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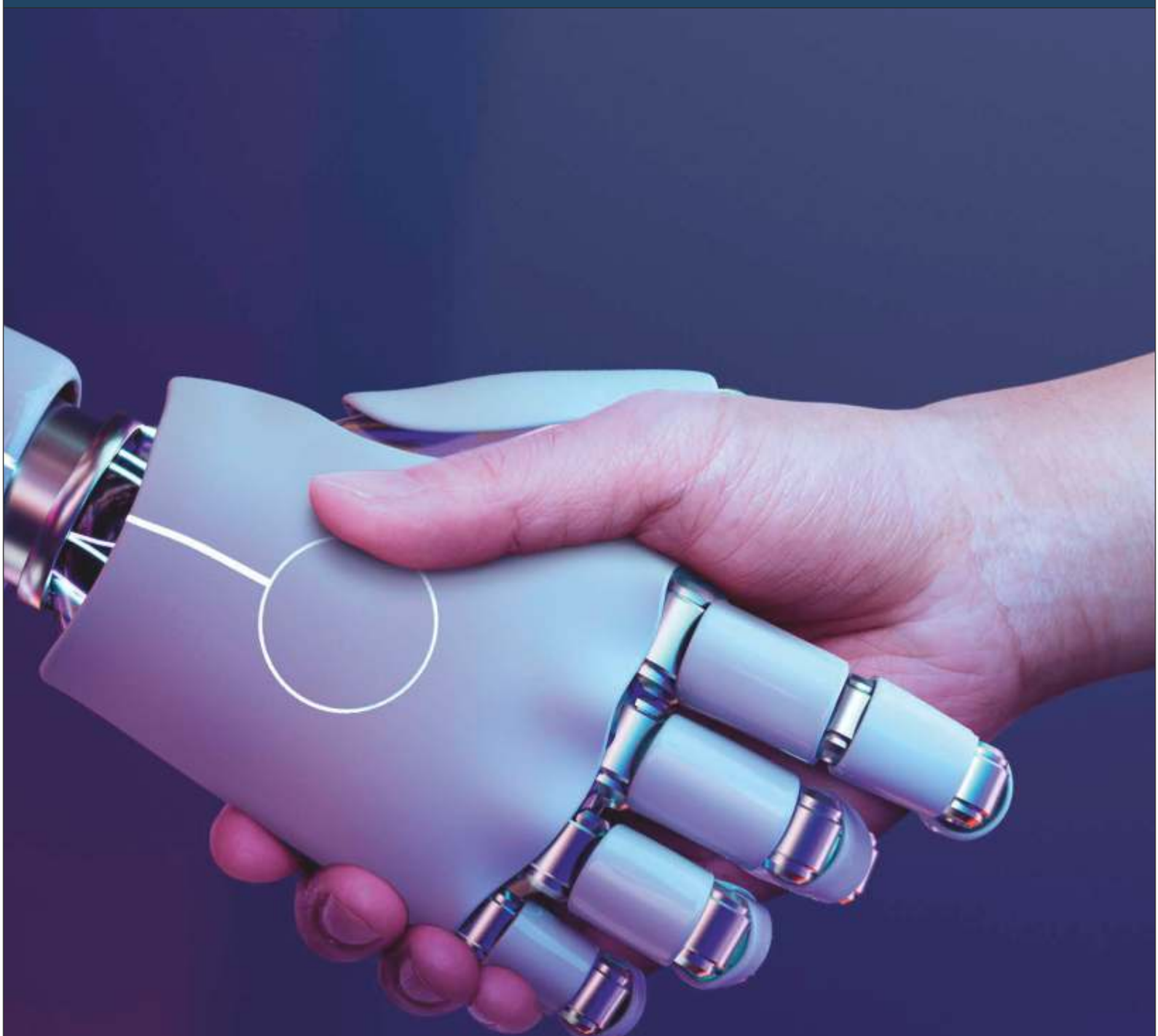

TECHNICAL SECTION

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2021: INDIA'S BEST EVER TECHNOLOGY

Soham Das
GME/19

"An unprecedented pace of new company formation and innovation in a variety of sectors resulted in a surge in the number of highly valued and as yet unlisted companies. Against 336 listed companies with a ~$1 billion market capitalization, there are now 100 unicorns in India with a combined market capitalization of $240 billion," Credit Suisse's March 2021 research of India's corporate landscape revealed.

