TELECOM PERSON OF THE YEAR: Enablers of Made in India 4G Stack

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CEO and Executive Director, TCS

Dr RK Upadhyay
CEO, C-DOT

Sanjay Nayak
Co-founder, CEO and MD, Tejas Networks

Pravin Kumar Purwar
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LIFETIME ACHIEVEMENT AWARD
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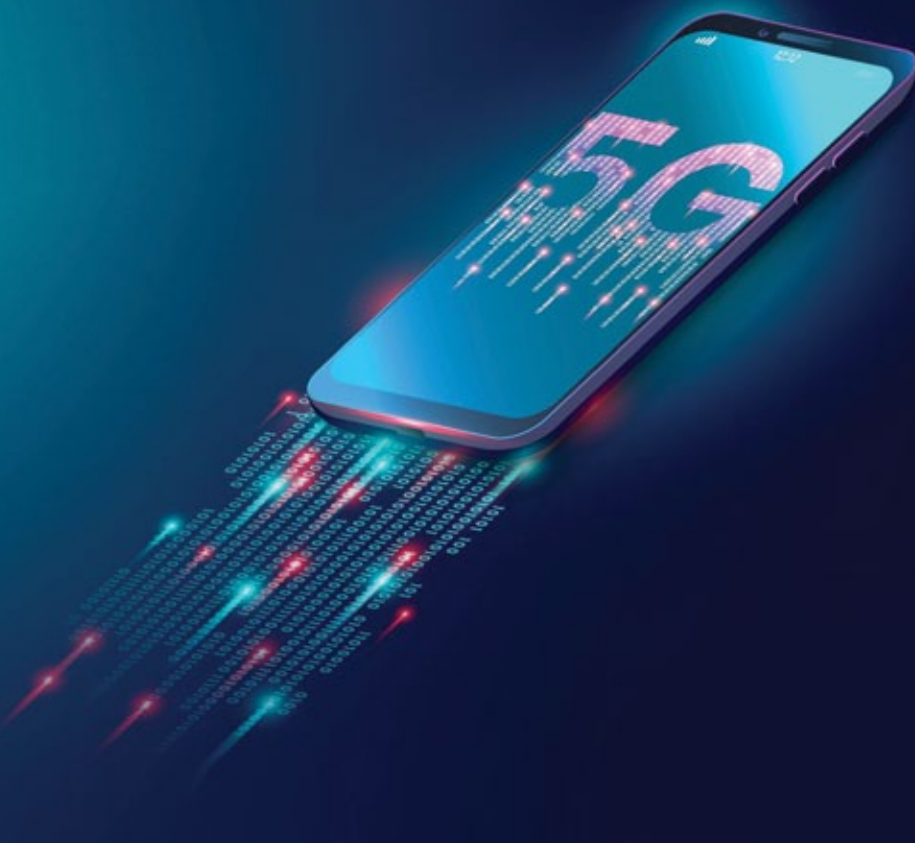For **subscription** related issues, contact us at
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SHUBHENDU
PARTH

[OPENING NOTE]

Telecom sector's tryst with generative AI

Generative AI, the tech wizard that can either change the world or blow it up (figuratively speaking), holds an incredible power to shape our economy and society. And nowhere is this influence more evident than in the communications sector, where it is about to shake things up and mess with consumer behaviour like a mischievous prankster.

Imagine a vibrant telecommunications industry where generative AI steps onto the scene, twirling its digital cape, and becoming the superhero of transformation. It promises to optimise networks, predict equipment failures, deliver exceptional customer service, and even protect networks from digital villains. It's like a magical genie granting wishes to telecom operators.

An exciting application of generative AI in telecom is network optimisation. It's like having a super-smart AI buddy analysing piles of network data in a flash, spotting bottlenecks, congestion, and signal interference like a superhero with X-ray vision. The result? Operators can provide users with seamless experiences, soaring to new network performance heights and leaving buffering and dropped calls in the dust.

And there is more…

Generative AI can also play the fortune teller game. By harnessing data from various sources, including sensors, it can predict equipment failures, helping operators to proactively address issues and minimise downtime. The result is improved network reliability and reduced costs associated with reactive repairs; a truly win-win situation.

Further, it breathes new life into customer service. Virtual agents powered by natural language processing possess the ability to comprehend customer queries and offer personalised assistance, greatly enhancing the overall customer experience. What's more, real-time engagement between customers and chatbots driven by generative AI enables tailored recommendations and advice.

Of course, we cannot overlook the inherent risks; a fun-loving prankster turning into a mischievous troublemaker. Voice clones created with generative AI can be used to trick unsuspecting victims, imitating their loved ones over the phone. Crafty fraudsters can also exploit generative AI to concoct convincing phishing content, putting individuals at greater risk of falling for online scams.

Also, implementing generative AI in the telecom industry comes with its own set of challenges. Data quality and availability can be as elusive as a rare Pokémon while integrating generative AI with existing systems and processes can be like solving a complex puzzle with missing pieces. It requires investments in new technologies and infrastructure, making it feel like a never-ending quest for the holy grail.

Additionally, acquiring the necessary technical expertise and ensuring compliance with regulatory frameworks adds further complexity. Developing and implementing generative AI models while upholding ethical considerations such as privacy, bias, and accountability amplifies the challenges faced by telecom operators.

To fully harness the benefits and navigate the challenges, telecom operators must proactively address the complexities associated with generative AI. Collaboration and knowledge sharing within the industry are also vital for success. Telcos must also actively engage with industry peers, policymakers, and experts to navigate these complexities.

Fear no danger, and make big plans… together they can conquer the AI realm.

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From Make in India to global dominance

To become a global manufacturing hub, India needs to focus on new-generation electronics, deepen R&D, ally with Taiwan, and create self-resilient products

BY AJAI CHOWDHRY

The last few years have seen the government take major steps to encourage the manufacturing of electronics in India. The production-linked incentive scheme, a string of reforms in the last decade, and the move away from China towards a safe India have provided the catalyst needed for electronics growth in the country. The next step is to build our products and get into product ownership to usher in a new era of Make in India products that are 100% repairable and upgradable, and support the vision of a robust growth nation catering and supporting a circular economy to the global market as well.

According to the Ministry of Electronics and Information Technology, electronics manufacturing in India will balloon to USD 300 billion in 2026 from USD 68 billion at present. We must rapidly transform India into a manufacturing hub for new-generation electronics products with minimal dependence on foreign components. To see real change, we need to deepen research and development. Taiwan helped create China as a product nation. There is a need to ally with Taiwan to learn from them. What makes us truly unique is that not only do we know how to design hardware, but we also know how to integrate software into hardware.

Let me give examples of some products that will help scale up our product self-resilience and kick-start job creation for high-end value jobs and blue-collar workers.

NEW PRODUCTS, NEWER MARKETS

There is a growing pressure to transition towards sustainability. Smart meters that use digital technology, enable a two-way flow of electricity and information. Consumers and suppliers can thus be empowered to make informed choices on smart energy use. The global smart meters market is expected to grow from USD 19.6 billion in 2021 to USD 30.2 billion by 2026 at a CAGR of 9.0%, and we can seize this opportunity.

Next, the global market for laptops and tablets will be USD 220 billion per year over the next three years, while in India, the market size is pegged at USD 7 billion. Nearly 87% of laptops and tablets come from China. We need to change this by increasing localisation and creating upgradeable and repairable products.

Third, our startups have a huge opportunity in the drone market, especially if they start making the components too. So far, DJI China has 90% of the global drone market, which is poised to become a USD 54 billion

> The country needs to propel growth and see more brands like Lava and Micromax, in the mid and high segments that are completely Made in India.

IN SHORT

- The government's initiatives and reforms have paved the way for significant growth in electronics manufacturing in India.

- To achieve self-resilience, India needs to focus on building 100% repairable and upgradable products and reducing dependence on foreign components.

- Smart meters, laptops, tablets, drones, and medical devices present lucrative opportunities for Indian manufacturers to capture global markets.

- The wearables market and the smartphone industry offer avenues for local startups to cater to both domestic and export markets.

- India should identify key products and prioritise R&D and manufacturing to replace China as a leading product nation and leverage geopolitical advantages.

market by 2025. With the government enforcing a ban on the import of drones, there's a huge market for not just the high-end segment like for defence and surveys, but also in the nano drone and micro drone segments used for entertainment, filming and so on.

Similarly, the Indian medical devices industry is growing at 28% each year to reach USD 50 billion by 2030. The way IIT Kanpur Ventilator Consortium assisted Noccarc Robotics, a young startup, in building affordable, high-quality ventilators, at the peak of the pandemic, is a case study of possibilities. The reason we are placed beautifully in Medtech is that most of the devices in use have outdated electronics. We need to make connected devices with predictive maintenance and usher in an era of more modern products in the health sector. We can also integrate Artificial Intelligence and Machine Learning into our products.

MEETING CONSUMER NEEDS

In the consumer market, too, we can make an impact. India's wearables market saw record double-digit growth in the first quarter of 2022, with shipments crossing 13.9 million units. The earwear category accounts for 71.3% of the overall wearables category. Quality manufacturers like Boat and Noise need to look at components too in this segment, and many more such startups can cater to the local and export markets.

Similarly, in phones, we need to propel growth and see more brands, like Lava and Micromax, in the mid and high segments that are completely Made in India. In space, India's share in the USD 360-billion global space economy is 2%. A growing impact in the space sector is needed to address national imperatives and for deepening research.

We need to identify 100 to 500 products for the next 5 to 10 years and go after designing and manufacturing these in India. Our opportunity to replace China as the only product nation is there due to geopolitical reasons. There is more trust in India as a supplier than in China. We must seize this opportunity. 🌀

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Delivering a new secure and flexible cloud

5G, Edge Computing, and network cloudification are revolutionising the cloud, enabling faster connectivity, real-time responsiveness, and scalability

BY SAMIT BANERJEE

In the last decade, we have seen a massive shift towards digitalisation with businesses, governments, and individuals relying tremendously on digital services and connectivity. The world is rapidly moving towards a more connected and data-driven future, with more devices than ever before. From smartphones and tablets to smart homes and autonomous vehicles, everything is becoming connected to the internet, and this is driving the need for scalable, secure, and flexible cloud technology.

To meet these needs, the cloud revolution is being fuelled by three key technological advancements: 5G, Edge Computing, and Network Cloudification.

> 5G promises to transfer more data at faster speeds for applications like autonomous vehicles and industrial automation that require real-time responsiveness.

By virtualising network functions, it is possible to scale services up or down as needed, reducing the need for expensive and complex hardware-based systems.

GETTING MORE FROM THE CLOUD

- **Higher Connectivity and Speed:** 5G networks are enabling faster and more reliable connectivity, facilitating applications like cloud gaming, virtual reality, and autonomous vehicles with real-time responsiveness.

- **Faster Decision-making:** By moving computing power closer to the data source, edge computing reduces processing time, enabling faster decision-making for real-time applications like video streaming and smart homes.

- **Better Network Management:** Shifting from hardware-based systems to software-based ones allows scalability, flexibility, and efficiency in managing network services, reducing reliance on expensive and complex hardware.

- **Support New Applications:** The cloud revolution will bring faster internet speeds, reduced latency, and real-time applications like autonomous vehicles and remote surgery.

- **Improve Efficiency:** Edge computing and network cloudification will enhance accessibility, reduce latency, and improve efficiency in various industries, from healthcare to entertainment to manufacturing. try-wide adoption of IoT and promote inclusive growth in India.

UNDERSTANDING THE KEY DRIVERS

The deployment of 5G networks has enabled faster and more reliable connectivity, opening new possibilities for mobile services. For example, cloud gaming, virtual and augmented reality, and high-definition video streaming are now possible on mobile devices. For applications that require real-time responsiveness, such as autonomous vehicles and industrial automation, 5G promises to transfer more data at faster speeds.

Edge computing, on the other hand, is all about bringing computing power closer to where it is needed. By moving computing power closer to the source of data, edge computing reduces the time it takes to process and analyse data, allowing faster and more efficient decision-making. This is particularly important for applications that require real-time analysis, such as video streaming and smart homes.

Finally, network cloudification is all about shifting network functions from traditional hardware-based systems to software-based ones. This allows greater scalability, flexibility, and efficiency in managing and deploying network services. By virtualising network functions, it is possible to scale services up or down as needed, reducing the need for expensive and complex hardware-based systems.

Cloud-based collaboration tools, such as Microsoft Teams and Google Workspace, are transforming the way people work, enabling remote teams to collaborate in real time and work from anywhere. The cloud has also enabled the proliferation of IoT devices and smart devices, which are changing the way we live and work. From smart thermostats and doorbells to industrial sensors and drones, these devices are generating massive amounts of data that can be processed and analysed in the cloud.

> Network cloudification allows greater scalability, flexibility, and efficiency in managing and deploying network services.

All three of these technological advancements are interrelated and work together to enable the cloud revolution.

ADDRESSING THE CHALLENGES

To manage the sheer volume of data generated by 5G, edge computing, and network cloudification will require new data management approaches and security strategies. The increase in the number of connected devices will also create new vulnerabilities that must be addressed to ensure a secure future.

These challenges need to be addressed with a comprehensive security plan at every layer of the technology stack, from the edge to the cloud. It also requires a more proactive approach toward security, where threats are identified and addressed before they can cause harm.

Scalability is another key consideration. With the explosion of data that will come with 5G, edge computing, and network cloudification, businesses must ensure that their infrastructure can handle the volume of data being generated. This means investing in scalable infrastructure that can grow as demand increases.

LOOKING AT THE FUTURE

Despite the challenges, the future of the cloud revolution is exciting. The cloud revolution has already transformed the way we store and access data, and the key drivers of 5G, Edge Computing, and Network Cloudification are expected to further revolutionise the technology landscape in the future. The rollout of 5G networks will bring about a significant increase in internet speeds and reduced latency. This will allow for faster and more reliable data transfer between devices, enabling real-time applications such as autonomous vehicles, smart cities, and remote surgery.

Besides, the combination of Edge Computing and Network Cloudification will allow for data to be processed closer to the end-users, which will result in reduced latency and faster response times. This will make cloud services more accessible to users in remote areas or regions with limited network infrastructure. Edge Computing will allow more processing to take place locally, which will reduce the amount of data that needs to be transmitted to the cloud. This will reduce network congestion and lower energy consumption, resulting in increased efficiency and reduced costs. These changes will have a profound impact on industries across the board, from healthcare to entertainment to manufacturing. ♻

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LT GEN DR S P KOCHHAR

TIME TO GET RID OF THE SIGNAL SABOTEURS

The rise of illegal mobile signal boosters poses a major challenge for India's telecom industry, causing network issues like call drops and slow data speeds

The mushrooming of illegal mobile signal boosters or repeaters, especially in urban locations, has emerged as a significant challenge for India's telecom industry. These devices, designed to amplify and distribute mobile tower signals in areas with poor connectivity, are commonly installed in buildings. While this issue is not talked about much in everyday discussions, the fact is – the widespread use of these unauthorised boosters is a leading cause of network issues such as call drops and slow data speeds, particularly in densely populated areas.

These devices are classified as "Wireless Telegraphy Apparatus" and "Wireless Transmitter" under the Indian Wireless Telegraph Act, 1933. The possession and sale of such equipment, without acquiring the necessary permissions under the Act and Rules framed therein, constitutes a breach of the Act's provisions and is a punishable offence. Despite this, these boosters are readily available in electronics markets and are installed by unauthorised entities in homes, offices, hostels, guest houses, etc.

> "The illegal use of boosters and repeaters interferes with mobile networks and diminishes the experience for all users in the periphery

> Illegal mobile signal boosters adversely affect the connectivity uplink path and amplify received noise at the site, leading to a decline in network experience.

While telecom service providers (TSPs) typically install repeaters or small cells after meticulous inspections in response to specific requests or identified needs, they ensure that such installations do not disrupt network coverage for individuals outside the distribution area. However, the unchecked illegal use of repeaters interferes with mobile networks, diminishing the experience for all users in the periphery.

These boosters adversely affect the connectivity uplink path and amplify received noise at the site, leading to a decline in network experience, Key Performance Indicators such as accessibility, retention, and user throughputs. Further, these devices usually support all spectrum bands and operate continuously, thus interfering with the service provider's cell sites. The increased interference in the uplink also causes mobile handsets to transmit at a higher power to maintain connectivity with the site, leading to increased battery consumption and a degraded network experience.

Such illegal signal repeaters have been discovered in substantial numbers in various Indian cities, including major metros like Delhi, Mumbai, Kolkata, and Bengaluru. In Delhi NCR alone, over 30% of cell sites (approx. 8,000 cells) have high interference from illegal repeaters across all bands and technologies, with 9 locations having the highest concentration of illegal repeaters. In some areas like Laxmi Nagar, PG Hostels even advertise "Network Boosters" as a facility for tenants. Back in February, in Nagpur, the Wireless Monitoring Organisation (WMO) of the Department of Telecom (DoT) and city police conducted raids in localities like Itwari, Mominpura, and Gandhi Bagh, whereby seven boosters, 30 antenna panels and several meters of cable were seized.

Locating and shutting down illegal repeaters is a laborious task and the telecom industry requested DoT to take appropriate measures in this regard. In a welcome development a few months back, DoT issued guidelines on how to deal with matters unauthorised boosters and repeaters which are causing harmful interference to telecom services. As per the guidelines, the WMO will be inspecting sites upon receiving complaints of interference and can take penal action against those who do not remove or surrender such illegal equipment on being notified by the government. This is a positive step by the government, as the issue is so severe that it impedes the licensed operators' ability to provide uninterrupted telecom services and launch new services.

