the study, the scientists detected the earthquakes by measuring shifts in the polarization of light sent through the cables instead of phase changes.

# Subsea fiber optic cables now enable deep-ocean science

## Bottomline

- In addition to enabling scientific advances in oceanography, these fiber optic detection techniques could provide advanced tsunami warnings. With ongoing monitoring, it could provide coastal residents advance warning of tens of minutes—instead of just a few minutes with current systems.
- Current applications with fiber optic sensing seem unlimited. Temperature and ocean 'swell' monitoring could aid climate change studies, geologic indicators could provide insights into understanding Earth's interior, and even whale migrations could be monitored with fiber optic cables.

Very cool! Thank you Phoebe...



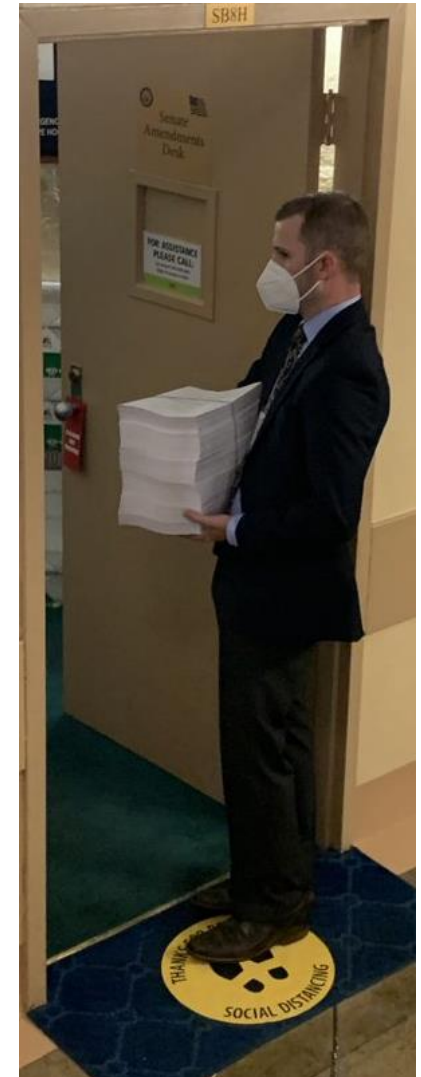
How about  
that infrastructure bill  
and what it means for technology

# Tech in the News

- President Biden [signed](#) the \$1.2T bipartisan infrastructure bill into law on Monday. The bill allocates about \$550B in new funds for transportation, broadband internet, and utilities. The funds will be released over five years.

# What the infrastructure bill means for technology

- The word “technology” appears 277 times in the draft, and ideas to advance the nation’s technological capacity are sprinkled throughout the 2,702 page document, amidst ideas on everything from how to make American roads more accommodating to monarch butterflies and other pollinators to an update to the Amtrak smoking policy that explicitly outlaws vaping on trains



# What the infrastructure bill means for technology

- **Broadband and connectivity**

- “Access to affordable, reliable, high-speed broadband is essential to full participation in modern life in the United States”
  - The proposal includes nearly \$65 billion intended to connect people to the internet
  - The bill seeks to address “digital equity” and sets parameters for download and upload speeds and latency to “support real-time, interactive applications”
  - It seeks to address digital discrimination issues by ensuring access to “comparable speeds, capacities, latency, and other quality of service metrics in a given area, for comparable terms and conditions.”
  - The Universal Service Fund puts about \$8 billion a year toward addressing inequities in connectivity.

# What the infrastructure bill means for technology

- **Cybersecurity**

- “Topping the bill’s cybersecurity-related spending is a \$1 billion measure to fund cybersecurity grants for state, local, tribal, and territorial governments over four years.”
- The bill also promises \$20 million a year for five years to a Cyber Response and Recovery Fund to be administered by the Cybersecurity and Infrastructure Security Agency (CISA). CISA can “spend the funds on vulnerability assessments, technical incident mitigation, malware analysis, analytic support, threat detection and hunting, and network protections”.
- And the “Department of Homeland Security Science and Technology Directorate would receive \$157.5 million for non-cyber and cyber-related research and develop into critical infrastructure security and resilience, security testing of telecommunications equipment, industrial control systems and open-source software.” Etc.

# What the infrastructure bill means for technology

- **Transportation**

- The bill supports the “development of cybersecurity tools to detect and protect against cyber incidents related to transportation infrastructure” and creates a ‘cyber coordinator’ office that is “responsible for monitoring, alerting, and advising transportation authorities of cyber incidents.”
- It supports the study of impact on roads from self-driving vehicles, for instance, and research into the reduction of driver distraction to “minimize or eliminate” such phenomena as “driver disengagement,” “automation complacency by drivers,” and “foreseeable misuse of advanced driver-assist systems”, as well as the development of “advanced drunk and impaired driving prevention technology systems.”

# What the infrastructure bill means for technology

## • **Climate**

- There's money to build new climate models.
- And there's also as much as \$25 billion for new fossil fuel subsidies (what?) Lobbyists, gotta love 'em!
- Page 1,661 - digital solutions may exist to confront climate change and "assesses using digital tools and platforms as climate solutions", including—
  - (1) artificial intelligence and machine learning;
  - (2) blockchain technologies and distributed ledgers;
  - (3) crowdsourcing platforms;
  - (4) the Internet of Things (IoT);
  - (5) distributed computing for the grid; and
  - (6) software and systems.

# What the infrastructure bill means for technology

- **Cryptocurrency**

- The Electronic Frontier Foundation's Rainey Reitman calls it a "disaster for digital privacy." The crypto industry doesn't like it!
- That's because in seeking to raise taxes from digital currencies, the bill as it is currently written "would require cryptocurrency exchanges – defined as 'any person who is responsible for regularly providing any service effectuating transfers of digital assets on behalf of another person' to file an information return reporting the transaction. *Yikes!*
- But this one may not be much worth getting worked up over- it already appears destined for a rewrite.

Question: Did it get rewritten before signing?



# What the infrastructure bill means for technology

- **Cryptocurrency**

As it stands today:

- the infrastructure bill would require businesses to report digital asset transactions above \$10,000 to the IRS. In addition, anyone making digital coin transfers would need to report that info to the IRS. The legislation would also authorize the IRS to seek taxes that the government had not known about, as the transactions weren't required to be reported.

Editorial Comment: Crypto, as we know it, is dead!

RIP

# What's the difference between the Infrastructure Bill and the Build Back Better Bill?

- The House of Representatives passed the \$1.2 trillion bipartisan [Infrastructure Investment and Jobs Act](#) by a 228-to-206 vote - The bill became law after it was signed by President Biden on Nov. 15, 2021
- The just-enacted [Infrastructure Investment and Jobs Act](#) legislation deals primarily with so-called hard infrastructure—including roads, bridges, waterways, and other physical structures
- The [Build Back Better Act](#) is a social safety net and climate bill - The House of Representatives passed and sent the bill to the Senate on Nov. 19, 2021 for consideration and amendments. Debate in the Senate is expected to last several weeks. Stay tuned!
- Together, the passage of both laws would necessitate spending more than \$3 trillion

# Saw this in the Infrastructure Bill

- **\$8 billion for western water infrastructure.** Ongoing drought conditions in the western half of the country will be addressed through investments in water treatment, storage, and reuse facilities.

