₹75

www.voicendata.com

VOL 31 ISSUE 04 APRIL, 2024

VOICE & DATA

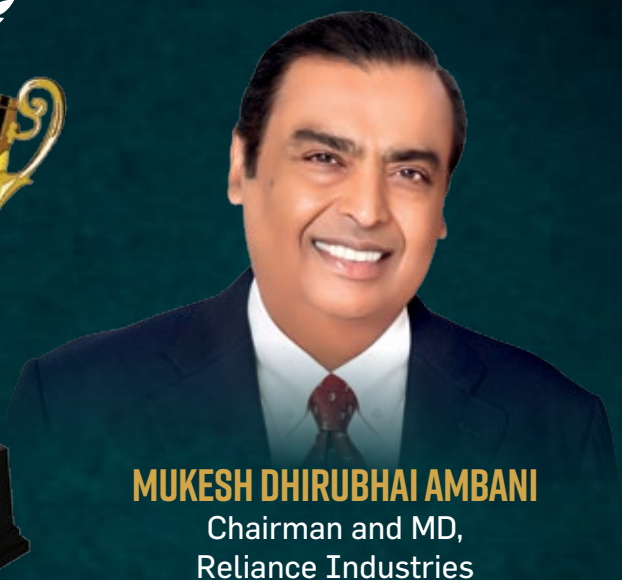
Connecting the Digital World

CyberMedia

TELECOM PERSON OF THE YEAR 2023

K. RAJARAMAN
Chairperson,
IFSCA

LIFETIME ACHIEVEMENT 2023



MUKESH DHIRUBHAI AMBANI
Chairman and MD,
Reliance Industries

PATHBREAKERS OF THE YEAR 2023

DR NEERAJ MITTAL
Chairman, DCC & Secy, DoT

MATHEW OOMMEN
President, Reliance Jio

GOPAL VITTAL
MD & CEO, Airtel

23rd TELECOM LEADERSHIP FORUM 52
EMPOWERING LEADERS IN TELECOMMUNICATIONS

VOICE & DATA
EXCELLENCE AWARDS 2023 55

76 pages including cover

Special subscription offer on Page 66

APEEJAY INTERNATIONAL SCHOOL,
Greater Noida | Estd. in 2001

50+ Years of EXCELLENCE Since 1967 APEEJAY EDUCATION

A FOUNDATION FOR LIFELONG LEARNING STARTS HERE

ADMISSIONS OPEN [2024 -25]
NURSERY TO IX & XI

APPLY NOW

(*Terms & Conditions apply and refer to the website for more details on Scholarships)

Admission Helpline: 91-8826-059-059

Sibling scholarships and several other attractive scholarships available

AWARDS & RECOGNITION

Awarded
'Outstanding Faculty amongst Senior Secondary School'
at 4th Education Leadership Award 2022 organised
by **APAC News Network**

Ranked No.1
School in the Leaders Category Greater Noida
by **TOI Survey 2022**

KEY HIGHLIGHTS

- State-of-the-art infrastructure and facilities
- Value-based holistic education to build resilience and character in students
- 24 hours CCTV surveillance including GPS enabled transport
- Value-based education for holistic development
- Excellent CBSE results
- Thematic curriculum aligned with NEP2020

For more details, please contact: Apeejay International School1 Institutional Area, Surajpur Kasna Road, Greater Noida-201308 E-mail: skool.ais.gnvd@apj.edu

Website: https://www.apeejay.edu/intl/ **Admission Helpline: +91-8826-059-059**

Download
all your favourite apps from
Indus Appstore

Indus Appstore

VOICE&DATA
CONNECTING THE DIGITAL WORLD

Website: www.voicendata.com

OUR OFFICES
GURGAON (CORPORATE OFFICE)
Cyber House
B-35 Sector-32, Gurgaon, Haryana – 122 003
Tel: 0124 - 4822222 Fax: 0124 - 2380694

BENGALURU
205-207, Sree Complex (Opposite RBANMS Ground)
73, St John's Road, Bangalore – 560 042
Tel: +91 (80) 4341 2000, Fax: +91 (80) 2350 7971

MUMBAI
INS tower, Office No. 326, Bandra Kurla Complex Road,
G Block BKC, Bandra East, Mumbai – 400051
Mobile: +91 9969424024

INTERNATIONAL
Huson International Media
President, 1999, South Bascom Avenue, Suit 1000,
Campbell, CA95008, USA
Tel: +1-408-879 6666, Fax: +1-408-879 6669

Voice&Data is printed and published by Pradeep Gupta on behalf of Cyber Media (India) Ltd, D-74, Panchsheel Enclave, New Delhi - 110 017, and printed by him at M/s Archna Printers, D-127, Okhla Industrial Area, Phase-1, New Delhi 110020. Editor: Shubhendu Parth

For Subscription queries contact rsevoicendata@cybermedia.co.in

All Payments Favoring: CYBER MEDIA (INDIA) LTD
Distributors in India: IBH Books & Magazines Dist. Pvt. Ltd, Mumbai.

Corporate Website: www.cybermedia.co.in
www.ciol.com (India's #1 IT Portal)

April 2024

[CONTENTS]

COVER STORY

INTERVEW

[CONTENTS]

INDUSTRY SPEAK

NEWS ANALYSIS

REPORT

BROADBAND BYTES

FOCUS

TECHNOLOGY

REPORT

[NEXT ISSUE]

MARCH 2024

Scan QR Code & Subscribe now...

SEND YOUR FEEDBACK FOR US TO SERVE YOU BETTER...

For **subscription** related issues, contact us at
rsevoicendata@cybermedia.co.in

You can also write to
Reader Service Executive, **VOICE&DATA**,
Cyber House, B-35 Sector 32,
Gurgaon-122 003, Haryana
Tel: 9953150474, 7993574118

FEEDBACK
From Online Readers

Share your views at vndedit@cybermedia.co.in

NEXT ISSUE

ASSET-LIGHT TELCOS

For any query: rajivp@cybermedia.co.in

SHUBHENDU
PARTH

[OPENING NOTE]

A quantum leap for India's 5G future

The recent launch of an experimental license module for 100 5G Labs by the Department of Telecommunications (DoT) in India marks a watershed moment for technological advancement in the country. This initiative, aimed at streamlining the licensing process for academic institutions housing 5G Use Case Labs, holds the potential to propel India to the forefront of the 5G revolution, fostering a burgeoning ecosystem of avant-garde innovation.

By awarding 100 5G Use Case Labs to educational institutions, the DoT is cultivating a fertile ground for students and startups to experiment, test, and develop transformative applications for 5G. These labs will serve as critical launchpads for exploring the technology's potential across diverse fields, from the sinews of smart cities to the vanguard of connected healthcare, remote education, industrial automation, and beyond.

