MATRIX MONITOR

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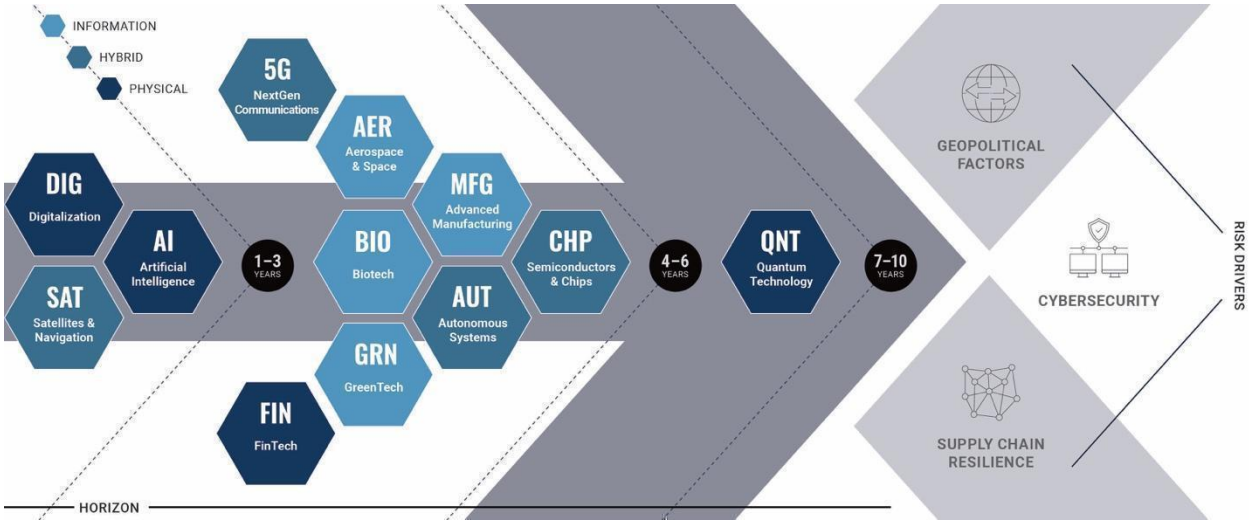
The only source dedicated exclusively to the emerging technologies shaping the future of business and national security.



This week's Next5 Matrix Monitor features the benefits of a metaverse for the US Space Force, efforts by SpaceX to reduce launch costs of its Starship rocket, efforts by China's government for communication with the US on space safety, A.I. ethics as a core requirement of the US national strategy, new AI education pilots for DOD employees, plans for commercial spacewalks and the first manned Starship flight, the US Army's climate plan, directed microwave energy as a counter to drone swarms, and India's ban of 54 Chinese apps due to security concerns.

NEXT5 NEWS & AMPLIFICATIONS

→ **The White House is warning the chip industry to diversify its supply chain in case Russia retaliates against threatened US export curbs by blocking access to key materials**. The potential retaliation has garnered more attention after Techcet - a market research group - published a report highlighting the reliance of many semiconductor manufacturers on Russian and Ukrainian-sourced materials like neon, palladium, and others. According to the report, 90% of US semiconductor-grade neon supplies comes from Ukraine while 35% of palladium is sourced from Russia. Neon is critical for the lasers used to make chips, and is a byproduct of Russian steel manufacturing, according to Techcet. It is then purified in Ukraine. Palladium is used in sensors and memory among other applications. Many chip companies have expressed that they are not worried about losing supply as much as they are about rising prices due to the Ukraine conflict. According to the US International Trade Commission, neon prices rose 600% in the runup to Russia's 2014 annexation of the Crimean peninsula. And Techcet projects that demand for all chip materials will rise by more than 37% over the next four years. #CHP #UKR #RUS #USA #SCRM #Geopolitics Reuters

→ **As US officials weigh economic penalties on Russia over Ukraine, Washington is factoring in whether Beijing would come to Moscow's aid to circumvent sanctions and other punitive measures**, according to people familiar with the matter. As we previously reported, US officials are considering cutting off major Russian banks' global financial networks and setting export controls on critical technology like American software, particularly in the aerospace, AI, maritime, and other sectors. The Administration currently sees Beijing as unlikely to interfere with any US restrictions substantially because that could jeopardize Chinese access to the US domestic market, financial networks, and critical technologies. However, China's relationship with Russia is strengthening and Beijing has demonstrated past willingness to circumvent US sanctions on North Korea and Iran. It would be far more punishing for Russia to face sanctions alone than if it has the world's second largest economy on its side. Beijing could help Moscow by increasing trade in Chinese yuan and using a nascent Chinese interbank payment system for cross-border finance instead of the dominant SWIFT system used worldwide. It could also use smaller banks that are less exposed to dollar transactions as it has done in the past to help Iran and North Korea. However, sales to the US represent more than 17% of China's total exports, whereas Russia accounts for 2% of Chinese exports. #Geopolitics #CHP #DIG #AI #AER #RUS #CHN #USA WSJ