Let's Talk about Electric Vehicles & the BBBA

Question: Does BBBA include tax credits for EV purchase? (YES!), but it's complicated... ([source](#))

- The Build Back Better bill includes a **\$12,500 EV tax credit**
  - The base amount remains **\$4,000**, as it is today
  - With another **\$3,500** available if the EV's battery pack includes **at least 40 kilowatt-hours** of capacity.
  - In the case of **plug-in hybrids**, **the gas tank cannot exceed 2.5 gallons**. This is for cars placed in service before 2027. *Not practical...*
  - EVs and consumers will be able to qualify for another **\$4,500** in the 'tax credit' if **an automaker makes the EV in the US with a union workforce**.
  - Another **\$500** comes into play **for automakers using a US-made battery** for a maximum of \$12,500 available.
  - Today, **the only car that would qualify for anywhere near the full proposed credit is the Chevrolet Bolt EV and Bolt EUV**. This provision would, notably, exclude Tesla and even the Ford Mustang Mach-E, which is assembled in Mexico.

I told you it was complicated!

# How about e-bikes?

- E-bikes – yup! ([source](#))
  - The subsidy would be capped at \$900 and be limited to e-bikes that cost less than \$4,000. It would also be fully refundable, meaning that tax filers who don't owe income taxes could still get the money back.
  - The tax credit is only authorized until 2026. It would also begin to phase out for e-bike buyers who make more than \$75,000 annually or married couples who earn over \$150,000 per year.
  - Plus federal dollars for bike projects like protected bike lanes, trails, and multi-use paths. The bill would increase the program to \$1.38 billion in 2022 and up to \$1.48 billion in 2026.
  - A requirement for all states to develop standards for 'Complete Streets', a policy and design approach to ensure all users have safe and convenient access.
  - A vulnerable road user assessment to determine how dangerous roads are for people outside of cars.
  - And inclusion of the model three-class e-bike definitions\*.

# Three-class e-bike definitions ([source](#))

The three classes are defined as follows:

- **Class 1:** eBikes that are pedal-assist only, with no throttle, and have a maximum assisted speed of 20 mph.
- **Class 2:** eBikes that also have a maximum speed of 20 mph, but are throttle-assisted.
- **Class 3:** eBikes that are pedal-assist only, with no throttle, and a maximum assisted speed of 28 mph.
  - All classes limit the motor's power to 1 horsepower (750W).

I expect an e-bike not conforming to these classifications would need to be registered and licensed as a motorized vehicle. That will be interesting... another good resource that talks about e-bike regulations ([link](#))

# How about motorcycles and e-bikes?

- Motorcycles – yup! ([source](#))
  - Electric motorcycles receive a 30% federal tax credit in the new bill
  - The credit is capped at \$7,500 and will apply to electric motorcycles that have at least 2.5 kWh of battery and travel at speeds of at least 45 mph (72 km/h) – don't know about phase-out limits
  - They must also be designed primarily for road usage (electric dirt bikes won't qualify)





# Tech in the News

- The \$1T **infrastructure bill**, passed by Congress over the weekend, sets aside **\$7.5B** for a **national network of electric-vehicle charging stations** over the next five years.
  - Biden **claimed** the funding could help build 500,000 new charging stations and support making half of all vehicles electric by 2030.
  - Another \$2.5B is dedicated for **hydrogen-fueling infrastructure** and other charging alternatives, and **\$7.5B** toward electric and low-emission buses and ferries.

# Tech in the News

# Tech in the News

- A Lansweeper analysis suggests that fewer than 1% of PC users are now running Windows 11, a lower percentage than even Windows XP and Windows 8.

Editorial Comment: *Could it be that Windows 11 “doesn’t run on anything normal users have”?*

The most restrictive requirements are those which demand your PC have a pretty modern CPU and TPM 2.0 (Trusted Platform Module) support

- Still interested, visit: ['This PC can't run Windows 11': How to fix this error](#), or wait (Microsoft will continue to support Windows 10 until **Oct. 14, 2025**)

# What the heck?

- The Tesla Model Y's gap between used and new price is the highest. A used Tesla Model Y is 14.5 percent more expensive (around \$8,245) than a new one.

*This is crazy!*

Rank	Vehicle	New Car Price	Used Car Price	% Used More than New	\$ Used More than New
1	Tesla Model Y	\$56,685	\$64,930	14.5%	\$8,245
2	Toyota Tacoma	\$37,339	\$41,905	12.2%	\$4,567
3	Toyota Tundra	\$47,322	\$52,850	11.7%	\$5,528
4	Dodge Charger	\$38,587	\$42,375	9.8%	\$3,788
5	Honda Civic (Hatchback)	\$27,089	\$29,735	9.8%	\$2,646
6	Tesla Model 3	\$49,652	\$54,215	9.2%	\$4,563
7	Toyota RAV4	\$31,492	\$34,373	9.1%	\$2,881
8	Kia Telluride	\$46,429	\$50,295	8.3%	\$3,866
9	GMC Yukon	\$72,870	\$78,352	7.5%	\$5,483
10	Subaru Crosstrek	\$30,039	\$31,785	5.8%	\$1,746
11	Chevrolet Tahoe	\$65,518	\$69,277	5.7%	\$3,760
12	Subaru WRX	\$34,166	\$36,029	5.5%	\$1,863
13	Honda Civic (Sedan)	\$24,223	\$25,499	5.3%	\$1,275
14	Hyundai Palisade	\$46,706	\$49,038	5.0%	\$2,332
15	Toyota Corolla	\$23,677	\$24,776	4.6%	\$1,099
Overall Average		\$42,087	\$41,530	-1.3%	-\$577

# Tech in the News

- According to a [Fermi estimate](#), one-fifth of all new GPUs in 2021 have gone to ethereum mining, and 0.5% of all global energy use went to crypto mining.
- [Barbados](#) (besides just [becoming a republic](#)) has [signed an agreement](#) with [Decentraland](#) to develop a metaverse embassy. *What?*



# Tech in the News

- **Apple announced Self Service Repair, a program that will allow iPhone and Mac owners to do their own common repairs.** In an apparent win for “right-to-repair” advocates, the company will sell genuine Apple replacement parts and tools along with instruction manuals for repairing its products at home.
- **Meta shared details about its work on haptic gloves that would simulate what it's like to hold and touch virtual objects in the metaverse.** The prototype gloves, still in the early stages of research, would be capable of stimulating pressure, texture, and vibration.

# Tech in the News

- **Ford Motor Co. [announced a pact](#) with chip supplier GlobalFoundries to boost supplies of semiconductor chips.** The strategic partnership could increase the automaker's chip supplies in the near term and eventually result in higher-end chips with advanced technical capabilities.
- **Starbucks [opened](#) its first location using Amazon's cashierless technology.** The store, in midtown Manhattan, is one of three "Pickup with Amazon Go" locations that Starbucks plans to open in NYC over the next year.
- The U.K. government seeks to impose a nearly [\\$23M fine](#) on New York-based facial recognition firm Clearview AI for violating data protection laws.

# Tech in the News

- **SpaceX hopes to launch its next-gen Starship spaceship into orbit for the first time in early 2022, according to Elon Musk. Starship could eventually launch up to 100 tons of cargo and crew members on missions to the moon and Mars.** The stainless steel rocket and underlying mega booster are both "rapidly and fully reusable". And this:

SpaceX CEO Elon Musk said in a companywide email on Friday that the company faces a risk of bankruptcy if it fails to meet its Starship rocket flight rate next year. *No pressure...*

- **Nvidia shares jumped more than 11% Thursday morning, boosting its market cap to \$800B, after the company beat earnings expectations and reported record revenues for the third quarter. The results were partially driven by "record revenue" for its data center chips, particularly those that process AI applications.**



# Tech in the News

- **Bill Gates-founded TerraPower [said](#) it will build its first advanced nuclear reactor at a site in Kemmerer, Wyoming.** The nuclear-design startup's experimental "[Natrium](#)" reactor could begin operations as early as 2028. Natrium, developed by TerraPower with GE-Hitachi, will be built near a site housing two coal plants that are set to retire in 2025. It will generate a baseload of 345 megawatts of power, with storage technology that can expand it to 500 megawatts.
- The U.S. **DOJ is [planning](#) to sell \$56M worth of cryptocurrency it seized as part of the BitConnect fraud case.**
- Morgan Stanley believes that the metaverse is an **[\\$8T opportunity](#) but is skeptical about Meta's ability to launch the metaverse successfully.**

# Tech in the News

- Starting next year, **U.K. drivers will be banned from taking photos and videos, scrolling through playlists, or playing games on their phones while in their vehicles.** The U.K. government is [strengthening its existing ban](#) on mobile use while driving to make it [easier to prosecute](#) offenders. Drivers can continue using their devices hands-free, such as for navigation purposes, so long as they're secured in a cradle.
- **Apple is looking to [accelerate the development](#) of a fully autonomous electric car for a possible launch in 2025.** Reports describe how the potential "Apple Car" could lack pedals and a steering wheel.