THE IMPACT ON TELCOS

Already burdened with debts, the telecom industry is facing massive losses due to this problem, as it is losing thousands of crores of investment, necessitating immediate intervention from the relevant authorities. The industry demands that those selling, installing and housing these illegal repeaters be held accountable. The Indian Wireless Telegraph Act, 1933, clearly prohibits the possession of wireless telegraphy apparatus without a license, and violation of this law can result in serious penalties. To effectively deter the use of such illegal devices, we believe that their use must be treated as a punishable offence with adequate jail terms, a fine, or both.

The other equally grave issue is that these devices are readily available in the grey market and on e-commerce platforms. The DoT and TSPs have written numerous detailed letters to the e-commerce websites and platforms selling such illegal equipment, informing them that possession and sale of such equipment, without obtaining requisite permissions constitutes a violation of the provisions of the Telegraph Act. Though some of the e-commerce companies have ceased such activities, others still continue to sell them.

While it has been conveyed to the e-commerce companies that no person or dealer, shall sell or hire a wireless set or equipment to any person unless such person or dealer holds a valid Dealer Possession License (DPL), the online companies contend that their role is of an intermediary only and they do not need a DPL. But DoT has further clarified that e-commerce portals are operating as an "online marketplace" and hence, are covered under the purview of the Information Technology

> Illegal signal repeaters have been discovered in substantial numbers in various Indian cities including major metros like Delhi, Mumbai, Kolkata, and Bengaluru.

THE BOOSTER PROBLEM

- Illegal mobile signal boosters in India pose a significant challenge to the telecom industry, causing network issues and hindering connectivity.

- The use of unauthorised repeaters disrupts mobile networks, leading to call drops, slow data speeds, and degraded network experience.

- The possession and sale of illegal boosters violate the Indian Wireless Telegraph Act, 1933, and punishable actions can be taken against offenders.

- Telecom service providers face substantial losses due to the proliferation of illegal boosters, necessitating immediate intervention from authorities.

- Similar problems exist globally, and countries like Australia, South Africa, the USA and UK have implemented strict regulations and penalties against illegal booster usage.

Act 2000 as intermediaries. Hence, the IT Act and Information Technology (Intermediaries guidelines) Rules, 2011 apply to them, whereby it is the responsibility of these intermediaries to follow certain due diligence guidelines, including the signing of a "User Agreement" for access or usage of the intermediary's computer resource by any person, which includes the need for compliance of any law by the sellers and the purchasers.

Furthermore, in case a wireless apparatus or transceiver is required to be imported from abroad, the importing entity needs to obtain an import license, as required under relevant Customs rules. So, the arguments of e-commerce companies to justify the possession, sale and use of such illegal devices by unauthorised entities do not hold ground.

One also does not realise that these devices are not even an effective solution to enhance network coverage in an area since most manufacturers of illegal boosters often utilise inexpensive and recycled components that have short lifespans. These devices typically exhibit poor performance, generate excessive noise, and users are constantly exposed to the possibility of legal consequences. The lack of provisions for refunds, warranties, and customer service means that users have no recourse if any issue were to arise. Given the highly unregulated nature of the market, malfunctions are also frequent, posing a potential risk to the individuals in close vicinity of such devices.

A GLOBAL MENACE
The concerns about the widespread use of illegal mobile signal boosters or repeaters are not limited to India. Globally too, this has been a menace in several countries that are grappling with similar challenges. In the USA, the Federal

> The public needs to be aware that these boosters are not only illegal but also harmful to the network infrastructure.

Communications Commission (FCC) has implemented strict regulations against the use of unauthorised signal boosters, and violators can face substantial fines. In 2013, the FCC further adopted new rules that require all consumer signal boosters to be registered with a wireless provider before use.

In the United Kingdom, Ofcom has made it clear that the use of these devices can lead to interference with emergency services and other radio users. They have also implemented strict penalties for those found to be using or selling these devices, including fines and potential imprisonment. In Australia, the Australian Communications and Media Authority has taken a multi-faceted approach to address the issue. They have launched public awareness campaigns about the risks associated with using illegal boosters. At the same time, they also conduct raids to confiscate these devices and have implemented strict penalties for those found to be using or selling them.

In South Africa, the Independent Communications Authority of South Africa has warned that the use of such devices can lead to interference with other users' signals and can degrade the quality of service for all users and also implemented strict penalties for those found to be using or selling these devices.

DEALING WITH THE PROBLEM

To mitigate these issues, the sale of illegal repeaters should be banned with immediate effect, and the Telecom Enforcement Resource and Monitoring and WMO should be empowered to take strict legal action against the offenders. Regular inspections need to be conducted to ensure that only authorised boosters are installed in areas where there is a need for signal amplification. There is also a need for time-bound resolution of identified network interference cases to ensure the flawless delivery of telecom services to customers.

While it is important for the authorities to act against the use of illegal boosters, it is also important for the public to be aware of the fact that these boosters are not only illegal, but also harmful to the network infrastructure, and can lead to poor quality of service for all customers. Besides, they also have the potential to disrupt emergency communication services, such as police and ambulance communication channels, which could lead to serious consequences.

The users also have a responsibility to be aware of the risks associated with illegal boosters and to refrain from using them. The industry will continue to work closely with the relevant government authorities to raise awareness about the negative impacts of using such devices and to enforce the Indian Wireless Telegraph Act, 1933. Only by working together can we ensure a safe and reliable telecommunication infrastructure for all. ♣

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AT&T, HAAS Alert to collaborate for cellular V2X technology

AT&T and HAAS Alert have joined forces to offer digital alerts from HAAS Alert's Safety Cloud cellular vehicle-to-everything (V2X) service bundled with AT&T's connected vehicle solutions. This collaboration aims to provide crucial hazard and roadway alerts to drivers, enhancing safety on the roads.

HAAS Alert's Safety Cloud is the largest cellular V2X solution currently deployed, connecting emergency vehicles, infrastructure, and other transportation assets in a consolidated platform. It delivers timely hazard notifications to connected vehicles, enabling drivers to be aware of nearby emergency vehicles, incidents, and hazards, promoting safer driving and protecting first responders and roadway workers.

By integrating HAAS Alert's solution into AT&T's connected vehicle offerings, automakers can easily incorporate cellular V2X capabilities, reducing data costs for digital alerts and simplifying the integration process. This partnership paves the way for enhanced road safety and connectivity for all drivers.

The Safety Cloud platform revolutionises road safety by allowing public safety agencies, tow fleets, and infrastructure operators to equip their vehicles and assets with digital alerting capabilities. These alerts provide drivers with earlier and more effective warnings of upcoming hazards, reducing the risk of collisions and improving overall road safety.

The collaboration between AT&T and HAAS Alert opens up opportunities for advanced cellular V2X applications, such as smarter traffic management, emergency vehicle prioritisation, and data-driven solutions for traffic patterns and road conditions. With the connected vehicle market expected to triple in the next five years, the demand for reliable connectivity and innovative safety solutions is on the rise.

Ciena to help MOX Networks boost optical network capacity

Fibre-optic network specialist, MOX Networks, has partnered with Ciena to enhance the capacity of its next-generation dark fibre network in the US. The collaboration will enable MOX to deploy Ciena's 6500 flexible grid Reconfigurable Optical Add/Drop Multiplexer (ROADM) photonic layer with WaveLogic 5 Extreme (WL5e) coherent optics delivering multi-terabit capacity on its networks. The deployment will offer both 100G and 400G connectivity on MOX network segments across the Pacific Northwest and Midwest fibre routes.

As MOX continues to diversify its network with new configurable dark fibre routes, the installation of Ciena's equipment will take place on its Hillsboro-Portland-Seattle and Columbus-Ashburn-Atlanta routes in the coming months. This announcement follows MOX's recent network upgrade to 400G capabilities, meeting the increasing demands of bandwidth-intensive operators. Additionally, MOX deployed Telescent's Gen 4 Network Topology Manager (G4 NTM) on its Hillsboro-Portland-Seattle fibre routes to enable remote-controlled, reconfigurable fibre-optic patch panels and cross-connect platforms for enhanced automation and diagnostics.

The initiative will also provide intelligent capacity and the ability to reconfigure backhaul dynamically, ensuring an exceptional experience for its customers. By leveraging Ciena's WaveLogic 5 Extreme, MOX can deliver wavelength services with improved capacity, speed, and efficiency, addressing the growing bandwidth needs of content providers and carriers. The upgrade will also help MOX extends its optical layer to nearby datacentres and customer locations through small remote nodes.

The deployment of Ciena's 6500 system and Telescent's reconfigurable patch panels will enable MOX to test and turn up the new fibre with 100G and 400G services on MOX's Hillsboro-Portland-Seattle fibre route later this year.

Equinix expands presence in Malaysia with new datacentre in KL

Digital infrastructure company, Equinix is set to open its first datacentre in Kuala Lumpur in Q1 2024. This expansion follows the company's announcement last year to enter Malaysia with a datacentre in Johor. With Malaysia's strong cloud growth, e-commerce adoption, and investment in 5G, the country has become a thriving datacentre market in the ASEAN region. Equinix's move aims to cater to the rising demand from local and global companies expanding in Malaysia.

As Malaysia enters Phase 2 of its MyDIGITAL blueprint for a digital economy, the demand for digital infrastructure remains high. According to Synergy Research, Malaysia is already the third-largest datacentre colocation market in the ASEAN region, and it is projected to grow at a compound annual growth rate (CAGR) of 11% from 2022 to 2027. Equinix's new facility, named KL1, will support Malaysia's digital vision and position the country as a hub for colocation in ASEAN.

The KL1 datacentre, located in Cyberjaya within Kuala Lumpur, will provide an initial capacity of 450 cabinets and a colocation space of 1,300 square meters in its first phase. When fully built, it will offer a total of 900 cabinets and a colocation space of 2,630 square meters. It will enable global networks, content providers, and enterprises to exchange high volumes of Internet traffic through Equinix Internet Exchange.

Equinix's expansion in Malaysia reinforces its commitment to supporting 5G development and serving as a trusted platform for businesses to interconnect their foundational infrastructure. The company's strong presence in Asia-Pacific, with 51 datacentres across 13 metros, including expansions in Indonesia and Malaysia, positions it as a key player in the region's digital transformation.

Transdev partners with Netskope to enhance cloud data security

Secure Access Service Edge (SASE) company, Netskope has announced that Transdev, a global mobility leader operating public transportation networks across 19 countries, has implemented Netskope Private Access (NPA) and Next Generation Secure Web Gateway (NG-SWG) as part of Netskope's Intelligent SSE platform, enabling secure data access and connectivity for employees worldwide.

The technical roll-out began in France and has expanded to Transdev teams in Germany, Canada, and Australia, ensuring data and threat protection for enhanced connectivity experiences in both office and remote environments. Transdev, a global mobility operator present in 19 countries, transports nearly 10 million passengers daily. The collaboration with Netskope further strengthens their commitment to data control and security in their operations.

Netskope's NG-SWG empowers Transdev to define and enforce acceptable use policies for different categories of websites and applications, supporting nuanced policy decisions based on evolving zero trust factors. The cloud-native platform differentiates between different instances of cloud applications, allowing Transdev to secure data and resources with application-level access control based on user identity and device security posture.

Netskope's global NewEdge infrastructure ensures compliance with regulations such as General Data Protection Regulation (GDPR) in France and Germany and the Personal Information Protection and Electronic Documents Act (PIPEDA) in Canada while providing options for data sovereignty to meet Transdev's preferences.

Highlighting the benefits of Netskope's zero trust solution, Yann Boulet, Head of Networks and Telecoms Group, Transdev said that the solution along with the next-gen Secure Web Gateway provides optimised data, network visibility and security. "With real-time identification and analysis of suspicious behaviour, Transdev teams can implement appropriate security measures to prevent potential attacks, ultimately enhancing data safety and meeting data protection responsibilities."

Salesforce unveils AI Cloud, trusted generative AI for enterprises

Salesforce has announced the launch of its AI Cloud, a suite designed to empower users with generative AI for enhanced customer experiences and increased productivity. AI Cloud integrates seamlessly with all applications and workflows, delivering trusted, open, and real-time generative experiences. The introduction of the Einstein GPT Trust Layer within AI Cloud addresses concerns around risks associated with adopting generative AI by offering customers robust enterprise data security and compliance measures while harnessing the benefits of generative AI.

At the core of AI Cloud lies Einstein, the company's AI for CRM, which currently powers over one trillion predictions weekly across Salesforce applications. By leveraging generative AI, Einstein enables companies and employees to boost productivity and efficiency across sales, service, marketing, and commerce.

AI Cloud empowers sales representatives to generate personalised emails tailored to their customers' needs rapidly. Service teams can auto-generate personalised chat replies and case summaries, while marketers can create personalised content to engage customers across various channels. Commerce teams can leverage AI-generated insights and recommendations to deliver customised commerce experiences at every stage of the buyer's journey. Additionally, developers can auto-generate code, predict potential bugs, and receive suggested fixes.

The importance of trusted generative AI in the enterprise cannot be overstated. While company leaders are eager to embrace generative AI, concerns surrounding hallucinations, toxicity, privacy, bias, and data governance have created a trust gap. Salesforce's research reveals that 73% of employees believe generative AI introduces new security risks, and nearly 60% of those planning to utilise the technology are unsure how to keep their data secure.

AI Cloud addresses this trust gap with the introduction of the Einstein GPT Trust Layer. This layer prevents large-language models (LLMs) from retaining sensitive customer data, ensuring that customer data governance controls are maintained while still harnessing the immense potential of generative AI. The Einstein GPT Trust Layer sets a new industry standard for secure generative AI in the enterprise. It also supports third-party LLMs from leading providers like Amazon Web Services (AWS), Anthropic, and Cohere, hosted entirely within Salesforce's infrastructure.

Emphasising the transformative power of AI, Salesforce Chair and CEO Marc Benioff said: "AI is reshaping our world and transforming business in ways we never imagined, and every company needs to become AI-first. AI Cloud is the fastest and easiest way for our customers to unleash the incredible power of AI, with trust at the centre driven by our new Einstein GPT Trust Layer. AI Cloud will unlock incredible innovation, productivity, and efficiency for every company."

The company has also established a shared trust partnership with OpenAI, enabling joint content moderation using OpenAI's Enterprise API and best-in-class safety tools in conjunction with the Einstein GPT Trust Layer to ensure data retained in Salesforce remains secure.

Customers can leverage Salesforce's own LLMs, developed by Salesforce AI Research, to power advanced capabilities such as code generation and business process automation assistance. These LLMs, including CodeGen, CodeT5+, and CodeTF, enhance productivity, bridge talent gaps, reduce implementation costs, and improve incident detection.

Additionally, customers who have trained their own domain-specific models externally can benefit from AI Cloud while storing data within their own infrastructure. AI Cloud seamlessly connects to these models, whether running through Amazon SageMaker or Google's Vertex AI, through the Einstein GPT Trust Layer, enabling customers to maintain control over their data.

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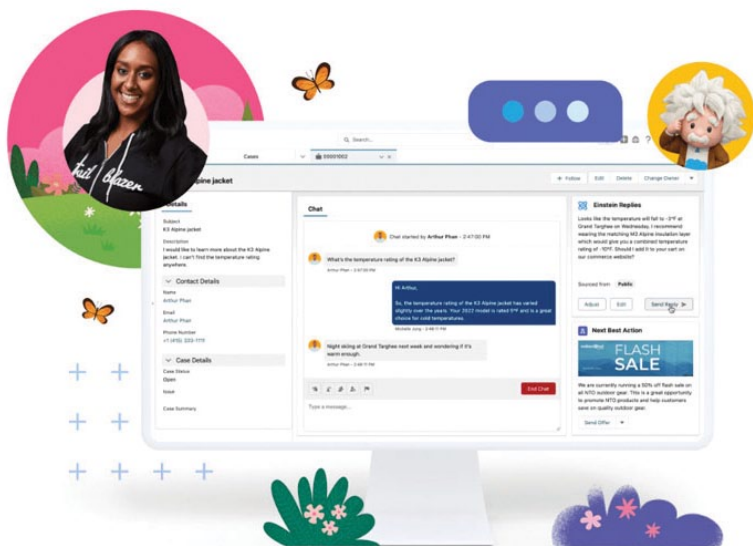
Deutsche Bahn, Ericsson, O2 Telefónica to provide 5G on trains

Deutsche Bahn, Ericsson, O2 Telefónica, and Vantage Towers have joined forces to develop a solution that will create a comprehensive 5G mobile communications infrastructure along train tracks in Germany. This infrastructure aims to provide train passengers with gigabit speeds for their phone and data connections, as well as high-performance transmission technology to further digitise rail operations. The partners have secured funding from the German Federal Ministry for Digital and Transport (BMDV) to test innovative technology for mobile communications coverage along tracks.

The BMDV will allocate approximately EUR 6.4 million to support the Gigabit Innovation Track (GINT) project, a crucial component of the German government's gigabit strategy. The GINT partners plan to explore technical and financial options for sustainable and high-performance 5G mobile coverage along tracks. Additionally, the project will test 5G on O2 Telefónica's 3.6 gigahertz frequencies to provide gigabit coverage for rail passengers. However, the shorter range of these frequencies means approximately 20,000 new towers will be required along tracks throughout Germany. The deployment of the Future Rail Mobile Communication System with its dedicated 1900-megahertz band will further necessitate additional towers.

By the end of 2024, the partners aim to determine how to achieve future high transmission rates and build the necessary infrastructure while minimising resource consumption. They will create a test area in Mecklenburg-West Pomerania, featuring ten innovative towers of different designs, to experiment with technological approaches and options. The project also includes exploring sustainable tower designs that can be securely installed without costly concrete foundations, saving time and reducing CO2 emissions.