DIGITALIZATION

→ **Chinese metaverse app Jelly – which topped the download charts in Chinese app stores last week – has taken itself down due to online attacks and the need to improve user experiences.** The app suffered from organized attacks, including rumors circulating on various online platforms, as well as a flood of bad reviews in its app store listings. The app suspended the registration of new users, seeking to undergo upgrades to fix system crashes

and spotty or delayed connections. Jelly, which became popular in China soon after its launch, underscores the potential of a consumer-based metaverse in the country. The app rose to the top of the iOS free app rankings in China last Wednesday, February 9 – three weeks after it was officially released – making it the first social networking app to overtake Tencent Holdings' WeChat since 2019. But amid rising popularity, Jelly also struggled with controversies. Some users claimed they received spam messages and calls from third parties after registering accounts on the app. Others accused Jelly of copying outfits of Chinese celebrities and international brands in designing the clothes of the app's avatars. #DIG #CHN SCMP

→ **According to Lisa Costa, the US Space Force's chief technology and innovation officer, the service should look to develop a metaverse.** On February 10, 2022, at the AFCEA NOVA Space Force IT conference, Costa noted that a military metaverse could allow service members to collaborate, train, and conduct any number of activities. She stated that 86% of U.S. airmen and guardians from the ages of 18 to 34 view themselves as gamers – Costa sought answers to how the military could take advantage of such skills. Costa also emphasized that a metaverse is especially appealing to the Space Force because guardians normally rely on digital representations of the space domain to do their jobs. Costa believes the Space Force could potentially leverage metaverse technologies, including virtual reality and augmented reality, to digitally engineer satellites and develop new capabilities for space operations. She noted that the Space Force, due to its small size, could also act as a testing ground for metaverse technology to determine if it can be scaled up for use across the U.S. military. #DIG #USA Space News

→ **Forbes released its Blockchain 50 for 2022, which tracks billion-dollar companies (minimum, by sales or market value) in the blockchain sector.** Twenty-nine of the Blockchain 50 are based in the US and 14% are Chinese. Last year, venture capital firms invested more than $32B in the sector – a new development in 2022's report. Since 2019, the companies on Forbes' annual list have moved beyond test projects and now rely on distributed ledger technology, meaning the companies have adopted consensus-based replicated, shared, and synchronized digital data spread across multiple sites, countries, or institutions. Developments involve verifying insurance claims or facilitating real estate deals, but blockchain has also become vital to supply chains, whether checking the origin of conflict minerals like cobalt or tracking auto parts for automobile manufacturers. Cryptocurrencies like bitcoin and ether have captured the headlines after booming last year and then losing more than $1T in value since November. But the more lasting impact will come as more multinationals integrate blockchains into their daily operations to realize greater efficiencies. #DIG #FIN #USA #CHN Forbes

SATELLITES & NAVIGATION

→ **According to Elon Musk, SpaceX's large Starship rocket should soon be able to reach orbits at significantly lower costs.** Starship should be able to reach orbits for less than $10M

a flight within two to three years, Musk stated during a presentation Thursday, February 10 at SpaceX's southern Texas facility, where the company plans to launch the spacecraft. Starship is the biggest and most powerful rocket SpaceX has built to date. SpaceX plans to use Starship for its most ambitious missions, including a potential trip to Mars. The vehicle is meant to be fully and rapidly reusable and forms an important part of the company's business, according to analysts, as it could potentially deliver hundreds of satellites to orbit at once, including those that make up SpaceX's own growing fleet of broadband satellites. Last April, NASA awarded SpaceX a $2.9B contract to use Starship to deliver astronauts to the lunar surface from Gateway, an outpost that would orbit the moon, or from NASA's Orion spacecraft. #SAT #USA WSJ

→ **An Arianespace Soyuz rocket launched 34 new broadband satellites for the OneWeb constellation from French Guiana on Thursday, February 10.** According to Arianespace, the new broadband satellites for OneWeb are meant to target sectors including aviation, maritime, backhaul, governments, and emergency response services. OneWeb also published a set of practices they aim to follow concerning "responsible space" management, including components such as satellite design and orbital debris. Current or planned satellite constellations such as OneWeb's, including companies like SpaceX and Amazon, often come under criticism for their effects on generating space debris and interfering with astronomical observations. With the launch, OneWeb's constellation now has 428 satellites in space, and the company plans to complete the full 648-satellite constellation this year. The next group of OneWeb satellites is scheduled to launch on March 5 on another Soyuz rocket carrying 36 OneWeb satellites from the Baikonur Cosmodrome in Kazakhstan. #SAT #FRA #KAZ #RUS Space