# Tech in the News

- A consortium of **crypto investors ([ConstitutionDAO](#)) lost its bid to purchase a first printing of the U.S. Constitution**. The rare document sold at a Sotheby's auction on Thursday for [\\$43.2M](#).
- At the NFT NYC conference, **Quentin Tarantino [announced](#) that he would release seven uncut scenes from the cult classic as NFTs on the Secret Network (SCRT)**. He is being [sued](#) by the Miramax film studio [claiming](#) Tarantino's release of unreleased movie scenes constituted **copyright infringement**.
- Construction began at the [first commercial-scale offshore wind farm in the U.S.](#) using 62 of [General Electric's](#) Haliade-X turbines, producing electricity for over 400,000 homes and businesses

# Tech in the News

- **Ford and Rivian have canceled plans to develop EVs together**, citing a need to focus on their own projects and deliveries. Ford and Rivian announced the joint venture in 2019 after Ford invested \$500M in the EV startup. Ford still holds a 12% stake in Rivian, worth about \$10B following Rivian's IPO.  
*(Not a bad return on investment!)*
- **The Pentagon was caught off-guard in July when it detected a Chinese test of a hypersonic missile that flew at five times the speed of sound — faster than any known missile.** The "hypersonic glide vehicle" has puzzled leading scientists in the U.S. military. DARPA is trying to determine how the Chinese vessel was able to overcome what were previously thought to be insurmountable physical laws governing the top possible speed of a vehicle on Earth. General David Thompson, vice-chief of space operations at the U.S. Space Force said "We have catching up to do very quickly."

# Tech in the News

- **Meta said it won't end-to-end encrypt messages on Messenger and Instagram until 2023, about a year later than originally planned.** In [an article](#) published in The Sunday Telegraph, Meta safety head Antigone Davis said **the delay will give Meta more time "to get this right."** End-to-end encrypted means only the sender and recipient can see their conversations.
- **Walmart will [begin delivering](#) same-day orders via Zipline's autonomous light cargo drone to customers in Pea Ridge, Arkansas.** The service area comprises a 50-mile radius. Zipline has completed over [200,000](#) deliveries since beginning operations in 2016. The company has focused on the delivery of medical supplies, including the dispatch of the Pfizer-BioNTech vaccine in ultra-cold-chain, in Nigeria and Ghana.

# Tech in the News

- U.K. Prime Minister Boris Johnson announced mandatory EV charging points on all new homes and buildings starting next year.
- Spotify will no longer shuffle albums by default after a request from singer Adele.
- Google parent Alphabet has deployed 100+ autonomous robots around its offices to do cleaning tasks.
- Chemical company Yara unveiled a semi-autonomous electric cargo ship that will be able to navigate without human intervention.



# Tech in the News

- **Samsung announced Taylor, Texas as the location for its \$17B U.S. semiconductor chip factory.** The electronics company announced the initial investment plan in January and considered Texas, New York, and Arizona as possible locations. **The new factory is expected to start production in 2024** and will generate over 2,000 jobs.
- **India's government is planning to submit a bill banning "private" cryptocurrencies.** The bill, named The Cryptocurrency and Regulation of Official Digital Currency Bill, 2021, is meant to establish **a framework for regulating digital currencies in the country and help create a central bank for digital currency.**

# Tech in the News

- **El Salvador plans to build a “[Bitcoin City](#)”** that will be initially funded by the cryptocurrency as early as 2022, President Nayib Bukele has announced. In September, El Salvador became the first country to [adopt bitcoin as legal tender](#). The city will be built near Conchagua volcano, in southeastern El Salvador, and use geothermal power from the volcano to support crypto mining.
- **Pokémon Go developer Niantic [raised \\$300M](#)** from hedge fund Coatue at a valuation of [\\$9B](#). The augmented reality (AR) company will use the capital to build what it calls "a metaverse for the real world\*."

*\*This sounds like an oxymoron!*



# Flashback

- A 1988 Seiko-made smartwatch that many consider the first true Apple Watch is now [up for auction](#). The "WristMac," an early Macintosh accessory, is expected to fetch at least \$25,000. The watch relied on [AppleTalk](#) to connect to Macs.

*The bidding seems to be stuck here, and for good reason...*



END TIME: Sunday, 12/19/2021 1:00 AM

18	08	07	50
D	H	M	S

**\$2,077**  
CURRENT BID

**35**  
BIDS

# Tech in the News

- Researchers developed a tool, "[This Climate Does Not Exist](#)," that visualizes the future impacts of climate change anywhere on the planet. The AI project uses a framework known as generative adversarial networks (GANs) to re-imagine Google Street View images as if they were struck by flooding, smog, or wildfires. Visit [thisclimatedoesnotexist.com](http://thisclimatedoesnotexist.com) and enter an address to see visualizations of climate change at that location.
- Apple [has sued](#) Israeli software surveillance firm NSO Group over claims that its Pegasus spyware and other malware were used to spy on iPhone users. Apple has [patched the flaws](#) that allowed NSO's software to access private data through "[zero-click](#)" attacks and plans to alert customers who were targeted. In the lawsuit, Apple alleges that Pegasus allows monitoring of iPhone activities, emails, texts, browsing history, as well as access to the camera and microphone.

# Tech in the News

- **NASA successfully launched its Double Asteroid Redirection Test (DART) probe to test a technology that could one day deflect distant asteroids that threaten planet Earth.** The 1,210-pound spacecraft is on a path to strike a small asteroid named Dimorphos next fall, allowing astronomers to gauge how effective "kinetic impact" can alter the speed and path of incoming space rocks.
- **Swedish government agencies called for an EU-wide ban on proof-of-work crypto mining, citing its massive carbon footprint.** They're hoping a ban will help Europe meet its climate targets outlined in the Paris Climate Agreement. In Sweden, crypto mining rose by several hundred percent from April to August. According to an estimate by the University of Cambridge and Digiconomist, Bitcoin and Ethereum use about twice as much electricity in a single year as the whole country.

*How 'bout the NVIDIA stock?*

# Tech in the News

- China has [suspended](#) WeChat developer Tencent Holdings from launching new apps or updates to existing apps amid concerns that they impede the "rights and interests" of users. The news comes several days after China's market regulator [fined Tencent](#) and other tech companies for alleged antitrust violations.
- Rivian [started emailing](#) delivery dates to some electric pickup and SUV reservation holders, who said [their cars are estimated to arrive sometime from March through September of next year](#). The estimates are specifically for the Launch Edition models of the R1T pickups and R1S SUVs.



# Tech in the News

- Tesla [is asking](#) Full Self Driving testers to allow the company to collect footage in case of an accident or serious safety risk, marking it the first time the carmaker will associate videos with specific vehicles.

You might be interested in this [YouTube Channel](#)

*Or not...*

- Collins Dictionary [chose NFT](#) as its word of the year, beating out "crypto," "metaverse," and "double-vaxxed."
- Apple says its digital driver's license feature, enabling storage of state IDs and driver's licenses in the Wallet app, won't roll out until [early 2022](#). [Arizona](#) and [Georgia](#) will be the first states to get the feature, followed by [Connecticut](#), [Iowa](#), [Kentucky](#), [Maryland](#), [Oklahoma](#), and [Utah](#).