The significance of this initiative lies in its ability to bridge the gap between theoretical knowledge and the tangible application of 5G technology. Since these labs will be using the 5G frequency bands for carrying out various experiments and testing, acquiring an experimental (non-radiating) license is crucial for interference-free operations ensuring licensed Telecom Service Providers (TSPs).

The streamlined licensing process is the engine driving this initiative's transformative potential. Traditionally, obtaining an experimental license involved a cumbersome procedure, demanding detailed technical specifications, equipment details, and frequency band information. This often presented a significant hurdle for institutions, delaying research and development efforts.

The DoT's new approach addresses this challenge with a touch of savoir-faire. By introducing a dedicated experimental license for the 5G labs on the National Single Window System (NSWS) portal, the process becomes significantly more efficient. With automated pre-filling of technical details, instant licenses through self-declaration mode, and a simplified application requiring only basic information, this initiative not only saves valuable time and resources for institutions but also encourages a broader range of participants to engage in the transformative potential of 5G innovation

To fully capitalise on this initiative, the telecom sector must play a pivotal role. Collaboration between TSPs and these 5G Labs is essential. TSPs can offer their expertise, infrastructure, and real-world data sets to guide research efforts and validate findings. Additionally, joint workshops and training programs can equip students and researchers with the necessary skills to navigate the intricacies of 5G technology.

Furthermore, fostering a culture of open innovation is paramount. The DoT and educational institutions can establish platforms for researchers to share findings, collaborate on projects, and attract potential investors. This collaborative milieu will accelerate the development of commercially viable 5G applications and propel India towards becoming a global leader in the 5G domain.

The DoT's decision signifies a strategic move to democratise access to 5G technology and unlock its immense potential for driving innovation. By actively engaging with the telecom sector and fostering a collaborative environment, India can harness this initiative to translate theoretical knowledge into practical applications, shaping a future powered by the transformative potential of 5G.

shubhendup@cybermedia.co.in

Telecom's data revolution: Adapting for a connected future

It is time telcos pivot to data-centricity to unlock efficiencies, commercialise data, harness AI, and fortify data strategies for transformative growth

BY FAWAD QURESHI

With 2024 well underway, the telecommunications industry is primed for a major transformation. The extensive amount of data gathered by providers daily presents a substantial advantage for the industry. However, many providers have been slow in adapting to a data-centric, highly connected environment. This is especially stark when comparisons are made with providers of streaming, mobile payments, and video conferencing applications, which are ironically driven by the services of telecommunications providers.

So, the wealth of data telecom companies can access through streamers, for instance, represents a gold mine. The caveat, though, is whether providers can pivot to data-centricity. This will be vital in the days to come.

#1
DATA HOLDS THE KEY TO CUSTOMER EXPERIENCES, SUPPLY CHAIN MANAGEMENT

Heightened customer expectations. Growing supply chain complexity. These are just a couple of the imperatives for unlocking new operational efficiencies. By utilising network data, service providers can develop hyper-personalisation, for instance. Hence, expect telecommunications providers to embrace new technologies, particularly modern data platforms, to harness existing data resources.

Service providers will also employ data to address supply chain challenges by analysing customer complaints, reorder logs, and other data sources to improve inventory management. Data-driven decision-making will be leveraged to ensure the timely delivery of customer equipment such as routers, modems, VoIP adapters, and satellites, with equipment potentially pre-staged to expedite deployment.

#2
GROWING NEED FOR DATA TO BE COMMERCIALISED

Telecom service providers have been conservative in

> Telecom service providers have been conservative in their efforts to commercialise data despite the substantial amounts they collect and its inherent value.

their efforts to commercialise data despite the substantial amounts they collect and its inherent value. Factors that contribute to this conservatism involve data privacy compliance, data segregation, and a lack of proficiency in data analytics.

But this is set to change as business leaders realise the need to better understand the context in which they operate as part of identifying potential business opportunities. This requires insights into regional trends, industry benchmarks, and more. In turn, this requires telecommunications companies to both capitalise on their data assets and pursue external data sources.

Another driving force for the latter will be the significant demand for training data by large language models (LLMs). This also presents an avenue for telecommunications companies to diversify revenue streams through the sale of their data, with a focus on ensuring strong privacy and governance protocols.

#3
IMPETUS FROM GENERATIVE AI

While the industry has already been utilising AI for use cases such as anomaly detection and recommendation engines for customers, the emergence of generative AI-driven advancements opens up significant potential for breakthroughs. For example, Allied Market Research estimates that, globally, AI in the telecommunication market was valued at USD 1.2 billion in 2021, projecting that this would reach USD 38.8 billion by 2031. Meanwhile, in India, AI is also growing at a rapid pace, with a report by the Confederation of Indian Industry, anticipating the telecom industry as a potential key driver of the AI market's estimated USD 7.8 billion evaluation by 2025.

Outside of telecommunications, generative AI-powered innovations include near-instant, highly precise results from translation tools, as well as the analysis of medical and pharmaceutical data to identify new treatments and potentially uncover novel medical breakthroughs.

Within the sector, generative AI will enhance customer experience through improved customer self-service and the reduced need for human intervention. Generative AI is already revolutionising support teams within telecommunications providers, from AI-driven chatbots to AI-optimised knowledge bases for support personnel. The future holds the promise of further advancements in intuitive issue-solving empowered by generative AI.

#4
BREAKTHROUGHS EMPHASISE THE VALUE OF A ROBUST DATA STRATEGY

Telecom service providers have long been under pressure to formulate an extensive and future-oriented data strategy. Breakthroughs such as generative AI do not change this. Quite the opposite, they intensify the need to dismantle data silos and facilitate access to data repositories dispersed throughout the organisation.

The efficacy of any model hinges on the quality of the data used in its training, with LLMs being no exception. To enhance their performance, service providers must also tap into, or collaborate on, data from the entire telecommunications ecosystem. This hinges on businesses in the telecommunications sector bolstering their data strategy significantly.

Companies that have already devised a forward-thinking and comprehensive data plan are in a favourable position. The crux of the matter lies in the elevated significance of the data strategy and the urgency in executing and investing in it swiftly. There exists a substantial opportunity for telecommunication organisations prepared to embrace a unified data strategy.

There is no doubt that the year ahead will bring many challenges and opportunities for the telecommunications industry. However, providers have all the tools to navigate developments, they just need to meld them together and rein in complexity. Ultimately, this is what will foster data-driven collaboration that drives the industry to push the envelope.