→ **The Chinese government says it is open to formal lines of communication with the US on space safety issues after two alleged close approaches of Starlink satellite to its space station**. A foreign ministry spokesman said last week that China "stands ready to establish a long-term communication mechanism with the U.S. side" on space safety after reiterating that two Starlink satellites passed close to its space station last year. The spokesman said China complained to the U.N. after receiving no responses from U.S. officials. However, as we previously reported: in its own notice to the U.N., the U.S. said it never heard from China about the close approaches and that U.S. Space Command determined that the Starlink satellites did not pass close enough to the station to warrant a notification. #SAT #AER #CHN #UN #USA #Geopolitics SpaceNews

ARTIFICIAL INTELLIGENCE

→ **For the first time, Congress has signaled that the federal government is moving towards defining AI ethics as a core requirement of the US national strategy.** Congress is also asserting that traditional American values must be integrated into government and Department of Defense (DOD) AI use cases. Two of the most consequential pieces of AI legislation ever enacted into law are in the National Defense Authorization Act for Fiscal Year 2022 (NDAA), recently signed by President Joe Biden: the Artificial intelligence Capabilities and Transparency (AICT) Act, and the Artificial Intelligence for the Military (AIM) Act. The AICT defines AI ethics as "the quantitative analysis of artificial intelligence systems to address matters relating to the effects of such systems on individuals and society, such as matters of fairness or the potential for discrimination." Overall, the AICT and AIM Acts seek to accelerate the federal government and DOD's ability to compete with the geopolitical reality of China's and, to a lesser extent, Russia's attempts to use AI in ways that threaten the national security and economic interests of the US. #AI #USA #CHN Fortune

→ **IARPA - the IC's research arm - is preparing to develop new AI systems that can identify who, or what, authored any specific text – and on the flip side, advanced systems targeting features to protect authors' privacy.** The program is called Human Interpretable Attribution of Text using Underlying Structure (HIATUS). Next week, the Intelligence Advanced Research Projects Activity (IARPA) is expected to release a broad agency announcement to solicit research proposals for HIATUS. A large volume of multilingual raw text is produced every day by anonymous authors – both human and machine. Such materials generally contain linguistic components that can be used to pinpoint precisely who crafted the information or to safeguard authors' identities if attribution could put them in danger. Through HIATUS, officials seek to develop novel human-usable AI systems for attributing authorship and protecting author privacy through identification and leveraging of explainable linguistic fingerprints. #AI #USA Defense One

→ **The Department of Defense's Joint Artificial Intelligence Center (JAIC) launched new AI education pilots for DOD employees ranging from executive education for general officers to in-depth coding bootcamps.** The work stems from a congressional mandate for the JAIC to develop an AI workforce and education strategy in the fiscal 2020 National Defense Authorization Act. The JAIC is now implementing that strategy through educational pilots. In the strategy, the JAIC identified six archetypes of AI learner: Lead AI, Drive AI, Create AI, Employ AI, Facilitate AI, and Embed AI. Each type of DOD employee needs a different level of detail on AI, so the JAIC is leaning on different platforms to teach them. For general and flag officers at the highest ranks of the military, Lead AI is an in-person seminar on the basics of what AI can do and how it will impact the capabilities they oversee. On the other end of the spectrum is Create AI, a group of coders that will be developing machine learning models for the military who need specialized training in developing machine learning models. By 2023 the JAIC hopes

to have all these lesson plans transitioned to other organizations, like the Defense Acquisition University or the Air Force's Digital University. #AI #USA Fed Scoop

NEXT GENERATION COMMUNICATIONS

→ **The Federal Communications Commission and National Telecommunications and Information Administration announced Tuesday, February 15 a new initiative to "address gaps" in how they manage spectrum allocation.** The effort to improve coordination comes just weeks after a major dispute between the Federal Aviation Administration and the FCC resulted in airlines canceling flights due to concerns that wireless carriers' deployment of 5G using C-band would interfere with radio altimeters in planes used for low-visibility landings. As part of Tuesday's announcement, the heads of the FCC and the NTIA agreed to increase direct communication between the agencies and hold formal, regular meetings to conduct joint spectrum planning. They would also clearly define their roles for managing spectrum, collaborate on a spectrum allocation policy, and develop a process for analyzing spectrum interference and compatibility. #5G #USA CNet

FINANCIAL TECHNOLOGY

→ **Intel announced in a blog post the company's plans to enter the crypto mining/blockchain market with a roadmap of specialized energy-efficient accelerators.** Intel will begin delivering new chips, consisting of Bonanza Mine application-specific integrated circuits (ASIC) to several large customers as it enters the Bitcoin mining market that it expects to grow by $2.8B from 2021-2025. Intel's first customers include BLOCK, Argo Blockchain, and GRIID Infrastructure. The company's second-gen 'Bonanza Mine' ASIC, known as BMZ2, has a specialized architecture designed specifically to accelerate processing for Bitcoin mining at ultra-low voltage. Intel's Bonanza Mine chips could give it a solid foothold in the lucrative Bitcoin mining market where its new competitors, like Bitmain and MicroBT, have long dominated. Intel will also not limit the mining performance of its standard Arc Alchemist GPUs that will come to market soon, allowing it to compete with its old rivals AMD and Nvidia in other types of cryptocurrency mining. This provides Intel with a dual-pronged strategy of ASICs and GPUs for the rapidly-growing blockchain/crypto mining market that it hasn't participated in before. Plugging those products into Intel's global production and supply chains could help the company grow quickly and sidestep some of the production shortfalls observed with other mining hardware providers. #FIN #CHP #DIG #GRN #USA #TWN Tom's Hardware Reuters

