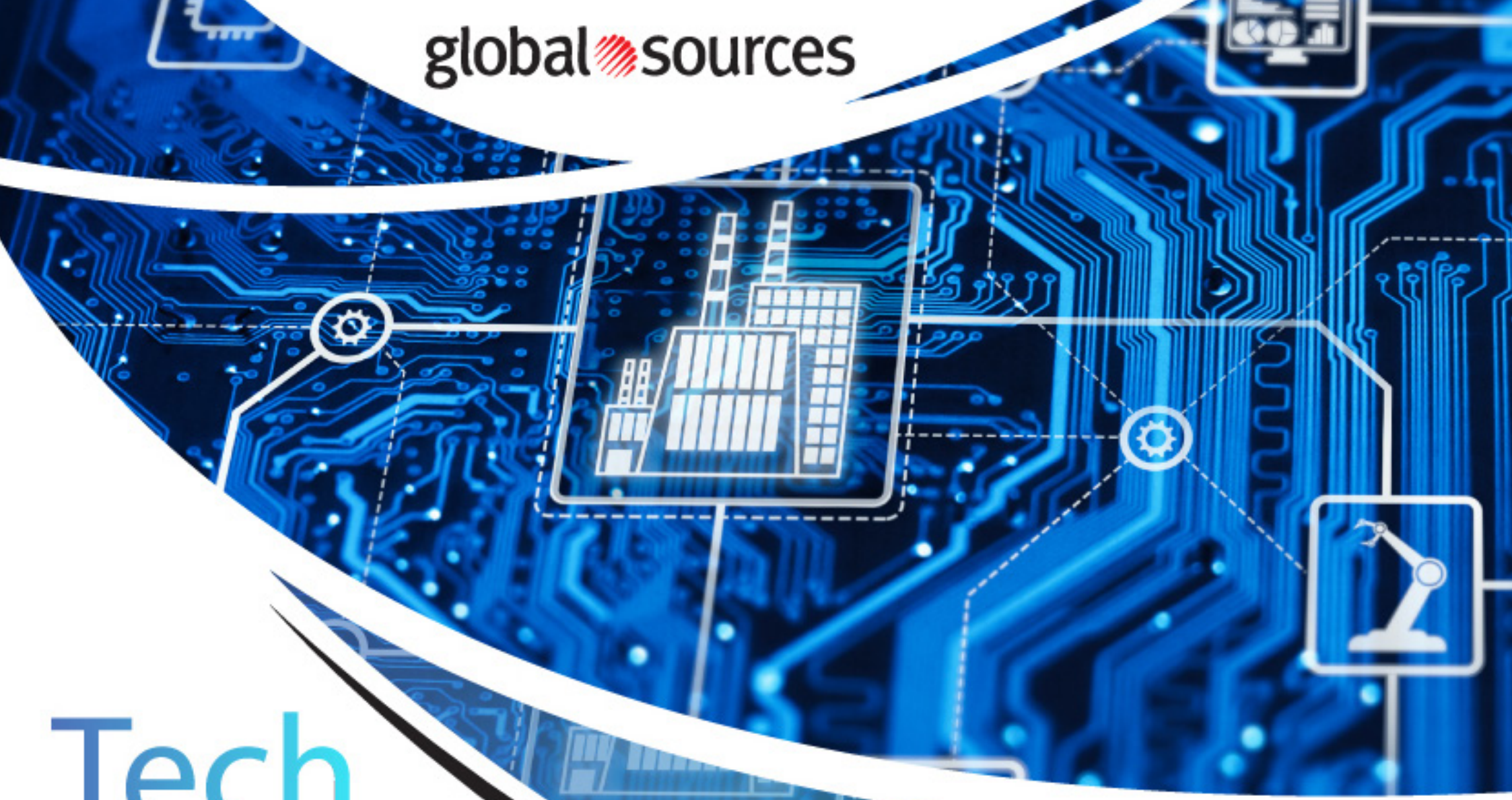
global sources



Tech Trends 2022

Introduction

Tech Trends 2022 aims to help smart buyers navigate the changing landscape of logistics and market demand in 2022. Our team of analysts tackle the key technological developments in supply chain, electric vehicles, energy solutions, fashion and computing.

By keeping buyers up to date with what's up and coming in the technology sphere, Global Sources aims to provide valuable information that will help make the best sourcing decisions this year.

CONTENTS

Supply Chain Tech Trends

2022 will see accelerated investment in supply chain tech as businesses worldwide aim to enhance their ability to plan and manage throughout the chain. More advanced digital enablers such as cognitive planning, AI-based predictive analytics, and advanced track-and-trace methods will be key elements.

That's the outlook according to KPMG, whose report *Six key trends impacting global supply chains in 2022* stated that "many supply chain managers are currently troubled by a lack of visibility throughout their extended supply chains, as there are so many nodes and participants within the extended chain. Leading organizations are using advanced technologies to significantly improve visibility and thereby become far more responsive to major disruption and variability within their domestic, regional and global supply chains."

KPMG outlines several key considerations for companies tackling today's logistical challenges, first among which is sufficient operational flexibility to adjust in real time to changes in trade flows and regulations, the continuing effects of the COVID-19 pandemic, and broader geopolitical issues. The consultancy also notes the importance of deriving actionable data from digital operations, supplier partnerships, and ongoing risk monitoring.

