

Galaxy Evolve 2021 A NIGHT TO CHERISH.

Galaxy has been continuously evolving and transforming to keep ahead of the technology curve and competition. To celebrate its success over the past two years and charge up the team for the coming year, a grand celebration was organised. Galaxites, from all over the country, got together for Galaxy Evolve 2021 and added zest to it with their outstanding artistic performances. The spirit of enthusiasm and motivation was floating throughout the air, sporting a stronger, highly responsive, innovative, agile and united organization.



MD SPEAKS

Anoop Pai Dhungat
Chairman & MD

Dear Readers,

Just as the year 2021 draws to a close and we thought that the horrors of COVID-19 and the associated measures were over, we are again hit with uncertainty. The Omicron variant is highly contagious but also seems to be a much milder infection than the previous variants. I hope and pray that is indeed the case and we are not subjected to anything like what we went through for the better part of two years.

I would like to touch upon three technologies that stood out during the year. At the top of my list would definitely be the mRNA vaccine, that has largely proven to be successful in controlling the COVID-19 infections. These new covid vaccines are based on a technology never before used in therapeutics and could transform medicine, leading to cost effective vaccines against various infectious diseases like malaria, sickle-cell disease and even HIV. And as this coronavirus keeps mutating, mRNA vaccines can be easily and quickly modified. There is some research on mRNA vaccines that will help the body fight off cancers.

Edge computing, a technology that ensures low latency and high-speed data processing, also saw a lot of interest in 2021. This allows computations to be carried out closer to data storage systems, improving application performance and saving on costs. The global edge computing market is expected to witness strong growth over the coming years due to the tremendous increase in the number of intelligent IoT applications and its proliferation across different industry segments at a rapid pace.

Blockchain technologies are now becoming mainstream outside of cryptocurrencies. I was very happy to see blockchain being used to verify Covid vaccination certificates, Travel passes and certain other documents. It is very heartening that the Indian Government has not only used technology in a better and faster way than most developed countries, but even beaten private players in technology adoption.

Stay safe and happy reading.



Future Is Now

Scientists build full-colour camera the “size of a grain of salt”

Ever wanted to live out your very own Inner space experience? This camera that’s roughly the size of a grain of salt could one day find itself working its way around your digestive system, to give doctors a clearer picture of your health.

Built by researchers at Princeton University and the University of Washington, the camera is able to pump out clear, full-coloured images equivalent to what you would see from a camera 500,000 times the size!

To build a working camera at this scale, the scientists had to completely reimagine the tech that you would find inside a camera. “In order to shrink down the size of the camera you really have to look at the optical system” said Felix Heide, the study’s senior author.

“If you look at the remaining pieces of a camera, that being the sensor and the electronics, they have already been miniaturised over the last decade quite substantially so we can already build ultra-small sensors. The optical systems haven’t really been designed very differently since the days of Gauss.”

Instead of the usual array of curved glass pieces used in most camera optics – which we know as lenses – this tiny device makes use of nanotechnology known as metasurfaces, cramming in an incredible 1.6 million cylindrical posts onto a surface just half a millimetre wide. With this surface being so small, it comes as no

surprise that these posts are absolutely tiny, roughly the size of the human immunodeficiency virus (HIV).

