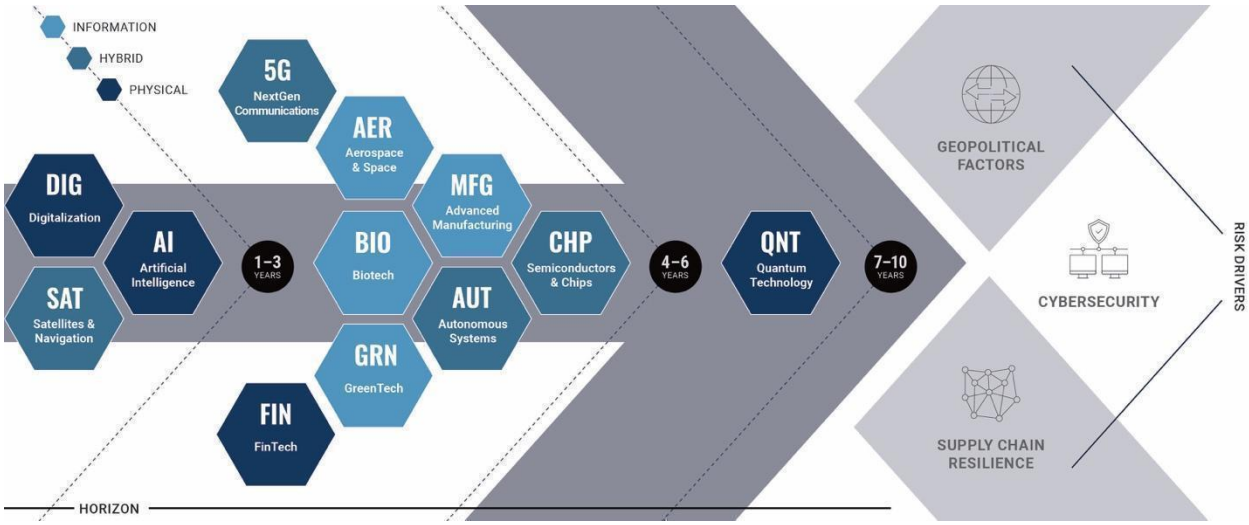
MATRIX MONITOR

Friday September 24, 2021

Welcome to Next5's weekly digest – emerging technology news and analysis to keep you on your game and ready for what's Next

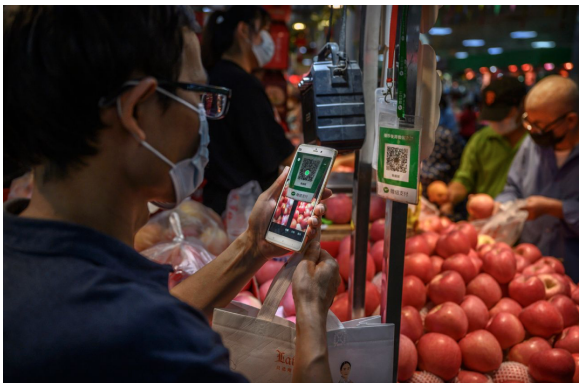


This week's **Next5 Matrix Monitor** *features the latest on Chinese firms' adaptations to increasing regulation, the use of AI systems by school administrators, regulating government usage of machine learning algorithms, Chinese phones with built-in censorship devices, the U.S. government's regulation of cryptocurrencies, coordination efforts by the U.S. Space Force and intelligence community, innovations in carbon capture technology, the risks associated with autonomous vehicles, the global-chip shortage, and an overwhelmed domestic supply chain.*

NEXT5

→ **Check out this recent piece Next5 published on The Future with COVID where we share results from a poll we conducted with a group of executives and recommendations for leaders as we move into the next year of living with COVID-19 restrictions and supply chain disruptions.**

DIGITALIZATION



→ **Tencent is gradually removing some competitive barriers from its WeChat service, including making it easier for users to share e-commerce listings from rival Alibaba on the messaging app.** The change came after Beijing made it clear last week that companies must stop blocking links leading to rivals' services on their apps, part of authorities' efforts to curb the power of Chinese consumer giants. According to a statement by Tencent Friday, September 17, users can access external links in one-on-one conversations as long as the links comply with government rules and other regulations. The move marks the beginning for Chinese technology companies to open up to their rivals' services. #DIG #CHN WSJ