Used effectively, technology can help reduce operating costs, provide improved visibility throughout the supply chain and diversify business responses to customer demands.

KPMG recommends that companies focus on building a network of trusted customers, supply-chain partners and suppliers to manage disruptions and support business continuity: "Cultivating a resilient supply chain means that the organization can be better at anticipating, reacting and planning against the unexpected by enabling cross-functional integration and collaboration with its ecosystem of vendors." Industry 4.0 is expected to break new ground in 2022, though as yet remaining outside the mainstream, with machine

learning using IoT and social media data to automate decisions and processes.

Writing in Forbes, SAP analyst Richard Howells states that predictive analytics will empower employees to make more informed, real-time decisions, and drive new business models.

"From smart factories featuring 5G, greater connectivity and enhanced AI solutions, to smart products and assets across the supply chain, Industry 4.0 has a lot to offer companies who have invested in these technologies," Howells writes. "The coming year will bring greater focus on companies using Industry 4.0 within their factories, across the supply chain of smart assets, and into the hands of consumers and customers leveraging the smart products and devices it enables."

Howells expects supply-chain tech to help alleviate worker shortages and improve retention by improving the productivity and decision-making of existing employees, freeing them up from repetitive tasks and allowing them to focus on more complex problems and key decisions.
"There is a movement to unify supply-chain tech from eCommerce to post-purchase experience, and from first mile to last mile," writes Deborah Laloum, a market strategist at logistics solutions provider Bringg. "In order to keep up, processes require automation, systems and data need to be integrated, workers need to have new resources, and managers need to have better supply chain visibility. It is important that whatever SCM technology businesses use will integrate with the business' existing supply chain systems, from the TMS and WMS all the way down to inventory management and CRM systems. A robust, two-way data synchronization ensures that every supply chain and business platform, as well as all team members, are aligned at all times."

Takeaways for buyers

- You can and should demand more visibility throughout supply chain – if your current supplier can't or won't comply, their competitors will.
- When researchinzg supply-chain platforms and solutions, focus on the needs of each key decision-maker in the company.
- Partnership is a two-way street. Talk to your suppliers not only about the data they can provide for you, but what information you can share with them to improve visibility and risk management through the supply-chain for both parties.

New Energy Solutions

In pursuit of clean & renewable energy

As the world tackles climate change, we'll see continued advances in batteries, as well as innovations in nuclear power and green hydrogen.

Demand for energy will continue to grow with population and economic activity, and in a fossil-fuel based power generation system, this will lead to even greater planet-warming carbon emission. In 2021, emitted carbon dioxide rose again after falling by 5.4 percent in 2020 due to the slowdown in business operations and transportation as a result of the pandemic. In the US alone, the estimated increase was 6 percent, based on data from the US Energy Information Administration and is projected to go up further by 2 percent in 2022.

To curb this upward trend from hitting record-high levels again as it did in 2019, worldwide efforts for decarbonization are underway.

On the power production and generation side, they are not limited to restarting solar and wind farm projects delayed by the pandemic and building greater renewable energy capacity through the addition of more such installations. Also being tapped is nuclear energy. Albeit controversial and not falling under the renewable category, nuclear has zero direct carbon emission. In fact, it is the world's second-largest source of low-carbon power, according to the International Energy Agency.

Carbon-neutralizing technologies are another. "Carbon capture is a suite of technologies used to decarbonize emissions-producing sources of energy as well as industrial processes like steel production, where electrification has its limits," according to international think tank Global CCS Institute. "This, in turn, can lower the life-cycle carbon footprint of solar and wind power."

Harvesting energy from these sources needs equally clean technologies for storage to be viable. Batteries based on lithium chemistries are the most widely adopted solutions for small electronic devices and electric vehicles alike. They replaced NiCd types, which although robust and work well in extreme conditions are toxic and carcinogenic due to the cadmium content. "But just because Li-ion batteries are commonly used in consumer electronics and EVs, that doesn't necessarily mean they're the best option for storing electricity in a renewable energy-dependent grid," according to Bianca Nogrady in an article featured on Ensia, a solutions-focused media outlet run by the Institute on the Environment at the University of Minnesota.

Batteries

Storing energy for conversion to usable power later must be aligned with the sustainability trend. Research and development initiatives have been going on for years, with a collective goal of producing batteries that can provide power in an instant and for longer periods. They are driven by judicious use of resources, covering technologies in mining, extracting and disposal.

Breakthroughs in this front are many and awaiting investments to make them a commercial reality. They include better alternatives to current materials and chemical compositions with battery performance-enhancing benefits yet having minimal impact on the environment.

In terms of anode materials, there are substitutes such as graphene to lithium and silicon to graphite, according to the compilation of discoveries on UK gadget website Pocket-lint by its editorial director Chris Hall. An example is Samsung's "graphene balls," which can increase Li-ion battery capacity by 45 percent and reduce recharging from one hour to 12 minutes. Electric car battery manufacturer Grabat, meanwhile, came up with a version that can go the distance of up to about 800km or 500 miles on a single charge.