→ **British tax authorities made their first seizure of non-fungible tokens in a crackdown on suspected criminal activity to hide money, they announced on Monday, February 14.** Her Majesty's Revenue & Customs seized three NFTs after investigating an attempt to defraud the public coffers of $1.9M. Around $6,700 worth of other crypto assets were also seized. The probe led to the arrest of three people for alleged value-added tax repayment fraud involving

250 fake companies. According to leadership at HMRC, the seizures of the NFTs, which had not yet been valued, served as a warning to anyone attempting to use crypto assets to hide money. HMRC emphasized that they are constantly looking to adapt to emerging technology to ensure they keep pace with criminals looking to conceal their assets. #FIN #GBR Reuters

AEROSPACE & SPACE

→ **Lockheed Martin ended its bid to buy Aerojet Rocketdyne Holdings after the Federal Trade Commission sued to block the $4.4B deal on the grounds it would hurt competition among defense contractors.** The unraveling merger complicates Lockheed's efforts to develop hypersonic weapons – a critical U.S. defense imperative – after the company had planned to bring Aerojet's propulsion systems in-house. It also raises questions for Aerojet, which now faces a proxy battle as its leaders spar over the defense supplier's future. According to the FTC, the proposed acquisition would've hurt competition by giving Lockheed the "ability and incentive" to limit rivals like Boeing and Raytheon from gaining access to Aerojet's engine technologies. #AER #USA Bloomberg

→ **Shift4 founder and Inspiration4 leader Jared Isaacman has unveiled a Polaris Program initiative that will include "up to" three crewed SpaceX flights and commercial spacewalks.** The first, Polaris Dawn, is planned for the fourth quarter of 2022 and should include the first commercial spacewalk. The effort will purportedly end with the first human-occupied Starship flight. The Polaris Dawn team will also aim for the highest-ever Earth orbit, conduct health research, and test laser-based Starlink communication. The program hinges on SpaceX and partners solving a number of problems. SpaceX is currently developing spacesuits necessary for the spacewalk, and Isaacman's group hasn't decided how many crew members will step outside. Moreover, while Starship has displayed some success in testing, the development of the next-gen rocket system has faced setbacks. The program represents a further normalization of private spaceflight. The Polaris Program promises to commercialize aspects of private spaceflight that are still reserved for government astronauts, such as spacewalks and the testing of new spacecraft. #AER #USA Engadget The Washington Post

→ **The National Oceanic and Atmospheric Administration (NOAA) plans to take over the military's role of tracking space traffic and providing warnings of potential crashes by 2025.** NOAA will issue requests for information (RFIs) asking the industry to identify capabilities that can help determine requirements for a new, improved space object tracking system called the Open Architecture Data Repository (OADR). Unlike DoD's semi-classified network, managed by SPACECOM's 18th Space Control Squadron, the OADR would be able to widely share precise data and information about close approaches on orbit. Following the determination of OADR requirements, the next step will be creating an acquisition strategy. The concept of the OADR since its inception in 2020 has been to bring in commercial data and info provided by foreign countries to provide better information than the military provides. #AER #SAT #USA Breaking Defense

BIOTECHNOLOGY

→ **Prior to meeting Russian President Putin about the Ukraine crisis, European leaders refused Russian-administered Covid-19 PCR tests.** French President Macron refused a Kremlin request to take a Russian COVID-19 test in order to prevent Russia from obtaining Macron's DNA, according to two sources in Macron's staff. Dmitry Peskov, a Kremlin spokesman, confirmed Macron's refusal of the test and said Russia had no problem with this, but it meant a 6-meter (20-foot) distance from Putin was required to protect the Kremlin leader's health. Furthermore, German Chancellor Scholz became the second European leader in a week to refuse a Covid-19 PCR test administered by Russia. #BIO #FRA #DEU #RUS Reuters Forbes

→ **Elon Musk's brain-computer interface company, Neuralink, has pushed back against animal abuse claims.** The company currently developing a brain implant intended to help treat a variety of neurological disorders faced backlash over claims that monkeys used in the project were mistreated. Neuralink denied the claims in a statement on Monday, February 14, insisting on its commitment to animal welfare. The company said “All novel medical devices and treatments must be tested in animals before they can be ethically trialed in humans,” adding that it has never received a citation from the USDA following inspections of its facilities and animal care program. This comes after it was revealed that the Physicians Committee for Responsible Medicine, an animal rights organization, filed a complaint with the USDA against the University of California for "invasive and deadly brain experiments conducted on 23 monkeys." Neuralink

relied on the university, which houses and cares for the monkeys used in the experiments, to carry out the brain research project. #BIO #USA Bloomberg