→ **In the latest move to curb screen time for younger Chinese users, ByteDance said it would restrict access to Douyin, the Chinese version of TikTok, to 40 minutes a day for users under 14 years old.** Douyin's "youth mode," which follows the imposition of new limits on younger Chinese users' access to online videogames, will restrict children under 14 to using the app between 6 a.m. and 10 p.m. The app will be inaccessible to all users in that age group outside of those hours. Douyin said that the mandatory measures were designed to protect younger users from harmful content. The new restrictions come as the Chinese government seeks to rein in the country's biggest internet companies, accusing them of violating antitrust, data-security, and labor rules. Concurrently, the ruling Communist Party has increasingly cast itself as a guardian of morality for the younger generation, cracking down on after-school tutoring and emphasizing the need to clamp down on what it calls an obsession with unhealthy celebrity culture. #DIG #CHN WSJ

→ **Zoom's proposed $14.7B deal to acquire Five9 is now under investigation by a government committee for potential national security risks.** In a letter sent to the Federal Communications Commission (FCC) last month, the Department of Justice (DOJ) requested for the FCC's review of the Zoom-Five9 deal to be halted until a telecommunications security committee could assess potential national security risks. The U.S. government has been

ramping up its scrutiny of Zoom's China ties. Last year, the Justice Department charged one of its China-based executives with conspiring to disrupt video conference commemorations of the Tiananmen Square democracy protests. The company is also facing ongoing federal investigations related to its dealings with Beijing. As we previously reported, Zoom announced the deal to buy Five9 in July, seeking to enter a crowded contact center as a service market. The company is betting that it can blend platforms and products like Zoom Phone to grab more enterprise wallet share. In Zoom's most recent financial results, the company reported its total quarterly revenue exceeded $1B for the first time in the company's history. #DIG #USA #CHN ZDNet WSJ

SATELLITES & NAVIGATION

→ **The ground stations and tracking antennas the U.S. military relies on to communicate with its satellites — known as the Satellite Control Network — are decades old and short of the capacity needed to keep up with the projected growth in space activities.** There are seven SCN sites located in the United States and around the world. About 15 large dish antennas at these sites command more than 190 military and government satellites in multiple orbits. The seven remote tracking stations monitor the position of satellites and control spacecraft's propulsion, thermal, and other systems. Because the antennas can only talk to one satellite at a time, they have limited capacity to transmit and receive telemetry, tracking, and command data. Space Force officials said the strategy to modernize the SCN will include a mix of new hardware procurements and commercial services augmentation. #SAT #USA Space News

→ **Terran Orbital, the parent company of Tyvak and PredaSAR, has leased a new four-story facility in Irvine, California, to house satellite design, engineering, and development.** Terran Orbital will continue to manufacture satellites at a separate Irvine facility, which the company is expanding to support its "robust pipeline," according to a Sept. 22 news release. The company claims to be growing rapidly, both in terms of its workforce and facilities, due to strong demand from government and commercial customers. One of Tyvak's recent orders was from Lockheed Martin, which is buying a pair of 12-unit cubesats for LINUSS, short for Lockheed Martin In-space Upgrade Satellite System, to demonstrate satellite servicing in geosynchronous orbit. #SAT #USA Space News

ARTIFICIAL INTELLIGENCE

→ **Educators and administrators are depending on AI to alert them of kids who are at risk of harming themselves or others.** When the AI recognizes certain key phrases, these systems typically send an alert to school administrators and counselors, who then determine whether an intervention with the student and parents is warranted. School administrators say such