# Tech in the News

- **Mobile chipmaker Qualcomm** expounded on its **plans to diversify and rely less on Apple and other individual customers**. More than a third of its sales now derive from chips for PCs, automobiles, VR headsets, smart appliances, and other devices.
  - Best known for its cellphone chips, Qualcomm shared forecasts showing higher revenue for sales of its IoT chips, automotive business, and more.
  - It announced an [agreement](#) to provide chips for BMW's advanced driver-assistance systems and a [next-gen Arm-based system-on-a-chip](#) for PCs due out in 2023.
  - Qualcomm also supplies the Snapdragon XR2 chipset for Meta's Quest 2 VR headset. Amon said Meta has sold [10 million](#) of the headsets since launch.

# Tech in the News

- **The U.K.'s main competition regulator is expected to reverse Meta's ongoing acquisition of Giphy, sources told the [Financial Times](#).** It would be the first time that the U.K. authority has reversed a Big Tech acquisition.
  - Meta first announced plans to acquire the online gif generator platform in May 2020.
  - Soon after, the CMA began investigating the deal and later fined Meta [\\$67.5M](#) for failing to provide full details about the acquisition.
  - It believes the deal would give Meta an unfair advantage over other social media apps that use Giphy and remove it as a potential competitor.

# Tech in the News

- Nissan announced plans to invest \$17.6B on new EVs and battery technologies over the next five years. Its "Ambition 2030" strategy seeks to launch 23 new electrified models by 2030, 15 of which would be new electric vehicles.
  - The company also unveiled four concept cars: the crossover Chill-Out, the pickup Surf-Out, the SUV Hang-Out, and the sports car Max-Out.
  - The Japanese automaker says it aims to have half of all global sales come from EVs or hybrids by 2030.
  - The company plans to launch at least one EV with in-house all-solid-state batteries by 2028.



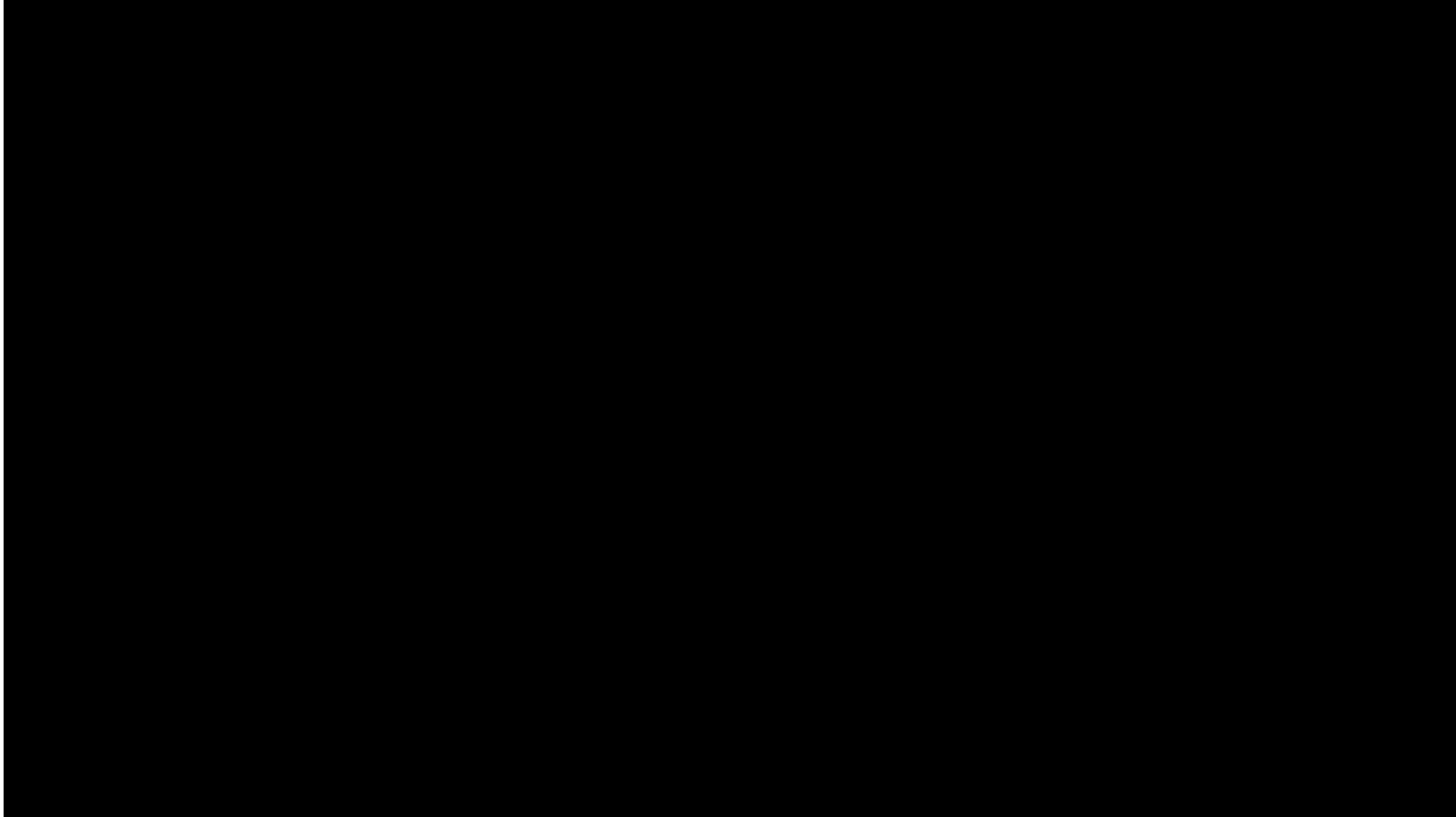
# Tech in the News

- **Instagram head Adam Mosseri is scheduled to testify about the platform's potentially harmful impacts on young users at a Senate subcommittee hearing on Dec. 6.** The news comes after Facebook whistleblower Frances Haugen testified and leaked internal documents showing that Instagram's engagement-based ranking can negatively impact the mental health of teens and young girls.
  - Mosseri will be the most high-profile executive to testify since the documents were released and Instagram parent Facebook [changed](#) its name to Meta.
  - In a [video](#) posted to Twitter, Mosseri listed ways that the company is working to protect younger users, such as restricting certain advertisements and making their accounts private by default.

# Tech in the News

- **Apple could launch its mixed reality headset in [Q4 2022](#)**. The computerized glasses will have two processors, including one with the same computing power as Apple's M1 chip.
  - The glasses would reportedly be capable of both virtual and augmented reality, when digital images are overlaid onto the real world.
  - Given the fast processing power, the headset will be standalone and not require an iPhone or Mac connection, and it would have two Sony 4K micro-OLED displays and support a range of apps.
  - Estimated cost is [\\$1,000-\\$3,000](#).

The End



And  
Thank You!

Old News

# Tech in the News

- **Twitter launched its premium paid subscription product, [Twitter Blue](#), on Tuesday in the U.S. and New Zealand.** The service for iOS, Android, and the web includes an "undo" option that lets subscribers "preview and perfect" tweets before they post. It also provides bookmarks folders, customizable themes, a reader mode for threads, and [early access](#) to upcoming features.
  - Reports noted the product will help Twitter diversify its revenue streams, which rely primarily (89%) on advertising.
  - Twitter is seeking to reach 315 million monetizable daily active users by late 2023.
  - **The service costs \$2.99/month in the U.S.** and \$4.49/month in New Zealand.