The author is the Global Industry Field CTO at Snowflake.
feedbackvnd@cybermedia.co.in

Navigating social media risks with AI

Amidst the complexities of social media, harness the power of AI to protect privacy, enhance mental health, and combat misinformation effectively

BY GAURAV SAHAY

In today's digitally connected world, social media platforms play a significant role in shaping interactions, influencing opinion, and impacting daily lives. While these platforms offer numerous benefits, they also present various challenges and risks that need to be addressed. By leveraging the power of Artificial Intelligence (AI), we can navigate these complexities more effectively.

One of the foremost concerns surrounding social media platforms is the collection and usage of user data. AI can play a pivotal role in addressing these concerns by implementing robust data protection measures. Techniques such as encryption, anonymisation, and user-controlled privacy settings can safeguard users' personal information, ensuring greater transparency and control over their data.

Data privacy concerns in today's digital age, particularly with the extensive collection and utilisation of user data by social media platforms, are pivotal. AI offers innovative solutions to ensure robust data protection measures.

ADDRESSING DATA PRIVACY, ALGORITHMIC BIASES

Beyond traditional methods like encryption and anonymisation, AI-driven algorithms can empower users with granular control over their personal information through sophisticated privacy settings. However, AI algorithms deployed by social media platforms have the

> Data privacy concerns in today's digital age, particularly with the extensive collection and utilisation of user data by social media platforms, are pivotal.

potential to perpetuate biases, leading to discriminatory outcomes in content distribution and recommendation systems. It is imperative to continually monitor and audit these algorithms to identify and mitigate biases effectively.

By promoting fairness and inclusivity, AI can help foster a more equitable online environment. Moreover, the inherent biases within AI algorithms deployed by social media platforms pose a significant challenge. To address this, continuous monitoring and auditing of algorithms are essential. By leveraging AI-powered tools, platforms can effectively detect and mitigate biases, promoting fairness and inclusivity in online interactions.

DEALING WITH MENTAL HEALTH CONCERNS, MISINFORMATION

Excessive use of social media has been associated with adverse mental health outcomes, including anxiety, depression, and loneliness. AI-driven solutions can assist in promoting healthier online behaviour by offering personalised recommendations and implementing features such as usage tracking and digital well-being tools. By encouraging mindful engagement, AI can contribute to improved mental well-being among users.

The detrimental effects of excessive social media usage on mental health necessitate proactive interventions. AI-driven solutions can provide personalised support to users by analysing their online behaviour and offering tailored recommendations for healthier engagement. Additionally, digital well-being tools can assist users in managing their screen time and fostering mindful interactions, ultimately contributing to improved mental well-being in the digital realm.

The proliferation of misinformation and fake news on social media platforms poses a significant threat to society. AI technologies, such as natural language processing and machine learning, can be leveraged to combat this challenge effectively. By detecting and flagging misleading content, conducting fact-checking, and promoting credible sources, AI can help mitigate the spread of false information, safeguarding the integrity of online discourse.

CREATING SAFER SPACE, MITIGATING POLARISATION

Social media platforms often serve as breeding grounds for cyberbullying and online harassment. AI-powered content moderation tools can play a vital role in addressing this issue by automatically identifying and flagging abusive behaviour, hate speech, and harassment. By enabling proactive measures to protect users from harm, AI contributes to fostering a safer and more inclusive online environment.

The phenomenon of filter bubbles and echo chambers on social media platforms contributes to polarisation and the reinforcement of existing beliefs. AI can help mitigate these effects by diversifying users' content feeds. By introducing serendipity and exposing users to diverse perspectives and viewpoints, AI fosters greater openness and understanding, promoting a more inclusive online discourse. Through proactive measures, such as real-time monitoring and intervention, AI can help create a safer and more inclusive online environment where users feel protected from harm.

As AI continues to play an increasingly prominent role in social media platforms, it is essential to prioritise ethical considerations. Transparency, accountability, and user consent should be central principles guiding the development and deployment of AI systems. By adhering to ethical frameworks, social media platforms can ensure that AI is deployed responsibly, prioritising the well-being and rights of users above all else.

The impact of social media platforms on society is profound and multifaceted. By leveraging the capabilities of artificial intelligence, we can address key challenges and risks associated with these platforms while maximising their potential benefits. Through a proactive and ethical approach, AI can help shape a more equitable, inclusive, and safer online environment for all users, fostering a digital landscape that promotes well-being, diversity, and meaningful interaction.

The author is Practice Head – Technology and General Corporate at Fox Mandal & Associates.
feedbackvnd@cybermedia.co.in

Transforming the city infrastructure

Cities are fast adopting IoT solutions to tackle pressing challenges, enhance citizen services, optimise waste and traffic management, and bolster safety measures

BY VINAY K MAYER

Urban landscapes are currently experiencing a significant transformation, which is largely being driven by the Internet of Things (IoT), which is playing a pivotal role in creating a smarter and more sustainable future by seamlessly connecting infrastructure, residents, and services. Today, numerous cities globally have successfully implemented IoT solutions to address urban challenges and improve the quality of life for their inhabitants.

For instance, Singapore, often regarded as a leading smart city, has established a strong network of sensors to monitor the environment, manage waste, and control traffic. Similarly, Barcelona uses IoT to effectively manage water resources, reduce energy consumption, and enhance public transportation.

FROM DATA TO ACTION: THE POWER OF IOT

Cities, full of potential yet challenged by issues like traffic congestion and inefficient waste management, find a

> IoT-enabled traffic management can optimise patterns, reduce congestion, shorten commutes, and improve the city's air quality.

> Surveillance cameras, equipped with IoT sensors, enable real-time monitoring of public spaces, enhancing the ability to respond promptly to emergencies.

solution in IoT. By embedding sensors across urban infrastructure, real-time data fuels smarter decision-making. IoT-enabled traffic management optimises patterns, reduces congestion, shortens commutes, and improves air quality. Smart parking solutions, guided by IoT sensors, minimise search times and cut emissions by an estimated 10%.

Waste management reimagined: IoT has revolutionised waste management in smart cities. Smart bins, equipped with sensors, signal when full, optimise collection routes, and reduce costs. Additionally, IoT aids in efficient recycling by tracking and sorting materials, enhancing environmental sustainability, and creating cleaner urban environments. IoT-enabled bins, monitoring fill levels, send alerts for collection, potentially reducing fuel consumption by 13.12%.

Advancing public safety: Surveillance cameras, equipped with IoT sensors, enable real-time monitoring of public spaces, enhancing the ability to respond promptly to emergencies. Smart street lighting systems, utilising IoT technology, can adjust brightness levels based on foot traffic, contributing to energy efficiency while ensuring well-lit and safer streets.