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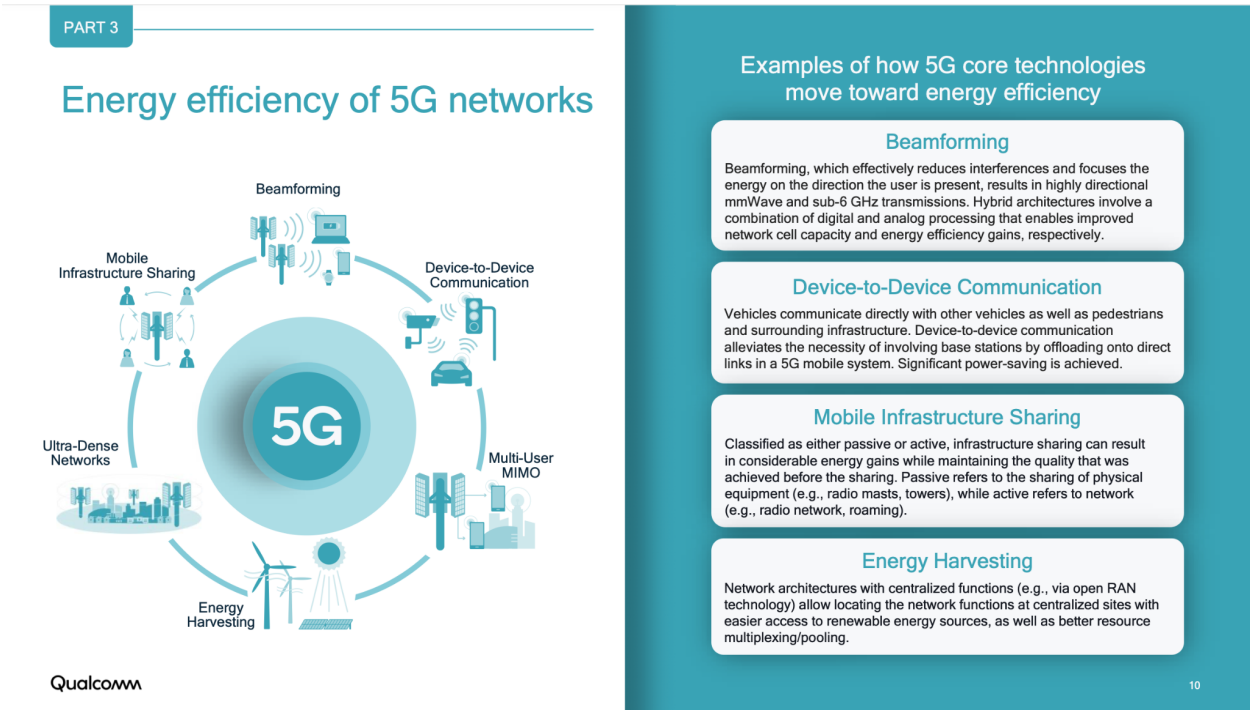
surveillance is more important than ever as students return to the classroom after 18 months of pandemic-related stress, uncertainty, and loss. Critics say it raises questions about privacy, misuse, and students' ability to express feelings freely or search for answers. In June, the consumer-advocacy nonprofit Center for Democracy and Technology conducted online surveys of more than 1,000 third- through tenth-grade teachers, more than 1,600 parents, and more than 400 high-school students across the country about student-monitoring software. According to the results, 81% of teachers surveyed said their school uses some form of monitoring software, and 77% of the students said the same. Of those students, 80% said knowing they were being monitored made them more careful about what they searched online. #AI #USA WSJ

→ **Scientists at MIT have concluded that algorithmic innovations in AI are more important than hardware — at least where the problems involve billions to trillions of data points**. The team conducted what they claim is the first study on how fast algorithms are improving across a broad range of examples. As algorithms are enhanced, less computing power should be needed — in theory. But this isn't settled science. AI research and infrastructure startups like OpenAI and Cerebras are betting that algorithms will have to increase in size substantially to reach higher levels of sophistication. But MIT research scientist Neil Thompson stated in a press release that the team's analysis showed how many more tasks could be done using the same amount of computing power after an algorithm improved–he believes this is a way to improve businesses and other organizations without the downside of higher environmental computing costs. #AI #USA VentureBeat

→ **An Op-ed published by *The Hill* argues that as regulators develop policies to regulate governments' use of machine learning algorithms, they must consider how human decision-makers interact with the algorithms.** If they do not, regulations will provide a false sense of security in governments adopting algorithms. In recent years, researchers and journalists have exposed how algorithmic systems used by government bodies are rife with errors and biases. These reports have spurred increased regulatory attention to evaluating the accuracy and fairness of algorithms used by governments. But an experiment in a newly published journal article found that even when risk assessments improve people's predictions, they do not improve people's decisions. The results build on a growing body of evidence demonstrating that judges and other public officials use algorithms in unexpected ways in practice, meaning that government algorithms often fail to generate the expected policy benefits. The evidence demonstrates the limit of regulations that focus only on how an algorithm operates when used autonomously. Even if an algorithm makes accurate predictions, it may not improve how government staff make decisions. Instead, tools like pretrial risk assessments can generate unexpected and undemocratic shifts in the normative balancing act that is central to decision-making in many areas of public policy. #AI The Hill