Research into silicon, said to have 10 times the capacity of graphite, has yielded other methods of producing it. From the University of Eastern Finland, this entails the use of a hybrid anode made from mesoporous silicon microparticles and carbon nanotubes and then producing silicon from barley husk ash. The combination boosts battery performance. In the University of California Riverside, sand is tapped to make pure silicon, a technique adopted by battery tech

startup Silanano, which is working with Daimler and BMW. Such batteries are expected to deliver 20 percent better performance, which can still go up further to 40 percent. They can be manufactured using existing facilities for Li-ion kinds as well.

There are also developments in making Li-ion batteries without cobalt, a common cathode material. "Cobalt is the least abundant and most expensive component in battery cathodes," said Arumugam Manthiram, a professor at the Walker Department of Mechanical Engineering and director of the Texas Materials Institute. His team swapped cobalt with 89 percent nickel while addressing issues associated with this change. SVOLT, a spin-off company from China's Great Wall Motors, also came up with cobalt-free EV batteries that can handle up to 800km or 500 miles and is said to be working with a large European manufacturer, according to Hall.

IBM Research has taken this a step further by dropping not only cobalt but nickel as well and using a new chemistry based on materials extracted from seawater. The company, which is working with Mercedes-Benz and other carmakers, said that this battery's manufacturing cost is low but performance exceeds Li-ion counterparts in terms of power, energy density and charging time.

Other breakthroughs include Monash University's Li-S batteries that can power smartphones for five days, the University of California's gold nanowires in a gel electrolyte that will not degrade from recharging even at more than 200,000 times, Toyota's solid-state batteries with sulfide superionic conductors, Power Japan Plus' Ryden dual carbon battery with 20 times faster charge, lithium-free sodium-ion batteries from Japan, and Harvard University's and Stanford University's liquid flow batteries for wind and solar power systems.

There are many others being developed further for commercial viability. What this means is battery technologies are finally catching up and will enable greater strides toward greening of the power industry.

Nuclear power

There are clear advantages and disadvantages to using nuclear energy, so how do those stack up against the global target of reducing carbon emissions that continue to heat up the planet? Recent incidents in Europe's largest nuclear plant in Ukraine have brought to the fore the possibility of catastrophe as happened in the Three Mile Island, Chernobyl and Fukushima disasters.

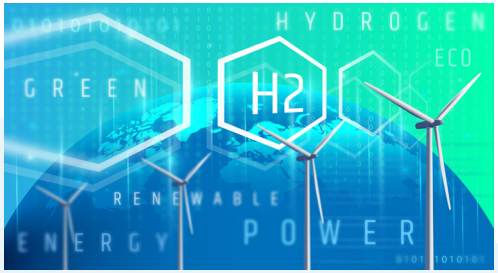
Going by statistics, nuclear power supplies 10 percent of the world's electricity, generated from about 440 power reactors, and is the second largest source of low-carbon power, with a 28 percent share in 2019, according to the World Nuclear Association. Nearly 20 percent of electricity in the US comes from nuclear power. The country is also the largest producer in the world, with a share of more than 30 percent.

"The potential of nuclear energy as a part of a broad, low carbon-generation portfolio is becoming clearer to those governments that want to take action on climate change," said Jonathan Cobb, the organization's senior communication manager.

Bill Gates, a proponent and an investor in this technology, said in an interview quoted by CNBC, "Nuclear has actually been safer than any other source of [power] generation. You know, coal plants, coal particulate, natural gas pipelines blowing up. The deaths per unit of power on these other approaches are — are far higher." He cited the dire need for clean energy and the new innovations for safety and affordability. The CNBC report also said that nuclear energy innovation was also part of President Joe Biden's campaign pledge for climate change.

The nonprofit group Nuclear Information and Resource Service, on the other hand, listed contentious issues such as "radioactive waste and pollution, nuclear safety, environmental justice and the costs of nuclear energy," a view shared by opponents of this power source. It is proposing instead a shift to a 100 percent renewable energy system.

Green hydrogen



Hydrogen is an abundant resource, a gas found everywhere in molecules such as water and air, and biomass.

It can also be extracted from fossil fuels, including natural gas, coal and oil, and this is the current practice. Such hydrogen is called brown if from coal or lignite, or gray if harvested through steam methane reformation, and both processes are "not exactly carbon-friendly," according to Greentech Media.

To make it green, one method is to produce it through electrolysis using renewables, including biomass, and water. There is also carbon capture and sequestration (CCS) technology to make it a zero-carbon energy source.

Interest in this resource is rising. "We cannot electrify everything," said Giles Dickson, CEO of WindEurope. "Some industrial processes and heavy transport will have to run on gas. And renewable hydrogen is the best gas. It is completely clean. It will be affordable with renewables being so cheap now."