Additionally, wearable IoT devices, such as smartwatches and health monitors, play a role in emergency response systems, providing immediate assistance in critical situations. Moreover, integrating solar power with street lighting, facilitated by IoT, further enhances sustainability efforts by reducing reliance on conventional energy sources. IoT sensors embedded in infrastructure can detect anomalies in bridges, buildings, and other structures, enabling preventive maintenance and potentially reducing infrastructure failures by 12%.

Future of traffic management: Indian smart cities are rapidly enhancing road surveillance by increasing camera density, particularly with the implementation of Smart Traffic Challan Technology. This innovative system efficiently counts and analyses traffic loads on specific roads in real time, facilitated by an API-based database. This database is the hub for immediate data transfer, allowing seamless communication between surveillance cameras and the centralised system.

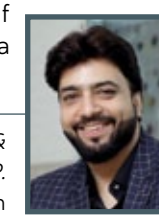
The synergy between high camera density and the real-time database empowers authorities to make informed decisions, optimise traffic management, and implement dynamic strategies for urban mobility, further improving traffic jam mitigation, ambulance and fire brigade mobility and emergency police mobilisation through a significant language predictive model well integrated with Game Theory.

Integrating Smart Traffic Challan Technology with an API-based real-time database marks a substantial shift toward proactive and data-driven approaches in traffic management, contributing to more intelligent and resilient urban transportation systems.

Data privacy and cyber security: India is moving towards becoming a smarter nation, with a growing number of users and increasing average data usage per day. This makes it an important market for online presence and content catering. However, to ensure effective governance and data management, it is essential to use secure and legal channels.

One of India's challenges is procuring and protecting data across its vast geography. The government is taking several steps to improve policy implementation since policy is essential for the success of smart cities. Strong data privacy policies and governance laws will be critical in managing these cities effectively.

Integrating IoT into smart city infrastructure is about improving the lives of city dwellers. Reduced traffic congestion, efficient waste management, and enhanced public safety are just some of the benefits that one can expect from a connected city.



The author is the Director of Market Research & Consulting at Asia Research Partners LLP.
feedbackvnd@cybermedia.co.in

TV RAMACHANDRAN

THE EVOLVING SKYSCAPE

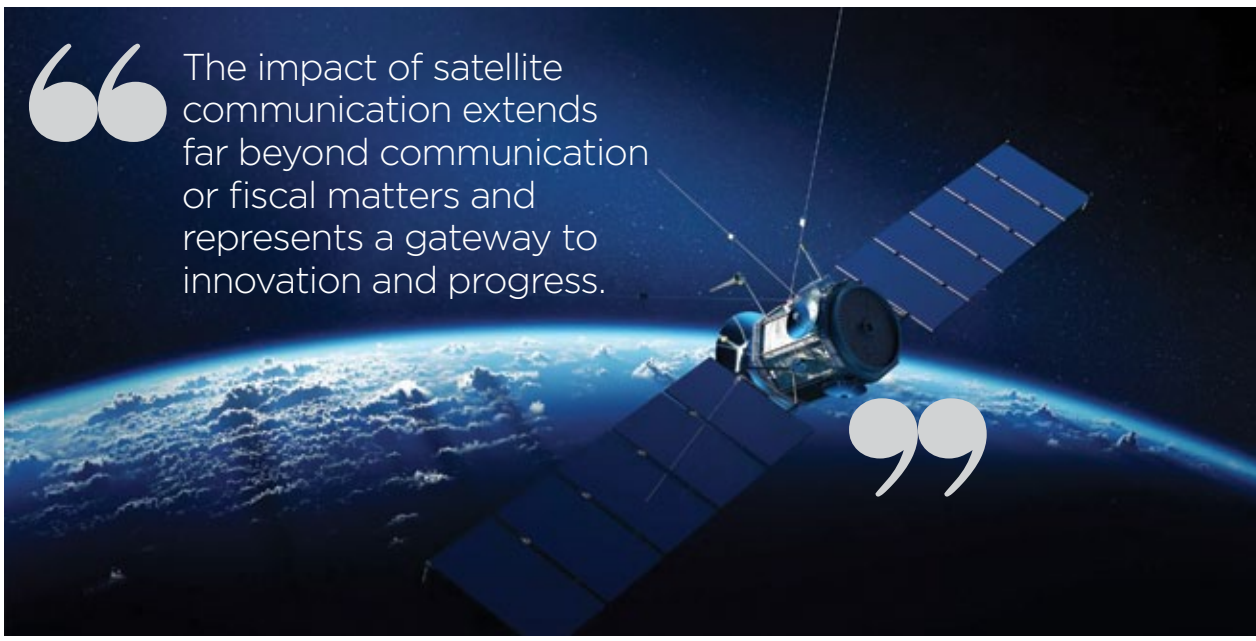
Satcom is fast emerging as a game-changer in India—bridging rural connectivity gaps, fueling innovation, and fostering inclusive development

Despite decades of dedicated efforts, adequate tele connectivity for the remote and unconnected many, remained a pipedream in India. None of the terrestrial technologies could succeed in bridging the divide in connectivity. Big practical and operational challenges as well as financial viability issues have been, and still are, being faced to connect such difficult-to-reach areas of our vast and diverse country.

SATELLITES CAN BE THE VERITABLE MESSIAH OF CONNECTIVITY

It is a sheer delight to listen to the connectivity achievements of today thanks to modern-day advancements in satellite communications. For example, on 15 March, while inaugurating the Centre for Broadband Proliferation in Rural Areas (CBPiR), Chairman – DCC and Department of Telecom Secretary Dr Neeraj Mittal highlighted that a huge pent-up demand for data and broadband exists in rural and inaccessible areas.

Citing an example where 4G was launched in a poorly connected area of North East through satellite, he noted the surprising trend of connectivity-deprived consumers consuming up to 25 GB per month, 40% higher than the national average. This and many more such interesting but unsung and unknown connectivity accomplishments are quietly happening in India today, thanks to the increasingly powerful role played by the progressively reformed and liberalised satellite communications sector over the last few years and the crying need for more satellite broadband.



> Technologies like reusable launch platforms, software-defined payloads, and High Throughput Satellites can bring down the cost of satellite broadband.

THE BEGINNING OF THE REFORMS

It is well accepted by all that the scientists of ISRO constitute the greatest heroes of the nation, thanks to their remarkable achievements in strategic space activity. However, in commercial communications, India had a long way to go and the liberalisation of the satellite sector commenced on 24 June 2020 when the Union Cabinet chaired by Prime Minister Narendra Modi approved far-reaching reforms in the space sector aimed at boosting private sector participation in the entire range of space activities. The vision behind this historic move was that of transforming India through the use of satellite communication to connect the unconnected and making the country self-reliant and technologically advanced in all space activities.