NEXT GENERATION COMMUNICATIONS

→ **Qualcomm published a report titled "Environmental sustainability and a greener economy: The transformative role of 5G" that looks at 5G as a sustainability driver.** Qualcomm identified three use cases that will be positively impacted by 5G: Greenhouse gas emissions reduction, optimal household water management, and pesticide use reduction. The ability to lean on smart technology enabled by 5G to use natural resources more efficiently could result, according to the report, in a reduction of about 6% of the annual emissions. Moreover, according to internal economic projections run by Qualcomm, the implementation of 5G enabled technology such as artificial intelligence, cloud computing, IoT, and automation will boost green jobs by creating 300K new positions by 2030. With the U.S. rejoining the Paris Agreement and addressing global warming high in the priority list of the current administration, Qualcomm is calling for more investment in research and policies that can benefit 5G development and deployment as well as the broader semiconductor industry.



#5G #GRN #USA Forbes

→ **Lithuania's defense ministry recommended that consumers avoid buying Chinese mobile phones and advised people to throw away the ones they have now after a government report found the devices had built-in censorship capabilities.** Flagship phones sold in Europe by China's smartphone giant Xiaomi have a built-in ability to detect and censor terms such as "free Tibet," "long live Taiwan independence," or "democracy movement," Lithuania's state-run cybersecurity body said on Tuesday, September 21. The capability in Xiaomi's Mi 10T 5G phone software had been turned off for the "European Union region," but

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can be turned on remotely at any time, the defense ministry said in the report. The report also said the Xiaomi phone was sending encrypted phone usage data to a server in Singapore. The report said the list of terms which could be censored by the Xiaomi phone's system apps, including the default internet browser, currently includes 449 terms in Chinese and is continuously updated. #5G #Cybersecurity #CHN #LTU SCMP

FINANCIAL TECHNOLOGY

→ **Global brands are cutting out the traditional financial middleman and plugging in software from tech startups to offer customers everything from banking and credit to insurance.** Embedded finance—a term for companies integrating software to offer financial services—means Amazon can let customers "buy now pay later" when they check out. Banks are still behind most of the transactions, but investors and analysts say the risk for traditional lenders is that they will get pushed further away from the front end of the finance chain. So far this year, investors have poured $4.25B into embedded finance startups, almost three times the amount in 2020, data provided by PitchBook shows. Some banks are already fighting back. Citigroup has teamed up with Google on bank accounts, Goldman Sachs is providing credit cards for Apple, and JPMorgan is buying 75% of Volkswagen's payments business and plans to expand to other industries. #FIN Reuters

→ **The Biden administration is preparing an array of actions, including sanctions, to make it harder for hackers to use digital currency to profit from ransomware attacks.** The government hopes to choke off access to a form of payment that has supported a booming criminal industry and a rising national security threat. The sanctions are expected to single out specific targets, rather than blacklist the entire crypto infrastructure where ransomware transactions are suspected of taking place. Nonetheless, the action will be intended to deter others from continuing their activities. The administration has focused enforcement efforts on the primary sources of recent attacks, which both private sector and government analysts say are in Russia and former Soviet satellite nations where Moscow exerts strong political influence. Former U.S. security officials say one of the pieces of evidence suggesting Russian government involvement is code within the programs that prevents them from being used on operating systems located in Russia and the former Soviet Union states. #FIN #Cybersecurity #USA #RUS WSJ

→ **U.S. officials are examining possible insider trading and market manipulation at Binance, potentially adding more heat to the cryptocurrency exchange that has become a target of regulatory scrutiny in many countries.** Binance runs a massive trading operation where everyday clients buy and sell digital tokens worth tens of billions of dollars outside the oversight of government watchdogs. That gives the exchange a view into millions of transactions, and U.S. authorities are questioning whether the firm exploited that access, including by trading on customer orders before executing them. #FIN #USA Bloomberg Reuters

→ **Invesco, one of the biggest operators of exchange-traded funds in the U.S., is making plans to roll out a lineup of funds backed by bitcoin and other cryptocurrencies.** The Atlanta-based asset manager plans to join with Galaxy Digital Holdings, an upstart digital asset firm, to develop U.S.-listed ETFs that hold and track the performance of bitcoin and other cryptocurrencies, yet trade like a stock. By doing so, the firm aims to position itself to capitalize on the fervor around digital assets if and when the Securities and Exchange Commission approves the trading of such products. #FIN #USA WSJ