GREEN TECHNOLOGY

→ **The Army's climate plan, published Tuesday, February 8 aims to increase the service's preparedness for operating in harsh environments caused by climate change while reducing the service's own contribution to climate change.** Under the climate strategy, the Army aims to achieve a 50% reduction in its net greenhouse gas emissions by 2030 from its emissions in 2005, while ultimately achieving net-zero emissions by 2050. The strategy lays out three lines of effort, each with several underlying objectives. The first is installations, where the service wants to adapt infrastructure to improve resiliency and sustainability. Second, acquisition and logistics lines of effort will work to improve the service's carbon footprint by investing in electrification, using predictive logistics, procuring green technologies, and bolstering the climate resilience of its supply chain. The strategy's final line of effort centers on training soldiers to prepare them for harsher environments. The service plans to publish climate change lessons learned every two years starting in 2024 and will implement a climate-informed curriculum into courses. According to the strategy, the service's operational and strategic exercises and simulations will add climate change risks by 2028. #GRN #USA Breaking Defense

→ **China recently signed a deal to build a nuclear power plant in Argentina**; the deal represents China's latest effort to engage with Latin American countries using its advanced clean energy technology to expand its influence in the region. The $8B plant, known as Atucha III, will use China's home-grown Hualong One design. Located near Lima – about 62 miles northwest of the capital Buenos Aires – it will be Argentina's fourth nuclear power station and will have an installed capacity of 1.2 gigawatts and an initial life of 60 years. Meeting Argentina's President Alberto Fernandez on Sunday, February 13 Chinese President Xi Jinping said the two nations should push forward existing hydropower and railway projects and deepen cooperation on trade, industry, infrastructure and investment, according to state news agency Xinhua. According to experts, if Argentina is to achieve carbon neutrality by 2050 – 10 years ahead of China's target – it needs foreign investment and cutting-edge clean energy technology to make the transition. China is seen by many as a promising investor and partner. While it is the world's largest emitter of greenhouse gasses it has also become a world leader in renewable energy capacity – solar, wind, hydro – as well as nuclear power and electric vehicles. #GRN #CHN #ARG SCMP

ADVANCED MANUFACTURING

→ **SenseTime is moving beyond facial recognition systems by applying its technology to the car components manufacturing sector.** According to SenseTime, which went public in Hong Kong last December, the company has launched an AI-enabled automated engine defect detection system with SenseSpring – its proprietary industrial quality inspection training platform

– for use by Beijing Foton Cummins Engine Co (Foton Cummins), the world's leading independent engine manufacturer. That AI infrastructure enables Foton Cummins to detect surface and assembly defects in key engine components, which frees workers from tedious manual quality inspection work. The project with Foton Cummins is expected to boost SenseTime's credentials in the Fourth Industrial Revolution, also known as "Industry 4.0." This represents the automation of traditional manufacturing and upgrading of industrial practices with the use of modern smart technology to help firms achieve more efficiency and profitable growth. The project also enables SenseTime to stay competitive against other Chinese tech giants. Baidu, for example, launched its own AI product inspection services in 2017, gaining state-owned carmakers such as Shougang Group and FAW Group as clients. #MFG #AI #HKG #CHN SCMP

AUTONOMOUS SYSTEMS

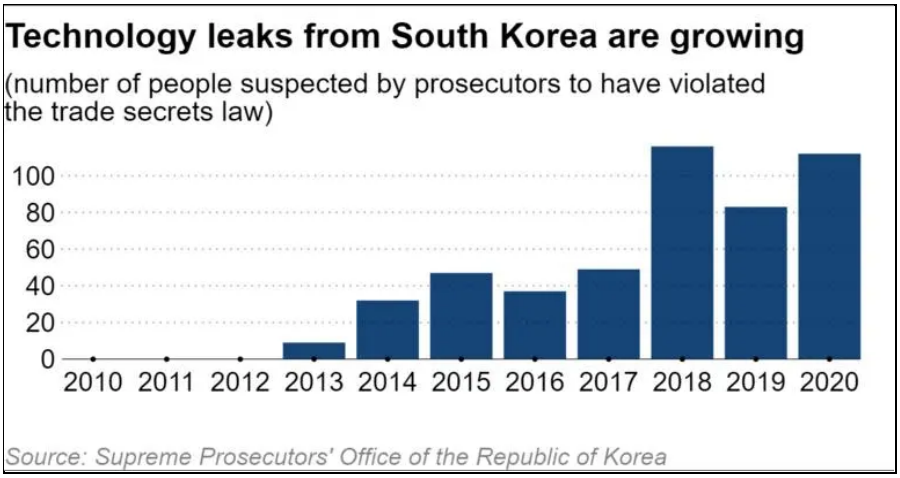
→ **As the military considers various ways to take down swarms of adversary drones, directed microwave energy has emerged as a promising option.** California-based company, Epirus announced a solution: a microwave-emitting pod that can sit on the bottom of heavy-lift drones and quickly down sudden drone swarms. Their Leonidas Pod is based on the company's land-based microwave weapons, which use gallium nitride transistors to generate microwaves rather than the clunky magnetron vacuum tubes used in radars for decades. Epirus CEO Leigh Madden stated "We can take sensor inputs from blue force trackers in the military, or IFF transponders on an aircraft, we can actually put a [protective sphere] around that friendly system and wherever that system goes, that [sphere] follows. That's driven by the software-defined ability of the system". The company is collaborating with the DARPA Warden program and the Army's Rapid Capabilities Office, among others, to complete the project. #AUT #USA Defense One