Juniper to enhance UTokyo's campus wireless Infrastructure

Juniper Networks has announced that the University of Tokyo (UTokyo) has selected its AP32 Access Points to provide a seamlessly unified wireless experience across its campuses. These networking upgrades will enable the multiple departments in UTokyo to deliver a high-speed wireless network infrastructure to its 48,000 students and faculty actively engaged in learning and research across 10 faculties and 15 graduate schools.

As one of Asia's most esteemed universities, UTokyo has a rich history of academic excellence and has produced numerous notable alumni, including prime ministers, Nobel Prize winners, and astronauts. In line with the Japanese government's initiative to develop research universities of global standards, UTokyo launched the UTokyo Compass initiative, aiming to foster innovation and excellence through dialogue and diverse perspectives.

To support this initiative, UTokyo has embarked on a comprehensive reassessment of its Information and Communications Technology (ICT) strategy. The university established the UTokyo Wi-Fi Task Force, which focused on enhancing the wireless network infrastructure to facilitate active communication throughout its campuses. The goal was to create a reliable, secure, and high-performing wireless network capable of accommodating a large number of users with multiple devices each.

The deployment of Juniper AP32 Wireless Access Points across its three main campuses in Hongō, Komaba and Kashiwa has streamlined network management and operations. With a single dashboard powered by Mist AI, the university's departments have gained a unified view of the entire network, enabling them to observe faults, visualise user experiences, and enhance operational efficiency.

Recognising the drivers of telecom in India

V&D announces its prestigious leadership awards – Telecom Person of the Year, Pathbreaker of the Year, and Lifetime Achievement Award

V&D BUREAU

As India's leading and the first telecom industry magazine, Voice&Data has been chronicling the journey of the telecom ecosystem in India since the first telecom policy was announced to open up the sector. The publication has been an industry voice, actively highlighting its achievements, underlining the challenges and advocating for policy updates and changes, playing an independent role of the fourth pillar to drive and influence factors of growth. The CyberMedia Group publication has also been motivating the industry to do more, better and innovate by recognising the leaders and trailblazers.

Keeping up with its tradition, the magazine hosted the 22nd Telecom Leadership Forum (TLF), including the V&D Telecom Leadership Award for 2022. The Telecom Person of the Awards for 2022 was conferred upon the enablers of Made in India 4G Stack jointly to Tata Consultancy Services (TCS), Centre for Development of Telematics or C-DoT, Tejas Networks, and BSNL. The award was received by Vimal Kumar, Vice President – Network Solutions and Services, TCS; Dr R K Upadhyay, CEO, C-DOT; Dr Kumar Sivarajan, Co-founder and CTO, Tejas Networks; and Pravin Kumar Purwar, CMD, BSNL respectively on behalf of their companies.

Award Jury Process

Phase 1: Voice&Data sought nominations from the industry through an open online process. The online form was available for anyone to submit their nomination or that of others.

Phase 2: V&D editorial team went through the nominations, did additional research on each individual, organisation and project, filtered them as per the pre-defined criteria, and created dossiers for each of the nominees. The nomination dossiers were shared with the jury members for their review before the Virtual Jury meeting was held.

Phase 3: The Virtual Jury Meeting was organised, where Jury Members led by Anshu Prakash, former Telecom Secretary, Government of India reviewed each nomination threadbare, discussed the impact at the company, industry and national level, deliberated on the long-term implications of the initiatives, decisions, and actions to unanimously decide on the winners.

LIST OF JURY MEMBERS

Anshu Prakash
Former secretary,
DoT [Jury Chair]

Prof Ashok Jhunjhunwala
Department of Electrical Engineering, IIT Madras [Jury Co-Chair]

Pradeep Gupta
Chairman,
CyberMedia Group
[Jury Co-Chair]

Arun Karna
MD and CEO,
AT&T Global
Network Services
India

P Balaji
Chief Regulatory
and Corporate
Affairs Officer,
Vodafone Idea
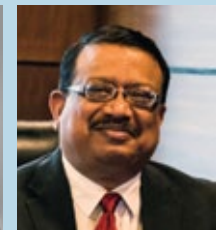
Manoranjan Mohapatra
CEO,
Comviva
Technologies

Prof NK Goyal
President of CMAI
Association of India
and Chairman
Emeritus, TEMA

Prateek Pashine
President,
Enterprise
Business,
Reliance Jio

Sanjay Sharma
Senior VP,
Accolite Digital

Saurabh Sahu
MD and Lead,
Communication,
Media, and Technology,
Accenture India

TV Ramachandran
Director-General,
Broadband India
Forum

The Pathbreaker of the Year was given to Made in India social media platform Koo as a recognition of the breakthrough initiatives for the development and launch of the Made in India social media platform. The award was received by Mayank Bidawatka, Co-Founder of the company. The Lifetime Achievement Award was conferred upon former TRAI Chairperson and NHA CEO Dr RS Sharma in recognition of his outstanding contribution to the field of digital communications and its applications.

The awards were decided by a Jury process chaired by Anshu Prakash, former Telecom Secretary, Government of India, and comprising telecom industry veterans and experts. 🔥

Voice&Data Telecom Person of the Year 2022

Enablers of Made in India 4G stack

Vimal Kumar
Vice President – Network Solutions and Services, TCS

Dr RK Upadhyay
CEO, C-DOT

Dr Kumar Sivarajan
Co-founder and CTO, Tejas Networks

Pravin Kumar Purwar
CMD, BSNL

Delivering indigenous telecom technology

Driven by the commitment to make India self-reliant on telecom technologies, these four companies, two from the private sector and two from the public sector, played a crucial role. Their collaborative efforts have led to the development of India's first indigenous 4G Stack, propelling the country into an elite league of nations like China, Finland, South Korea, Sweden, and the USA that have achieved cutting-edge telecom network technology. Currently, the market is dominated by global players like Ericsson, Nokia, Huawei, and Samsung, the latter making significant strides in the field.

The country's indigenous telecom technology stack primarily refers to the development of the 4G core software that facilitates end-to-end call control across telco networks developed by the Centre for Development of Telematics (C-DOT), the Radio system supplied by Tejas Networks, and the software component to stitch and integrate the 4G solution by Tata Consultancy Services (TCS).

The indigenous telecom technology stack in India primarily revolves around the development of the 4G core software, responsible for seamless end-to-end call control across telco networks. The Centre for Development of Telematics (C-DOT) has developed this core software, while Tejas Networks has supplied the radio system, and Tata Consultancy Services (TCS) has contributed the software component necessary to integrate and stitch the 4G solution together. However, none of this would have been possible without the active involvement of the public-sector telecommunications company, Bharat Sanchar Nigam Limited (BSNL), which provided the crucial opportunity to conduct the Proof of Concept (PoC) by running the 4G stack on its network.

The successful completion of the PoC and the demonstration of its ability to handle a 10-million subscriber load at the Ambala site on BSNL's network have paved the way for the nationwide rollout of the 4G stack. Once the hardware is scaled, the system will be capable of handling even higher call volumes, enabling the pan-India rollout of 4G by BSNL. The agreement between BSNL and the TCS-led consortium is valued at approximately Rs 24,500 crore, including the supply and maintenance of equipment for 100,000 4G sites.

The 4G Converged CORE developed by C-DOT is a cloud-based solution that adheres to international standards set by 3GPP. It boasts a highly scalable, virtualised, and modular architecture, ensuring a simplified yet efficient system. One of the notable advantages of this solution is its resilience against external threats, as it is entirely developed within the country. It operates on commercially off-the-shelf (COTS) hardware, leading to reduced capital and operational expenditures. Additionally, the absence of vendor lock-in ensures cost-effectiveness, regular updates, upgrades, and long-term support for service providers.

Experts highlight the immense benefits of the 4G Core technology for telecom network service providers, public safety networks, strategic telecom networks, rural telecommunication networks, infrastructure networks, and private on-campus networks. It comes as no surprise that several countries have expressed interest in India's "Made in India" 4G stack. In fact, India's Minister of Railways, Communication, Electronics and IT, Ashwini Vaishnav, has described it as a significant milestone marking India's emergence in the telecom technology front.

The recognition of the outstanding commitment and work done by TCS, C-DOT, Tejas Networks, and BSNL in the development and launch of the Indian 4G stack has been unanimous. The Telecom Leadership Awards 2022 Jury and Editors of Voice&Data have acknowledged their visionary approach and unwavering determination in completing the testing phase and reaching the threshold for the launch of the indigenous 4G stack.

The award acknowledges the enablers of indigenous 4G equipment, infrastructure, and solutions and also highlights BSNL's pivotal role in providing the platform for this groundbreaking achievement. The successful deployment of the indigenous 4G-based communication network is also likely to open up opportunities for exporting Made in India 4G and 5G technology equipment and software in the days to come. ✣

Voice&Data Lifetime Achievement Award 2022

Dr RS Sharma, Former CEO – National Health Authority and Former Chairman, TRAI

Transforming digital communications in India

I n the fast-paced world of technology and communications, few individuals leave an indelible mark on an entire industry. Dr Ram Sewak Sharma is one such visionary technocrat who has transformed the Indian digital communications sector like no other. His exceptional leadership and relentless pursuit of innovation have propelled India to become a global leader in digital applications.

As the Chairperson of the Telecom Regulatory Authority of India (TRAI), he played a pivotal role during an extremely challenging time in the Indian telecom sector. Under his astute leadership, TRAI initiated major reforms and groundbreaking initiatives that have had far-reaching impacts on the industry. One of his key accomplishments was the introduction of transparent, non-discriminatory, and non-predatory telecom tariffs. This game-changing move has revolutionised the telecom industry, fostering a fair and competitive environment for all stakeholders.

A true technologist at heart, Dr Sharma has consistently displayed an inclusive approach, bringing together diverse stakeholders in the telecom industry. His open, accessible, objective, and forward-looking style of leadership has accelerated India's march towards becoming a digitally empowered nation. Recognising the transformative potential of telecom in bridging the digital divide, he tirelessly worked to ensure the adoption of contemporary technology, thus improving the economic and social conditions of the average Indian citizen.

Under his stewardship, TRAI actively sought public participation in policy-making through consultations, studies, and discussions aimed at bridging the digital divide. Various consultation papers on crucial topics such as cloud services, unified numbering plans, interoperable set-top boxes, and next-generation public protection and disaster relief communication networks were released, reflecting his commitment to a participatory approach.

Dr Sharma's impact on the digital communications sector, however, extends beyond policy-making. He spearheaded the digitisation of broadcasting and cable services, enabling the seamless transition to a digital era. Additionally, he made significant recommendations on critical issues such as privacy, security, ownership of data in the telecom sector, and the development of indigenous

telecom manufacturing. His dedication towards creating consumer education and awareness through a multitude of outreach programmes and workshops is highly commendable, that highlights his steadfast resolve to safeguard consumer interests.

The magnitude of his contributions extends beyond the realm of telecommunications. As the first Director General of the Unique Identification Authority of India, he played a pivotal role in creating Aadhaar, the world's largest identity platform. His book, "The Making of Aadhaar: World's Largest Identity Platform," stands as a testament to his invaluable expertise and leadership in this groundbreaking initiative. Additionally, his tenure as the Secretary of the Ministry of Information Technology and IT further exemplifies his vast experience and deep understanding of the sector.

Over his illustrious 40-year career, Dr Sharma made significant contributions to the field of e-Governance, spearheading the integration of IT systems in various areas of public service delivery. His visionary efforts resulted in the introduction of digital systems in government treasuries, public grievances, office automation, land reforms, urban governance, tax reforms, and transport systems, among others. One of his notable achievements was crafting policies for digital payments, which laid the foundation for the highly successful Unified Payments Interface (UPI) in India. He also played a pivotal role in driving policies related to open source, open standards, and open APIs in all government projects.

In recent times, Dr Sharma's role in leading the CoWIN platform for creating and maintaining the digital infrastructure for COVID-19 vaccines in India has been instrumental in the nation's fight against the pandemic. His remarkable achievements also include his involvement in the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana, the world's largest fully government-funded health assurance scheme. He is credited with driving the development of the backbone necessary to support this integrated digital health infrastructure.

Voice&Data recognises his contributions, visionary approach, and unwavering commitment to transforming the digital communications sector, which makes him a technology leader who will continue to shape the future of the sector in India, inspiring generations to come. ♣

Voice&Data Pathbreaker of the Year 2022

Koo

Koo to tango: Aprameya Radhakrishna, Co-founder and CEO (left) and Mayank Bidawatka, Co-Founder.

Pioneering the Indian social media revolution

In the ever-evolving realm of social media, one platform has emerged as a true trailblazer in the Indian digital landscape. Koo, a homegrown social media sensation, has captivated the nation with its unwavering commitment to privacy, local content, and support for Indian languages. Surpassing Twitter India in both popularity and valuation, with a staggering 50 million downloads, Koo stands as a testament to the burgeoning demand for indigenous alternatives that celebrate local culture and language.

At the core of Koo's triumph lies its unwavering dedication to showcasing local content. With a dedicated section brimming with news and information from various Indian states, Koo has become the go-to platform for politicians, celebrities, and everyday individuals seeking an authentic Indian experience. Its availability in ten Indian languages has further propelled its meteoric rise, enabling a wider range of users to engage and connect, contributing to its remarkable growth.

Yet, Koo's influence extends far beyond the borders of India. In countries like Brazil and Nigeria, it has made waves as a compelling alternative to established social media giants. Brazilians, disenchanted by recent changes on Twitter, flocked to Koo, amassing over two million downloads in no time. Similarly, in Nigeria, Koo emerged as a coveted sanctuary after Twitter faced an indefinite ban. This global recognition underscores Koo's potential for expansion and its unique ability to resonate with users across diverse cultural landscapes.

Investors have eagerly embraced Koo's triumph, with the platform's founders successfully raising a staggering USD 30 million in Series B funding. This resounding support from esteemed investors attests to Koo's limitless growth potential and sets the stage for its exciting future development and expansion. Koo's impact on the Indian and international social media landscapes serves as a powerful reminder of the imperative to prioritise homegrown alternatives that honour local customs, languages, and privacy.

Koo first catapulted into the limelight in August 2020, when it clinched the prestigious AatmaNirbhar Bharat App Innovation Challenge, an initiative launched by MyGov, the Indian government's citizen engagement platform. The accolade, awarded in the Social category, solidified Koo's position as a trailblazing solution within the Indian digital ecosystem.

Founded by Aprameya Radhakrishna and Mayank Bidawatka, Koo aimed to create a compelling alternative to Twitter, granting a voice to countless Indians previously confined to WhatsApp groups due to the dearth of regional language options on existing social media platforms. Initially launched with support for the local Kannada language, Koo swiftly blossomed into the second-largest multilingual microblogging platform, championing languages like Hindi, English, Tamil, Telugu, and more.

Having amassed an impressive 50 million downloads, Koo stands as a pioneer in language-based microblogging, actively harnessed by over 7,500 eminent personalities spanning diverse industries. Its influence transcends borders, captivating users across 100+ countries through its app and web platform.

Recognising the transformative power of artificial intelligence, Koo seamlessly integrated generative AI, specifically ChatGPT, into its platform, empowering users to effortlessly craft captivating and relevant posts. Koo's groundbreaking integration enables users to draft posts using ChatGPT directly within the app, a first among the existing social media platforms.

Koo's commitment to an unparalleled user experience is exemplified by a host of remarkable features. These include the ability to edit Koos, free self-verification, multiple profile photos, support for numerous media attachments, extended video capabilities, the option to save and schedule Koos, and effortless tweet importation, obviating the need to start from scratch.

Acknowledging its groundbreaking initiatives and the successful launch of the Made in India social media platform, Koo was awarded the coveted Pathbreaker of the Year accolade for 2022 by the esteemed Jury of the Telecom Leadership Award and Editors of Voice&Data magazine. This prestigious recognition solidifies Koo's standing as a revolutionary force, reshaping the Indian social media landscape.

As Koo continues to evolve and flourish, its unwavering commitment to safeguarding user privacy, amplifying local content, and championing Indian languages remains unyielding. With its unprecedented success, Koo shines as an illustrious exemplar of indigenous alternatives, reflecting the cultural tapestry and aspirations of a nation within the global digital arena. 🌀

5G: MEN (STILL) AT WORK

The 'slip between the cup and the lip' has become too long for 5G if we look at its actual, on-ground picture of both deployment progress and impact

BY PRATIMA HARIGUNANI

Smart fisheries, remote surgeries, intelligent trucks, extreme gaming, real-time farm-tech, private LTE factories, Metaverse, Augmented Reality (AR), low-latency-everything, URLLC-many things; all this is a superb picture of the future that is 'almost here'. All these super-fast, and super-sleek, jets are almost done with all the tinkering. They are waiting in the wings to take off.

Albeit, a hitch. The runway, called 5G, is still being paved.

It is a strong and promising road that is being laid with a lot of fervour and hope. But overall, the ground is still soggy, slippery and unfriendly to hammers and nails. Meanwhile, the world waits with bated breath for all those new flights that can be propelled from this runway. The pilots are ready and passengers are strapped. But the departure screen keeps changing. It does not exactly look on time in many spots.

By 2025, 5G is expected to account for a quarter of all total mobile connections, as per a GSMA report. But would that happen so easily? Consider a recent Analysys Mason's 5G deployment tracker that shows that 44 new 5G networks were launched by operators in 2022; a dip from the 48 launches in 2021. There were also some postponed launches in 2022, attributed to delays in the spectrum allocation process and regulatory barriers. In 2023, there has been only one 5G network launch in Q1. An additional 67 are either in deployment or slotted for a later date. Even in the Standalone genre of 5G, while launches are on the rise in Western Europe and developed Asia-Pacific (DVAP), the adoption remains slow.

"Rolling out 5G will take 3-4 years because it will need a lot of depth and density, with lots of base stations, sensors, cloud, compute platforms and edge infra."