# Tech in the News

- **A federal judge on Tuesday denied Apple's request to delay changes to its App Store stemming from its Epic v. Apple lawsuit.** The decision means Apple may have to rewrite its policies allowing app makers to tell customers about non-Apple payment options as soon as December.
  - The original ruling stated that Apple cannot prevent developers from offering customers alternative payment options outside of Apple's own systems.
  - Apple sought to put that decision on hold while its appeal is ongoing, which would potentially push back the App Store changes by years.
  - In a new order Tuesday, Judge Yvonne Gonzalez Rogers said Apple must comply with the order allowing developers to add links and buttons to external payment options, which would enable them to bypass Apple's 15-30% sales cut.
  - Apple plans to appeal to the Ninth Circuit for a stay.

# Tech in the News

- **The European Union's General Court upheld the decision to fine Google \$2.8B in an antitrust case.** Wednesday's verdict agrees with a 2017 finding by EU competition regulators, who determined that the company favored its own shopping comparison services and downgraded those of rivals.
  - The General Court, the EU's second-highest court, dismissed an appeal from Google and parent Alphabet over that decision, which was the largest penalty ever handed out by the European Commission.
  - The company can appeal one more time to the European Court of Justice, the EU's highest court.
  - The decision bolsters antitrust regulations favored by the EU's competition commissioner, Margrethe Vestager, over major tech firms.



# Tech in the News

- **AMD announced that it will supply its chips for use at Meta's data centers.** The companies jointly developed a processor, based on AMD's third-generation Epyc processor, as part of Meta's data center expansion.
  - Facebook parent Meta claims the fourth largest data center operation in the U.S., behind AWS, Microsoft Azure, and Google Cloud.
  - Landing Meta further cements AMD's growing market share and its competition against leader Intel. *Not happy!*

# Tech in the News

- **Meta says it plans to restrict the ability of advertisers to target users based on "sensitive" topics like health, race, politics, religion, and sexual orientation.** The company said it made the decision after hearing concerns from experts that it results in "negative experiences for people in underrepresented groups."
  - The change, set **to take effect on Jan. 19**, impacts advertisers on Facebook, Instagram, Messenger, and Meta's audience network that places ads on other smartphone apps.
  - It involves the removal of "Detailed Targeting" keywords that target ads to specific users across categories.

*They can change the name of their company overnight, but it takes 2 months to make a programming change!*

# Tech in the News

- Rivian priced its stock at \$78, well above expectations, in an IPO that could now value the company at a fully-diluted \$77B. (RIVN)



## Market Summary > Rivian Automotive Inc NASDAQ: RIVN

172.01 USD 0.00 (0.00%) today

Closed: Nov 17, 9:09 AM EST • Disclaimer  
Pre-market 158.52 -13.49 (7.84%)

1 day 5 days 1 month 6 months YTD 1 year 5 years Max



Open	-	Mkt cap	146.70B	52-wk high	179.47
High	-	P/E ratio	-	52-wk low	95.20
Low	-	Div yield	-		

# Tech in the News (includes the kitchen sink!)

- **Shares of Rivian were up more than 18% on Thursday, a day after it made its public debut on the Nasdaq market. The electric vehicle company ended Wednesday with a market capitalization of \$86B, higher than Ford's \$79B and close to GM's \$88.8B. It's still behind Tesla's market cap of \$1T+.**
  - Rivian is **backed by Amazon and Ford**, with Amazon owning a 20% stake and Ford owning a 12% stake in the company.
  - In 2019 Amazon placed an order for 100,000 electric delivery vans from Rivian to be delivered by 2030.
  - So far, Rivian has produced 180 and delivered 156 of its R1T electric pickup trucks, and has a backlog of pre-orders for 55,400 of its R1T EV Pickup truck and R1S SUV, which it plans to deliver by the end of 2023.
  - **The company expects to lose as much as \$1.28B in Q3. Its revenue is expected to range from \$0 to \$1M. What?**

# Tech in the News

- A bipartisan group of U.S. governors sent a letter to Congress today asking for [a bill to subsidize](#) the semiconductor factories needed to increase U.S. production of computer chips.
- Apple says it will roll out a [software update](#) allowing for independent shops to do standard iPhone display repairs that don't disable Face ID.
- The \$1T infrastructure package [mandates](#) that all new vehicles must have monitoring technology to prevent drunk driving as early as 2026.
- Google is facing backlash for [its plans](#) to build two data centers, which require large amounts of water to cool equipment, in a drought-stricken Oregon city.

# Tech in the News

- **YouTube said on Wednesday that it will hide public dislike counts in an effort to combat "dislike mobs," which disproportionately affect smaller channels.** The dislike button will remain and creators can still view the metric privately.
  - YouTube said it saw a drop in "dislike attacks," when a group deliberately downvotes videos to drive up dislikes, after testing the change earlier this year.
  - The testing showed that smaller and newer channels are especially impacted, and creators have reported that they feel unfairly targeted and harassed.
  - **The most disliked video of all time is the company's own "2018 Rewind" video, which has 19 million dislikes and 3 million likes.**

# Tech in the News

- **Tesla CEO Elon Musk sold ~\$5B in shares in the company this week as he exercised stock options.** The stock sales came shortly after he asked his Twitter followers whether he should sell 10% of his stake, though regulatory filings show they were part of a pre-scheduled plan dating back to September.
  - Musk's net worth has fallen around \$50B in two days due to a plunge in Tesla's share value, though he still remains the world's wealthiest person.
  - But what good is all that money if you don't eat right and exercise? Elon, get with the program an lose weight!



# Tech in the News

- **Twitter has tapped cryptocurrency startup veteran Tess Rinearson to lead its new [Twitter Crypto team](#).** The division is described as "a center of excellence for all things blockchain and web3," and will set the strategy for crypto's future on the platform.
  - The team will explore ways that the app's creators can accept cryptocurrencies or earn money.
  - It will start by supporting creators' interest in using decentralized apps to manage virtual goods and currencies.
  - They will also explore how crypto communities' ideas can help push boundaries of "what's possible with identity, community, ownership and more," she said.
  - Twitter CEO Jack Dorsey is a [vocal supporter](#) of cryptocurrencies and his [Twitter bio](#) contains only one word: "#bitcoin."



# Tech in the News

- **Nvidia [announced](#) Omniverse Avatar, a platform for generating interactive AI avatars.** The news comes as the chipmaker is expanding more into software and services, including its Omniverse simulation/collaboration platform for creating 3D worlds that model the physical world.
  - Omniverse Avatar leverages computer vision, natural language understanding, and other technologies to create digital stand-ins for people.
  - The virtual agents can speak about many topics and comprehend "naturally spoken intent."
- During his [keynote](#), Nvidia CEO Jensen Huang showed off examples including:
  - Colleagues conversing with a toy replica avatar of himself.
  - A customer-service avatar taking orders at a restaurant kiosk.
  - A digital assistant helping a driver select the best route to reach his destination on time.
  - A [Project Maxine](#) demo showing the tech filtering out background noise in a video call. It transcribes and translates the speaker's words in multiple languages in the same intonation and voice.



# Tech in the News

- SpaceX [launched four](#) astronauts to the ISS on Wednesday. The crew aboard a Crew Dragon spacecraft arrived Thursday evening.
- Bitcoin [reached](#) another all-time-high of \$69,000.
- The U.S. government [added](#) 57 cryptocurrency addresses to its sanctions list (for facilitating ransomware and money laundering) this week, including one that controls NFTs that are still for sale on a digital marketplace.
- Public datasets with images of skin conditions [lack information about ethnicity and skin color](#), which could result in biased algorithms that screen for skin cancer and more.
- Mexico City landed in the Guinness World Records for having the most hotspots—[21,500](#)—of any single free urban Wi-Fi network.