Conclusion

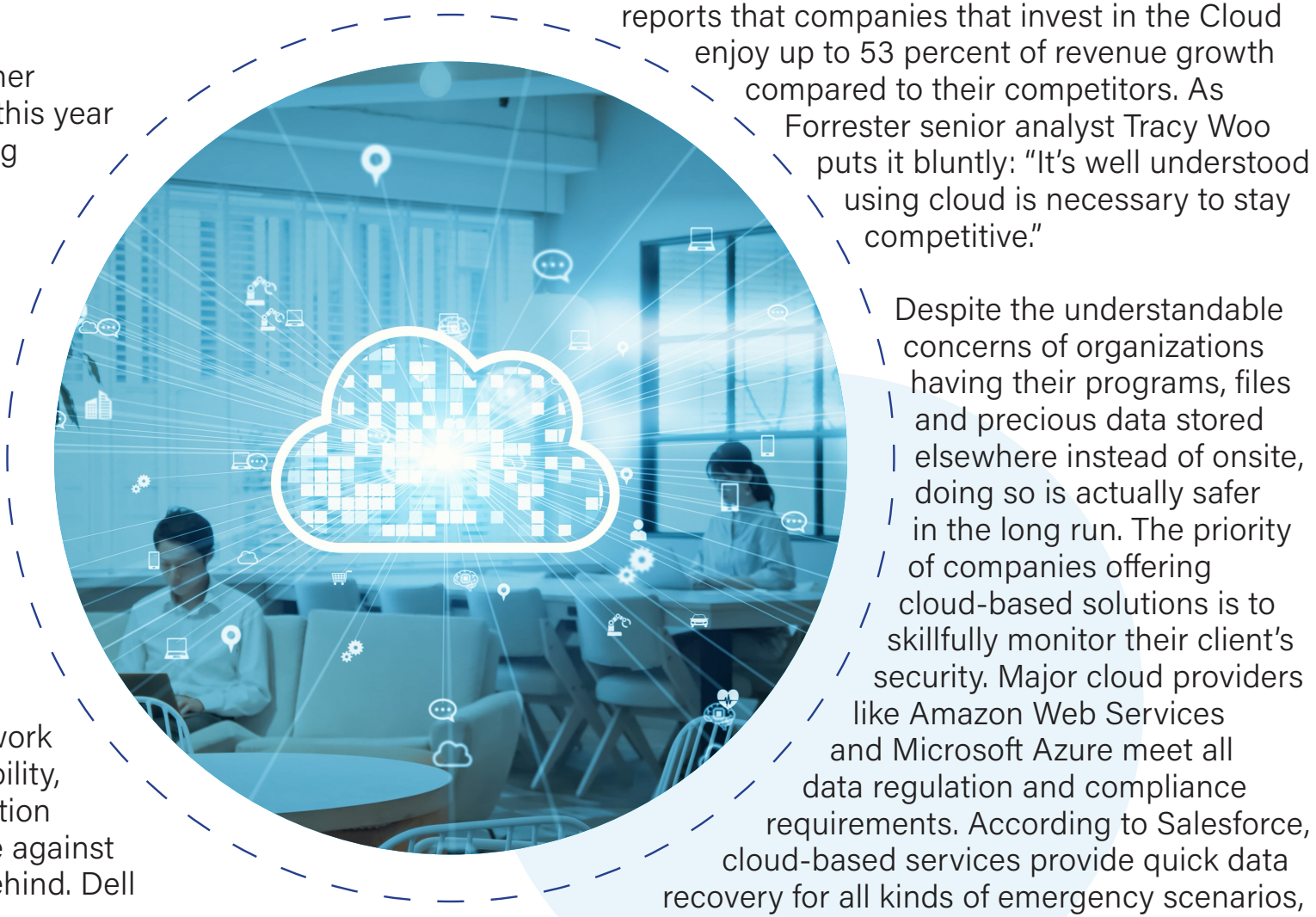
The search for clean energy and renewable energy, however disparate the paths may be, will eventually converge on a green future. Choosing and using both now based on available technologies and safeguards, with innovations pursued further down the line, is already choosing a way forward to achieving carbon neutrality and addressing climate change.

Key computing power trends to watch

Why enterprises are moving to the cloud, plus the advancements of 5G and the future of 6G.

Cloud Technology

Cloud computing is set to further expand at an exponential rate this year and beyond, due to the growing popularity of remote work influenced by the COVID-19 pandemic, rise of the gig economy, and the urgent need of enterprises to scale their Big Data. The market is expected to grow from US$371.4 billion in 2020 to US$832.1 billion by 2025, at a CAGR of 17.5 percent. Small- to large-scale businesses are integrating their programs and storing valuable data through cloud services. Organizations gain benefits on security, boosted work and space efficiency, sustainability, cost-reduction in IT, file protection and having a competitive edge against companies who are lagging behind. Dell reports that companies that invest in the Cloud enjoy up to 53 percent of revenue growth compared to their competitors. As Forrester senior analyst Tracy Woo puts it bluntly: "It's well understood using cloud is necessary to stay competitive."



Despite the understandable concerns of organizations having their programs, files and precious data stored elsewhere instead of onsite, doing so is actually safer in the long run. The priority of companies offering cloud-based solutions is to skillfully monitor their client's security. Major cloud providers like Amazon Web Services and Microsoft Azure meet all data regulation and compliance requirements. According to Salesforce, cloud-based services provide quick data recovery for all kinds of emergency scenarios,

from natural disasters to power outages. Entrusting the security to the cloud vendor is more efficient compared to simply delegating the task to the IT department, which already deals with various IT concerns within the company. Unfortunately, it is also not uncommon for data thefts to be committed by employees themselves. 94 percent of businesses saw an improvement in their security after switching to the cloud, per RapidScale.

Cloud computing helps with cost reduction since companies won't have to purchase equipment and in-house servers, which take up valuable office space and are prone to theft, fire or water damage. Work efficiency is also improved since collaborations can be done anywhere and anytime, without the limit of location. Co-authoring documents and file sharing is made easy and done in real time, with the aid of cloud-based productivity tools like Google Workspace and Microsoft Teams.