The Cabinet also approved the creation of the Indian National Space Promotion and Authorisation Centre (IN-SPACe) to ensure a level playing field for private sector players to use Indian space infrastructure and also empowered it to promote and guide the private industries in space activities through facilitating policies and a friendly regulatory environment. These actions seem to have borne rich and substantial fruits already.

A great outcome has been the entry of LEO satellites which could be instrumental in delivering low latency high-quality broadband to the remote and unconnected to bridge the digital divide. The reforms of the government have spurred the interest and entry of LEO players like Eutelsat OneWeb India, Amazon's Kuiper, Jio Satellite Communications, Starlink and others. With probably only around 600 million unique broadband users out of a total of 850 million, satellite players, especially the LEOs, are targeting the potential of at least 500 million unserved potential subscribers.

Although satellite broadband is perceived to be costly, it can be less expensive than alternative terrestrial technologies. Modern technological innovations like re-usable launch platforms, software-defined payloads, High Throughput Satellites, especially of the LEO category and many other state-of-the-art techniques can help bring down the cost per GB significantly and this has been the thrust of INSPACe incessantly in their interactions with industry.

EODB REFORMS AND THE END OF SPECTRUM UNCERTAINTY

While privatisation and liberalisation of satellite communications had nominally commenced a few years ago with the introduction of VSAT players and a significant impetus was provided by NDCP 2018, the regular full-blooded reforms and liberalisation commenced only after June 2020 when the powerful triumvirate of ISRO, IN-SPACe, and DoT in tandem with TRAI, synergistically commenced catalysing satellite communications.

In May 2021, the Government of India (TEC/DoT) came out with new liberalised specifications which helped remove erstwhile restrictions which curbed the use of modern Satcom technologies and brought huge benefits to the end consumer by way of high-capacity, high-speed broadband services and better Quality of Service at lower cost. Subsequently, after consultations in August 2021, TRAI released recommendations on the licensing framework for satellite-based connectivity for Low Bit Rate applications. In November 2022, it published the recommendations on licensing framework for Establishing and Operating Satellite Earth Station Gateway in a standalone mode.

Earlier in October 2022, DoT had issued a package of satellite communication reforms "to propel growth and accelerate provisioning of affordable services to the citizens". This package of Ease-of-Doing Business (EoDB) reforms included waiver of the high NOCC charges, waiver of Mandatory Performance Verification Testing (MPVT) charges, enhancement of the scope of satellite licenses including commercial VSAT authorisation to enable the provisioning of satellite-based M2M and IoT devices and User Terminal stations on moving platforms, automated and contactless online processing of all applications through Saral Sanchar Portal.

The other highly impactful announcement was the Telecommunications Act 2023, which provided the long-awaited clarity on allocation methodology for spectrum

> The government has prepared the ground for the take-off of Satcom by amending the FDI Policy, bringing all telecom services under the 100% FDI route.

for Satcom. Schedule I of the Act made it clear that all satellite spectrum will be assigned through administrative allocation. This permanently put to rest the uncertainty for potential investors and the satellite sector.

SUPPORT FOR GROWTH THROUGH 100% FDI

India is now targeting to grow its share in the global satellite market from the current 2% to 10%, which surely is not a cakewalk. The key to this growth would be access to the significant capital required and that too at a low cost. This means maximum inflow of FDI, at 100% level. Happily, the sector had been, like Barkis, "ready and waiting" merely for the spectrum clarity and EoDB reforms.

The government had already prepared the ground for the take-off of satellite communications in October 2021 through its Press Note 4 which amended Para 5.2.14 of the FDI Policy to bring all telecom services including GMPCS, VSAT, etc. under the 100% FDI automatic route. This permission would only be limited by the security constraint regarding nations having borders with India.

UNIQUE SATCOM USE CASES

Helping the entrepreneur: In Mumbai, Satish, a young entrepreneur, was grappling with the challenges of launching his sustainable energy start-up to provide affordable solar power solutions to rural communities. However, he faced a daunting obstacle: reaching these remote regions with reliable communication to monitor and maintain his solar panels.

Fortunately, India's burgeoning satellite communication infrastructure offered a lifeline. Through satellite-enabled Internet connectivity, Satish could remotely monitor his solar installations, ensuring optimal performance and timely maintenance. This enabled him to scale his business efficiently.

Combating tax evasion: By providing tax authorities with unprecedented visibility into remote regions, satellite-enabled real-time data transmission has significantly reduced opportunities for evasion, bolstering revenue collection efforts and promoting transparent governance.

Supporting agribusiness: Agriculture and related businesses in India are increasingly using satellite data for precision agriculture. Companies like Agribotix provide satellite-based solutions for monitoring crop health, predicting yields, and optimising farm operations.

Enabling remote sensing services: Private companies like BlackSky and Planet operate satellites that provide high-resolution imagery for various applications, including urban planning, infrastructure monitoring, and environmental management.

Aiding in disaster response: Private satellite operators collaborate with government agencies and NGOs to provide timely imagery and communication services during disasters. For example, during the 2022 Uttarakhand floods, private satellite imagery was used to assess the damage and plan rescue operations.

The impact of satellite communication extends far beyond communication or fiscal matters and represents a gateway to innovation and progress within the technology sector. From enhancing disaster response and management to revolutionising agricultural practices through precision farming techniques, satellite technology has become deeply intertwined with various aspects of Indian life.

Educational initiatives, empowered by satellite connectivity, have reached even the most remote corners of the country, unlocking doors of opportunity for the youth and driving progress towards a more knowledge-driven and inclusive society. It has now emerged as an indispensable tool for tracking progress towards the SDGs and crafting targeted public policies.

Researchers recognise the instrumental role of satellite communication in delivering granular insights into the development of villages and neighbourhoods, bridging information gaps, and enabling tailored interventions towards a more equitable, inclusive and sustainable future.

The author is Hon. FIET (London) and President of Broadband India Forum.

Views are personal.

Research inputs by Neha Hathiari, Advisory@TVR

feedbackvnd@cybermedia.co.in

Orchestrating a brighter world NEC

Empowering Lakshadweep

NEC Connects Dreams with Submarine Cable
Powering Lakshadweep with High-Speed Internet

NEC's Submarine Cable Networks, deployed globally, collectively

spans the earth 8 TIMES

Submarine Cables carry **99%** of World's Internet traffic

NEC Corporation India Pvt. Ltd., 18th & 19th Floor, Tower C, Advant Navis Business Park, Plot 7, Sector 142, Noida, Uttar Pradesh 201305
in.nec.com marketing@in.nec.com

[NEWS ANALYSIS]
SPECTRUM AUCTION

More airwaves on offer for telcos: Why is it important now?