# Tech in the News

- **China's Alibaba and JD.com reported record sales of \$139B during the Singles Day online shopping event, with an emphasis on luxury items and electronics. JD said it sold roughly \$15.64M worth of iPhones during the first two seconds of the event, which ended Thursday.**
  - Alibaba's sales grew 8.5% YoY over the 11-day event, down from the 26% increase it reported in 2020.
  - The e-commerce giant toned down its sales campaign this year amid pressure from the government and focused on sustainable growth and eco-friendly products.
  - JD.com reported sales of \$54.6B, a 28% increase YoY.

# Tech in the News

- **An iPhone X modified with a USB-C port sold on eBay for just over \$86,000**. Robotics engineering student [Kenn Pillonel](#) created the mod, which he called "the world's first USB-C iPhone," and [open-sourced](#) his work on Github.
  - The 64GB model phone sold on Thursday, with a total of 116 bids placed.
  - He had to source parts from China, reverse engineer the C95 connector, and create a custom circuit board before fitting the USB-C components into the phone.
  - Apple has said it has no plans to replace its proprietary Lightning port on the iPhone with a USB-C, which it's already done with the Mac and iPad.

# Tech in the News

- A **bipartisan bill** introduced in the House would require social media platforms to provide a version of their apps without algorithms that prioritize and filter content. The "**Filter Bubble Transparency Act**" comes as lawmakers show renewed interest in taking action against algorithms that promote hateful and divisive content in the wake of Facebook whistleblower Frances Haugen's testimony.
  - The bill would ensure that social media users be allowed to turn off data-driven algorithmic recommendation systems, possibly through a toggle of some sort.
  - There are some **exceptions**, such as companies with annual gross receipts of less than \$50M in three years and those that gather data on fewer than 1 million users every year.

# Tech in the News

- **The Internet of Things is projected to generate \$5.5T to \$12.6T in value globally by 2030, according to a McKinsey Global Institute (MGI) report.** The institute defines IoT as sensors and actuators connected to computing systems via networks. **Examples include wearable health monitors, smart home appliances, and connected cars.**
  - China, in particular, is poised to become a "global IoT force" as a tech supplier, manufacturing hub, and end market for value creation.

# Tech in the News

- On Wednesday, Inside Transportation analyst Nicolas Saravia interviewed Jetson co-founder and president Peter Ternstrom, who discussed his predictions for the wider adoption of **personal flying vehicles and eVTOLs (electric vertical take-off and landing aircraft)**. You can watch the full interview [here](#).
  - The first commercial flying cars certified for city use are five to six years away, with certain cities opting out of regulatory constraints earlier.
  - Ternstrom believes that eventually, there will be **rooftop landing areas for eVTOLs in residential areas**.
  - There will be **automated air traffic control**, which would not depend on human communication for clearance, but a computer that would calculate the trajectory and direct traffic between locations.



Added to the 'what can go wrong' category!

# And while we're on this topic

- The Speeder is a futuristic-looking flying motorcycle created by Ventura, Calif.-based [Jetpack Aviation](#).
  - The vertical take-off-and-landing aircraft will have jet turbine engines that provide vertical thrust. Once in the air, the engines would tilt backward and the aircraft would fly on small wings powered by net-zero-carbon fuel.
  - Two recreational models, **priced starting at \$385,000 each**, are available for preorder.
    - One reaches speeds of over **150 mph**, and flies for nearly an hour at more than **15,000 feet**
    - An ultralight version that doesn't require a pilot's license to operate is limited to 60 mph and flies for 15 minutes. The company hopes to make them available in 2023.





# Tech in the News

- Carnegie Mellon University opened a new "[maker space](#)" for students to experiment with AI projects and software. The space at CMU's Tepper School of Business in Oakland contains drones, robotics systems, smart appliances, and other hands-on tools.
- A former Hyundai engineer will receive a [\\$24M payout](#) from the U.S. government for reporting safety violations committed by the carmaker. It's the first reward to come out of the National Highway Traffic Safety Administration's [whistleblower program](#), which took effect this year. The Hyundai violations involved a design flaw in car engines that seized up or caught fire.

# Tech in the News

- [Astronauts take shelter as debris passes dangerously close to space station](#)
  - NASA did not specify what caused the debris field. The State Department confirmed that a Russian weapons test created more than 1,500 fragments of space junk in orbit.



# Tech in the News

- **The Biden administration reportedly discouraged Intel from increasing chip production in China due to security concerns, [Bloomberg](#) reported.** Intel currently has "no plans" to manufacture silicon wafers in a Chengdu-based factory, which it had sought to do by the end of 2022.
  - Intel needs government funding to ramp up chip production amid the ongoing shortage.
  - Intel CEO Pat Gelsinger said he expected the chip shortage to improve every quarter in 2022, though he didn't expect supply to meet demand [until 2023](#).

# Tech in the News

- **IBM unveiled Eagle, its largest quantum processor to date, with 127 quantum bits.** The company says Eagle can't be simulated on a traditional computer, implying that "it's more powerful than anything else," CEO Arvind Krishna said.
  - Information in quantum computers is represented by quantum bits, or qubits, that are "entangled" with others in the processor.
  - In classical computers, bits must be either 1 or 0, but qubits can be both at the same time, giving them vastly more power.
  - To simulate Eagle on a classic supercomputer, it would require "more classical bits than there are atoms in every human being on the planet."

# Tech in the News

- **Samsung is expected to [announce a decision soon](#) on the **planned location of its \$17B U.S. chip plant**.** The reveal is expected to coincide with Samsung Electronics Vice Chairman Jay Y. Lee's [current visit](#) to the U.S. and Canada.
  - Lee said he will meet with "many U.S. partners" during his visit to North America, his first high-profile trip since he was [convicted](#) of bribery and embezzlement. He served 18 months and qualified for parole [in August](#).
  - Samsung plans to make advanced logic chips at the new plant, **with Phoenix, upstate New York, and a site near Austin, Texas under consideration.**

# Tech in the News

- **The FBI [said](#) hackers took advantage of a software misconfiguration in its Law Enforcement Enterprise Portal, or LEEP, to send out fake cyber alert emails late Friday, though no one's data or personal identifiable information was compromised.** The emails appeared to be sent from a legitimate FBI email address.
  - More than 100,000 people received emails telling them they were the victim of a "sophisticated chain attack" from an extortion group called the Dark Overlord.
  - The subject line read "Urgent: Threat actor in systems" and included a fake sign-off from the Department of Homeland Security.
  - The FBI says it has since fixed the software vulnerability and "confirmed the integrity" of its networks.

# Tech in the News

- **Tesla owners reported seeing SpaceX Starlink dishes at Supercharger stations in several states**, suggesting that the EV maker could be planning a larger rollout of the **satellite internet connectivity for station users**. It comes several weeks after Elon Musk confirmed that the stations would get WiFi.
  - Starlink beams internet from orbiting satellites to dishes on the ground.
  - **Placing Starlink antennas at Superchargers could allow Tesla owners to use the internet for free** instead of paying \$10/month for Tesla's LTE service subscription.

# Tech in the News

- **Ohio's attorney general [has sued](#) Meta Platforms, alleging that the company violated federal securities laws by failing to disclose the harmful effects it has on young users.** The lawsuit was filed on behalf of the Ohio Public Employees Retirement System and Meta investors, who have lost a collective \$100B in market share since Facebook whistleblower Frances Haugen first leaked internal documents about two months ago, according to AG David Yost.
  - The suit alleges that company executives violated securities law by making false claims about the "safety, security and privacy of its platforms" in an effort to boost company stock.
  - It claims that Meta executives were aware that its platforms encourage "dissension, illegal activity, and violent extremism."
  - The lawsuit is seeking to recover the [\\$100B+ in damages](#) and pension fund losses. It also wants to force Meta to make changes so it doesn't mislead investors again.