Innovative firms are emerging all across the country, expanding at significant speed as they capitalize on strong digital public-infrastructure foundations and key strategic partnerships. As such, India is fast becoming the destination of choice for global investors keen on unveiling the next big tech revelation.

The recent World Investment Report 2021 by the United Nations Conference on Trade and Development showed that India became the fifth largest recipient of Foreign Direct Investment (FDI) inflows in 2020, receiving $64 billion. It is also worth acknowledging that those young Indians have expanding access to the digital world through the growing adoption of smart devices, which is further raising the prospects of India's tech sector. Companies within the digital space have good growth potential because of the increase in the number of internet users and wide access among the youth.

India has a brighter future in the tech industry and it's now at a pace that is unstoppable. This startup boom has helped millions of dreams come true. Not only the creators but the customers have to be acknowledged as they have started believing in the credibility of small to small startups , thus causing a win win situation on both sides.

METAVERSE IN INDIA

Soham Das
GME/19

While VR (Virtual Reality) is all about a world created solely inside computers or online, AR (Augmented Reality) still deals with the real world and has elements of the virtual world built atop it, akin to layers of information. Mixed reality or MR, as the name suggests, mixes both realities in a bid to capture the best of both worlds. MR (Mixed Reality) is what powers the metaverse to a very great extent.

With the advent of Metaverse in the world, Indian Startups are nowhere back in the league. Startups like Imaginate, Nextmeet, XR Central are leading the flag. Reliance India Limited have also started using Metaverse into their day-to-day meets.The employees can now go in groups for training. The machines too, can be upgraded or replaced in this metaverse. Companies can use Metaverse, for instance, to build their own salesroom and sell virtually to customers anywhere in the world; or as a virtual ground workforce training module at airports using VR; or to enable a virtual branch visit to the branch of a bank or insurance company. The metaverse is about (enabling) collaborative 3D environments via the internet(which are) created to increase user engagements through immersive experiences. The pandemic has created a need for remote working across India and with the rising logistics and transportation costs, India is now more open to the concept of meeting and doing business virtually. So, the metaverse will be a perfect enabler to such a growing market. The metaverse is also as much about individuals as it is for companies. Plutoverse, an avatar technology company, for instance, has created a virtual avatar for adults called DeerDost. Plutoverse aims to create more virtual avatars, virtual versions of icons from Bollywood and sports, virtual worlds and so on. The company says it will soon introduce various touch points for the virtual avatars, such as (NFTs), digital goods, animated shows, and virtual concerts. With so much buzz, the metaverse is expected to make a lot of money for individuals and companies.

THORIUM-BASED ENERGY
KEY TO THE SUSTAINABLE FUTURE

Sidharth Shukla
GCS/21

Nuclear power is one of the important sources of energy that is generated by using nuclear fission reaction. Using the nuclear fuel, the reaction enables nuclear power plants to produce huge amount of electricity. During the reaction process, nuclear fuel generates heat to power turbines. Heavy fissile elements present in most of the nuclear fuels have a capacity to produce nuclear fission reaction.

To generate power, a nuclear reactor uses some fissile isotopes that include uranium-235, plutonium-239, and uranium-233. Low-enriched uranium (LEU) is used widely in the nuclear power generation. Discovered in 1828 by the Swedish chemist Jons Jakob Berzelius, Thorium is a naturally-occurring nuclear fuel source. The isotope uranium-233 produced from thorium is used to generate nuclear fission in a thorium-based nuclear power. Due to its huge potential, thorium as fuel to generate nuclear power has attracted considerable attention.

However, there are many reasons why there are not many thorium based nuclear reactors:

Huge investments are needed for thorium nuclear power reactor, as it requires significant amount of testing, analysis and licensing work. Also, there is uncertainty over returns on the investments in these reactors.

Presence of Uranium-232 in irradiated thorium or thorium-based fuels in large amounts is one of the major disadvantages of thorium nuclear power reactors. It can result in significant emissions of gamma rays.

Despite all the advantages, thorium-based reactors are very rare as the world is still relying on conventional uranium powered energy. The road ahead is still very long in terms of providing thorium powered clean and green future.

TECHNOLOGY HAS CHANGED THE WORLD

Prashant shahi
GME/21

Technology has affected education, medication, social life, etc. There are many people in this world that don't like using technology and won't use it only for important things. Technology has changed and affected the world in a positive and negative way.