AEROSPACE & SPACE

→ **The Space Force and the Intelligence Community have stood up a coordinating group to make sure there is unity of effort in acquisitions despite a medley of agencies.** The chief of the U.S. Space Force General John "Jay" Raymond has called on the service to move faster with the acquisition of new technologies to stay ahead of rivals like China. Lt. Gen. Michael Guetlein, commander of the Space Systems Command, said a "program integration council" chaired by Raymond and by NRO Director Chris Scolese brings together representatives from all the space buying agencies and the organizations that need the equipment — U.S. Space Command and Space Operations Command. #SAT #USA #CHN Space News

→ **NASA leadership announced that the Human Exploration and Operations Mission Directorate (HEOMD) would be split into two organizations.** One, the Exploration Systems Development Mission Directorate, will be responsible for developing programs for the agency's Artemis lunar exploration initiative and future Mars exploration. The other, the Space Operations Mission Directorate, will handle the International Space Station and low Earth orbit commercialization efforts. Spending on exploration has sharply increased over the last five years, from just over $4B in fiscal year 2016 to more than $6.5B in 2021 as NASA increases spending on new Artemis programs like the Lunar Gateway and Human Landing System. Spending on space operations, though, has declined from just over $5B in 2016 to just under $4B in 2021 as spending on commercial crew development ramped down. According to NASA Deputy Administrator Pam Melroy, the restructuring of NASA's Human Exploration and Operations Mission Directorate will help safely and effectively manage this growth in scope. #AER #USA Space News

BIOTECHNOLOGY

→ **The immunity of COVID vaccines appears to be waning, sparking debate as to whether booster shots should be administered now.** Healthcare records from countries such as Israel, UK, and elsewhere all show that COVID vaccines are losing strength when it comes to curbing disease transmission. But encouragingly, researchers found that vaccination spurred durable cellular immunity, which is what protects people from disease. A booster shot can help

contain transmission as it boosts vaccine effectiveness, but getting more people vaccinated in the first place is the most effective way to prevent the spread of COVID. #BIO Nature

→ **A CIA officer who traveled with agency director William Burns to India earlier this month developed "Havana Syndrome" symptoms on the trip and had to seek medical attention**. The incident came just weeks after Vice President Kamala Harris delayed her trip to Vietnam over reported cases of the mysterious illness. The event reportedly left Burns fuming with anger and sparked concerns over security as the CIA Director's schedule is closely held for security reasons. Some officials suggest this incident was a direct message that no one, including the head of the CIA is safe. #BIO #USA #IND #VNM #Geopolitics Axios CNN New York Times Reuters

GREEN TECHNOLOGY

→ **Developed countries are providing relatively little financial assistance to help their developing counterparts reduce greenhouse gas emissions.** Developed countries provided or mobilized just $180B in mitigation and adaptation finance for their developing counterparts in 2019. The largest funding sources came from multilateral development banks ($30B), bilateral government assistance ($29B), and the private sector ($14B). Developed countries have committed to deliver the equivalent of just $16 per person per year to help the developing world mitigate and adapt to climate change – and managed to provide only $12 per person in 2019. This is not even close to the hundreds of billions of dollars that would be needed to replace traditional cooking and heating fuels, such as wood, coal, and kerosene, with modern cleaner alternatives by 2030, which is one of the United Nations Sustainable Development Goals. It is even further away from the amount that would be needed to electrify transportation and other energy services and simultaneously decarbonize electricity generation by replacing coal and gas combustion with wind, solar, hydro, and nuclear power. #GRN Reuters

→ **American Airlines will contribute $100M to a new green technology fund spearheaded by Bill Gates and aimed at spurring research into technologies to lower carbon emissions.** Microsoft, Bank of America, Blackrock, and General Motors are among other high-profile corporations that signed onto the Breakthrough Energy Catalyst fund on Monday, September 20. The group's goal is to provide low-interest loans and other low-cost investments to get green technology projects into motion. Of the target areas for the investment fund, American is most keen on sustainable aviation fuel, an emerging fuel source using recycled waste such as cooking oils to produce jet fuel. In theory, using sustainable aviation fuel reduces carbon emissions by about 80%. However, the entire sustainable aviation fuel industry only produces about 4.5M gallons a year, compared with more than 90B gallons of jet fuel consumed by the global aviation industry. Sustainable aviation fuel is also three to five times more expensive than conventional jet fuel, so airlines need more production and lower prices. #GRN #USA Press Herald