Telcos use spectrum auctions to shore up airwaves and expand network coverage; this year, however, it could be more about consolidation for the sector

BY VERNIKA AWAL

On 8 March, the Department of Telecommunications (DoT) announced an upcoming round of telecom spectrum auction. According to the DoT, the auction would "augment the existing telecom services and maintain continuity of services." This announcement, in its own right, puts under the spotlight the rather different turnout that this year's spectrum auction could see.

An analysis of the history of spectrum auctions in India, coupled with close observations of India's three private telecom operators—Bharti Airtel, Reliance Jio Infocomm and Vodafone-Idea—reveal that the spectrum auction, slated to begin on 20 May, could see a considerably shallow showing from the telcos. A large part of this could be due to FY25 becoming a year of consolidation, instead of brute-force network expansion across India.

> A total of 10523.15MHz of spectrum is set to be auctioned, with the DoT setting the total reserve price at Rs 96,317.65 crore (USD 11.6 billion).

"We had a very major auction last year, where a large chunk of the spectrum was auctioned ... the demand for a new auction is very limited for the new spectrum."

Ashwini Vaishnaw

Union Minister, Communications and Electronics & IT, Government of India

On this note, Voice&Data looks at what the upcoming spectrum auction could shape up to be like.

PARTICULARS OF THE AUCTION

To begin, all spectrum available across eight bands—from 800MHz in the low-frequency range to 26GHz in the high-frequency range—will be auctioned by the central government. A total of 10523.15MHz of spectrum is set to be auctioned, with the DoT setting the total reserve price of the auction at Rs 96,317.65 crore (USD 11.6 billion).

To be sure, the auctioning of spectrum is key to the operating procedure of telecom operators in India. The central government, through the Ministry of Communications' DoT, owns all spectrum in the country. Spectrum, specifically, refers to frequencies of airwaves that offer transmission of pockets of data wirelessly between the towers. Since transmission of information is a sensitive matter, government ownership and controlled access to applying companies is the only way for any entity to get access to Indian airwaves.

The upcoming auction will follow standard operating procedures, which include a 20-year spectrum issuance period, the ability for telcos to pay for the spectrum during the period, a capped interest rate for clarity and stability of payments for the spectrum, and no separate spectrum usage charges (SUC). Besides, there is no need to pay any bank guarantees to acquire the spectrum.

WHAT DOES ALL OF THIS MEAN?

Telcos need a wide range of spectrum for different purposes. For instance, the low-frequency spectrum has the highest range of transmission and thus needs fewer towers for signals to be relayed over large distances. However, high-frequency spectrum is key to facilitating higher data transfer bandwidth—which is a key aspect of providing 5G services.

Given the ability of low-frequency spectrum to maximise connectivity range and therefore offer cost-effective network distribution, the former is expected to be the most in-demand due to the technology.

PAST TRENDS IN PLAY

It is important to note that each of the three key private telcos in India already have a spectrum for both 4G and 5G services—some more than others. No wonder that media reports have cited both analysts, as well as Union IT and Telecom Minister Ashwini Vaishnaw, to point out that the upcoming auction will draw limited participation from most telcos.

It is important to break this down further to understand why.

Speaking at an industry event in New Delhi in October last year, both Akash M Ambani, Chairman of Reliance Jio and Sunil Bharti Mittal, Chairman of Bharti Enterprises, said that the telcos will achieve near-pan-India 5G network coverage by the first quarter of the ongoing calendar year.

Kumar Mangalam Birla, Chairman of Vodafone-Idea shareholder Aditya Birla Group, added that the telco will roll out 5G services to its customers "soon." The operator remains the only one of the three without any consumer 5G services—a factor that caused it to lose nearly 1.4 million subscribers of its network in December alone, as per data from the Telecom Regulatory Authority of India (TRAI).

However, the situation presently looks bleak for the cash-strapped operator, which in late February saw its board of directors approve a Rs 45,000 crore fundraising move—including Rs 20,000 crore in various equity instruments, and Rs 25,000 crore in loans.

Media reports have so far claimed that while investors are interested in Vodafone-Idea's assets, a volatile market and lack of stability of the stock's pricing remain concerns before investing. As a result, it remains to be seen if

While the auction in May might not match the full reserve value, a partial auction could still boost the government's cash inflow, exceeding FY25 projections.

IN BRIEF

- Spectrum auction in India slated for May might see limited participation due to industry consolidation and existing 4G and 5G spectrum holdings.
- Spectrum bands ranging from 800MHz to 26GHz will be auctioned by the government, with a reserve price set at Rs 96,317.65 crore.
- Low-frequency spectrum, conducive to wide coverage, is expected to be in high demand, especially for cost-effective network distribution.
- Major telcos like Airtel and Jio are likely to bid for additional spectrum to improve services and increase average revenue per user.
- Uncertainty looms over Vodafone-Idea's participation due to financial constraints, despite the need for spectrum to bolster its services.
- Despite limited participation, the spectrum auction could yield substantial tax revenue for the government, potentially exceeding projections.

Vodafone-Idea gets its cash in hand to apply for the auction before the 22 April deadline, and from the 20 May start to the auction process.

All of these factors combine to mean that this upcoming spectrum auction would not be a big money spinner for the Centre. The government could be very well aware of this, as Vaishnaw appears to have hinted at.

BETTING ON THE CONTRARIAN

While all of this is true, it is also important to note that additional telecom spectrum may not be a bad idea. Once the basic rollout of networks is complete, both Airtel and Jio would want additional spectrum to improve their services. Both the telcos are right now looking to increase their average revenue per user (ARPU), a factor that could lead to the procurement of at least some spectrum by the players.

If Vodafone-Idea's fundraise goes through, the operator is also likely to pick up more 5G-oriented spectrum. Media reports also cited following the Union Budget this year that newcomers may join the spectrum bidding, including potential bids from international players, as well as the Adani Group.

All of this could yet again shore up the total price and quantum of spectrum auctioned. This signifies the crucial role that the upcoming auction is set to play in the central government's tax projections.

As a result, even though Airtel leads Jio in terms of the all-important ARPU metric, owning the additional spectrum that is now available without any SUC, could give it an extra edge. While matching the full spectrum reserve value may not occur, even a significantly partial auction, set to take place in May, could help the Centre earn close to or more in tax inflow from the telecom sector than projected in the annual interim Budget for FY25.

feedbackvnd@cybermedia.co.in

India's indigenous 'core' router: How fast is it?