# Tech in the News

- **Google on Tuesday [said](#) it will invest ~\$740M in Australia over the next five years to launch a research hub and further expand its cloud infrastructure.** The tech giant's largest investment in Australia comes after it threatened to withdraw its search engine from the country [earlier this year](#).
  - The company's program, the [Digital Future Initiative](#), is expected to directly create 6,000+ jobs in areas like AI, engineering, and computing science.
  - In addition, Google says it plans to partner with Australian government scientists on topics like green energy, and work with Sydney-based Macquarie University on quantum computing.

# Tech in the News

- **Google executives argued that a Pentagon cloud contract that the company is pursuing won't violate its weapons ban.** Google Cloud CEO Thomas Kurian confirmed last week that the company "will absolutely bid" on the Joint Warfighter Cloud Capability, if invited by the Pentagon to do so.
  - It comes three years after Google abandoned its Pentagon AI initiative, Project Maven, amid employee concerns that its technology would be used to support warfare and killings.
  - In a meeting last week with employees, Google executives claimed the contract would not violate the guidelines that the company adopted governing how its artificial intelligence tech is used.

# Tech in the News

- **Honda and engineering firm Black & Veatch began testing the automaker's Autonomous Work Vehicle (AWV) at a solar energy site in New Mexico.** To maneuver without a driver, the second-generation prototype uses radar and lidar for object detection and 3D cameras for remote monitoring.
  - Honda unveiled the first AWV with advanced autonomous technology during the 2018 Consumer Electronics Show.
  - It also can be controlled by a remote operator using a cloud-based app.
  - It has a maximum range of 27.9 miles and is fully charged in six hours at 120 volts.



# Tech in the News



# Tech Resources

- <https://www.wsj.com/news/technology>
- <https://www.wsj.com/news/tech/future-of-everything>
- <https://www.nytimes.com/section/technology>
- And many others:
  - <https://arstechnica.com/>
  - <https://techcrunch.com/>
  - <https://thenextweb.com/>
  - <https://www.wired.com/>
  - <https://www.cnet.com/>

- **What's Harder to Find Than Microchips? The Equipment That Makes Them**
- The world is hungry for semiconductors, and not all of them need to be made with cutting-edge technology. The race is on to find older machines that can still crank out chips.

# Here's Why Smart Home Technology Adoption is Rising Among Seniors

- Amazon (Alexa Smart Home), Apple (HomeKit), Google (Nest)
  - *Voice-activated smart home assistant speaker*
  - *Smart lights and lightbulbs*
  - *Smart locks*
  - *Smart doorbell*
  - **Senior living communities also are adopting smart technologies**
  - With the right smart home device set-up, seniors who are isolated, have mobility or dexterity challenges, or have memory issues can live in their home more safely, happily, and easily. This also has the potential added benefit of alleviating loved ones' and/or caregivers' concerns
  - *Plus wearables*
  - **Related:** [How Technology Is Reducing Long-Distance Caregiver Burden](#)

# Where Are All the Truck Drivers?

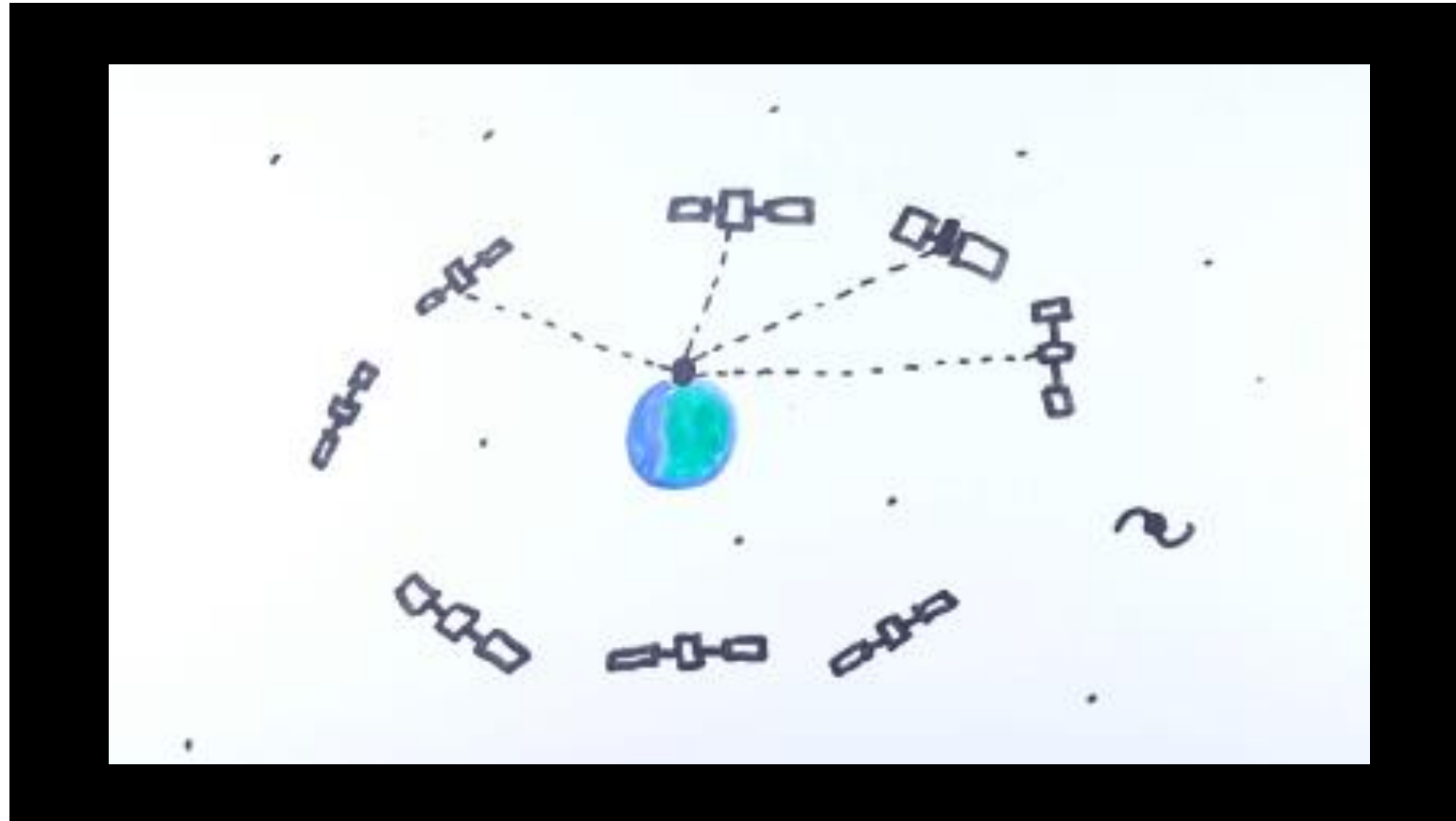
- The American Trucking Associations, one of the largest trade bodies, estimates the industry is some 80,000 drivers short of the workers needed to keep goods moving freely this year—up from an estimated shortage of 61,500 drivers before the pandemic. New trucks, trailers and other equipment are [in short supply](#), further limiting the movement of cargo.
- And there's a lack of efficiency in a model that hasn't changed much in several decades.
- And there are truckers quitting because of low pay and poor treatment by both employers and customers.
- Bottomline: “There is absolutely not a shortage of people licensed and trained to do that job,” Mr. Viscelli said. “The industry has burned so many of them that they left.”