5G and 6G

5G technology in smartphones will become mainstream in 2022 as network coverage is expanded globally. Forbes notes that as of July 2021, 80 percent of Americans already had access to 5G coverage. Globally, 170 commercial 5G networks were launched in 2021. Demand will continue to rise as operators launch their own stand-alone 5G networks, which include 5G mmWave launches in Europe. Verizon claims that its Ultra-Wideband service will be ten times faster than 4G and will provide better security and lower latency for seamless 5G cloud gaming.

Beyond the smartphone realm, 5G is starting to be applied in the automotive industry. 5G cars, enabled by Snapdragon, will soon be out in the market. These are said to support AI driving and Augmented Reality, plus integrate large screens, premium audio systems and smart mirrors. Moreover, autonomous vehicles will become more popular. Delivery vehicles and trucks are already being tested in Houston, Texas to deliver food packages without the need for drivers – just 5G connectivity.

As 5G continues to advance, there is also a growing momentum of cellular-enabled laptops. So far, HP, Lenovo and Dell already have their own offerings – the HP Elite Dragonfly G2, Lenovo ThinkPad X1 Titanium Yoga and Dell Latitude 9510 2-in-1, respectively. Meanwhile in the healthcare field, 5G will be used in teleconsultations, remote surgery, the transfer of large medical files, and real-time patient monitoring and treatment with the aid of smart wearables.

Tech giants like Qualcomm, Apple, Google, and LG are already working on 6G. The goal is for it to be released by 2030. YouTube tech content creator Arun Maini notes that 6G will be 50 times faster than the fastest possible 5G connection, with a tenth of the latency. To put it in perspective, it would only take one second to download 100 hours of Netflix, with the ability to support 10 times the number of devices and being 100 times more reliable.

With 5G already incredibly fast, why the need for 6G? This is where connectivity moves beyond smartphones to various other industries like self-driving cars. A short delay in connection would prove highly risky here since these vehicles need to react in a split-second. Through 6G, self-driving cars will be made safer through this network's reliability in a snap.

To grow their businesses, entrepreneur sourcing professionals should take heed of various organizations slowly moving to the cloud. The efficiency, security and cost-effectiveness that cloud computing provides makes it a worthwhile investment.

In the realm of 5G, it would be wise to keep an eye on 5G phones and related accessories, both in the flagship and mid-range tiers. In the not-so-distant future, 5G laptops and 5G-enabled wearables in the medical field could prove worthy additions to their ever-growing list of must-source tech devices.

What´s super charging the electric vehicle market?

The market for electric vehicles is poised to reach $1,318.22 billion in 2028 according to Fortune Business Insights.

Electric vehicles (EVs) are on their way to global market domination and becoming the "new normal" mode of transportation. With oil prices rising sharply to more than 15 percent in January 2022 alone – reaching nearly $100 a barrel and surpassing the $90 per barrel global benchmark price – and the growing concern about the adverse environmental and health impacts of greenhouse gas emissions and other air pollutants, electric vehicles provide a viable, cost-effective and sustainable alternative to vehicles that depend on fossil fuels.

Electrification trend

The trend towards EV adoption is expanding at a tremendous speed as more well-known automotive companies join the global race to a net-zero carbon economy and micromobility is revolutionizing the daily commute. Fortune Business Insights has stated that the global electric vehicle market is anticipated to reach $1,318.22 billion in 2028 at a CAGR of 24.3 percent from 2021 to 2028. Meanwhile, VynZ Research's report showed that the global light electric vehicle market is poised to reach a CAGR of 10.4 percent from 2021 to 2027, owing to rapid industrialization, stringent emission norms and growing government support for EV adoption.

Net-zero carbon economy

The climate crisis has been an ongoing global problem for many years, giving birth to the "Net Zero by 2050" roadmap for cutting greenhouse gas emissions to as close to zero as possible. Data from the United Nations shows that more than

70 countries, including China, the US and Europe, have set a net-zero target, while thousands of companies, cities and educational institutions around the globe have also pledged to halve global emissions by 2030.

Considered the world's largest EV market, with 5.4 million units in use in 2020 alone, China has invested heavily in the development of battery manufacturing technology, as reported by KPMG. The country aims to allocate up to 20 percent of new car sales to "new energy" vehicles by 2025.

By 2030, the European Commission is targeting to have at least 30 million EVs on the roads. Plans to incentivize the use of electricity as a fuel are also in the works. In fact, part of the EU's €750-billion stimulus package is dedicated to boosting the sales of clean vehicles and the installation of electric and hydrogen vehicle charging stations.

In the US, a recent executive order signed by President Joe Biden has directed the federal government to buy only zero-emission light-duty vehicles by 2027 and that by 2035, all government vehicles must be zero-emission.

Tesla's continued domination

Leading American vehicle manufacturer Tesla is accelerating the transition to sustainable energy with its EVs' continued dominance in the US market. Tesla models remain the most popular EVs in the world with a whopping one million units sold worldwide in 2021 and crossing the average 100,000 registrations a month with 170,000 registrations in the last quarter of 2021.