As technology continuously changes throughout time, so do the ways teachers use in their classrooms. A few years ago, schools had chalk boards then changed to white boards. Nowadays, teachers are using active boards, or smart boards. These kinds of boards are highly advanced and have their own way to teach and share information with children. This is an example of how modern technology is changing our education system everyday. Educational technology has many positive effects. For example, students can open or log on to the internet to know what's happening in the real world, and keep up with sports or news. On the other hand, technology has its negative effects. For example students can copy the answers to questions word by word. They are copying information instead of learning ideas and concepts. The use of social networking sites has both positive and negative consequences. It is amazing how people could reconnect with their long-lost friend through a social website. With the help of mobile technology, we are able to talk to friends or family members living far from us. The internet helps us or gives us the chance to learn new things. Social networking also gives us the ability to find our childhood friends, relatives,etc. And important events in their life. On the other hand, social networking has its negative consequences. With the use of the internet, children are getting addicted to online games.

Children, five or ten years ago, used to hold a coloring book, while nowadays they are holding cell phones, i-pads , tablets , etc. Technology is like a coin which has both positive and negative sides. We are the buyers of the technological products; we can choose when to use it or how to use it. If we use it in a good or positive way it will affect our lives positively, or the other way around.

THE FUTURE OF CHEMICAL INDUSTRY IN INDIA

Ayushi
GCT/21

Introduction

Chemical industry of India is one of the fastest growing industries. It is the backbone of India's industrial and agricultural & role as the key enabler of economic growth is well-established worldwide. In India Chemical industry as a key growth element and forecast to increase share of the chemical to ~25% of the GDP in the manufacturing sector by 2025. Under the Union Budget 2021-22, India is the sixth largest producer of chemicals in the world and contributes 3.4% to the global chemical industry. The chemical industry is a knowledge intensive as well as capital intensive industry.

Scope of the chemical industry

Chemical industry in India is highly diversified, covering more than 80,000 commercial products. It is broadly classified into bulk chemicals, Specialty chemicals, Agrochemicals, Petrochemicals, Polymers and Fertilizers. India's proximity to the Middle East, the world's source of petrochemicals feedstock, makes for economies of scale. India is a strong global dye supplier, accounting for approximately 16% of the world production of dyestuff and dye intermediates. Chemicals industry in India has been de-licensed except for few hazardous chemicals. Upcoming Petroleum, Chemicals and Petrochemicals Investment. Regions (PCPIRs) and Plastic parks will provide state-of-the-art infrastructure for Chemicals and Petrochemicals sector. Chemical industry is focusing more on higher value-added materials compared to commodity chemicals. Chemical-based product design has now become a key topic in chemical engineering.

A few computer-aided chemical product design platforms/tools have been developed to help design various chemical products. In other words, a Quantum mechanics/Machine learning-based Computational property prediction tool is developed for chemical product design, aiming to employ the Quantum Mechanics and Machine Learning (ML) techniques to better design organic solvents, inorganic materials, fertilizers and pesticides, polymers, catalysts and other chemical products for human needs.

Production of Total Major Chemical and Petrochemicals in 2019-20 (up to September 2019) was 13,871 thousand MT. Total Chemical and Petrochemicals registered a CAGR of 4.78% in production during the period 2014-15 to 2018-19. The current per capita consumption of chemical products in India is one-tenths of the global average indicating that demand has potential to grow due to rising population, and increasing disposable income.

Demand for credit in India's Chemical sector is largely dependent on bank credit due to its capital-intensive nature of operations. As of FY20, the metals sector contributes 6.4% or USD 27 billion (INR 2,056.6 billion) of the total credit outstanding under Industrial category in India. Furthermore, Chemical sector has a Gross NPA of 6.9% of total advances during FY-20, which is the lowest among the total industrial credit in India during the same period. Good repayment track and the healthy overall total shareholder returns, along with large capacity addition plans on account of lower tax and the Government policy support bode well for the bank credit growth towards Indian chemical industry.

Future Prospects & Investment Opportunities in Chemical Industry

In India , chemical industry is expected to register a growth of 8-9% in the next decade and is Expected to double its share in global chemical industry to 5-6% by 2021. Chemical Industry has the potential to grow significantly provided some of the key growth imperatives Are taken care of. Securing Feedstock, Right Product Mix, M&A opportunities are currently the Key imperatives for chemical industry in India.

BLOCKCHAIN AND WEB 3.0

Nikhil Kumar
GCS/21

Introduction

The sector huge web has long gone via numerous modifications within the previous couple of years. From only being a readable mode to currently enabling each read and write and now the time has come to go into a new era of www, and that is the advent of net 3.0, that is a real revolution of Blockchain.