→ **Xi Jinping said at the United Nations General Assembly on Tuesday, September 21, that China would not build new coal-fired power projects abroad**—the move could significantly limit the financing of coal plants in the developing world. Xi repeated pledges from last year that China would achieve a peak in carbon dioxide emissions before 2030 and carbon neutrality before 2060. The country has been under heavy diplomatic pressure to put an end to its coal financing overseas because it could make it easier for the world to stay on course to meet the goals of the Paris climate agreement to reduce carbon emissions. Meanwhile, ties between the U.S. and China have been languishing at their lowest point in decades over issues ranging from human rights to transparency over the origins of COVID-19. China last week warned of an intensified arms race in the region after the United States, Britain, and Australia announced a new Indo-Pacific security alliance, dubbed AUKUS, which, as we previously reported, will provide Australia with the technology and capability to deploy nuclear-powered submarines. #GRN #Geopolitics #USA #CHN #GBR #AUS Reuters Bloomberg

→ **Orca is the largest installation in the infant "direct air capture" industry, which aims to remove CO_2 from the atmosphere**. When sealed underground, such CO_2 counts as "negative emissions"—an essential but underdeveloped method for tackling global warming. Climeworks, the company that owns Orca, has developed chemical filters which snag CO_2 when air passes through them. When heated they release the CO_2 again, generating a stream of gas that is handed to another firm called Carbfix. Carbfix pipes the gas to nearby wells, mixes it with water, and pumps the resulting carbonated water into the bedrock. To stop temperatures rising by 1.5°C or even 2°C above pre-industrial averages, as per the Paris climate agreement, hundreds or thousands of billions of tons of CO_2 will have to be removed from the atmosphere in the second half of the century. #GRN #CHE #ISL The Economist

ADVANCED MANUFACTURING

→ **Boeing has signed an agreement with the Royal Melbourne Institute of Technology (RMIT) to merge its expertise in space product development with RMIT's advanced manufacturing research.** Initially collaborating on design strategy, materials research, and process innovation, RMIT will connect with Boeing's resources and global networks to develop Australian sovereign capabilities critical for commercial production of equipment for spaceflight and off-world exploration. The research and development will be undertaken at RMIT's Space Industry Hub – a launch pad and industrial solutions incubator dedicated to growing Australia's space sector. Boeing has had a longstanding relationship with RMIT which has contributed to

Australia's aerospace manufacturing capability through innovation in undergraduate education, postgraduate research, and collaborative research projects. Boeing says that the RMIT collaboration 'furthers the company's commitment to investing in sovereign space capability'. #MFG #AER #USA #AUS ADM

AUTONOMOUS SYSTEMS

→ **Tesla plans to make its Full Self-Driving (FSD) Beta program available to customers even though the software has not been debugged yet.** Tesla CEO Elon Musk warned that the FSD Beta is so powerful that it can give drivers a false sense of security. In reality, neither of Tesla's driver assistance systems – Autopilot and FSD – make Tesla cars autonomous, meaning that drivers must still remain attentive at the wheel. But before owners can access the FSD Beta download button, they must first prove that they are good drivers. If driving behavior is good for 7 days, beta access will be granted. #AUT #USA CNBC

→ **Automakers are looking to satellites to handle the massive amounts of data that autonomous vehicles generate.** Currently, autonomous cars receive data through cellular towers, which can have unreliable coverage. This is dangerous for autonomous vehicles because they need constantly updated information and real location accuracy – this is where satellites can help. In fact, SpaceX has already deployed more than 1,700 satellites that operate in LEO. The proximity to Earth will facilitate faster communication and broader coverage. Despite the benefits of satellites, the time it takes for a signal to reach a car from a satellite is 50 milliseconds, compared to 10 milliseconds for a cellular tower. #AUT #SAT Bloomberg