Other market players like BMW, BYD, Ford, GM, Toyota, Nissan, Toyota, Mercedes-Benz Group and Group Renault are seeking to catch up with Tesla and have also started manufacturing EVs and partnering with overseas brands for localization.

Wider range of EV models

As demand for EVs skyrockets, demand for product variety is also rising. Electric pick-up trucks, SUVs, crossovers and off-road vehicles will see an increase in production soon. Ford, for instance, is set to introduce its F-150 Lightning truck which will have 10,000lbs of towing capacity. Mazda is also set to launch its first plug-in hybrid SUV, the MX-30, in 2022. Meanwhile, Tesla's highly anticipated Cybertruck, which boasts a range of 500 miles, is also projected to be released in late 2022 or 2023.

Improved EV charging

Charging remains a challenge for many EV users, but this is about to change as more manufacturers are not just developing ultrafast chargers but are also looking into the use of cloud-connected charging and vehicle-to-grid (V2G) technologies. Smart charging enables owners to monitor and manage the use of their devices remotely to optimize energy consumption. V2G, on the other hand, lets EVs save unused power and discharge electricity generated from renewable sources such as solar and wind – a feature that is especially useful when there is a power outage.

There is also a growing trend towards building EV-ready homes and public places. For example, the EU's Energy Performance of the Buildings Directive (EPBD) set out orders for new buildings and buildings undergoing major renovations to install charging stations or duct infrastructure in parking areas.

Post-COVID-19 recovery & opportunities for the B2B sector

The future looks favorable for the global EV market as governments start easing movement restrictions and economies return to full strength. EV manufacturers are ramping up their R&D efforts – increasing driving ranges and battery capacities, and adopting an eco-friendlier approach to production, ma king EVs more attractive to the public. The increasing demand for EVs in the fleet management and public transportation sectors is providing business opportunities not just to EV makers but to battery manufacturers as well. As the transition to EVs gains momentum and becomes a global trend, this will present more opportunities not just for investors but to supply chains.

Internet of Things in Fashion

Make way for the next generation of wearables

Who would have imagined that from wearable electronics and smart homes, the Internet of Things (IoT) would also invade the fashion industry? Today, we see IoT integrated into fashion to develop clothing that measures heart rate, babywear that can analyze an infant's sleep patterns or vital signs, and outfits that can protect the skin from environmental pollutants and contamination.

In 2022, expect more clothing and fabrics geared towards providing health benefits to users to dominate and allow wearers to send information about their emotional or physical wellbeing to doctors.

Smart clothing

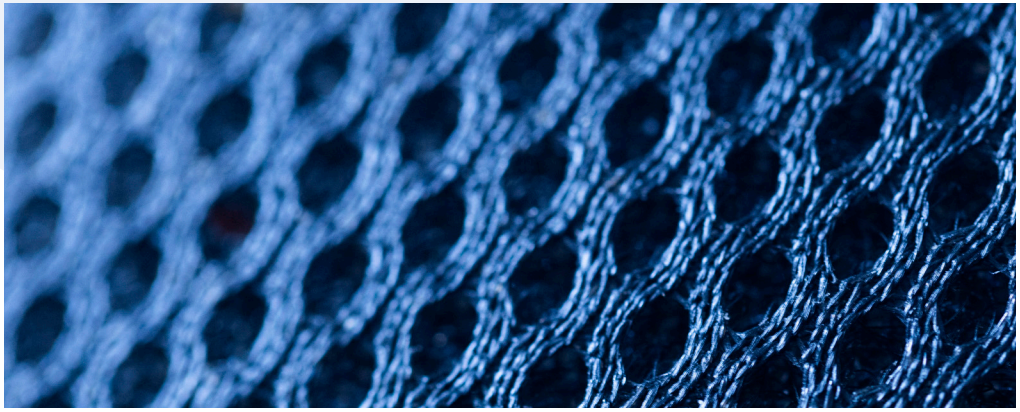
Smart clothes are helpful in analyzing and measuring a user's health while wearing them. These are highly useful in high-risk occupations like firefighters, police and military as the heart rate and other vital functions of individuals can be detected while they are in high stress and dangerous situations – aiding them in seeking medical advice. Some models include an ECG, as well as sensors to detect heart rate.

In the sportswear department, smart clothing not only monitors the athlete's heart rate and other vital signs but also tracks workout performance. The apparel can be equipped

with a GPS to accurately track runs and give athletes tips on how to improve their performance.

Heated garments are another innovation in IoT integration in fashion, with a few smart heated jackets released in the past. This apparel category has a lot of potential as a stable, commercially available product but is still yet to be fully developed.

Sudden infant death syndrome is a new parent's nightmare. That's where babywear made with IoT fabric comes in. This outfit tracks an infant's breathing and alerts parents of abnormal or interrupted breathing via an app. New York-based startup Nanit has developed such a wearable.