Sanjay Nayak
Co-founder, CEO and MD, Tejas Networks

> "Enterprises often have legacy technologies and networks in place, which need to coexist and interoperate with the new 5G infrastructure."

Praveen Cherian
CEO, STL Global Services

A Counterpoint Research report indicates that a major chunk of the 5G deployments in 2022 was in the developed economies of the world. The scenario could shift towards emerging markets in 2023 with more network roll-outs expected in emerging markets and a shift from 5G NSA to 5G SA. But it is hard to miss that many players, especially in the emerging market region, are struggling. Only 42 operators have deployed 5G SA commercially while many are in testing and trials. Overall, the deployments in emerging economies are lagging, the report says.

Commenting on the infrastructure for 5G, Sanjay Nayak, Co-founder, CEO and MD, Tejas Networks said: "Rolling out 5G will take three to four years because it will need a lot of depth and density, with lots of base stations, sensors, cloud and compute platforms and edge infra." "5G is still evolving and only major cities have access with a large number of Tier 2 and Tier 3 cities still out of coverage," he added.

This delay trickles its way into on-ground confidence in 5G's execution ease. When compared to wired or wireless broadband connection 5G is a more expensive option, says Manoj Gupta, Associate Vice President – IT, Burger King India. "Therefore, for an enterprise to fully reap the benefits that 5G offers, they will have to invest a huge amount. The best way to tackle this would be to do a step-by-step cost investment. 5G will replace broadband connections in the future but at the moment considering the cost factor and network range, we have decided to wait for some more time. However, we are open to adopting 5G as a secondary or backup connection provided the store has a network range."

The 'slip between the cup and the lip' has become too long for 5G if we look at its actual, on-ground picture of both deployment progress and impact. Interestingly, a lot of this can be blamed on business strategy gaps as it can be slapped on the shoulders of technical cavities. From fibreisation, technical infrastructure, and spectrum gaps to the absence of 5G-savvy use cases, many pot-holes dot this up-and-coming airstrip.

Let's see some of the top issues that are blocking 5G's path.

THE NUTS AND BOLTS
Ask Biswajeet Mahapatra, Principal Analyst at Forrester and he points at the low level of fibreisation as the biggest issue. "Fibreisation is the process of connecting radio towers via optical fibres. In India, only 30-40% of towers are fibreised whereas it is almost 70-80% in countries like China, Japan, South Korea, and the USA. Ideally, a country needs 1.3 km of firer per capita to ensure good fabrication. India's fibre km average is just 0.09 compared to 1.35 in Japan, 1.3 in China, and 1.34 in the US."

"We also need to consider the restriction on large-scale fibreisation due to the Right of Way (RoW) rules. The variations in cost/km of fibre laid are extremely high which sometimes becomes unviable for MNOs. In addition to these, since telcos will deploy 5G on virtualised RANs, and deploy edge computing capabilities, the backhaul also has to improve," Mahapatra adds.

More such issues stop 5G's deployment traction. It is important to note that Standalone (SA) 5G is different from Non-SA 5G. The former is unrestricted by the limits of the prior generation of telecommunications technology, but the latter hinges on already-existing 4G infrastructure.

While fibre tarmac matters a lot, we cannot ignore two big technical issues here that will play out once the fabric is in place: network and technology interoperability. "As 5G technology evolves and different vendors introduce their solutions, ensuring seamless interoperability between diverse networks and technologies becomes crucial for enterprises. One

> "Private Mobile Networks should be seen as a medium-term opportunity that will gain momentum as the market matures with deployment, applications, and devices."

Pulkit Pandey
Principal Analyst, Gartner

of the primary challenges lies in integrating 5G networks with existing infrastructure and systems. Enterprises often have legacy technologies and networks in place, which need to coexist and interoperate with the new 5G infrastructure. Achieving compatibility and smooth interoperability between these systems can be complex and time-consuming, requiring careful planning and coordination," points out Praveen Cherian, CEO, STL Global Services.

Interoperability challenges can hinder network integration and innovation, limiting effectiveness. The lack of 5G specifications and standards creates compatibility and consistency issues among vendors and equipment, causing deployment complexities and delays. Previous generation limitations, like outdated infrastructure, may require upgrades to fully leverage 5G capabilities.

Truly. The tech tar of 5G is still not fully ready, both at the individual level and at the level of standards and industry.

Tushar Agnihotri, Country Head – India and Regional Head – APAC, Route Mobile Limited argues that with the availability of such high-speed connectivity, organisations will need to upgrade to technologies that support 5G. "Customer service standards will also rise with 5G and customers will prefer to interact with brands that adopt the evolving tech, efficiently".

"5G Networks are not entirely ready for 3GPP use cases like Ultra-Reliable and Low Latency Communications (uRLLC), Massive Machine Type Communication (mMTC), and Vehicle-to-everything (V2X), which support stringent low latency, high reliability, high-density QoS parameters. Cross-domain orchestration across the networks required for Network Slicing is still a challenge and evolving technology. 5G deployments in the telco cloud for 5G enhanced mobile broadband (eMBB) are still stabilising, with Site Reliability complexity and monitoring taking precedence," tells Kuljesh Puri, Senior Vice President and General Manager – IBM Alliance, Communications, Media and Product Business, Persistent Systems.

Dr Rahul Shrestha, Associate Professor, School of Computing and Electrical Engineering, IIT Mandi reminds us of some other challenges for the 5G network deployment, especially regulatory ones. "Like deployment of small and macro cells, streamlining the regulatory approval for small cell equipment is also important. Furthermore, securing sufficient suitable sites with power and backhaul is another challenge."

ZOOMING OUT: THE COUNTRY AND ENTERPRISE ANGLE

Specific to India, there are issues like infrastructure requirements, spectrum availability, and regulatory considerations, underlines Cherian. "Recently, the Department of Telecommunications (DoT) has decided against giving spectrum directly to enterprises for captive

> "We need to consider the restriction on large-scale fibreisation due to the RoW rules; the variations in cost/km of fibre laid are extremely high."

Biswajeet Mahapatra
Principal Analyst, Forrester

> "With the availability of high-speed connectivity, organisations will also need to upgrade to technologies that support 5G."
>
> **Tushar Agnihotri**
> Country Head – India and Regional Head – APAC, Route Mobile Limited

private networks. Instead, enterprises can lease spectrum from telecom operators. This will allow enterprises to have access to 5G spectrum and also help to ensure that spectrum is used efficiently and that security and privacy concerns are addressed."

Also, factors such as compliance, network coverage and complexity, and the lack of control pose potential hurdles, making it difficult for enterprises to tailor the technology to their specific needs. "One particular challenge arises from the possibility of being tied to a long-term contract with a telecom operator when leasing spectrum. This contractual arrangement may restrict enterprises from switching to a different provider if they are dissatisfied with the service, creating a sense of limitation," Cherian dissects.

Even on the enterprise side, or maybe more on this side, many hurdles interrupt the fast-lane drive of 5G.

Pulkit Pandey, Principal Analyst at Gartner is particularly excited about Private Mobile Networks as one of the key areas of interest for enterprises. "However, there are certain factors, such as complexity and long process that act as roadblocks. One needs to go through an exhaustive decision-making process, as a high number of Business Units (BUs) and accordingly, stakeholders are involved in the process. Additionally, the 5G ecosystem is still immature and thus slows down the process of adoption. Overall, Private Mobile Networks should be seen as a medium-term opportunity, which will gain market momentum as the market matures with deployment, applications and devices."

Cherian dismisses the idea that these issues are limited to a particular country or industry. "They transcend borders and industries. These challenges may arise from factors such as infrastructure readiness, regulatory frameworks, and market dynamics."

But the challenges do change as per different formats like Private LTE, Edge Outposts, SA vs. non-SA architectures and non-fibreised areas. "Yes, the deployment challenges for these formats differ from that of traditional 5G deployments." Cherian avers.

"For Private LTE, challenges include spectrum availability, licensing, and network security within the private environment. Edge Outposts require addressing power, cooling, connectivity, and optimising data transfer between edge and core networks. SA and non-SA architectures have different infrastructure requirements and capabilities. Non-fibreised areas pose connectivity challenges without fibre-optic infrastructure. Overall, these formats present unique challenges that enterprises must tackle during 5G deployment," he explains.

There are many other issues like spectrum, telco infra inadequacy, lack of 5G specs and standards, millimetre wave band, previous generation limitations and network density. Ask Cherian and he concedes that these problems significantly impact 5G network deployment and effectiveness. "Spectrum availability is critical for network capacity and performance. Inadequate spectrum allocation or management can cause congestion, slower speeds, and reduced capacity. Telco infrastructure adequacy is vital to support increased demands.

> The lack of 5G specifications and standards creates compatibility issues among vendors and equipment, causing deployment complexities and delays.

> "5G deployments in the telco cloud for 5G enhanced mobile broadband are still stabilising, with Site Reliability complexity and monitoring taking precedence."

Kuljesh Puri, Senior Vice President and General Manager – IBM Alliance, Communications, Media and Product Business, Persistent Systems

Upgrading and expanding existing infrastructure is necessary for handling higher data volumes and ensuring reliable service."

What can be done right is more expansive than what is gone wrong. We should be embracing automation to scale up the deployment, strengthening rural connectivity, and focusing on skill development and workforce training, especially for managing, maintaining, and troubleshooting the complex infrastructure.

"The telecom and allied sectors are projected to experience a significant increase in demand for technology talent. Estimates indicate a rise of 15-20% in the coming year, with an even more remarkable surge of 25-30% expected in the current year," Cherian highlights.

Manish Vyas, President, Communications, Media and Entertainment Business, and CEO, Network Services, Tech Mahindra shares how recently the company announced that it would work with a large German-based telecom operator to develop 5G use cases. "Tech Mahindra's 5G Enterprise provides a range of services that can enable enterprises to establish their private wireless networks to span wide areas of operations and enable a plethora of IoT use cases. These use-cases range from industry 4.0 floor-to-floor automation, to control of autonomous trucks in open cast mines, to logistics and warehousing, to electricity distribution grids, to venue services amongst others," he says.

THE YELLOW SIGN OF WORK-IN-PROGRESS
It has just been a few months: India's operators launched 5G in October 2022. So, when Open Signal published an examination of real-world 5G experience across 22 telecom circles of India and its major cities around March 2023, it was good to see that there has been a significant uplift in users' experience with 5G compared to 4G. Average download speeds across the circles were between 12.2 to 26.2 times faster with 5G (video

experience was 19.9-32.4% better, and games experience about 14-44.4%). 5G users in half of India's telecom circles spend over 20% of the time with an active signal. Looks like there is a lot of potential for improving the mobile network experience for users in both urban and peri-urban India. The study, however, tells that a lot of work needs to be done to ensure widespread availability and consistent performance across all regions.

And that has to be done because 5G would unleash a lot of never-before benefits when it hits the ground. "Getting real-time information about fish pool location, dynamic monitoring of fishes, and improving safety by accurate local weather prediction is critical in the fishing industry in India which has a huge coastline. 5G enabled-crop monitoring helps in determining the soil characteristics, which helps determine the right amount of water, minerals and fertilisers required. 5G will help improve agriculture production, reduce waste, and conserve the environment," shares Mahapatra as just one example of the revolution we can unlock.

Puri adds that 5G will greatly benefit enterprises such as airports, seaports, public utilities, Smart Cities IOT, hospitals and ambulance systems, industrial operations at manufacturing plants, and many more.

Gupta reminds us how 5G offers benefits like faster installation, which helps businesses in a new location go live immediately which is great especially when you have challenges getting wired lines.

It will take a lot of priority work, skill, tools and some real grit to finish this tarmac as soon as we can. More so as 5G could be as much of a tech runway as a fashion runway. The 'new and hot' in technology will happen here and no prizes for guessing who will enjoy it the most. Those in the front row. ♣

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"5G INTEGRATION NEEDS TO RESOLVE COMPATIBILITY ISSUES"

GAURAV GANDHI
Founder and CEO, Echelon Edge

What are some practical challenges enterprises should consider when deploying a 5G network?

There are several challenges that enterprises should take into account when deploying a 5G network. These challenges arise from different aspects of the deployment, such as Private LTE, Edge Outposts, SA vs. non-SA architectures, and non-fibreised areas. Some critical considerations can be spectrum allocation, telco infrastructure adequacy, network interoperability, lack of 5G specs and standards, millimetre wave band challenges, previous generation limitations and network density and capacity.

Are these issues specific to India or a particular vertical or region?

No, the practical challenges in 5G network deployment are not specific to India or any particular vertical or region. These challenges are globally applicable and arise from the inherent complexities and requirements of deploying 5G networks. Enterprises worldwide, regardless of their location or industry, need to consider these challenges when implementing 5G technology.

Do they differ for formats like Private LTE, Edge Outposts, SA vs. non-SA architectures and non-fibreised areas?

Yes, the challenges in 5G network deployment can vary depending on the format and specific architecture being implemented. Private LTE deployments may require addressing issues related to spectrum allocation, infrastructure adequacy, and network interoperability while catering to the unique needs of the private network environment. Edge Outposts, which bring compute and

> Private LTE deployments may require addressing issues related to spectrum allocation, infrastructure adequacy, and network interoperability.

> SA architecture may require building a completely new core network, while NSA architecture allows for leveraging existing 4G infrastructure.

storage capabilities closer to the network edge, may require additional considerations for power and space requirements, as well as ensuring connectivity and synchronisation with the core network.

The choice between Standalone (SA) and non-Standalone (NSA) architectures also presents different challenges. SA architecture may require building a completely new core network, while NSA architecture allows for leveraging existing 4G infrastructure but may have limitations in terms of functionality and performance. Moreover, non-fibreised areas pose challenges related to backhaul connectivity. Since fibre-optic infrastructure may not be readily available, enterprises operating in such areas need to explore alternative backhaul solutions like wireless backhaul or satellite connectivity.

How critical are problems in areas like spectrum, telco infrastructure adequacy, network interoperability, lack of 5G specs and standards, millimetre wave band, previous generation limitations, and network density?

Various areas are critically important in the context of 5G network deployment. Adequate spectrum allocation is crucial for optimal network capacity and coverage. Upgrading or establishing new infrastructure is necessary to support the increased bandwidth and requirements of 5G. Interoperability between different vendors and technologies is essential for seamless integration. Additionally, clear and comprehensive specifications and standards are needed for interoperability and compatibility.

The challenges associated with millimetre wave bands lie in their limited signal propagation and range. Also, integrating 5G with previous generations can introduce compatibility issues. Sufficient network density and capacity are critical for seamless coverage and supporting numerous connected devices. Enterprises should carefully plan and address these challenges through collaboration with vendors, participation in standardisation efforts, and assessing the feasibility of millimetre wave bands. By proactively tackling these challenges, enterprises can ensure a successful and efficient 5G deployment, unlocking the transformative potential of the technology.

Are there any other factors impacting 5G network deployment?

There are a few other factors that deserve attention during 5G network deployment. Security and privacy are of paramount importance as 5G networks connect more devices and enable a wide range of applications. Enterprises need to implement robust security measures and ensure the protection of sensitive data. Another aspect to consider is the scalability of the network.

5G deployments should be designed with scalability in mind to accommodate future growth and increasing demands on the network. Furthermore, enterprises should focus on training and upskilling their workforce to effectively manage and maintain 5G networks. The successful deployment of 5G requires a skilled workforce capable of handling the complexities of the technology. ♻

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> We have achieved higher bandwidth with lower WAN cost while improving in-store Internet availability and addressing connectivity challenges across all restaurants.

Manoj Gupta
Associate Vice President – IT, Burger King India

"SD-WAN has helped us improve our uptime to 99.7%"

The trick of making a good burger is not just the ingredients you put in, but how you stack them. No wonder then, Burger King India, a franchisee of the US-based Burger King Corporation, recently implemented Software-Defined Wide Area Networking (SD-WAN) to nail high-performance networking capabilities that streamline operations, increase business agility, and bolster security across their data centre and restaurant locations.

Incidentally, India is the 100th country where Burger King opened a restaurant, and it marks a footprint of over 330 locations throughout the country. A recent report from investment banking firm Kennis Ventures Private Limited highlights that it is on the heels of the leading brand McDonald's in the top burger chain in India. This sprawling business and the competitive field make it crucial for its internal network to work well for fast transactions, store visibility, secure guest Wi-Fi connectivity, and application availability. Wiping away latency or failure as a digital business enabler becomes as central as the softness of the bun in a burger.

So, would SD-WAN be the right ingredient in this stack that makes a complete burger? What issues and pickles would have to be handled here? **Manoj Gupta, Associate Vice President – IT, Burger King India** *replies in detail about the secret dip that makes*
it all come together in an interaction with **Pratima Harigunani.** *Excerpts:*

Tell us about the recent SD-WAN rollout and what triggered this decision.

Burger King has 330 restaurants spread across India, some of which are in tier 3 and 4 cities. An end-to-end online Burger King experience for millennials has defined the brand over the years. As a customer-centric strategy, user experience and resilient network connectivity to enhance business uptime drove us to look at refreshing our networking and security technologies.

The business was getting affected because of unreliable local Internet connectivity in locations like malls or other remote areas. Security became a major concern, as we had to depend on the service provider for secure connectivity, which was not adequate. Considering better uptime and network security, we sought a solution that could provide centralised network control, visibility and better performance.

What made you choose SDN?

We looked at SD-WAN to connect our widely dispersed restaurants securely and cost-effectively. It became essential, for providing fast and secure access between the Burger King restaurant locations and our datacentre.

> A key benefit of SD-WAN solutions is that it provides seamless packet transfers between multiple links and gives us uninterrupted connections.