SEMICONDUCTORS & CHIPS

→ **Former chief of the British secret service MI6, Sir Alex Younger, stated that the British government must "strain every sinew" to keep Arm Holdings in the UK.** After a planned $66B sale to US semiconductor giant Nvidia fell through, Japan's SoftBank announced plans to list Arm Holdings in New York. The announcement has sparked outrage in the UK about the country's inability to retain domestic manufacturers. Concerns have also been raised about a concentration of power in the global semiconductor industry, which is central to the US, Asia, and Europe's technological arms race. Younger stated that Britain's "future security depends on our ability to sustain and grow a strong science and technology base," and the fact that so many UK tech companies avoided the London stock exchange in favor of New York was a "market failure". "There is a direct security and military aspect to this. But more important is the economic strength it generates," he added. Arm's new CEO, Rene Haas said the company has

not "made any decisions at all" about where it will list. Haas added that he hoped to finish the list by the end of 2022 — "if not sooner". #CHP #GBR #USA The Financial Times

→ **South Korea will create a database of chip engineers to track their movements in and out of the country in an effort to discourage poaching by Chinese firms.** The measure is part of a five-year plan put together by a number of government agencies, including the industry and justice ministries, the Korean Intellectual Property Office, and the National Intelligence Service, to strengthen intellectual property safeguards. The plan calls for the creation of a list of professionals with extensive knowledge in 12 "national core technologies" in which South Korea specializes, such as batteries, organic light-emitting diode displays, ships, and steel. The databases will not be limited to residents of South Korea. Foreign engineers working for South Korean companies or their foreign subsidiaries will be included. Seoul aims to clamp down on a growing problem for chip giants like Samsung that rely on their technological edge. South Korea has seen 397 instances of technology leaks over the past five years.



#CHP #Geopolitics #KOR #CHN Nikkei Asia

→ **Foxconn has partnered with Indian conglomerate Vedanta Ltd to manufacture semiconductors, as the electronics giant seeks to diversify its business amid a global chip shortage.** In recent years, Foxconn, the world's largest contract electronics manufacturer and a major supplier to Apple, has expanded into areas such as electric vehicles (EVs) and semiconductors. Foxconn said it would invest $118.7M to set up a joint venture company with Vedanta, which would be the majority shareholder of the new venture. Foxconn would hold 40% of the venture's shares, it added. In recent years, the Taiwanese company has counted semiconductors among its core businesses, and last year formed a partnership with Yageo Corp to make chips, in response to a global chip shortage. In recent years, the company has also announced plans to become a major player in the EV market, and has stated that it is in talks with "related foundries" to possibly make chips for EVs. #CHP #SCRM #TWN #IND Reuters

→ **As the US decouples, China's leading chipmaker, SMIC, warns of an increasing chip shortage.** Manufacturers in China are increasingly looking to source chips locally because they

are concerned that the US and other nations will prioritize domestic users of critical semiconductors for national security, according to a senior executive at SMIC. Following a global chip shortage that crippled the automotive and electronics industries, governments from Tokyo to Washington and Brussels are racing to strengthen domestic chip ecosystems, fearful of a heavy reliance on Taiwan and South Korea. The US has also sought to limit technology flows to China, which it regards as a geopolitical rival, particularly if it is used for military purposes. SMIC itself has been hit with US sanctions, which the company said has a major impact on its advanced technology development. However, the company just posted record revenue in 2021, despite sanctions, largely due to increased demand after the pandemic-driven chip shortage. #CHP #SCRM #Geopolitics #CHN #USA Bloomberg Reuters