Smart fabrics

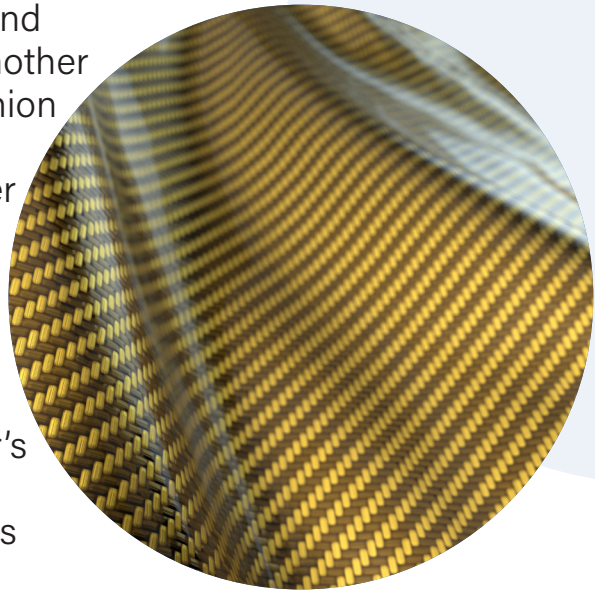
According to a report from Markets and Markets, the smart textiles market is expected to grow from $2.3 billion in 2021 to $6.6 billion by 2026, at a CAGR of 23.2 percent during the forecast period. This significant growth is primarily due to technology advancements such as IoT and AI, as well as expanding wearable electronics.

This year, expect more clothing made from smart textiles to make waves. What's great about smart fabrics is that they react to body temperature or pull moisture away from the skin. These materials can adapt to the environment, so users can wear the same apparel in both summer and winter simply by changing its settings.

Moreover, IoT fabrics can be used to track the elderly, hospital patients and kids via a GPS tracker, which sends an alert when a patient with dementia has wandered off. Since clothes made from IoT fabrics have various contact points with the body, more functionalities such as obtaining blood-oxygen and glucose level data, can be included in the system than other wearables allow – providing a more holistic and accurate observation.

Color- and pattern-changing fabrics

Spotted on the runway, color- and pattern-changing fabrics are another breakthrough innovation in fashion to watch out for. The Unseen fashion designer Lauren Bowker has designed and invented a fabric that can change colors and patterns through the use of a sensor system. Likewise, she has also created a dress that can understand the wearer's emotions, interpret human magnetism and change patterns through sensing brainwaves.



Challenges and opportunities

While this new frontier may be exciting ,there are also challenges posed on the design front. Apart from a flexible and easy-to-use human-machine interface, IoT fabrics need to be hardy, accurate and self-sufficient, and must be able to withstand vibrations, collisions, and everyday wear and tear.

Ensuring accuracy is another challenge in IoT fabrics. The wear and tear may affect the preciseness of the data it collects. While installing more sensors will help ensure data accuracy and lengthen product life, it also entails additional design costs and complexity.

As with other smart wearables and devices, IoT fabrics face the same problem of ensuring a steady power supply and consuming energy as efficiently as possible while maintaining high performance.

Lack of standards and regulations is another hurdle for the market growth of smart textiles. Manufacturers are having difficulty scaling up and commercializing new technologies. Some of the processes in smart textile production, such as bleaching, dyeing, neutralizing, scouring, mercerizing, printing and finishing, pose serious environmental threats and cause pollution.

There's no doubt IoT is changing the face of the fashion industry in more ways imaginable. While designing IoT fabrics and scaling their production can be incredibly challenging, nobody can argue that it presents a lot of opportunities for businesses to tap. After all, this effort will enable fabrics and clothing bring the power of IoT to everyday life.

About Global Sources

Global Sources is a trusted, internationally recognized B2B sourcing platform that has been driving global trade for more than 50 years. The company connects authentic buyers and verified suppliers worldwide with tailored solutions and trusted market intelligence through trade shows, digital platforms and magazines.

Vision

To be the most trusted, customer-centric, multi-channel B2B trade platform that promotes authentic global trade geared towards enhancing the quality of human lives