A key benefit of SD-WAN solutions is that it provides seamless packet transfers between multiple links and gives us uninterrupted connections. WAN link remediation automatically chooses the best connectivity to provide better application performance and user experience. With security-driven networking, we can increase visibility, apply control, and access policies across the network, all from a single pane of management.

Is SDN a better option than existing network infra? What made you choose SDN over NFV?

SD-WAN technology is becoming increasingly popular due to its ability to increase efficiency, reduce costs, and provide greater flexibility. With an integrated approach to secure SD-WAN, businesses can gain all the benefits of agility, without sacrificing security.

As networks continue to evolve, one concept will remain true: users and devices will need fast, accurate, reliable, and secure access to critical applications and resources. Whether deployed on-premise, in the cloud, as a cloud-based service, or even as part of a larger solution, it will continue to securely connect users, devices, and networks with critical applications and resources regardless of where they are deployed.

Would you be considering Intent-based Networking (IBN) as well?

The goals of SDN and IBN are the same, though the approach might be different. IBN is in its nascent stages and will evolve as a technology further. We are seeing the benefits of Artificial Intelligence (AI) and Machine Learning (ML) in security with automated threat response and remediation. Automation with IBN will similarly help on the networking side and will make the network business-centric rather than device-centric.

Yes, given a choice if we have to do it, maybe in the next few years we will surely think about implementing IBN to reduce manual tasking, faster resolution of networking issues, better security, and more.

How crucial are latency reduction and application availability for your business?

Digital Transformation is changing how Burger King is delivering value to customers whether in-store or online. A major portion of our business runs online, and this includes mobile aggregators. Such latency in the network or connectivity issues directly affects our sales and has an impact on our business and customer retention.

The restaurants require reliable network connectivity to overcome latency or connectivity failure. Application availability for both in-store and online orders is critical to enhancing customer experience since we rely heavily on the internal network to process transactions, transmit, and store customer data.

Have you started witnessing any benefits already? What big results do you expect from this deployment?

SD-WAN can be configured to prioritise business-critical traffic and steer it over the most efficient route. Having multiple options for moving traffic helps reduce packet loss from overloaded circuits and latency due to heavy traffic, improving performance and user experience. The solution has helped us to improve our uptime from 98.5 to 99.7%, which makes a huge difference in sales from a business standpoint.

We have achieved higher bandwidth with lower WAN cost while improving in-store Internet availability and addressing connectivity challenges across all restaurants. With centralised management and reporting through FortiManager and FortiAnalyzer, Burger King India has drastically improved visibility and security with next-generation firewall capabilities. Our security-driven networking approach simplifies deployment and connectivity and helps the restaurant chain achieve a resilient infrastructure with a security incident response strategy in place for future risks.

What about the challenges? What has been the learning from the rollout?

One of the most important aspects when making the move to SD-WAN is the focus on the networking and business benefits without paying much attention to the security implications. This lack of foresight is compounded by the fact that most SD-WAN solutions offer little more than a basic firewall and VPN functionality, which then presents a significant challenge for those teams now responsible for securing this technology. The inherent security issues of a dynamic WAN environment typically lead organisations to try and deploy overlay solutions that are not only very expensive but also add more complexity and limit visibility for security teams. Additionally, by relying on individual, isolated security tools, organisations struggle to gain granular control across the entire network, opening the door to security gaps.

With the right SD-WAN solution organisations

> **"** Digital transformation to enhance customer loyalty, drive repeat business and improve growth, is a critical business factor for Burger King.

can support their digital transformation goals while continuing to ensure business continuity, even when faced with limited IT staff and infrastructure resources. Centralised management and zero-touch deployments allow for faster configuration rollouts at scale, enabling the best possible performance of applications even when being delivered to a large group of remote users. It can shorten deployment times by securely connecting remote locations with Zero Touch deployment, even without the availability of technical resources. Branches can be up and running with plug-and-play connectivity as the device can be managed centrally from the head office.

Any issues that you have confronted or foresee as the flip side of SDN?

Approximately 85% of network traffic is encrypted. Inspecting this traffic to ensure it does not include malware or other malicious content requires massive amounts of processing power that most SD-WAN solutions (and most firewalls) cannot handle. To defend networks against cybercriminals who hide malware in VPN traffic to infiltrate networks, or hide data being exfiltrated, we should look for a solution that features built-in encrypted traffic inspection capabilities that can operate at the speed of the applications and connections being used. Also, when you don't have a security strategy for your SD-WAN solution you will find it difficult to ensure consistent policy enforcement across interconnected ecosystems by relying on an overlay solution.

What about the Whooper Wi-Fi? How does it help the business?

Burger King customers are mostly millennials and the Whooper Wi-Fi is about improving their in-store experience. Most of our guests carry smartphones and the Whooper Wi-Fi makes their time within the store more enjoyable. Our customers have a 'mobile on-the-go lifestyle and our Wi-Fi allows access to quality connectivity and digital experience which is garnering an overwhelming response. We have started the service in a few flagship outlets.

What else is happening on your IT side? Any exciting examples from the last 2-3 years? What have you planned next?

The company identified four pillars to target with our new digital strategy: increased visibility, improved control, automated IT workflows, and most importantly, increased security.

In a bid to improve internal data security, Burger King structured the project with these carefully mapped-out pillars based on existing challenges and the IT department's goals. The company was also mindful of the stakeholders involved, including employees and customers. After implementing the project, these four pillars have been addressed thoroughly. All results are well-aligned with the company's focus on achieving a centralised management infrastructure to create resilience between restaurants and data centres. This has straight away resulted in improved internal customer satisfaction scores. All restaurant-level devices can be traced and monitored centrally.

Digital innovation is an ongoing effort at Burger King, and you will see new technology platforms in our restaurants that will make them an enjoyable experience zone for our customers. 🍔

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Taking a step forward in space exploration and development

By adapting to evolving global and national dynamics, the Indian Space Policy 2023 sets the roadmap for the country's endeavours and domination in the sector

BY LT GEN A K BHATT

The Union Cabinet on 6th April 2023 approved the much-awaited Indian Space Policy 2023. The policy was an outcome of detailed deliberations which took place with various stakeholders within and outside the government, ever since the Prime Minister announced his historical decision in June 2020 to open space to private players. The policy outlines the strategic framework and principles for the country's space activities in the coming decades. It reflects the changing global and national context of space exploration and development and aims to enhance India's capacity, competitiveness, and cooperation in space.

One of the notable features of the new space policy is its emphasis on commercialisation and private participation in all domains of space activities. The policy recognises that the space sector has immense potential for generating new technologies, products, and services, as well as for creating jobs, revenues, and exports. Therefore, the policy aims to promote a conducive environment for private players to invest, innovate, and operate in space, while ensuring that the public interest, national security, and international obligations are safeguarded.

CLARITY IN THE ROLE OF STAKEHOLDERS

To achieve this goal, the policy envisages several measures, such as simplifying the regulatory and licensing procedures for space activities by defining roles of all governmental organisations such as the Department of Space (DOS), Indian Space Research Organisation (ISRO), Indian National Space Promotion and Authorisation

> The notable feature of the new space policy is its emphasis on commercialisation and private participation in all domains of space activities.

> The policy aims to enhance the quality and quantity of space education and training in the country through various initiatives.

Centre (IN-SPACe), and NewSpace India Limited (NSIL) as non-government entities. It encourages private industry, start-ups, and Micro, Small and Medium Enterprises to develop space-related products and services, facilitating technology transfer and incubation, promoting space tourism and education, and collaborating with foreign space agencies and industries.

All these measures are expected to stimulate the growth of a vibrant and diverse space ecosystem in India, which can leverage the country's strengths in space science, engineering, and applications, and address the emerging needs of the global space market.

To maintain India's competitive edge in the multiple domains of space infrastructure, space transportation, space applications, capacity building, and human spaceflight, ISRO will primarily focus on research and development of advanced space technology and applications. Developed systems will be transferred to businesses for commercial use through Technology Transfer authorised by IN-SPACe.

The commercialisation of space technologies and platforms, as well as the production, leasing, or acquisition of space assets from the public or private sector, will be overseen by NSIL, the commercial arm of the DOS, as per the approved government business practices.

BUILDING THE CAPACITY IN INDIA
The new space policy prioritises capacity building and talent development in space science and technology, recognising that India's space programme's success depends on skilled and motivated human resources.

To achieve this, the policy aims to enhance the quality and quantity of space education and training in the country through various initiatives such as setting up state-of-the-art space universities, promoting research collaborations between academia and industry, and providing scholarships and fellowships for deserving students and professionals.

FOSTERING GLOBAL COLLABORATION
The new policy reflects India's commitment to sustainable development and global cooperation in space. The policy acknowledges the potential of space technology and data in addressing global challenges such as climate change, disaster management, agriculture, health, and other sectors. It highlights the importance of international collaboration and coordination in space activities, demonstrating India's leadership in promoting a peaceful, inclusive, and equitable space order.

The policy sets an ambitious roadmap for India's space activities in the next decade, which can enhance India's global standing, advance its technological prowess, and benefit its people and the world. However, the successful implementation of the policy would require sustained political will, institutional agility, and focused effort from all stakeholders.

Specific guidelines need to be developed for the various space verticals, particularly for the Satcom and Geospatial domains, to clarify the technical intricacies surrounding them. Such guidelines would provide stakeholders with greater clarity and facilitate the development of effective strategies for commercialising products and services.

TAKING THE NEXT STEPS
The policy should be seen as a dynamic and evolving document that needs to be reviewed, updated, and evaluated periodically based on the feedback and performance of all stakeholders. Overall, the new Indian Space Policy 2023 is a timely and bold initiative that demonstrates India's vision and capabilities in space and has the potential to foster scientific progress, economic prosperity, and social welfare.

However, the aspect of spectrum assignment for space, liberal Foreign Direct Investment (FDI) policy, insurance policy, and clear guidelines are essential for the policy to be effective. The efficient utilisation of the scarce and valuable spectrum resource is essential and thus safeguarding it for space aka Satcom Industry must be prioritised without compromise.

The administrative method of spectrum assignment, which is a global practice, gives the government the necessary control to manage its use effectively, ensuring maximum benefits to society. It enables the

> Liberalising the foreign direct investment policy in the space sector in India presents ample opportunities for private industry to secure capital.

THE NEW SPACE STRATEGY

- Indian Space Policy 2023 emphasises commercialisation and private participation in space activities.
- The policy simplifies regulatory procedures and encourages private industry and startups to foster international collaboration and coordination
- It aims to generate new technologies, products, and services while safeguarding the public interest and national security.
- ISRO will focus on R&D, transferring developed systems for commercial use through IN-SPACe. NSIL will oversee the commercialisation and production of space assets.
- The policy prioritises capacity building and talent development in space science and technology.
- India's policy lays stress on sustainable development and acknowledges the potential of space technology in addressing global challenges.

support of crucial areas like national security and disaster management. Moreover, this method offers long-term spectrum access to industry stakeholders, providing much-needed stability and reducing interference with other users. Such measures are pivotal in fostering innovation and attracting investment in the space industry.

Also, liberalising the FDI policy in the space sector in India presents ample opportunities for private industry to secure capital. However, corresponding market demand must be generated to prevent foreign companies from reaping the benefits as resellers.

Finally, to address the liability concerns of space objects, the government must establish regulations to govern these matters. By doing so, the government can promote responsible and safe space activities while encouraging the growth and development of the space industry.

NEED SUCCINCT, SIMPLE, AND LIGHT-TOUCH GUIDELINES

To effectively implement the space policy, it is crucial for the newly formed IN-SPACe in collaboration with other ministries and departments to lay down succinct guidelines. These clear and concise, light-touch guidelines will ensure the furtherance and implementation of the visionary policy. It is also critical that the single window role of IN-SPACe is implemented in letter and spirit.

The critical aspects of liberalised FDI policy, clarity on the method of spectrum assignment and third-party liability for insurance, as stated above, need to be finalised at the earliest. This will prove a wholesome regulatory framework that can help the Indian private space industry achieve greater success. The new Indian Space Policy 2023 which is a step forward in space ecosystem growth and development, will need to be made a reality by the Indian Space Enterprise which now comprises not only ISRO, but private industry, startups, and academia. 🔶

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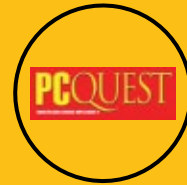
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Propelling enterprise performance and growth

The adoption of IoT is gradually gaining momentum, despite challenges hindering its potential to transform industries across India


BY AMIT SATPATHY

After taking mobile connectivity to every nook and corner of the country and covering over a billion plus Indian population, the focus of telcos' is now on connecting machines and devices. Internet of Things (IoT) is connecting millions of machines at home, workplace and in cities, making people and machines smarter.

With the onset of new technologies, the IoT industry is on its path of evolutionary growth and transformation, with an expected surge in the number of diverse applications across various industries. This dynamically burgeoning market is projected to reach a staggering USD 9.28 billion by 2025, according to Frost & Sullivan, driven by rising internet penetration and the adoption of smart applications.

> India aims to transform 100 cities across the country into smart cities, using IoT and other technologies to enhance urban infrastructure and services.

> The absence of standardised protocols and guidelines poses an obstacle for businesses that are keen to adopt IoT technologies.
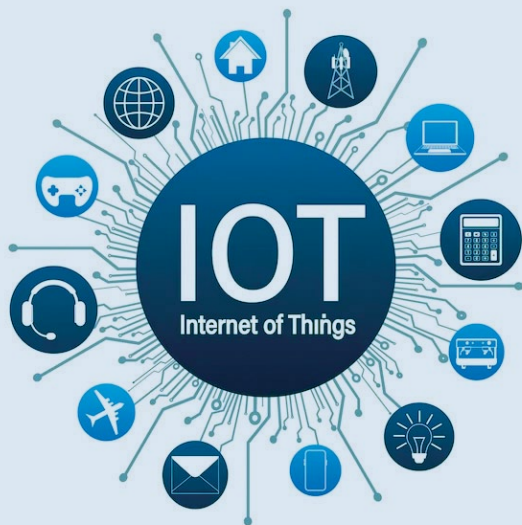
IoT STATUS IN INDIA

- **IoT Market Growth:** The IoT industry in India is projected to reach USD 9.28 billion by 2025, driven by rising internet penetration and the adoption of smart applications.

- Challenges in IoT Adoption: Fragmented markets, lack of standards, and compatibility issues hinder the adoption of IoT technologies in India.

- **Establishing Standards:** Regulatory bodies and industry associations are working to define and establish standards for IoT devices, applications, and networks to enhance inter-operability and drive IoT adoption.

- **Interoperability Issues:** Lack of interoperability results in data silos, security vulnerabilities, and inefficiencies, slowing down the pace and scale of IoT adoption in India.

- **Promising Future:** Technological innovations like edge computing, AI- and ML-enabled IoT, along with government-driven projects such as the National Logistics Policy and Smart Cities Mission, are expected to drive industry-wide adoption of IoT and promote inclusive growth in India.

ADDRESSING THE ROADBLOCKS TO IOT ADOPTION

The adoption of IoT is at a nascent stage in India, and there are several challenges hindering the technology from unlocking its full potential. Fragmented, unorganised markets and a dearth of clearly defined standards are some of them.

The absence of standardised protocols and guidelines poses an obstacle for businesses that are keen to adopt IoT technologies. They may encounter compatibility issues and face roadblocks in integrating IoT solutions with their existing systems. The absence of penetration of clear standards defined by global and Indian SDOs and regulatory bodies for IoT is adversely impacting IoT adoption.

All this has led to organisations becoming cautious about investing in IoT technologies that may not comply with future regulations or industry standards. To mitigate these challenges, regulatory bodies and industry associations in India are striving to define and establish standards for IoT devices, applications, and networks. Once in place, these protocols will enhance interoperability, ensuring that IoT devices from different vendors seamlessly communicate with each other. This will bolster IoT adoption, enabling businesses to derive maximum value from their digital transformation initiatives.

Lack of interoperability obstructs seamless communication between physical devices, vehicles, buildings, and other objects on a network, preventing them from effectively collecting, exchanging, and analysing data to engineer informed decisions. This results in a number of issues, including data silos, security vulnerabilities, and inefficiencies. This is again impacting IoT adoption in the country and is slowing the pace and scale necessary for the growth of Digital India.

EARLY ADOPTERS, IMPACT ON BUSINESSES

The rise in the demand for process automation, industrial automation, connected assets and the emergence of 5G in India, has led to an increase in the adoption of complex IoT projects. It has become imperative to simplify such
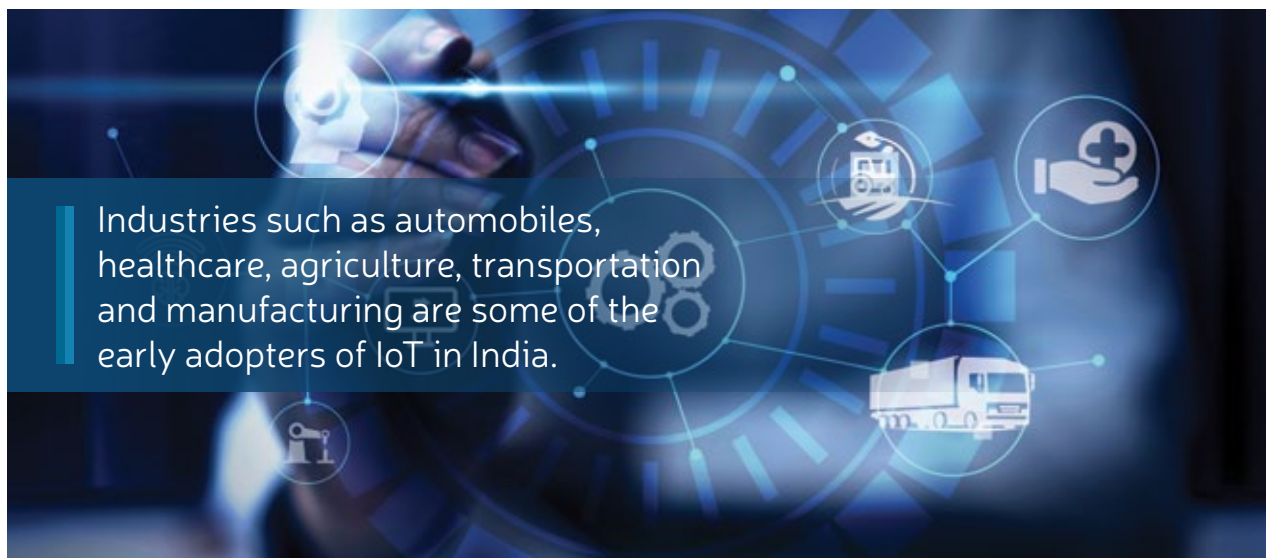
> Industries such as automobiles, healthcare, agriculture, transportation and manufacturing are some of the early adopters of IoT in India.