→ **ASML, the world leader in lithography - a vital step in semiconductor production - is flagging possible IP infringement by a Chinese company**. The allegation comes as China is doubling down on developing its own capabilities in lithography. ASML said it has asked its customers not to encourage the alleged IP infringement by Dongfang Jingyuan Electron, a Beijing-based company. Established in 2014, Dongfang is one of the "little giants" named by the Chinese government, lesser known startups that are pursuing technological breakthroughs to help the country achieve its goal of self sufficiency in technology. In July 2021, Donfang sold a critical dimension scanning electron microscope to SMIC - China's largest chip foundry. ASML said that the Chinese business is associated with XTAL, which it previously sued for trade secrets theft in the US. In 2019 XTAL was ordered by a US court to pay ASML $845M as compensation for stolen trade secrets. ASML was unable to collect the money because XTAL filed for bankruptcy, granting the Dutch company ownership of most of XTAL's IP after it went out of business. ASML's most advanced lithography systems are banned from being sold to China's top chip makers under US trade sanctions. #CHP #NLD #CHN #USA #Geopolitics #SCRM SCMP

QUANTUM TECHNOLOGY

→ **Researchers have successfully proved the concept of superabsorption, paving the way for next-generation quantum batteries.** To prove the concept of superabsorption, the team – who published their findings in the journal Science Advances – built several wafer-like microcavities of different sizes which contained different numbers of organic molecules. Each was charged using a laser. The idea of the quantum battery has the potential to significantly impact energy capture and storage in renewable energy and in miniature electronic devices. People's energy consumption is expected to have increased by 28% from 2015 levels by 2040. The majority of energy will continue to be derived from fossil fuels, at a great environmental cost. A battery that can harvest and store light energy at the same time would provide significant cost savings while reducing the unpredictability of energy from solar technologies. The next step is to develop a fully functioning quantum battery prototype. #QNT #GRN #AUS SciTechDaily

→ **Physicists use quantum computing and machine learning to find out what's inside a black hole.** University of Michigan physicists are using advanced technology to better understand holographic duality. Holographic duality is a mathematical conjecture that connects particle theories and their interactions with gravity theory. This hypothesis implies that the theories of gravity and particles are mathematically equivalent. In a published study, the team examined how to probe holographic duality using quantum computing and deep learning to find the lowest energy state of mathematical problems called quantum matrix models. These physicists used two matrix models simple enough to be solved using traditional methods, but which have all of the features of more complicated matrix models used to describe black holes through the holographic duality. #QNT #AI #USA #JPN #GBR Phys.org

GEOPOLITICS

→ **The US is stepping up its efforts to persuade Equatorial Guinea to reject China's proposal to build a military base on the country's Atlantic coast.** A senior US diplomatic and military delegation will visit Equatorial Guinea to discuss American counter-piracy assistance and other inducements aimed at persuading President Teodoro Obiang Nguema Mbasogo to reject Beijing's advances. The visit comes with growing concern over China's global expansionism and pursuit of a permanent military presence on waters considered home turf by the US. Chinese state-owned companies are constructing ports and other infrastructure throughout Africa, from highways in Kenya to hospitals in Equatorial Guinea. According to Chinese experts, a military base in Bata would fit China's model of integrating commercial and political ends because it would provide China's military with a place to refit and rearm warships in the Atlantic. Moreover, it would provide Chinese companies with access to the interior of Central Africa via Equatorial Guinea's highways. #Geopolitics #USA #CHN #GNQ WSJ

→ **According to a new report, India has banned 54 Chinese apps in a new order citing security concerns.** The Ministry of Electronics and Information Technology has banned apps – including those belonging to major Chinese technology companies such as Tencent Holdings, Alibaba Group Holding and NetEase – that are rebranded versions of apps that the Indian government already banned in 2020. The latest move comes as a long-running dispute between the two nations remains unresolved, after a 2020 skirmish that resulted in casualties on both sides, and drew tougher laws in India for investments from China, including the original app ban. #Geopolitics #DIG #IND #CHN SCMP

→ **Last week, the US Commerce Department added 33 Chinese entities, mostly high-tech manufacturers, to its unverified list (UVL), citing an inability to verify their ownership.** The entities include those that produce laser components and pharmaceuticals, government research labs and two universities. The move tightened the chokehold on China's technological supply chain by focusing on its most vulnerable points. The new names on the UVL include Shanghai Micro Electronics Equipment, Wuxi Biologics, Beijing Shiweitong Science & Technology (SWT), Guangzhou Hymson Laser Technology, and more. These entities are part of a group of industrial and technology firms that Beijing is counting on to help China to compete

with the US technologically. Investors in listed companies linked to some of the named entities rushed to sell their holdings, analysts say. One of the companies, Wuxi Biologics, a Hong Kong-listed company, fell more than 34% in a day following the news. #Geopolitics #SCRM #AUT #BIO #CHP #USA #CHN SCMP