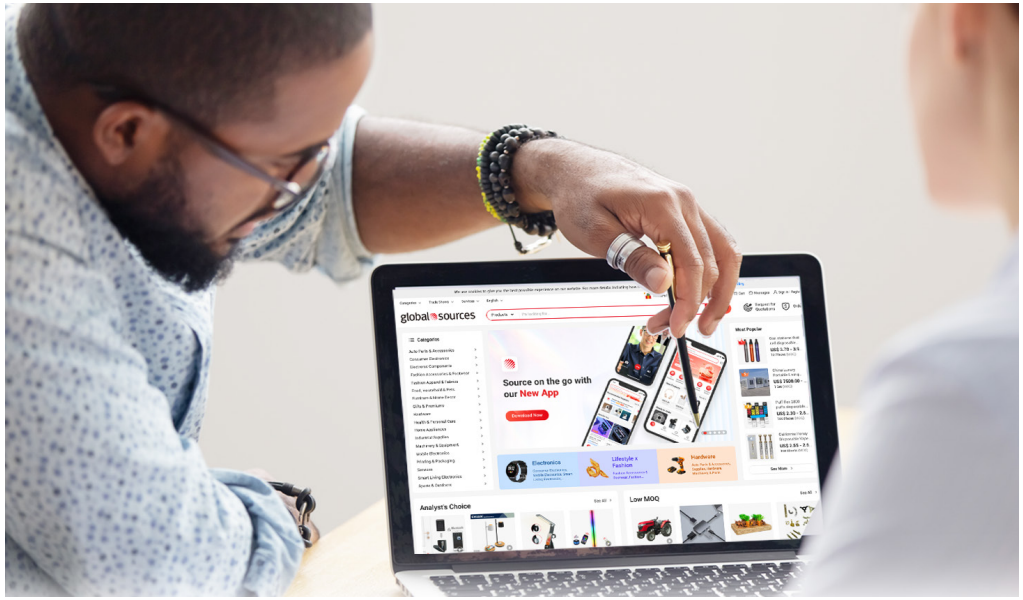
Mission

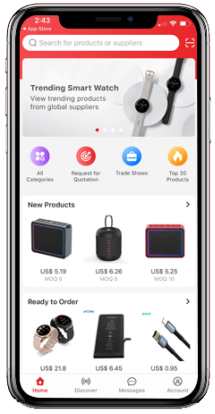
Connect authentic buyers and suppliers worldwide with tailored sourcing solutions and actionable market intelligence. Help them meet the rapidly changing dynamics of the global trade, source more effectively and seize new opportunities

Global Sources helps buyers find the right suppliers and products through its range of customized sourcing solutions:

- MATCH: Business matching service for buyers
- Trade shows
- Online events for the Global Sources community
- Analyst's Choice
- Hot new releases

Watch the video:
How to Source Products on GlobalSources.com to learn how you can source the right products for your market and contact verified suppliers.

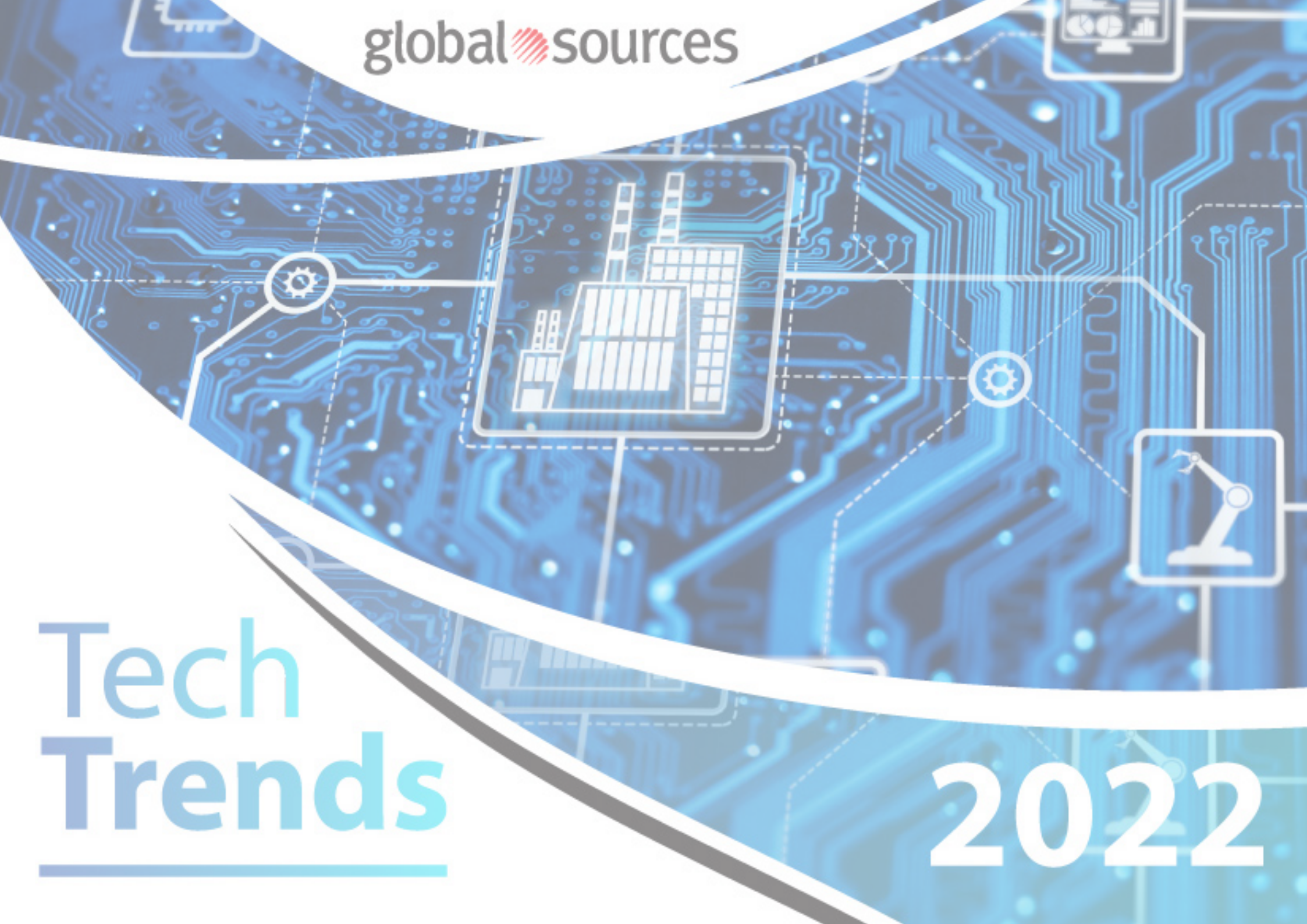




Source anytime, anywhere via the Global Sources app. It's an easy, all-in-one sourcing tool for buyers to search millions of products and manage their inquiries and quotations.

Download App now

global sources



Tech Trends 2022