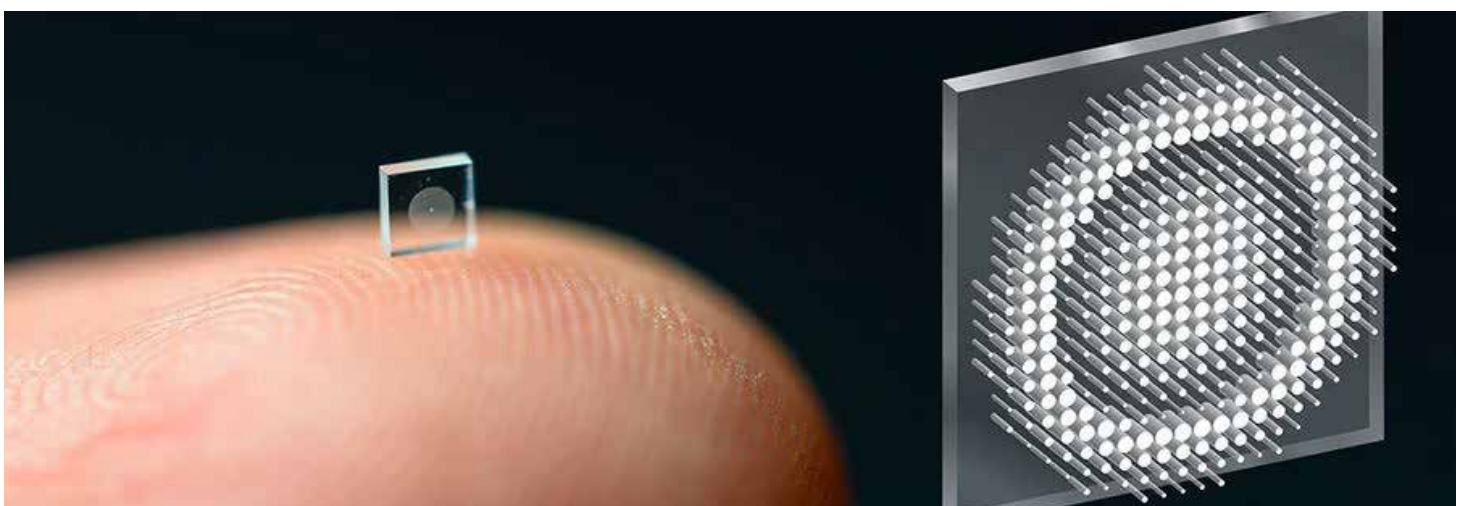
These posts effectively channel incoming light towards a sensor, a bit like antennae. An artificial intelligence then makes sense of the pattern of light hitting the surface of the sensor. In the past ultracompact lenses have produced blurry images, with a small field of view and a limited colour spectrum. But Heide’s team were able to train a machine-learning algorithm in simulations to create a clear picture from the data collected.

It’s tiny, complicated and surprisingly high definition but other than being an impressive display of science, what is the use of this camera? Heide said “There’s potential of bringing these ultra-small cameras inside the human body to do endoscopy on a smaller scale, that’s one of the areas we’re really pushing forward.

“Then a completely different area we’re looking into is space imagery. How can we bring down the size of a telescope for example to something much lighter so you don’t have to bring these massive optics into space.”

Another possible use that is closer to home for most people is the potential application in smartphones. With such tiny devices, you could pack hundreds of cameras into one phone with them all working together for a superior performance.

However, for now a lot of this is very much theoretical with obstacles still in their way. Our biggest question remains around how the images will be saved... the idea of a tiny SD card joining the camera on an intestinal journey comes to mind.





Quantum computing supremacy

Quantum computing is a form of computing that takes advantage of quantum phenomena like superposition and quantum entanglement. This amazing technology trend is also involved in preventing the spread of the coronavirus, and to develop potential vaccines, thanks to its ability to easily query, monitor, analyse and act on data, regardless of the source. Another field where quantum computing is finding applications is banking and finance, to manage credit risk, for high-frequency trading and fraud detection.

Quantum computers are now a multitude times faster than regular computers and huge brands like Splunk, Honeywell, Microsoft, AWS, Google and many others are now involved in making innovations in the field of Quantum Computing. The revenues for the global quantum computing market are projected to surpass \$2.5 billion by 2029 and to make a mark in this new trending technology, you need to have experience with quantum mechanics, linear algebra, probability, information theory, and machine learning.

Quantum computers perform calculations based on the probability of an object's state before it is measured - instead of just 1s or 0s - which means they have the potential to process exponentially more data compared to classical computers. Classical computers carry out logical operations using the definite position of a physical state. These are usually binary, meaning its operations are based on one of two positions. A single state - such as on or off, up or down, 1 or 0 - is called a bit.