Blockchain, as we all know, is a chain of statistics "blocks" stored on masses or thousands of computer systems or servers allotted over a huge geographical vicinity. It is a complete ledger that maintains a duplicate of all of the credit score and debit transactions of a digital asset.

The combination of Blockchain with internet 3.0 has extremely good consequences on our daily lives that we are able to see later in this newsletter.

There are various blockchain certifications courses that provide limitless opportunities to kickstart your profession. In case you want to grow to be a blockchain developer, you may test out the fine blockchain on-line schooling platforms.

Potential of web 3.0 in Blockchain Technology

Blockchain provides terrific fee to the capabilities of web 3.0 by disposing of and fixing the undermining problems of older versions. here's a list of functions that illustrates how this new edition of the net is fairly the first-class.

Net 3.0 blockchain stack gives a decentralized community which is greater person-centric.

Model is constructed with maintaining user privacy as a number one purpose. it's far an open-supply and permits users to browse the web eight times quicker than web 2.0.

The latest version permits users to browse the internet securely, unlike opera, chrome, which are examples of web 2.0 and most significantly, it blocks unwanted commercials.

THE FUTURE OF ELECTRIC VEHICLES IN INDIA

Environmental pollution has reached almost the threshold level in India. As per the Climate Risk Index 2020, India ranks in the top 5, which means India is vulnerable to climatic change. So, there seems to be no other option than to adopt e-mobility.

To mitigate environmental issues, the Government of India decided to promote Electric Vehicles (EV) to reduce pollution.
However, as per a Castrol report, the new car owners wouldn't be buying EVs until 2030 because of several factors.
Proper infrastructure is one of the critical factors. But whatever the cons are of using and promoting EVs on Indian roads, the overall electric vehicles on the Indian roads will be almost 100 million in the financial year 2030 from just a half million in the financial year 2020.

More about Electric Vehicles

Electric Vehicles are one of the most recent vehicles run by electricity instead of the typical fuels like petrol, diesel, or CNG.
The electric vehicles batteries can be charged for reuse.
There are three types of Electric Vehicles available in India as of now.
They are:

- Entirely battery-operated electric vehicles.
- Solar-powered electric vehicles.
- Hybrid electric vehicles.

Current Scenario of Electric car

Since 2010, EVs started becoming popular apart from public transports. The most surprising fact is that by 2016 September, almost 1 Million electric vehicles were delivered globally.

This was the turning point of the global acceptance of electric vehicles. The speed to acceptance was so good that by 2019, almost 4.8 million cars were sold, and by 2020, it reached 10 million units.

EVs fuel price

Surprisingly, the fuel price of EVs can be as low as only 1.1Rs/ km. As a result, the overall cost of about Rs 20,000 is reduced while traveling every 5000 km by an EV. Also, it will reduce vehicular emission, which otherwise creates a 3% GDP loss every year.

Campaigns for EV Adoption

When we talk about e-mobility, EVs are the only options. From 1st April 2021 till 31st November 2021, India's fuel price has increased almost 75%.

With ever-increasing petrol prices (almost 114Rs/liter in Delhi as of October 2021), many states in India have already divided into EVs' usage. Delhi and Kolkata are the two forerunners in this aspect. They promoted e-rickshaws that are much more environmentally-friendly and economical.

One amazing fact is, in Delhi, almost 1 Lakh e-rickshaws are operating, and Kolkata is not too far from this rally. This development is encouraging private car owners to switch to EVs.

The Indian Government has started formulating EV adoption, like the National Electric Mobility Mission Plan (NEMMP), Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles (FAME) Scheme, loan subventions, and income tax rebates alongside similar relaxations on the state level.

G Shai Harsh
GME/20

WHAT WOULD HAPPEN IF THE INTERNET STOPPED WORKING FOREVER?

Aditya
GCT/20

Huge companies like Google or Amazon, would become obsolete instantly. Other companies like Microsoft would see enormous sections of their operations disappear. Even companies that only use the Web as a means of advertisement would be adversely affected.

While the loss of services like electronic banking or PayPal would be annoying, the effects would extend much further. Think of the businesses that depend upon the internet. Every Web site would be offline. Huge companies like Google or Amazon would become obsolete instantly.

Other companies like Microsoft would see enormous sections of their operations disappear. Even companies that only use the Web as a means of advertisement would be adversely affected. Assuming the collapse was either of a permanent or extended nature, many companies would go out of business. Hundreds of thousands of people would be out of a job.