Nivetti's 2.4Tbps router is a significant leap for Made-in-India—from gigabit- to terabits-class—critical for enterprise networking infrastructure

BY VERNIKA AWAL

On 9 March, Union Communications and Electronics & IT Minister Ashwini Vaishnaw unveiled India's 'fastest router'. Jointly developed by Bengaluru-based electronics development firm Nivetti Systems, the Department of Telecommunications (DoT) and the Centre for Development of Telematics (C-DOT), it is a 'core' router. What this means is that it will not be used in home networks but as a crucial component of large networking infrastructure. The development is being seen as yet another success of India's advancements in domestic electronics equipment manufacturing and research.

WHAT IS THE ROUTER, AND WHY IS IT IMPORTANT?

A 'core' router plays a critical role in networking infrastructure by supporting the highest possible network bandwidth across all ports.

> Core routers are used in large-scale networking systems, which serve as the backbone for enterprises, defence systems, and government Intranets.

> Nivetti's router supports Internet Protocol/ Multi-Protocol Label Switching for routing data through network nodes using 'labels' instead of IP addresses.

Such routers are primarily utilised in large-scale networking systems, which serve as the backbone for modern-day enterprises, defence systems, government Intranets, and more. It is essential to differentiate these devices from the Wi-Fi routers commonly found in homes, as they provide single-point network routing to deliver Internet services suitable for household demands, which are considerably lower than those of enterprise-grade systems.

The significance of such a system, and thus the hype surrounding it, lies in the fact that, until now, core routers were predominantly imported from other countries. In India, notable suppliers of core routers have included China's Huawei and ZTE, as well as global firms like Cisco, Ericsson, and Nokia.

"The indigenously developed router by Nivetti is important from India's security and self-reliance perspective and the C-DOT is fully backing it to further the country's Make-in-India capabilities in critical hardware and equipment sector, as well as in fostering innovation," Dr Rajkumar Upadhyay, CEO of C-DOT said adding that the government plans to further invest in such initiatives.

The Nivetti-DoT-CDOT router boasts the capability of supporting a gross network bandwidth of 2.4 terabits per second (Tbps), making it India's fastest to date. This achievement is particularly noteworthy because, until now, local networking equipment manufacturers have primarily produced gigabit-class core routers, which are inadequate to meet the high-speed network demands of the modern enterprise 5G network era.

This indigenous router operates on what the company claims to be India's first and only indigenous enterprise operating system for such devices—NiOS by Nivetti. Additionally, it supports a protocol known as Internet Protocol/Multi-Protocol Label Switching (IP/MPLS), a technique for routing data through various network nodes using 'labels' instead of IP addresses. The advantage of this lies in simplifying the process of adding multiple sites to a network, making IP/MPLS systems more preferable in network cores.

WHAT VAISHNAW SAID, AND WHY?

Announcing the launch of the router, Vaishnaw emphasised its significance, stating, "Networking is key to the entire Digital India effort. And within networking, routers, especially core routers like this one, are crucial. So, I am glad that such complex equipment has been designed in India, developed in India, and made in India."

Vaishnaw's statement comes at a time when geopolitical tensions have heightened the focus on core networking infrastructure, particularly concerning global reliance on China for such technologies. Since 2016, the United States has raised significant concerns regarding networking infrastructure built by Huawei and ZTE, alleging backdoors that could potentially allow China to intercept and snoop data across various networks. Both the Chinese government and the companies involved have consistently denied these allegations.

However, China's strained relations with India have also dwindled in the meantime, adding to the concerns about potential data espionage across the border. Consequently, the central government's introduction of production-linked incentives (PLIs) for IT hardware, alongside support from entities like C-DOT and DoT, has facilitated the development of a terabit-class core router domestically in India.

Going by the announcement made during the launch, the router's operating system (OS) has undergone security evaluations by the Defence Research and Development Organisation or DRDO's Scientific Analysis Group (DRDO-SAG). Furthermore, it has reportedly garnered interest from various sectors, including power grid operators, DRDO itself, the Indian Navy, and several unnamed private enterprises. However, the authenticity of these claims could not be independently verified by Voice&Data.

Nevertheless, the necessity for such infrastructure development in India has been long acknowledged due to the aforementioned factors. While it is improbable that the terabit-class IP/MPLS router developed by Nivetti and government entities is entirely indigenous—given the likelihood of imported components—their collaborative

The router's operating system has undergone security evaluations by the Defence Research and Development Organisation's Scientific Analysis Group.

IN BRIEF

- **Indigenous innovation:** India's self-reliance in networking tech advances with Nivetti's domestic router development.
- **Security and self-reliance:** Nivetti's 2.4Tbps router is significant for India's security and tech self-sufficiency amid geopolitical tensions.
- **Policy implications:** The launch highlights the impact of India's policy shift to boost indigenous tech that aims to make India a global manufacturing hub.
- **Global impact:** Nivetti's achievement paves the way for attracting global firms to consider manufacturing advanced networking hardware in India.
- **Future directions:** It underscores the evolving manufacturing landscape in India, emphasising software, innovation, and hardware integration.

effort marks a significant step towards domesticating the production of advanced networking hardware.

In the future, this could potentially attract global firms such as Cisco, Ericsson, and Nokia to consider designing and manufacturing their advanced networking hardware in India, among other trusted locations.

IS THIS TRULY THE FASTEST CORE ROUTER?

Not exactly. Several other core routers offer faster networking bandwidth. For instance, the Ericsson SSR 8000 smart systems core router, introduced in April of last year, boasts a rated bandwidth of 16Tbps. Similarly, Cisco's 8000-series core routers support up to 25.6Tbps network bandwidth without high-bandwidth memory and 12.8Tbps with HBM support.

However, these aforementioned routers represent the cutting edge and are the latest of their kind. This would still position the Nivetti IP/MPLS router as one of the fastest in its category.

Looking ahead, Vaishnaw's statement implies potential policy changes aimed at further promoting indigenous tech development for such hardware. "We will work on policy measures that remove any roadblocks innovators face in their journey to create. Having a strong base in software, and design capabilities put us right at the take-off point to become a major product nation of the world. We have been a good service-oriented nation, which will continue to grow. In parallel, we will make efforts to be a product-manufacturing nation. That is the focus," the minister said.

He emphasised the importance of core routers in the context of the Digital India initiative, noting, "Within networking, a core router like this is very important." He also highlighted the evolving nature of manufacturing processes, noting that manufacturing was no longer a mechanical process. "Today, it involves significant software, innovation, and intellectual input in hardware," he added.

feedbackvnd@cybermedia.co.in

Celebrating excellence in telecom leadership

Voice&Data shines a spotlight on the trailblazers and visionaries shaping India's telecom landscape with the Telecom Leadership Awards 2023

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 23rd Telecom Leadership Forum (TLF), including the V&D Telecom Leadership Award for 2023. The Telecom Person of the Awards for 2023 was conferred upon K Rajaraman, Chairman of the International Financial Services Centres Authority for his role as the former Telecom Secretary for creating a conducive environment to drive the telecom sector.