IoT deployments while ensuring interoperability, so as to achieve seamless integration of IoT devices and networks. Such efforts will lead to enhanced efficiencies, productivity, and profitability for businesses.

Telecom companies have been investing in IoT infrastructure, including the upgrade and optimisation of cell sites and the implementation of IoT standardisation and interoperability. Industries such as automobiles, healthcare, agriculture, transportation and manufacturing are some of the early adopters of IoT in India. Similarly, some of the operators have started to offer secure, flexible and scalable smart solutions to enable digital transformation in these sectors.

For instance, in the EV space, the environment-friendly mobility company Electriq was looking for a reliable IoT solution to track its electric vehicle fleet, use the data for the safe utilisation of its assets, and monitor the health and performance of the vehicle and battery for maintenance. Using an integrated IoT smart mobility solution, the company was able to get 100% visibility of its fleet in real-time including vehicle movement, usage, distance travelled, trip history and more. The solution also helped automate its operations with 0% manual intervention and error-free systems.

Further, it was able to track the health and performance of the vehicle and prevent misuse or theft of the vehicle with the automatic remote immobilisation feature. This led to a 40% improvement in operational efficiency on a quarter-on-quarter basis, a 15% reduction in asset losses, enhanced rider safety and security, and better governance of vehicle usage.

DRIVING INDIA'S TECHADE

Looking forward, the future of IoT in India seems promising with endless technological innovations such as edge computing, AI- and ML-enabled IoT and Digital Twins, as well as driving growth in sectors such as manufacturing, mobility, smart cities, renewable energy, and e-commerce etc. Further, the country's government-driven projects are poised to significantly drive industry-wide adoption of IoT.

The National Logistics Policy launched in October 2022, which aims to reduce the cost of logistics from 14% of GDP to around 9%-10% could accelerate the adoption of IoT to eliminate friction points. The government's Smart Cities Mission aims to transform 100 cities across the country into smart cities, using IoT and other technologies to enhance urban infrastructure and services. Similarly, the Indian government has set a target of installing 250 million smart meters by 2025, significantly enhancing efficiencies in power distribution and usage.

Moreover, as IoT adoption continues to expand, it is crucial for policymakers, industry leaders, government, and other IoT ecosystem players to collaborate and ensure that the benefits of IoT reach every corner of the country, enabling inclusive growth. By embracing IoT and harnessing its potential, India can pave the way for a digitally powered future and solidify its position as a global technology leader. 🔶

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Telcos' path to digital transformation

5G, AI, IoT, Cloud, Edge Computing, virtualisation, and the need for security, privacy, and compliance are driving significant changes in the telecom sector

BY PRAVEEN CHERIAN

The telecom sector is at a key juncture, facing significant changes and challenges due to the impact of new technologies such as Artificial Intelligence (AI) and Big Data. Startups and Over-the-Top (OTT) services have been setting new standards for customer experiences, and the pandemic has further accelerated the need for digital transformation. The world is witnessing an increasing reliance on high-speed internet connectivity for remote work, learning, and entertainment.

As telcos and companies working in this dynamic sector, they must go beyond providing basic connectivity and take a leadership role in driving digitisation to meet the growing demand for digital services.

Building an ecosystem that adds value and meets the evolving needs of the customer is critical, and organisations must act fast to remain relevant and competitive in the industry.

> Audi is exploring how 5G can enhance the in-car experience, providing real-time traffic updates, video streaming, and personalised services.

> With the increasing popularity of cloud-based services such as SaaS, PaaS, and IaaS, telecom companies are well-positioned to offer these services.

Indian players are responding to market challenges by putting in a concerted effort to modernise their internal digital structures. It is heartwarming to see how many of them are adopting digital processes through the use of apps or other digital touchpoints. Many large organisations are taking things to the next level by revamping their entire IT systems with a layered architecture approach. They are automating all lifecycle processes in the backend layer, using virtualisation in the middle layer to reduce human intervention, and creating a front-end layer that enables seamless service provisioning.

There are quite a few technologies that are driving significant changes in the telecom sector, from the way networks are built and operated, to the services that are offered to customers.

#1
5G

It has the potential to transform the Indian telecom industry and the broader economy in significant ways, and it will be interesting to see how this technology is leveraged in the years to come. Audi is exploring how 5G can enhance the in-car experience, providing real-time traffic updates, video streaming, and personalised services, ultimately improving the driving experience and setting itself apart in the marketplace.

> NFV involves virtualising network functions such as routing, switching, and firewalls allowing telcos to reduce hardware costs and improve network agility.

#2
ARTIFICIAL INTELLIGENCE

AI is disrupting the Indian telecom as chatbots with AI capabilities can provide quick responses to common queries and free up human agents for complex issues. AI is also applied in network optimisation, predictive maintenance, and fraud detection, transforming the telecom industry. Reliance Jio implemented an AI-powered virtual assistant, JioInteract, that can answer queries on balance, data usage, recharge plans, and music recommendations, as well as recognise speech in multiple languages. Jio also uses AI for network optimisation and predictive maintenance to prevent issues and improve the customer experience.

#3
INTERNET OF THINGS (IOT)

With the number of IoT devices expected to grow exponentially in the coming years, the telecom industry in India is well-positioned to leverage this technology for continued growth and innovation. A forecast by International Data Corporation, IDC estimates that there will be 41.6 billion IoT devices in 2025, capable of generating 79.4 zettabytes (ZB) of data.

#4
CLOUD COMPUTING

Cloud computing has opened up new business opportunities for telecom companies in India. With the increasing popularity of cloud-based services such as software-as-a-service (SaaS), platform-as-a-service (PaaS), and infrastructure-as-a-service (IaaS), telecom companies are well-positioned to offer these services to their customers. One example of an Indian telco using Cloud Computing to generate better revenues is Bharti Airtel's partnership with Amazon Web Services. Airtel is targeting the enterprise market with this partnership and is offering cloud solutions to businesses of all sizes.

#5
EDGE COMPUTING

Edge computing processes data at, or near the source, instead of a centralised data centre. In telecom, it is used for real-time apps like video streaming, AR, and VR. Telcos invest in edge computing infrastructure to improve the quality of service, reduce latency, and enhance security. It is crucial for applications like autonomous vehicles and remote surgery that require low latency and real-time data processing.

#6
VIRTUALISATION

One example of virtualisation in the Indian telecom sector is network function virtualisation (NFV). NFV involves virtualising network functions such as routing, switching, and firewalls. This allows telecom companies to reduce hardware costs and improve network agility, making it easier to deploy new services and scale their networks.

#7
NETWORK SECURITY

With the increasing complexity of telecom networks, ensuring robust network security has become paramount. Technologies like advanced firewalls, intrusion detection and prevention systems, and secure network protocols are continuously evolving to safeguard against cyber threats, data breaches, and unauthorised access.

#8
PRIVACY AND COMPLIANCE

Telecom companies are investing in privacy-enhancing technologies and compliance frameworks to meet regulatory requirements and protect user privacy. This includes implementing robust data protection measures, user consent mechanisms, and privacy-enhancing protocols.

The emergence of these technologies will require the telecom sector to broaden its capabilities and functions, leading to further advancements in customer needs and technological progress, which will eventually pave the way for the upcoming 6G era. The telecom industry's future will depend on the current leaders who can grasp the scale of the change, respond quickly, and become the driving force of the future. 🔥

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"Spam is a tricky problem to solve"

From a customer simply hanging up to companies watching sharply for "throwaway numbers" and regulators taking strict action against real fraudsters (and not getting lost with the 'man in the middle'), a lot can be done to effectively fight the explosion of frauds and spam. **Rajdip Gupta, MD and Group CEO, Route Mobile Limited** *shares his perspective on Calling Name Presentation (CNAP), DnD, virtual SIMs, 5G and SIM-swap detection and whether they can help dial down intrusions and frauds in India. Excerpts from his interaction with* **Pratima Harigunani***.*

What led to the development of products for SIM fraud prevention and digital identity protection? What on-the-road lessons have you learnt as you rolled them out?

We listened to our customers and the challenges they face. Solving these challenges in new ways is a natural progression of our business. We are already helping them with identity protection, for example, by delivering OTP tokens to users via SMS. As we assessed the market, we found that our long-term partner Masivian, based in LATAM, had developed a product that helps businesses understand the risk associated with trusting a phone number. We recognised the opportunity and acquired Masivian to gain a foothold in the LATAM market and leverage its amazing products for our customers.

India has seen a growing incidence of spam calls and messages. What can be done by the industry to address these frauds? Is enough being done?

Spam is a tricky problem to solve. We have seen blunt policy instruments deployed in many markets around the world attempting to protect users from spam calls and messages. These are rarely effective. Sender ID or Caller ID pre-registration, for example, lower the effectiveness of spam messages, but spam messages and calls are still sent in the billions by switching to generic sender IDs or simply misusing other brands' sender IDs.

Mobile Operators can protect users by deploying AI and ML to scan for spam calls and messages as they enter their networks. Regulators can strengthen legislation against those who originate spam messages and calls as we are now starting to see in several markets, but these measures need to be targeted at the fraudsters, not those unwittingly in the middle of the delivery chain. While those in the middle do have some responsibility, targeting them is a blunt tool which simply moves the problem elsewhere rather than solving it.

What's your advice to users and customers?

Our advice to customers is to protect themselves by not believing unknown people on calls and never giving out personal information either. If you suspect it is not your

> Spam messages and calls are still sent in the billions by switching to generic sender IDs or simply misusing other brands' sender IDs.

Rajdip Gupta
MD and Group CEO, Route Mobile Limited

> "Blunt policy instruments deployed in many markets around the world to protect users from spam calls and messages are rarely effective.

bank calling, then simply hang up, find the bank's contact number and inquire with them.

How tough is it to balance convenience and frictionless CX and privacy in today's digital world? What can users do on their part?

Brands can differentiate their offering on the CX they provide. One of the reasons Amazon has been so successful in the e-commerce space is because of how easy they have made it for consumers to find what they want and buy with minimal clicks and all in their pocket. But this comes at a cost. Bots, fraudsters and ready-to-abuse brands don't protect themselves. A great example of this is in consumer apps that use the phone number as the unique identifier for the user.

Many companies deploy SMS-based phone number verification, which in 99% of the cases is effective and secure. There are, however, some markets where there is a prevalence of 'throwaway' numbers. Currently, we are developing a solution to identify these numbers and help customers make an informed decision about whether or not to allow a given phone number to sign up.

There is SIM swapping, missed call fraud, IRSF fraud, Wangiri fraud, and more. How critical are these frauds in India?

Sim Swapping is a huge issue in India as well as in most countries around the world. You only have to look at news reports and you find many examples of real people suffering from loss due to SIM swap attacks. For both banks and mobile operators, this is both a financial and a reputational loss. Banks may have to refund the loss to the customer. Both will lose customers if consumers cannot trust the bank or the operator to protect them. Thankfully, solutions are being launched. Following the success of Sim Swap detection APIs in the UK, Vodafone India is launching an API for banks to detect potential SIM swaps occurring.

The Do-Not-Disturb or DND system is not effectively working for many people, given the barrage of marketing spam one gets. What can vendors, operators and regulators do to fix this?

The challenge with a DND system is that the two worlds of business-to-consumer (B2C) calling and consumer-to-consumer (C2C) calling function on the same network. This makes it almost impossible to ensure that B2C calls that have not been screened against the system are blocked because the bad actors will seek to mask them as regular C2C calls. Even deploying solutions such as Stir or Shaken – suites of protocols and procedures – in the US market has not stopped spam calls.

PBX Pumping, traffic hacking, GSM Gateway, jail-breaking. How serious and rampant are they in India? What solutions exist?

Traffic-related hacks are likely to be low in India.

> Apple and Android users cannot send each other secure, rich IP-based messages on their native messaging apps because Apple wants to retain its walled garden.

However, ILD traffic leakage to grey traffic does occur and operators can catch them with their fraud detection teams along with the cyber cells of law enforcement agencies. Traffic blasts have been on the rise and are getting controlled partially via TCCCPR 2018 regulation. However, the CNAP proposed by TRAI is likely to bring respite to consumers from unwanted blasts and spam campaigns.

With Apple launching its store in India, the issues of right-to-repair and closed wall-garden business models have come to the spotlight again. What's your perspective here given the dilemma between the user experience and security?

Closed wall gardens are ultimately anti-competitive. True, it can help to keep an ecosystem more secure for users, but that comes at a cost, both financial in terms of higher fees app developers have to pay in particular to the company but also in the limited user experience they receive. Take RCS as an example: Apple and Android users are barred from sending each other secure, rich IP-based messages on their native messaging apps because Apple wants to retain its walled garden.

Virtual SIMs, Truecaller-like apps, stricter KYC. How much do they help?

Virtual SIM or eSIM is more secure than physical SIM. It is also observed that eSIM users have fewer connectivity issues than physical SIM users. Truecaller-like apps are reliable most of the time for identifying an unknown number. Stricter KYC rules have helped recognise the user if they are the person they claim to be. As these services have their benefits, there are some disadvantages as well. Regarding virtual SIM, there are very few mobile handsets available in the market that support it, and switching devices in case of emergencies can be difficult.

Is there a flip side to these?

When it comes to Truecaller-like apps, the data they provide is sometimes inaccurate and it becomes difficult to rely on them all the time to identify a caller of an unknown number. Regarding stricter KYC, it can create a bad customer experience if it takes longer to verify the data they provide.

Will security get better with the arrival of 5G, Artificial Intelligence (AI), and Machine Learning (ML) in this scene? Why or why not?

Security will improve with the arrival of 5G and AI/ML. 5G improves the confidentiality and integrity of user and device data. Unlike previous generations of mobile systems, 5G protects the confidentiality of the initial Non-Access Stratum messages between the device and the network. AI/ML are intelligent methods that computers use to perform designated tasks independently. It runs on algorithms that analyse the data and perform automated tasks, data entry, checking and filtering emails, and analysis. Automation also mitigates human errors and increases efficiency and operation productivity.

What else should we be thinking of when we think of telecom and subscriber security?

A solution that covers only part of the customer journey can never be fully effective. The entire ecosystem needs to come together to enable solutions at every possible point in the network. Fraud and spam are cat-and-mouse games. As we develop new solutions to tackle these problems, fraudsters will adapt and change tactics.

And what about the innovations that the company is working on?

We will continue to innovate to stay on the front foot helping our customers to protect their users from fraud. At Route Mobile, we provide these services to both ends of the chain, to the mobile operators to help them detect and block spam calls and messages through the services of 365Squared and to enterprise and app customers, giving them the signals and insights, they need to make informed decisions about how to open the door should be on every transaction. 🔧

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Let us re-think the Cloud strategy

Businesses may find themselves trapped in the cloud and soon realise that cloud-hopping is not exactly like pub-hopping or changing lanes

BY PRATIMA HARIGUNANI

Watching 'The Menu' movie feels eerie from the very first scene. Despite the red-carpet welcome, the meticulous arrangements, the air of exclusivity, the suave staff, and the company of high society, something is off in that elegant island. The guests are supposed to be treated to a specially crafted many-course haute cuisine by a coveted chef. And amidst well-marinated satire, dark humour, and mind-shaking epiphanies, what follows is unexpected turbulence, knives not meant for slicing food, blood gushing out between fancily-plated gourmet plates and a suffocating sense of, well, being locked in.

> "Most cloud providers structure their services as roach motels to make it easy to move in and difficult to leave."
>
> **Mike Loukides**
> Vice President, Content Strategy, O'Reilly Media

Guests try to run, to break windows, to scream, to throw tantrums — but nothing helps. Unless a girl, who was never supposed to be on this special list, does something obvious and unexpected. And she gets to get out. Exactly how? We will come to that in a bit.

But it is an attempt that some enterprises also seem to opt for due to indigestion from the Cloud buffet they opted for. They are trying everything: repatriation, hybridisation, scale-back, right-sizing, moving to special-purpose hardware or infrastructure optimisation. It can be due to unexpected shocks of Cloud economics, hidden Cloud bills that were not visible before, indirect breathlessness due to vendor lock-in or some data control and sovereignty issue.

WHEN DOES IT FEEL 'NOT RIGHT'

Let us start with the why. And what better way than to read what David Heinemeier Hansson, Co-founder and CTO of 37signals wrote in a 2022 post? In "Why we are leaving the Cloud." he argued that Basecamp had one foot in the Cloud for well over a decade, and Hey has been running there exclusively since it was launched two years ago.

"We have run extensively in both Amazon and Google Cloud. We have run on bare virtual machines, and we have run on Kubernetes. We have seen all the Cloud has to offer and tried most of it. It is finally time to conclude: renting computers is (mostly) a bad deal for medium-sized companies like ours with stable growth. The savings promised in reduced complexity never materialised. So, we are making our plans to leave."