Very few types of businesses would remain unaffected by the collapse of the internet. The internet has become pervasive in business.

A world without the internet would probably seem very strange to us now. Depending upon the nature of the disaster and how you defined the internet, even basic services like text messaging or cell phone service could become unavailable. That's because the infrastructure for these services is also part of the internet infrastructure.

The economic fallout would probably be the primary crisis governments would face around the world if the internet were to collapse. But that would just be one problem world leaders would face. As the internet has become more pervasive, Countries have used it to gather intelligence and to spy on one another. The loss of the internet would be an enormous blow to intelligence agencies. Sharing information would become slow and difficult. Some governments might react to such a situation rashly. It's impossible to predict how each government would react; However, it's not hard to imagine a series of events that could escalate into a conflict.

METAVERSE

The metaverse is a hypothesized iteration of the Internet, supporting persistent online 3-D virtual environments through conventional personal computing, as well as virtual and augmented reality headsets.
Metaverses, in some limited form, are already present on platforms like VRChat or video games like Second Life and Roblox.

As the metaverse grows, it will create online spaces where user interactions are more multidimensional than current technology supports. Instead of just viewing digital content, users in the metaverse will be able to immerse themselves in a space where the digital and physical worlds converge.

What Exactly Is the Metaverse?

Facebook defines the metaverse as "a set of virtual spaces where you can create and explore with other people who aren't in the same physical space as you." Though metaverse technology is years away from being fully realized, it is expected to eventually be a place where you can work, play, learn, create, shop, and interact with friends in a virtual, online environment.

What is the Difference Between AR and VR?

Augmented reality involves overlaying visual elements, sound, and other sensory stimuli onto a real-world setting to enhance the user experience. AR can be accessed with a smartphone, and users can control their presence in the real world. In comparison, virtual reality is completely virtual and enhances fictional realities. VR requires a headset device, and users are controlled by the system.

AR	VR
The system augments the real-world scene.	Completely immersive virtual environment.
In AR User always have a sense of presence in the real world.	In VR, visual senses are under control of the system.
AR is 25% virtual and 75% real.	VR is 75% virtual and 25% real
This technology partially immerses the user into the action.	This technology fully immerses the user into the action.
AR requires upwards of 100 Mbps bandwidth.	VR requires at least a 50 Mbps connection.
No AR headset is needed.	Some VR headset device is needed.
NIt is used to enhance both real and virtual worlds.	It is used to enhance fictional reality for the gaming world.

What is the Facebook Metaverse?

Facebook has been talking metaverse for a while, noting in an Oct. 17, 2021, press release that the metaverse is "a new phase of interconnected virtual experiences using technologies like virtual and augmented reality. At its heart is the idea that, by creating a greater sense of "virtual presence," interacting online can become much closer to the experience of interacting in person."

Interest in the metaverse is expected to grow substantially as investors and companies want to be part of what could be the next big thing. The metaverse is "going to be a big focus [of Facebook's], and I think that this is just going to be a big part of the next chapter for the way that the Internet evolves after the mobile Internet," Zuckerberg told technology site The Verge before announcing the name change. "And I think it's going to be the next big chapter for our company too, really doubling down in this area."

Proponents of the metaverse view the concept as the next stage in the development of the Internet. Facebook, for example, has already invested heavily in AR and VR, developing hardware such as its Oculus VR headsets, while AR glasses and wristband technologies are in the works.

Zuckerberg, who believes AR glasses will one day be as ubiquitous as smartphones, told the verge that over the next several years, Facebook "will effectively transition from people seeing us as primarily being a social media company to being a metaverse company."

The metaverse has no single creator (or definition), so it's not something that Facebook owns or is solely responsible for developing. Still, Facebook has already invested heavily in the metaverse through its Oculus VR headsets, and it's working on AR glasses and wristband technologies. In September 2021, the company announced a $50 million investment in global research and program partners to ensure that metaverse technology would be developed responsibly.

KEYPOINTS:-

• The metaverse is a shared virtual environment that people access via the Internet

• Technologies like virtual reality (VR) and augmented reality (AR) are combined in the metaverse to create a sense of "virtual presence."

• Facebook CEO Mark Zuckerberg believes augmented reality glasses will eventually be as widespread as smartphones.

• In October 2021, Facebook announced plans to create 10,000 new high-skilled jobs in the European Union (EU) to help shape the metaverse.

Suraj Kumar
GCS/21