→ **The U.S. Cybersecurity and Infrastructure Security Agency (CISA) published a guide that outlined the risks associated with autonomous vehicles (AV) and strategies on how to mitigate them.** Although AVs will revolutionize transportation across the nation, their reliance on Internet of Things (IoT) devices make them more vulnerable to attacks. CISA's Autonomous Vehicle Cyber-Attack Taxonomy analyzes AV risks based on attack vectors, targets, consequences, and outcomes associated with a specific cyber-physical attack. These risks, according to CISA, can happen at the enterprise and asset levels. To mitigate these risks, CISA recommends companies develop resilient and secure systems so that AVs can withstand a potential attack. #AUT #Cybersecurity #USA CISA

SEMICONDUCTORS & CHIPS

→ **The type of semiconductor chips found in cars are far too obsolete, and chipmakers are telling car companies to use newer and improved chips.** When the pandemic hit, replacement demand for new cars decreased. But when the car market recovered, chipmakers already reallocated their capacity and were no longer producing car chips at the level they used to. While car companies want chipmakers to expand their capacity, chipmakers want car companies to transition into newer technologies. But when it comes to cars, the importance of safety has made companies stick with old but proven designs. Although chip companies like

Qualcomm are working with the car industry to accelerate the transition, it is not easy because new technologies are often not compatible with the existing car designs. #CHP Fortune

→ **Despite the current global chip shortage, the semiconductor market is expected to stabilize by mid-2022, potentially reaching overcapacity by 2023.** The 2021 market is expected to grow 17.3% in 2021. Moreover, the global semiconductor market will see a high 5.3% CAGR to reach $600B by 2025. This growth is driven by mobile phones, notebooks, servers, automotive, smart home, gaming, wearables, and Wi-Fi access points. Fortunately, this growth can be accommodated thanks to strong front-end manufacturing and dedicated foundries working with fabless suppliers. #CHP CRN Australia

QUANTUM TECHNOLOGY

→ **UK Quantum Technology Hub Sensors and Timing's researchers at the University of Birmingham and the National Physical Laboratory (NPL) are building a fiber optic cable that will run from the university's campus to NPL's office in London.** Scheduled to be completed in October 2021, this is the first time a fiber optic cable network for precision timing has been extended to a large area in the UK. Fiber optic cables are beneficial because they are less susceptible to interferences as the data is concentrated within the fiber itself. This means that fiber link technology can only be affected if it is physically cut. #QNT #UK The Quantum Daily

→ **Accenture and IonQ are collaborating to help accelerate the adoption of quantum computing in businesses.** The exploration of quantum in business is increasing because of the potential business value and competitiveness it can deliver. With Accenture's track record of implementing innovative technologies and IonQ's world-class quantum computers, this partnership promises to help businesses unlock new and unprecedented opportunities. #QNT The Quantum Daily

GEOPOLITICS

→ **Investors are turning to India as China's crackdown on its technology industry has sparked fear of government risk.** Although India's internet industry is not nearly as large as China's, its low risk and recent rise in billion-dollar startups and IPOs offer strong growth prospects. For instance, March Capital – a long-time backer of Indian startups – is increasing its investments in areas such as blockchain, network infrastructure, and SaaS as confidence in India's technology sectors grows. #DIG #FIN #Geopolitics #CHN #IND Bloomberg

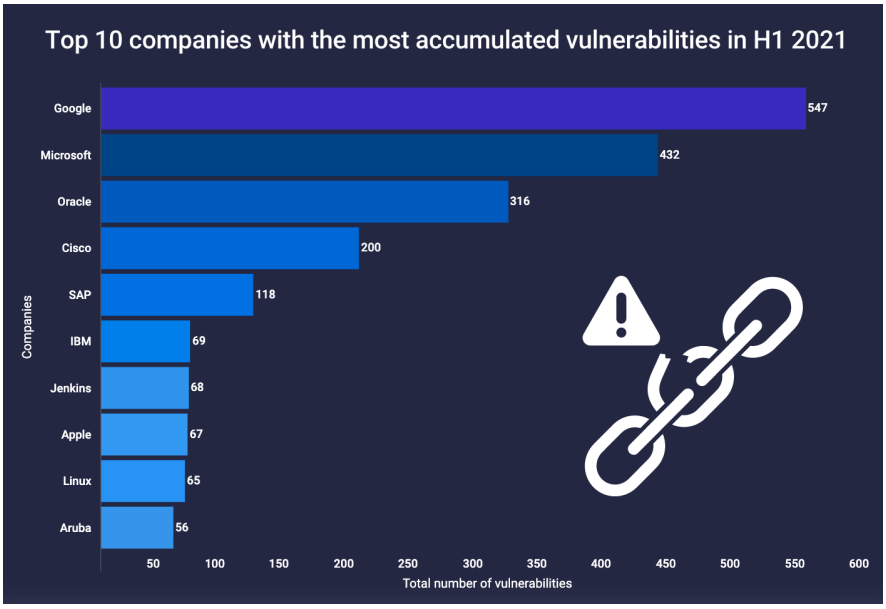
→ **Companies that refuse to delete online content deemed illegal in Russia could face fines 5% to 20% of their local revenue.** This is partially a result of the Russian elections, during which Russia has aggressively cracked down on anti-Krelin opposition. But even before the elections, a series of laws introduced in 2018 and 2019 expanded Russia's ability to filter internet content. The government also required internet service providers to install equipment