- What's Causing The Container Ship Traffic Jam Clogging Up Global Trade

GPS

What is GPS and how does it work?  
([source](#) – video 2:10min)

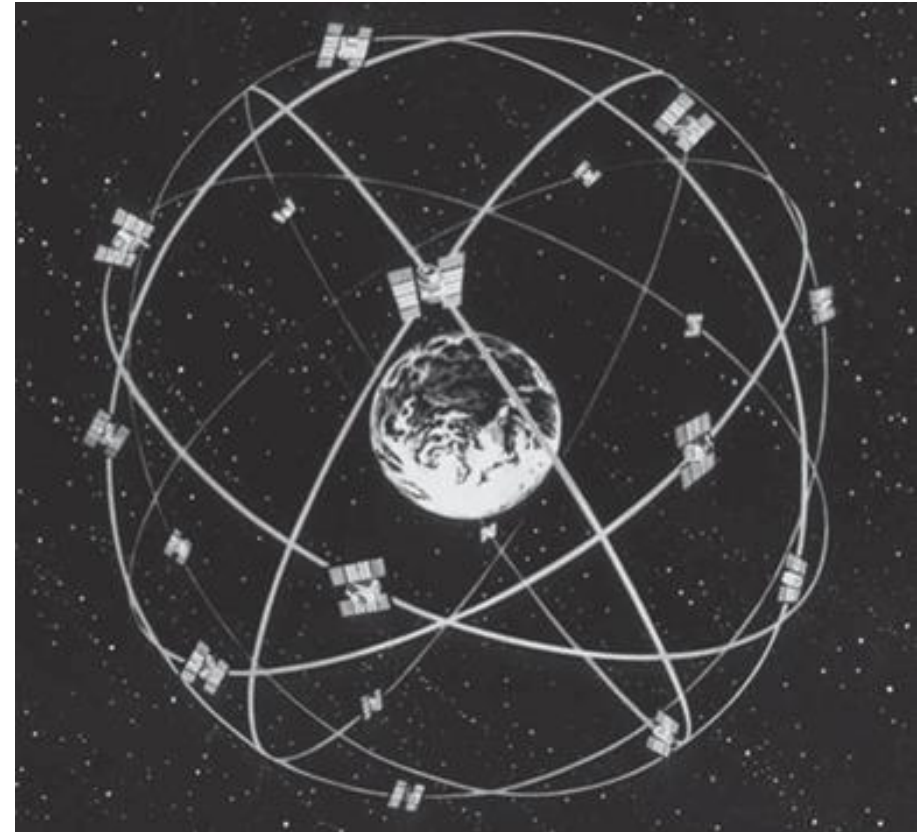


# GPS

- [Two Decades of Development and Evaluation of GPS... \(1999\)](#)
- [GPS Future and Evolution](#)
  - The [GPS](#) is a space-based global navigation satellite system (GNSS) that provides reliable positioning, navigation, and timing services to civilian and military users on a continuous worldwide basis. GPS is a U.S.-owned utility, developed by the U.S. Air Force starting with the program in 1978.
  - The U.S. actively engages in bi-lateral cooperation: Europe, Japan, India, Russia and multi-lateral cooperation: International Committee on GNSS (ICG), Asia Pacific Economic Cooperation (APEC), [International Civil Aviation Organization \(ICAO\)](#), [International Maritime Organization \(IMO\)](#), [International Telecommunication Union \(ITU\)](#) International Civil Aviation Organization (ICAO), International Maritime Organization (IMO), International Telecommunication Union (ITU).

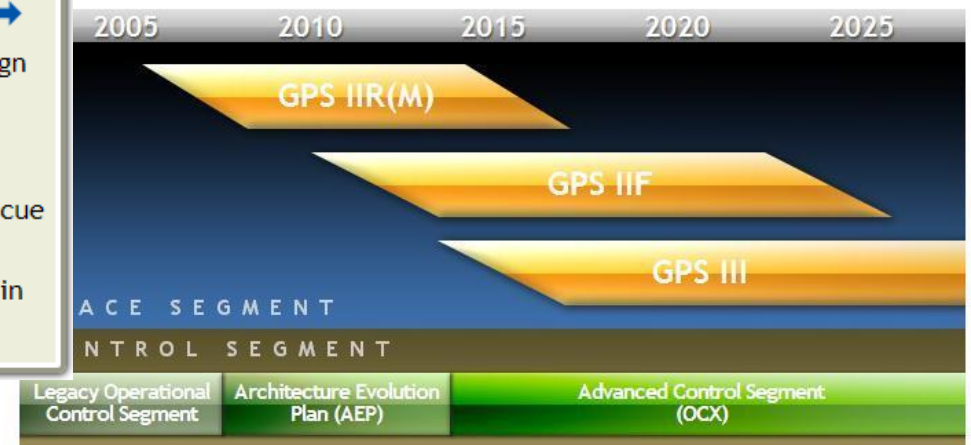
# GPS

- The operational GPS satellite constellation consists of 24 NAVSTAR satellites arranged in six  $55^\circ$  planes around the Earth so that a minimum of four satellites would always be in view above the horizon.
- GPS satellites fly in medium Earth orbit (MEO) at an altitude of approximately 20,200 km (12,550 miles). Each satellite circles the Earth twice a day.



# Space Segment Futures

LEGACY SATELLITES		MODERNIZED SATELLITES		
GPS IIA satellite	GPS IIR satellite	GPS IIR-M satellite	GPS IIF satellite	GPS III satellite
BLOCK IIA	BLOCK IIR	BLOCK IIR-M	BLOCK IIF	GPS III/IIF
0 operational	8 operational	7 operational	12 operational	4 operational
<ul style="list-style-type: none"> <li>Coarse Acquisition (C/A) code on L1 frequency for civil users</li> <li>Precise P(Y) code on L1 &amp; L2 frequencies for military users</li> <li>7.5-year design lifespan</li> <li>Launched in 1990-1997</li> <li>Last one decommissioned in 2019</li> </ul>	<ul style="list-style-type: none"> <li>C/A code on L1</li> <li>P(Y) code on L1 &amp; L2</li> <li>On-board clock monitoring</li> <li>7.5-year design lifespan</li> <li>Launched in 1997-2004</li> </ul>	<ul style="list-style-type: none"> <li>All legacy signals</li> <li>2nd civil signal on L2 (L2C) <a href="#">LEARN MORE →</a></li> <li>New military M code signals for enhanced jam resistance</li> <li>Flexible power levels for military signals</li> <li>7.5-year design lifespan</li> <li>Launched in 2005-2009</li> </ul>	<ul style="list-style-type: none"> <li>All Block IIR-M signals</li> <li>3rd civil signal on L5 frequency (L5) <a href="#">LEARN MORE →</a></li> <li>Advanced atomic clocks</li> <li>Improved accuracy, signal strength, and quality</li> <li>12-year design lifespan</li> <li>Launched in 2010-2016</li> </ul>	<ul style="list-style-type: none"> <li>All Block IIF signals</li> <li>4th civil signal on L1 (L1C) <a href="#">LEARN MORE →</a></li> <li>Enhanced signal reliability, accuracy, and integrity</li> <li>No Selective Availability <a href="#">LEARN MORE →</a></li> <li>15-year design lifespan</li> <li>IIF: laser reflectors; search &amp; rescue payload</li> <li>First launch in 2018</li> </ul>



# Who is Brad Parkinson?

- [The Origins of GPS, and the Pioneers Who Launched the System](#) May 1, 2010
- [GPS pioneers honored with Queen's award at Buckingham Palace](#) Dec 3 2019
  - Bradford Parkinson said: "Today marks a landmark moment in all of our lives—there is no prize for engineering greater than this, it is an honor. This recognition reflects the responsibility incumbent upon those developing technology today to strive to do so for the good of humanity. Day-after-day, we are astounded at the new ways in which people across the world use GPS. It is a 'System for Humanity' in each and every sense."
- [My father in-law's](#) classmate and companymate at the Naval Academy
  - Brad lived across the hall from me at USNA from 1953 to graduation in 1957. While in SLO for David's graduation Marilyn and I visited with Brad at his palatial home outside SLO. One of his sons is sheriff of the territory.