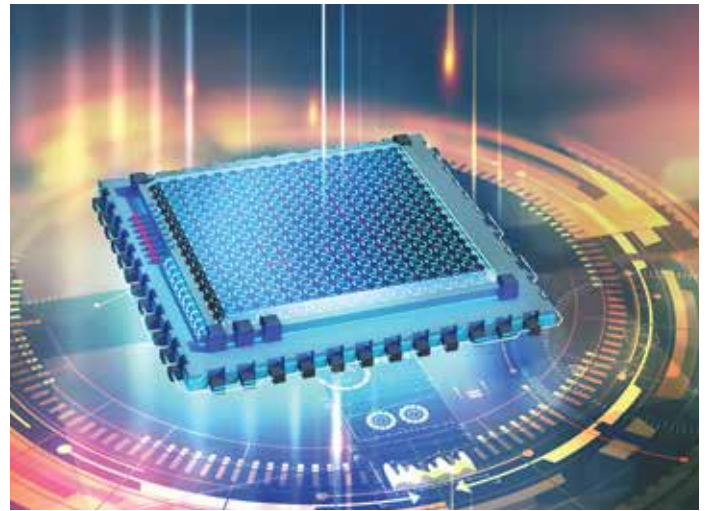
In quantum computing, operations instead use the quantum state of an object to produce what's known as a qubit. These states are the undefined properties of an object before they've been detected, such as the spin of an electron or the polarisation of a photon.

Rather than having a clear position, unmeasured quantum states occur in a mixed 'superposition', not unlike a coin spinning through the air before it lands in your hand.

These superpositions can be entangled with those of other objects, meaning their final outcomes will be mathematically related even if we don't know yet what they are.

The complex mathematics behind these unsettled states of entangled 'spinning coins' can be plugged into special algorithms to make short work of problems that would take a classical computer a long time to work out if they could ever calculate them at all.

Such algorithms would be useful in solving complex mathematical problems, producing hard-to-break security codes, or predicting multiple particle interactions in chemical reactions.



Types of quantum computers

Building a functional quantum computer requires holding an object in a superposition state long enough to carry out various processes on them.

Unfortunately, once a superposition meets with materials that are part of a measured system, it loses its in-between state in what's known as decoherence and becomes a boring old classical bit. Devices need to be able to shield quantum states from decoherence, while still making them easy to read.

Different processes are tackling this challenge from different angles, whether it's to use more robust quantum processes or to find better ways to check for errors.

For the time being, classical technology can manage any task thrown at a quantum computer. Quantum supremacy describes the ability of a quantum computer to outperform their classical counterparts. Some companies, such as IBM and Google, claim we might be close, as they continue to cram more qubits together and build more accurate devices



Special Focus

Morphisec's patented moving target defense technology is designed to provide end-to-end protection against the most damaging cyberattacks. With the power of moving target defense, attackers are unable to accurately identify the resources they need to leverage in order to evade your current defenses. This proactive cyber defense solution guards your critical systems with a lightweight, easy to install agent that doesn't require any updates to keep securing critical infrastructure.

There are three main categories of MTD:

Network level MTD: Changing the network topology, including IP-hopping, random port numbers, extra open or closed ports, fake listening hosts, and obfuscated port traffic as well as fake information about the host and OS type and version.

Host level MTD: Changing the host and OS level resources, naming and configuration.

Application level MTD: Changing the application environment. This includes randomly arranging memory layout, changing application type and versioning and routing them through different hosts, or changing setting and programming languages to compile the source code, altering the source code at every compilation.

Moving target defense strategy which introduces a dynamic, constantly evolving attack surface across multiple system dimensions. This increases uncertainty for bad actors and complicates their attacks. MTD is the deployment of decoys such as false endpoints, servers, and internet-of-things devices to misdirect attackers at the network, host or application layer of a tech stack that security teams benefit from the most. Such

distractions create a constantly changing environment, prompting attackers to question if the vulnerabilities they find are real or fake, if systems are a decoy and if the layout of a network is genuine.

In the arms race between cyber attackers and cyber defense technologies, attackers currently claim control. They employ sophisticated deception techniques designed to evade traditional and even "next generation" defense mechanisms, for example by hiding malicious behaviour and disguising it as benign or unknown behaviour. Moving Target Defense (MTD) uses counter-deception techniques that constantly change the target surface, so that attackers can't get a foothold.

All of these techniques are intended to morph the target, making it unfamiliar to the attacker. MTD forces the attacker to learn the target over and over again, increasing the likelihood of discovery and making attacks costly and unfeasible. By using deception and MTA, attackers had the upper hand by camouflaging their next moves. The new MTD paradigm turns the tables by making the attacker operate in an uncertain and unpredictable environment.

MTD at the OS and Application levels holds particular promise, as a successful attack depends on accurate information about the targeted operating system and application.