that can block websites and restricted citizens' access to VPNs. The extent of this crackdown has been extensive – in just 2020, Google has been forced to remove 340,000 items from its websites; and Facebook has been charged $900,000 this year. Prior to parliamentary elections, Google and Apple were ordered to remove the Smart Voting app from their app stores. The app was designed to help protesters vote out ruling party politicians. #Geopolitics #RUS Bloomberg

CYBERSECURITY

→ **Robot Hacking Games (RHG) are government-backed competitions that China uses to advance the automation of software vulnerability discovery, patching, and exploitation technologies.** These tools provide capabilities that help increase the efficacy of vulnerability discovery, making countries less susceptible to attacks. Since 2017, these competitions have attracted numerous academic, military, and private sector teams. China's RHGs are a part of President Xi Jinping's goal to become a "cyber powerhouse." #Cybersecurity #CHN CSET

→ **A recent report revealed that Google and Microsoft accumulated the most security vulnerabilities in the first half of 2021. Specifically, Google claimed the top spot with 547, followed by Microsoft with 432.** These figures make sense, because the large user base of Google's products like Chrome makes more users victims of cyberattacks. As for Microsoft, state-sponsored actors from China carried out ransomware attacks by abusing Microsoft Exchange Server vulnerabilities. #Cybersecurity TechRepublic



→ **Iowa-based farm services provider NEW Cooperative took their systems offline to contain a cybersecurity incident just as the U.S. farm belt begins harvest.** This cyberattack can likely be attributed to the Russia-based ransomware group BlackMatter, which said on its website that it had encrypted NEW's data and stole 1,000 gigabytes worth of files. The group

then demanded $5.9M in cryptocurrency by September 25 for a tool to decrypt the data. #Cybersecurity #USA WSJ Reuters

SUPPLY CHAINS

→ **A backlog of 70 cargo ships is waiting to enter the ports of Los Angeles and Long Beach, which handle 40% of the nation's imports.** This is largely due to pandemic-related halts on shipping followed by increased American consumer demands after shutdowns ended. These events have overwhelmed the domestic supply chain and increased shipping traffic by 50% from pre-pandemic levels. Worse, a truck and drivers shortage has only exacerbated supply chain delays. With the onset of the holiday season, the situation is expected to only get worse. #SCRM #USA MSN

→ **The pandemic highlighted the flaws in current supply chain management practices. A study by NTT Data outlines several ways the logistics industry plans to change to limit future disruptions:**

- Increased use of technology will make supply chains more intelligent and agile. Technologies such as 5G, real-time data transmission, Internet of Things, and data analytics will help managers monitor supply chains with more visibility and improve maneuverability when disruptions arise.
- Pivoting towards regional and domestic supply chains will decrease the risk and volatility associated with global supply chains. Even before the pandemic, geopolitical tensions between the U.S. and China have caused cracks in the supply chain. Thus, nearshoring will help companies source their materials and supplies with greater speed and reliability.
- Adopting a supply chain-as-a-service (SCaaS) business model will help alleviate capacity constraints. SCaaS essentially monetizes excess capacity, giving companies an alternative way to generate additional revenue when the capacity is unused. Excess capacity has traditionally been viewed as cost centers, disincentivizing companies to hold any spare capacity which can be risky. The SCaaS business model, however, helps companies generate profit while preventing future bottlenecks.

#SCRM Forbes