According to his bean-counting, continuing to operate in the Cloud, is like paying an absurd premium for the possibility that something could go wrong. "It is like paying a quarter of your house's value for earthquake insurance when you do not live anywhere near a fault line. Yeah, sure, if somehow a quake two states over opens the earth so wide it cracks your foundation, you might be happy to have it, but it does not feel proportional, does it?"

This echoes what Dropbox did when it announced weaning itself off from the Cloud and garnering millions of dollars in savings (about USD 75 million reportedly in 2017) in that shift — by repatriating workloads from the public Cloud.

As Hansson decided, "We consider it a duty that we at 37signals do our part to swim against the stream. Our business model is incredibly compatible with owning hardware and writing it off over many years. Growth trajectories that are mostly predictable. Expert staff who might as well employ their talents operating our machines as those belonging to Amazon or Google. And I think there are plenty of other companies in similar boats."

There are examples of a hybrid approach too, as seen with CrowdStrike and Zscaler. According to a 16z analysis, across 50 of the top public software companies currently utilising Cloud infrastructure, as much as an estimated USD 100 billion of market value is being lost among them due to Cloud impact on margins — relative to running the infrastructure themselves. When the analysis is extended to the broader universe of scale public companies — that stand to benefit from related savings — the total impact is reckoned to be potentially greater than USD 500 billion.

The Andreessen Horowitz analysis also pointed out: "For every dollar of gross profit saved, market caps rise on average 24-25X the net cost savings from Cloud repatriation (assumed savings are expressed net of depreciation costs incurred from incremental Capex if relevant). This means an additional USD 4 billion of gross profit can be estimated to yield an additional USD 100 billion of market capitalisation among these 50

"We expect to see a rise in demand for native cloud environments to manage systems efficiently through reduced dependence on traditional servers."

Manish Gupta
Vice President & General Manager, Infrastructure Solutions Group, Dell Technologies India
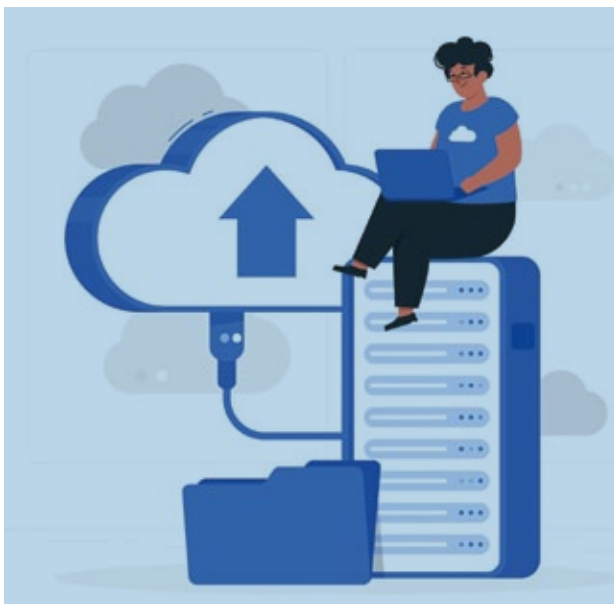
WHY SWITCH?

• Sudden cloud bill spikes

• Heavy margins of the top three cloud providers

• Growth offsets the elasticity tax that one pays for cloud during the initial years

• Workloads and data-related factors

• Issues with the existing cloud provider

• Outages and security fears

• Inadequate diversity in the cloud industry

• Data and control issues

companies alone. Repatriation results in one-third to one-half the cost of running equivalent workloads in the Cloud." Interestingly, Cloud repatriation is estimated to drive a 50 per cent drop in Cloud spending, translating into total savings of USD 4 billion in recovered profit.

A lot of CIOs prefer either an on-premise or hybrid approach. As Bhoopendra Solanki, Chief Information Officer, Sakra World Hospital says, "The data size and compliance factors are also a reason here. In industries like BFSI and healthcare, data sensitivity is on the higher side. No matter how much assurance a Cloud provider gives, core areas cannot be completely on Cloud. We have a hybrid approach here."

Speaking to Indranil Bandyopadhyay, Principal Analyst, Forrester gives us a chance to look at this subject from both an incisive and a hands-on view. His take, in short, is that Cloud may not be a panacea for core systems for large enterprises with heritage systems. "It can be a good idea for young and Cloud-native companies for the Opex advantage. It can also be a good option for tertiary use cases where heavy data processing can be handled in the Cloud. It will also be a plausible move for stuff that enterprises want to innovate with low-code and Cloud infra." He, however, cautions that organisations must think again for anything where the business is in a direct impact area, regulators have data-location concerns, and they cannot afford damage if they are picking Cloud just because everyone else is.

Here is why, as he explains in detail.

COURSES FOR HORSES

"In many companies with heritage technology, like the Mainframes or the AS400s, there are core systems that are not engineered for Cloud models. People do not want to fix something which is not broken. Especially when the technology is well-entrenched, working fine and is pretty fault-tolerant. If one moves to Cloud in such a

"Humans are wired to be in control. We are emotional beings. And an on-premise system is no different – where you and your team can see and fix everything in proximity."

Indranil Bandyopadhyay
Principal Analyst, Forrester

back-drop, it will take a lot of re-purposing and system modernization," Bandyopadhyay dissects.

Looking back at his days as a practitioner, he cites an example to explain this. "When our business made a strategic decision to move to Cloud, I looked at all the hardware and realised how hardware and software are financially different. Hardware gets depreciated quicker than software, maybe in just 2-3 years. And in an on-premise scenario, the Opex is explicit, but in Cloud, the Opex is implicit. The idea of variable costs that Cloud vendors sell is amazing, but it may not work if the hardware is sitting idle and has an accounting connotation for me. If the hardware is doing its job, then what is my financial reason to move to Cloud? It is also not a lift-and-shift choice, as many perceive it to be. To take advantage of Cloud and variable costs, one has to do a lot of refactoring."

To add to that there are other complications like migration of data. The bundled services offered by some Cloud players can turn out to be more expensive than expected, he reminds.

Mike Loukides, Vice President, Content Strategy, O'Reilly Media weighs in that Cloud switching and roll-back is a palpable and stable trend. "There are two separate trends here. Cloud rollback is often called 'Cloud repatriation' which is taking applications and data out of the Cloud and moving them back to company datacentres. Cloud switching is moving from one provider to the other." Loukides explains that in both cases, Cloud users will do what is economically necessary. "Many companies are finding the 'Cloud' to be more expensive than they initially thought and therefore moving back to on-premise or hosted solutions."

Loukides recommends that it is worth asking whether their Cloud expenses are high because their savings estimates were over-optimistic, or because they used

the Cloud inefficiently: spinning up more instances than they needed, not shutting down instances that were not needed, and/or not taking advantage of discounted services like AWS Spot Instances. "IT managers need to look at this carefully before deciding to pull the plug on the Cloud. Are you using the Cloud efficiently, in a way that minimises costs? It would be a shame to repatriate if the real reason for repatriation is that you have not used the Cloud effectively."

Manish Gupta, Vice President and General Manager, Infrastructure Solutions Group, Dell Technologies India captures that in the current times, Cloud is essential in storing the data while businesses adapt to the new digital goals. "The shift to the Cloud is going to be pivotal for Indian enterprises to be successful in the digital era. While businesses try to venture out and combine services to save on expenditure components, the changes in the IT landscape will push businesses to explore the Cloud."

"Globally, and in India, we expect to see investments in hybrid Cloud operating models that span public, private and edge environments to grow to enable rapid scale and management of IT workloads. A multi-Cloud approach will define processes of the future to store and manage mission-critical data. With time, CIOs across organisations shall realise that the smaller ongoing costs versus cyclic infrastructure builds, will bring more value to the business and change perceptions of IT, being considered as a cost-heavy component to the business."

In Gupta's opinion, private Clouds also provide greater levels of security and control, while the decentralised processing of Cloud edge computing can help to reduce costs and enable low-latency experiences on edge devices. For example, Dell Technologies' Cloud simplifies its migration by providing IT teams with a consistent management experience and familiar tools,

creating efficiencies and increasing comfort with tasks and reducing errors.

HOW TO LEAVE THE TABLE?

Moving from one Cloud to another is a different scenario, admits Loukides. "Most Cloud providers structure their services as 'roach motels' to make it easy to move in and difficult to leave. Dropping one Cloud for another is likely to be expensive and may not yield any significant savings. However, all Cloud providers are not the same. In some cases, you may need a service that another provider offers. In this case, a better alternative to Cloud switching would be designing the application to run across multiple providers: splitting the application into parts, each of which can run whichever provider delivers the service it needs."

Bandyopadhyay opines that it is not always such an easy choice, especially as Economics has changed during Covid and post-Covid world, and when companies have become money-conscious. Transferring anything from on-premise to Cloud also means a lot of disruptions; not just qualitatively, but also quantitatively.

Examining how easy and practical it is for someone to switch back to the on-premise model, Bandyopadhyay underlines it all in two words: courage and deep pockets.

"If a company has the culture of accepting a mistake of 'sunk costs' and correcting it, it will make the switch. But it has to have deep pockets to do that. Because just like going to Cloud needed a lot of work, going back from Cloud would need a lot of re-engineering too. And that means a lot of time." Here the companies that have suffered any real business damage due to a Cloud investment are more likely to hit the 'reset' button, Bandyopadhyay weighs in.

Would SLAs be a way to accommodate these expectations and create a safety net for enterprises? Bandyopadhyay reasons that while claw-back mechanisms can be put in place, the question is not about money; it is about damage. "Does it help to be paid by a Cloud vendor if you are a bank and you suffer Cloud outage? The claw-back can put some pressure on vendors but it is not a silver bullet for your problems."

It is not that easy to do Cloud-switching. Gupta avers that moving workload between public, private and edge Clouds can be expensive. "It is also time-consuming and risky. Cloud migration can take months without consistent management infrastructure, adversely impacting productivity and hindering innovation. The major challenge is the difficulty that IT teams experience when working with Cloud resources that have drastically different management frameworks, tools, SLAs and security issues."

So, what is the right way about it? "It is not always about choosing a private or a public Cloud solution, the decisive move has to be about aligning the needs of the on-prem infrastructure with the expectations from the Cloud environment of the organisation. We could have a datacentre but run applications with multiple hyperscalers, hence without a consistent infrastructure between Clouds, the task of migration can take much longer and place the organisation at greater risk. Ease of access to data, proactive security and making the value chain resilient to threats, and the best agility, flexibility and scalability for business needs, would determine what Cloud infrastructure an organisation would invest in.

HOW TO DO IT WELL?

- Containerisation and modular workloads

- Reorient developers and engineers towards optimisation

- Go hybrid

- Use custom-purpose infrastructure

- Incorporate 'barriers to exit' during the initial SLA talk

> Of the top public software companies currently utilising Cloud infrastructure, an estimated USD 100 billion of market value is being lost among them due to cloud impact on margins.

Latency is also a determining factor in choosing the kind of Cloud for the business, be it public, private or even, edge," says Gupta.

NOT ONE FORK, BUT MANY

Loukides reflects how a decade ago, it was hard for IT groups to think about architectures like this. "Now, it is common with very few companies using a single Cloud. It may have a Cloud strategy built around AWS, Azure or GCP, but eventually, there will be a wildcat project running on a different provider that suddenly becomes important; or there will be an acquisition, and the acquired company will have its applications running in another Cloud. Everyone is (or will be) multi-Cloud, and that is a good thing."

Gupta argues that a shift to an on-demand service offering for hybrid Cloud computing will provide organisations with an efficient Cloud environment that can develop, manage and deliver applications with reduced spending in the longer run. "That being said, consistent operations and infrastructure across Clouds are paramount. Indian businesses must realise that the hybrid Cloud model is the right strategy for longer-term costs, scalability and security. At Dell Technologies, through the VMware Cloud, we are already offering Infrastructure-as-a-Service services to help enterprises with the ability to move workloads across multiple Cloud environments and scale resources quickly with predictable pricing and transparent costs."

When it comes to Opex-heavy businesses or young and Cloud-born companies, it can be a good choice to stick to Cloud, reasons Bandyopadhyay. "For them, Opex is a big barrier to entry and Cloud creates a level-playing field. Also, if you are a company dealing with AL, ML, deep learning models or some form of heavy batch-processing or quantum workloads, it will make sense to take some things to Cloud."

However, Europe has not seen much Cloud uptick due to the data location concerns; the regulators are asking hyperscalers if there is enough care taken for data scrutiny by other governments. "Of course, there are ways to solve that with encryption layers, but regulators decide based on the Lowest Common Denominator. You cannot ignore the instances of Cloud-setups going down, and in such cases, a business cannot tell its customers that it is because of a Cloud outage. You are still answerable for your business data and uptime."

Bandyopadhyay sums it up well. "Cloud may not tick all the boxes. Go with your eyes open. Do not think of it as some Panacea. Go for Cloud for the right reason. Not because it is being painted as the future. Even if you want Cloud for its agility and as an additional capacity and low-code buddy to help you with experimentation, It is not an 'or' decision but an 'and' decision."

He has a beautiful philosophical angle to explain the inexplicable here. "Human beings love control. I may be okay outsourcing the care of my car to someone better equipped to deal with it, but I still want to see my wife, my kids, and my pets. I cannot give that away. Humans are wired to be in control. We are emotional beings. And an on-premise system is not different – where you and your team can see and fix everything in proximity."

YOUR TIME TO CLAP

Cloud, has for a long, been promised and proven a great choice for companies on a growth inflection, and with a need for high elasticity of compute in unpredictable demand scenarios. And while disillusionment with Cloud can be due to gaps that Cloud providers have failed to address or due to external factors like security and outages or availability of cheaper hardware outside, one cannot deny that it may be easy to get into an island full of promises, but it is never easy switching off a Cloud, or from a Cloud.

Unless you have the clarity of exactly what you want and ask the ruthless, but still-human, Chef for it. With a voice that is confident when it says "I want to send your food back. I do not like it, Chef." Like the girl Margot did – and got away from the island while it burnt down. 🧡

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Driving business innovation and competitive edge

By leveraging the power of the cloud, organisations can streamline their research processes, drive innovation, and make data-driven decisions

BY TARUN ARORA

In this era of rapid technological advancement, enterprises are constantly seeking ways to enhance their research and development (R&D) capabilities to stay competitive. The emergence of cloud-based research platforms has brought about a paradigm shift, revolutionising how organisations approach R&D. These platforms offer unparalleled opportunities to streamline and optimise the research process, empowering enterprises to drive innovation, make data-driven decisions and gain a significant competitive edge.

By harnessing the power of big data and advanced analytics, enterprises can derive valuable insights from diverse sources, enabling informed decision-making and accelerating innovation. These cloud-based platforms foster collaboration and knowledge sharing among

> Cloud-based research platforms have gained popularity due to three primary reasons: enhanced collaboration, reduced cost, and improved agility.

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researchers, both within organisations and across geographies. Real-time collaboration tools, data-sharing capabilities and virtual project management enable teams to work seamlessly together, breaking down silos and driving cross-functional synergy.

As more enterprises recognise the transformative power of cloud technology, the adoption of these platforms is set to soar, ushering in a new era of R&D excellence and propelling organisations toward success in the dynamic global marketplace.

POWER OF CLOUD COMPUTING

Cloud-based research platforms facilitate seamless collaboration among researchers. This leads to enhanced knowledge exchange and accelerated innovation. Additionally, it helps organisations reduce costs by eliminating the need for extensive infrastructure investments.

Such research platforms utilise the capabilities of cloud computing to enable organisations to efficiently access and analyse large volumes of data. These platforms have gained popularity among enterprises due to three primary reasons: enhanced collaboration, reduced cost, and improved agility.

DATA ACCESSIBILITY AND COLLABORATION

Traditional siloed data storage hampers collaboration and knowledge sharing among researchers. Cloud-based research platforms break down these barriers by providing seamless accessibility and collaboration. Researchers can securely store, manage, and share their data in the cloud, facilitating cross-functional collaboration and accelerating knowledge exchange. This enhanced data accessibility fuels collaboration within organisations and across geographies, enabling researchers to tap into diverse perspectives and expertise.

A survey by McKinsey & Company found that organisations with high levels of collaboration and data sharing across functions are more likely to achieve above-average revenue growth. Cloud-based platforms enable researchers to collaborate in real-time, share insights, and collectively contribute to breakthrough discoveries. The

ease of data access and sharing within these platforms fosters a culture of collaboration, propelling organisations towards R&D excellence.

SCALABILITY AND FLEXIBILITY

One of the key advantages of cloud-based research platforms is their inherent scalability and flexibility. Enterprises can dynamically scale up or down their computational resources based on project requirements, eliminating the need for costly infrastructure investments. This agility allows organisations to tackle complex research problems, such as large-scale simulations or data-intensive analyses, with ease.