Don't let Moving Target Defenses complexity delay your journey! Galaxy can help your organization extend a consistent solution set across Moving Target Defenses. Our strong OEM partnerships help you create a lasting Moving Target Defenses strategy that unifies environments and reduces risk.



Dell Technologies and AWS collaborate to help customers protect their Data from Ransomware Attacks

Dell Technologies and Amazon Web Services are bringing Dell's cyber recovery vault to the AWS Marketplace with the launch of Dell EMC Power Protect Cyber Recovery for AWS. Through the AWS Marketplace, customers can easily purchase and deploy an air-gapped cyber vault from Dell, the leading provider of data protection appliances & software globally, to help securely protect and isolate data away from a ransomware attack.

Dell EMC Power Protect Cyber Recovery for AWS provides multiple layers of protection with a modern approach that allows AWS customers to resume normal business operations quickly and confidently after a cyberattack. The solution moves a customer's critical data away from the attack surface, physically and logically isolating it with a secure, automated operational air gap. Unlike standard backup solutions, this air gap locks down management interfaces, requiring separate security credentials and multi-factor authentication for access.

"Data is a strategic asset and protecting it against ransomware and other cyberattacks is critical for organizations to make informed decisions about their business and thrive in today's digital economy," said David Noy,

vice president of data protection product management, Dell Technologies. "By teaming with AWS, we are offering customers a cyber recovery solution that isolates business-critical data away from an attack with an air-gapped cyber vault, helping organizations reduce risk and protect data with confidence after a successful cyberattack."

As organizations continue to adopt diverse IT infrastructures, across the public cloud and on-premises environments, data protection solutions can improve data security. According to the 2021 Dell Technologies Global Data Protection Index survey of 1,000 global IT decision makers of which 250 are from APJ (Australia, India, Japan, Singapore, and South Korea), Global: 67%, APJ: 66% of organizations lack confidence that all business-critical data can be recovered in the event of a destructive cyberattack. Dell EMC Power Protect Cyber Recovery for AWS helps customers address the increasing risk of ransomware and other cyberattacks.

Available today, Dell EMC Power Protect Cyber Recovery for AWS is the latest data protection solution from Dell Technologies available for purchase in AWS Marketplace, a digital catalogue with thousands of software listings from independent software vendors that make it easy to find, test, buy and deploy software that runs on AWS. Customers can gain fast access to Dell's portfolio of data protection offerings for AWS with a simple purchase, so they can begin deployment immediately.





Tech News

Indian SaaS companies are poised to reach \$30 billion in revenue

Indian Software-as-a-Service (SaaS) companies are poised to reach \$30 billion in revenue, capturing 8% to 9% share of the global SaaS market by 2025, according to a new report by Bain & Company. The report said that investments in the space increased by 170% over 2020 and are expected to reach \$4.5 billion in 2021.

“While the overall growth in funding has been driven by an increase in deal volume across stages, there has been notable growth in the volume of deals larger than \$50 million, as investors give a clear vote of confidence in the potential of Indian SaaS companies to achieve substantial future growth,” said Arpan Sheth who is a partner & leader in Bain & Company’s Global Vector Solutions Group.

India has the opportunity to develop a true niche in horizontal infrastructure software, vertical business software, and SMB-focused SaaS companies.

-Indian SaaS companies are expected to grow at 30% CAGR over 2020–25 and double their share in the global market to 8%–9% by 2025.

- India now has 13 SaaS unicorns as compared to one in 2018.
- Indian SaaS companies currently employ 62,000 people.
- 250 new companies have been set up by former SaaS employees, which employ about 5,000 people.
- India has the third largest SaaS ecosystem globally, after USA and China.
- 100% growth in exits in 2021 over 2018.
- Strong ARR-to-funding ratio in line with global SaaS peers.
- The number of companies hitting a \$100m+ annual revenue run rate increased to 7-9 from 4-5 a year ago.
- SaaS-specific talent demand expected to grow two to three times in the next 5 years
- The top 15 deals constituted 75% of total deal value in 2021.
- SMB-focused India for India and enterprise-focused India for the world companies are attracting most of the funding, with 65%–70% deal volume share in 2021.
- Increased interest in enterprise collaboration, events tech, conversational AI, and HR tech in horizontal business software.



<https://cutt.ly/IYFJpri>

All product names, logos, brands, trademarks, and registered trademarks are property of their respective owners.