CYBERSECURITY

→ **On Tuesday, February 15, a distributed denial-of-service (DDoS) incident knocked out Ukraine's critical infrastructure systems, including the defense ministry and two state-owned banks.** Ukraine's information security center pointed the finger at its neighbor Russia amid ongoing geopolitical tensions between the two nations. In a Facebook post, the country's defense ministry stated that its web portal was likely subjected to a DDoS "attack", in which hackers flooded the website with traffic in order to overload its systems and take it offline. The DDoS incident also disrupted the web services of Ukraine's Armed Forces, as well as PrivatBank and Oschadbank, the country's two largest lenders, according to Ukraine's State Service of Special Communication and Information Protection. Officials have not yet attributed this incident to any actor. #Cybersecurity #Geopolitics #UKR Reuters WSJ

→ **Securonix received more than $1B in growth investment from Vista Equity Partners, making it the year's largest raise in cybersecurity so far.** According to Crunchbase data, this is also the second-largest round by a US-based, VC-backed company in 2022, trailing Cruise's $1.35B raise earlier this month. Securonix offers security information and event management (SIEM) and extended detection and response (XDR) capabilities to companies. XDR platforms, which are highly scalable, provide businesses with greater visibility into network and application communication. By analyzing data from activity logs, XDR solutions can read and group related alerts and create timelines for attacks. With many people working remotely, the attack surface has expanded, which has increased availability to cybercriminals. Those threat detection and response capabilities across endpoints and the network have become even more important in securing systems. #Cybersecurity #USA Crunchbase

→ **Crowdstrike released its 2022 Global Threat Report. Key findings include**:

- There was an 82% increase in ransomware-related data leaks in 2021.
- Since late 2020 multiple Iran-nexus adversaries have adopted "lock and leak" attacks to disrupt their targets.
- China-nexus actors deployed exploits for new vulnerabilities at a significantly elevated rate in 2021 - a sixfold increase since 2020, associated with 10 different actors.
- The most high profile vulnerability of 2021 was Log4Shell, which exploited Apache's Log4j2.
- Cloud-based services now form crucial elements of many business processes, however these same services are increasingly abused by malicious actors.

#Cybersecurity #USA #CHN #IRN #Geopolitics #SCRM Crowdstrike

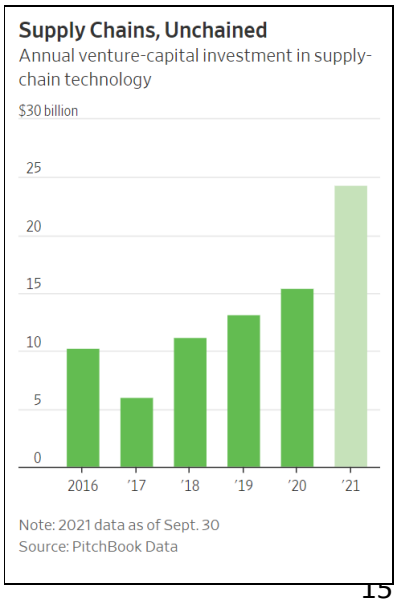
SUPPLY CHAINS

→ **Amid long-term supply chain disruptions, venture-backed supply chain management firms received record-high funding of $11.3B in 2021.** The record-high investments nearly doubled from 2020 and surpassed the previous all-time high in 2019, when $9.1B was invested in startups aimed at keeping the supply chain moving. Nine venture-backed supply chain management companies raised rounds of a quarter-billion dollars or more last year, compared to only five in 2020. Investors have already invested nearly $1.9B in the space this year, including a number of large transactions:

- Chicago-based Project44, a supply chain visibility platform, raised a $420M funding round at a pre-money valuation of $2.2B;
- Ottawa-based Assent Compliance, a provider of cloud-based solutions for product compliance and vendor management, closed a $350M Series D in January;
- France-based Exotec, a robotics order preparation platform, raised a Series D worth approximately $333M, also last month; and
- Chicago-based Loadsmart, a logistics platform that helps carriers optimize loads, closed a $200M Series D earlier this month.

An industry that previously relied on historical data-driven optimization tools is no longer able to do so, creating a demand for SaaS solutions in a slow-changing industry, making it easier for supply chain startups to exhibit product-market fit. #SCRM #USA #CAN #FRA Crunchbase

→ **Entrepreneurs are addressing the most fundamental issues plaguing all supply chains by developing advanced software and creating autonomous robotic warehouse systems.** Startups are working on AI software to develop more agile warehouse management and inventory tracking systems. Additionally, others are working on new ways to automate parts of the labor-intensive supply chain. Investment in tech-focused supply-chain companies has exploded over the past year, totaling $24.3B in the first nine months of last year, almost 60% higher than the total for all of 2020. Accelerate360, a company that places magazines and other products in the checkout aisles of more than 90% of US grocery stores, employs Attabotics' highly automated robotic fulfillment systems. The 3D robotic warehouse system contains robots that move on tracks up and down as well as side to side, grabbing bins of goods stored anywhere within a large cube. 3D robotic warehouse systems, like the one from Attabotics, can store the same amount of goods in a fraction of the floor space. Experts say building many more of those small warehouses closer to consumers is exactly



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what companies need to do to compete with Amazon. #SCRM #AI #AUT #USA #CAN WSJ

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