Cloud-based platforms provide researchers with the freedom to explore new ideas, experiment with different approaches, and restate quickly. The flexibility to scale resources up or down based on project needs ensures optimal utilisation of computational power, reducing costs and improving efficiency. Researchers can focus on their core work without worrying about the underlying infrastructure, leading to faster time-to-insights and accelerated innovation.
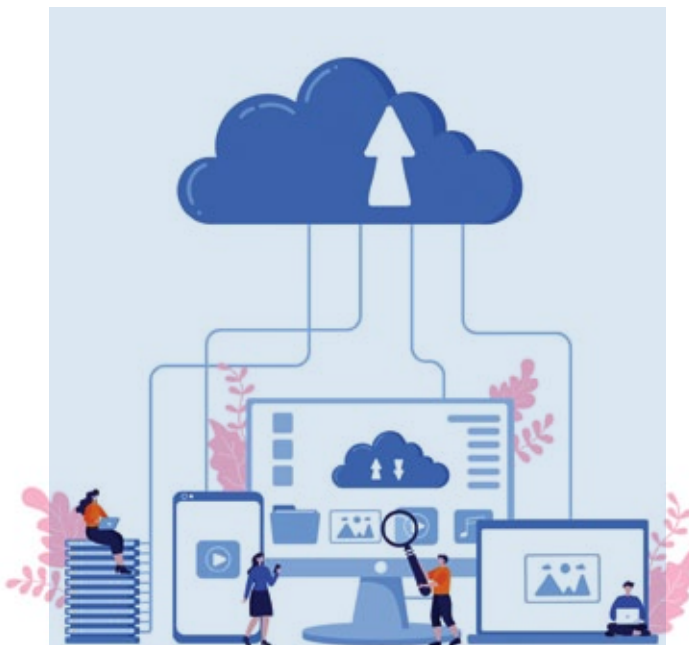
ADVANCED DATA ANALYTICS AND ML

Cloud-based research platforms provide access to advanced data analytics and machine learning capabilities, enabling researchers to unlock valuable insights from vast datasets. With powerful cloud-based tools and frameworks, researchers can leverage sophisticated algorithms and models to analyse data, identify patterns, and make data-driven decisions.

Machine learning (ML) algorithms can automate repetitive tasks, enhance predictive modelling, and drive optimisation, enabling enterprises to make breakthroughs and gain a competitive edge in their respective industries. Cloud-based platforms offer extensive libraries and resources for implementing machine learning algorithms, reducing the barriers to entry and empowering researchers with the latest advancements in AI.

The scalability of cloud resources allows researchers to process and analyse large datasets

REVOLUTIONISING R&D

- Cloud-based research platforms revolutionise R&D, empowering enterprises to drive innovation and gain a competitive edge.

- Collaboration and knowledge sharing among researchers are enhanced through seamless accessibility and data sharing in the cloud.

- Scalability and flexibility of cloud platforms eliminate the need for costly infrastructure investments and enable tackling complex research problems.

- Cloud-based platforms provide access to advanced data analytics and machine learning capabilities, unlocking valuable insights from vast datasets.

- Robust security measures and compliance standards ensure the protection of sensitive research information in the cloud.

> The scalability of cloud resources allows researchers to process and analyse large datasets quickly, enabling more comprehensive and accurate results.

quickly, enabling more comprehensive and accurate results. The combination of advanced data analytics and machine learning capabilities within cloud-based platforms equips researchers with the tools they need to derive meaningful insights, make discoveries, and drive innovation.

SECURITY AND COMPLIANCE

As enterprises embrace cloud-based research platforms, robust security measures and compliance standards become imperative. Cloud providers invest heavily in ensuring data security, encryption, access controls, and regular audits to safeguard sensitive research information. Enterprises must also consider compliance requirements specific to their industry, such as GDPR or HIPAA when storing and processing research data in the cloud.

Cloud-based research platforms offer advanced security features that protect valuable intellectual property and sensitive data from unauthorised access or breaches. Encryption techniques ensure data confidentiality, while access controls restrict access to authorised personnel. Regular audits and compliance certifications assure that the platform adheres to industry standards and regulations.

In summary, Cloud-based research platforms are transforming enterprise R&D by providing enhanced data accessibility, scalability, advanced analytics, and collaboration capabilities. By leveraging the power of the cloud, organisations can streamline their research processes, drive innovation, and make data-driven decisions. As cloud technology continues to evolve, enterprises must embrace these platforms and harness their transformative potential to stay competitive in today's fast-paced, data-driven world. 🌀

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Analog Devices announces SD signal processing solution

Analog Devices has introduced the Apollo MxFE platform, a software-defined, direct RF-sampling, wideband mixed-signal front-end technology. With aerospace, defence, wireless communications, and instrumentation applications, Apollo MxFE empowers advanced functionalities such as phased array radar, electronic surveillance, test and measurement, and 6G communications.

The relentless growth of data-intensive applications demands wider bandwidths and faster data conversion and processing capabilities. Addressing this need, the Apollo MxFE platform offers instantaneous bandwidths of up to 10GHz and direct sampling and synthesising of frequencies up to 18GHz (Ku Band). Built on a cutting-edge 16nm CMOS architecture, the platform utilises state-of-the-art high dynamic range RF Analog-to-Digital Converter (ADC) and RF Digital-to-Analog Converter (DAC) cores, boasting exceptional spurious free dynamic range and noise spectral density.

The product encompasses four 12-bit RF ADCs with a sample rate of up to 20GSPS, four 16-bit RF DACs with a sample rate of up to 28GSPS, an RF input bandwidth from DC to 18GHz (Ku Band), and an instantaneous bandwidth of up to 10GHz. Notably, it is the industry's first integrated radio capable of directly interfacing with emerging 6G frequency bands.

The platform's on-chip digital signal processing (DSP) features real-time FFT Sniffer, programmable FIR filters, fast-hopping NCOs, DDCs and DUCs, and a fractional sample rate converter. The DSP offers dynamic configuration ability, enabling seamless transitions between narrowband and wideband profiles without interrupting the JESD link. Apollo MxFE supports JESD 204B/C and a very short reach (VSR) interface. The platform streamlines engineering design for Intelligent Edge devices, allowing flexibility to cater to high data rates, shorter latencies, and lower overall system power requirements.

Tejas deploys ultra converged broadband solution for TTBS

Tejas Networks has deployed its TJ1400 family of carrier-class Fiber-to-the-x (FTTx) and Packet Switching Network (PTN) solutions for Tata Tele Business Services (TTBS). The project aims to deliver high-speed fibre connectivity services to businesses across India, meeting the growing demand for enterprise connectivity.

The TJ1400 Ultra-Converged Broadband products enable integration of Access, Transport, and IP Network technologies. It helps service providers reduce network build-out costs of modern telecom infrastructure. Designed for cost-optimised delivery of mobile backhaul, broadband access, and enterprise services, the platform combines redundancy, low power consumption, and high service scalability in a compact form factor.

Key features of the TJ1400 platform include various access technologies such as Active Ethernet, PON (GPON/XGS-PON/Multi-PON), ERPSv2, and Open ERPSv2. It also supports transport technologies like PTN, MPLS-TP, and massive-scale Circuit Emulation with 1+1 APS support for TDM technologies such as PDH/SONET/SDH (E1/DS1/E3/DS3/STMn/OC-n). The platform provides synchronisation services and supports OTN and VR/VRF over MPLS-TP and virtual routers.

The platform adds versatility in delivering high-speed broadband connectivity and enterprise services. Its integration of multiple technologies into a single box streamlines network deployment and management, making it an ideal solution for telecom operators looking to enhance their infrastructure while optimising costs.

Dell announces software platform to optimise secure edge deployments

Dell NativeEdge
Edge Operations Software Platform

DØLL Technologies

Dell Technologies has introduced Dell NativeEdge, an edge operations software platform aimed at helping businesses streamline and optimise secure edge deployments. The platform enables customers to simplify edge operations across thousands of devices and locations, from the edge to core datacentres and multiple clouds.

Dell NativeEdge offers secure device onboarding at scale, remote management, and multi-cloud application orchestration. With its zero-touch deployment and open system design, it is purpose-built to support any enterprise edge use case and integrates seamlessly with a range of hardware across Dell's comprehensive portfolio.

With built-in Zero Trust capabilities, Dell NativeEdge mitigates security risks by safeguarding customers' applications and infrastructure throughout their entire edge estate. By providing a single solution to manage and simplify the entire edge estate, Dell empowers customers to drive better experiences, products, and outcomes.

The launch of Dell NativeEdge marks a significant milestone in the edge computing revolution, addressing the complex infrastructure environments and security challenges associated with deploying devices and applications at the edge. Moreover, Dell is expanding its retail edge solutions with the introduction of the Dell Validated Design for Retail Edge, in collaboration with inVia Robotics intelligent automation. This solution optimises last-mile picking, packing, shipping, and delivery for retailers, enhancing efficiency and order fulfilment times.

Dell NativeEdge will be available to customers, OEMs, and partners in 50 countries starting August 2023. The Dell Validated Design for Retail Edge will be globally available in June 2023, offering retailers a simplified path to intelligent retail automation.

Spectrum intros Digital Pulse Generator for Digitizers and AWGs

Spectrum Instrumentation has released the Digital Pulse Generator (DPG) option for its product lineup. This new option enables the units to generate digital pulses and pulse streams while simultaneously performing their regular tasks of acquiring or generating analog signals and waveforms. The DPG option is ideal for a wide range of automated test and measurement applications, including experiment control, AI and robotics, stimulus-response testing, and more.

Implemented using the onboard FPGAs of the PCIe cards or LXI/Ethernet instruments, the DPG option runs parallel to the unit's other functions. It offers a simple programming structure to adjust pulse characteristics for each of the four outputs, allowing the generation of single pulses, pulse trains, or continuous pulse streams. Key parameters such as pulse width, period, phase, and the number of pulses are all programmable.

Once enabled, the DPG outputs pre-programmed pulses on the assigned Multi-Purpose I/O connector upon receiving a valid trigger. The trigger can be generated by software or from various sources, including internal and external triggers of the products or other DPG channels. The synchronised pulse generator outputs are ideal for producing enabling or switching signals, making them suitable for applications requiring precise timing.

The DPG option is available for 92 different Spectrum products, including the 59xx-series Digitizers with various sampling rates, resolutions, and channel options, and the 65xx-series AWGs with different output rates and channel configurations. With a wide range of products, users can select the performance that best suits their specific application requirements.

Cisco launches FSO platform to provide contextual insight

Cisco has announced the launch of its Full Stack Observability (FSO) platform, a comprehensive solution that leverages the company's portfolio to deliver contextual insights, predict and resolve issues faster, and optimise experiences while reducing business risk. The FSO Platform creates an observability ecosystem by aggregating data from various domains such as applications, networking, security, infrastructure, cloud, sustainability, and business sources.

Built on OpenTelemetry and Metrics, Events, Logs, and Traces (MELT), the platform allows seamless collection and analysis of MELT data from any source. It also offers extensibility for developers to build their observability solutions, fostering an ecosystem of customers and partners.

Cloud Native Application Observability is the flagship solution on Cisco's FSO Platform, enabling businesses to achieve desired outcomes, make informed digital experience decisions, ensure performance alignment, prioritise tasks, and mitigate risk while securing workloads. The platform also features modules like Cost Insights, Application Resource Optimizer, Security Insights, and Cisco AIOps, providing visibility, optimisation, risk assessment, and operational simplification for various aspects of the business.

The platform signifies a significant milestone in Cisco's FSO strategy, empowering partners to unlock additional value for themselves and their customers through extensibility. By utilising AI-driven root cause analysis, experience optimisation, and incident management, teams can proactively identify, prioritise, resolve, and predict issues to ensure uninterrupted digital experiences are aligned with business objectives. The company has also collaborated with partners like CloudFabrix, Evolutio, and Kanari to develop and monetise a diverse ecosystem of solutions for the FSO Platform, expanding its use cases and delivering customer value.

Lightstorm NaaS platform to enable cloud interconnectivity

Network infrastructure company, Lightstorm has announced the launch of Polarin, a self-serve Network-as-a-Service (NaaS) platform that empowers enterprises to manage network interconnections across hybrid and multi-cloud infrastructure, internet exchanges, CDN service providers, and SaaS applications within a secure private network.

The platform caters to the needs of cloud-native enterprises, offering a network fabric with diverse connectivity solutions for seamless network design, deployment, and scaling in dynamic hybrid and multi-cloud environments. As a self-service platform, Polarin enables businesses to enhance customer experiences without disrupting their network or cloud architecture.

Built on the principles of transparency, agility, and scalability, Polarin addresses the evolving requirements of modern businesses seeking efficient management of their complex cloud networks. By simplifying provisioning, integrating with technology partners through APIs, and providing customised solutions, it streamlines network management, enhances operational efficiency, and delivers significant cost savings.

"With Polarin, we aim to empower businesses to leverage cutting-edge technologies for accelerated growth. Traditional network solutions are inadequate for the cloud era. Polarin offers a transparent, secure, and agile solution that enables enterprises to accelerate their hybrid and multi-cloud journey," pointed out Amajit Gupta, Group CEO and MD, Lightstorm.

Polarin eliminates the constraints of legacy networks and enables businesses to embrace scalable and agile cloud interconnectivity. With its 100% uptime and low latency, it paves the way for businesses to flourish in a future of seamless and customisable cloud infrastructure management.

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HCLT launches advanced testing facility for 5G infra OEMs

Global technology company, HCLTech has announced the launch of a state-of-the-art test lab in Chennai, to enable global telecom infrastructure original equipment manufacturers (OEMs) to test and validate 5G solutions. The facility, a first of its kind in India, is equipped with advanced scanners to enable comprehensive testing of large cellular base stations and small form factor antennas utilised in mobile phones, smart devices, health monitoring systems, and remote surveillance systems.

With a firm commitment to driving next-generation mobile telephony, HCLTech boasts a team of highly skilled and experienced engineers dedicated to ensuring the highest levels of quality, performance, and technology in the products they test and verify. The lab is currently equipped to test and validate 5G telecom antennas for frequency bands up to 7 GHz. Furthermore, it possesses the scalability to test millimetre-wave frequency 5G infrastructure, empowering OEMs and telecom service providers to accurately and rapidly measure critical parameters.

By leveraging the lab's capabilities, telecom infrastructure OEMs can accelerate their time-to-market, optimise cellular networks, and deliver seamless voice and data connectivity. Vijay Guntur, President of Engineering and R&D Services at HCLTech, emphasised the significance of these parameters in enabling OEMs to achieve their goals and meet the increasing demands of the industry.

HCLTech works with over 100 of the world's top 250 engineering R&D spenders and the launch of this advanced test lab reaffirms its commitment to driving innovation and supporting the development of robust digital infrastructure for the telecommunications sector.

AHEAD to set up service delivery office in India

AHEAD, an enterprise cloud solution company based in Chicago has announced its expansion into the Indian market. With a strong presence across 24 locations in the United States, the company plans to open a service delivery office in Gurugram, India this summer.

Offering a wide range of services and solutions encompassing cloud platforms, digital engineering, data and analytics, datacentre modernisation, automation, cybersecurity, and managed services, AHEAD aims to leverage its expertise to implement a global growth strategy. This expansion will help meet the growing demand for unique skill sets and cater to clients while delivering impactful results.

The Indian operations will be led by Praveen Grover, Vice President and Managing Director, who brings over 20 years of experience in enterprise technology and best shoring. With a proven track record of building and leading successful transnational operations, Praveen will spearhead AHEAD's growth in India.

By establishing a presence in India, AHEAD aims to enhance its client services by offering larger engagements, flexible cost structures, and follow-the-sun support. The company is committed to delivering impactful results and looks forward to innovating and growing in the Indian market. The company will focus on supporting the growth of managed services, digital solutions, security, datacentres, networks, and enterprise service management practices. Through these initiatives, AHEAD will ensure that clients have access to top-notch technology and expertise to drive their businesses forward.

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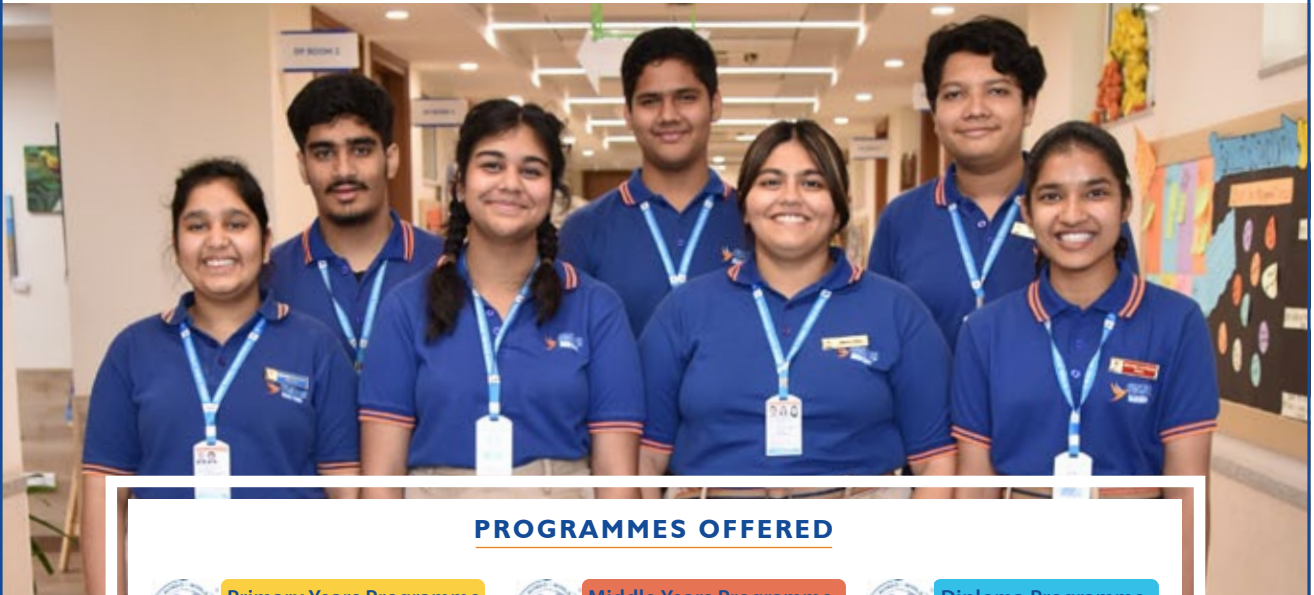
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