The Pathbreaker of the Year was given jointly to Dr Neeraj Mittal, Chairman – DCC and Secretary – Department of Telecommunications (on behalf of the DoT), Mathew Oommen, President of Reliance Jio, and Gopal Vittal, Managing Director & CEO of Bharti Airtel. The award was conferred upon them for their role in rolling out the world's largest 5G network in the shortest time across India. The award was received by Madhu Arora, Advisor – Technology, DoT on behalf of Dr Mittal; Kapil Ahuja, CEO (North), Reliance Jio on behalf of Oommen; and Rahul Vats, Chief Regulatory Officer, Bharti Airtel on behalf of Vittal.

The Lifetime Achievement Award was conferred upon Reliance Industries' Chairman and Managing Director Mukesh Dhirubhai Ambani in recognition of his

Award Jury Process

Phase 1 - Nominations: 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 - Research: The 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 nominee. The nomination dossiers were shared with the jury members for their review before the actual Jury meeting was held.

Phase 3 - Jury Meeting: The in-person Jury meeting was held in Delhi, where Jury Members led by Dr R K Upadhyay, CEO of C-DOT reviewed each nomination threadbare, discussed the impact of individual nominees and projects 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

Telecom Leadership Awards Jury Members 2022

Dr R K Upadhyay
CEO,
C-DOT
[Jury Chair]

Sanjay Nayak
Co-founder,
Tejas Networks
[Co-Chair]

Pradeep Gupta
Chairman,
CyberMedia Group
[Co-Chair]

Lt Gen AK Bhatt
Director General,
ISpA

Anku Jain
Managing Director,
Media Tek

Ganesh Lakshminarayanan
CEO – India,
Airtel Business

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

Pankaj Mohindroo
Chairman,
ICEA

Shyam Prabhakar Mardikar
Group CTO – Mobility,
Reliance Jio Infocomm

outstanding contribution to the communications sector and efforts towards bridging the digital divide. The award was received by Kapil Ahuja on his behalf.

The awards were decided by an in-person Jury process chaired by Dr R K Upadhyay, CEO of C-DOT and included telecom industry veterans and experts.

AWARD PARAMETER

The V&D Telecom Person and Pathbreaker awards are given for the initiatives and achievements by individuals, a group, or a company in the last 12–18-month period. The Lifetime Achievement Award, however, evaluates the individual's overall contribution to the industry and impact in the past 3-4 decades.

The Telecom Person of the Year Award recognises the overall leadership, vision, and impact on the organisation, industry, and the country, including the contributions towards driving the company's growth. The Pathbreaker Award, as the name suggests focuses on innovative services, creative and ingenious products, technology, services, and processes. The Jury also evaluates the impact of the innovation on the industry and the company, the size, scale, and complexity of the project, product, technology, service, process and the level of their maturity.

Telecom Person of the Year (2023)

K RAJARAMAN

Chairman, International Financial Services Centres Authority
(Former Secretary – Department of Telecommunications)

A bureaucrat par excellence, K Rajaraman's visionary leadership has been instrumental in driving domestic telecom equipment manufacturing and streamlining decision-making processes within the DoT. He also played a crucial role in formulating the Indian Telegraph (Infrastructure Safety) Rules 2022, addressing significant safety concerns surrounding existing telecom infrastructure.

His astute stewardship in newer technologies positioned India as a frontrunner in shaping 6G standards, laying the groundwork for a comprehensive 6G roadmap. His proactive efforts resulted in the setting up a single-window clearance platform for all satellite-related networks, opening new avenues for connectivity and fostering technological innovation.

His strategic foresight and unwavering dedication have not only propelled India's telecommunications sector to new heights but have also established him as a paragon of excellence and innovation in the industry."

[INTERVIEW]

"India has made progress in various components of the 5G ecosystem"

The Voice&Data Telecom Person of the Year 2023 and the Chairman of the International Financial Services Centres Authority (IFSCA) ***K Rajaraman****, shared his views on how the telecom sector has evolved during the last couple of years, including achievements in 5G, initiatives in 6G, Satcom, and local telecom equipment manufacturing, and the role of IFSCA in funding innovation. He also touched upon challenges encountered during his tenure at the DoT and some of the toughest decisions he had to make during his tenure as the Telecom Secretary. Excerpts from his interaction with* ***Shubhendu Parth****:*

The telecom sector has become a cornerstone of the modern economy. How would you characterise this transformation, and do you have concerns about the over-reliance on digital technology?

Technology, particularly in the digital realm, has revolutionised our lives, offering convenience and cost-effectiveness to individuals, small businesses, and large corporations alike. The widespread adoption of digital technologies globally attests to its myriad benefits. While issues such as cybersecurity, fraud, and environmental impacts need addressing, the advantages of technology are undeniable.

During the COVID-19 pandemic, for instance, India swiftly dispersed nearly Rs 60,000 crore to over 40 crore accounts, illustrating the efficiency of digital infrastructure. Contrastingly, countries like the US were still issuing physical checks. India's success in this endeavour was facilitated by its robust digital public infrastructure and the JAM trinity—the Jan Dhan Accounts, Aadhar, and Mobile penetration—which connected even the most marginalised to formal financial systems. This integration has minimised leakages in welfare schemes, enhancing the efficacy of social security systems.

The exponential growth of the digital economy is evident in projections by the Reserve Bank of India (RBI), forecasting a rise from 8.5% to 20% of gross value added by 2030. This indicates a significant economic shift, with an estimated USD 2 trillion contribution to a likely USD 10 trillion economy. The RBI study also highlights the economic multiplier effect of digital-dependent sectors, emphasising their role in driving economic efficiency, particularly in developing countries.

You are credited with creating the roadmap for 5G services in India, including spectrum auctions. How did you manage the pressure to deploy cutting-edge technology, considering India's delayed entry compared to other nations?

The delay in implementing 5G in India primarily stemmed from spectrum availability issues. Previous

The exponential growth of the digital economy is evident in projections by the Reserve Bank of India (RBI), forecasting a rise from 8.5% to 20% of gross value added by 2030.

> The collaborative efforts between the government, private, and public organisations have laid a strong foundation for India's indigenous 5G technology.

administrations had made efforts in collaboration with various ministries to address this challenge. Thanks to these efforts and the government's decisive actions, the spectrum for 5G was released from various other uses, with cooperation from other ministries. This paved the way for the commencement of the auction process in 2021, which saw significant demand, resulting in the government raising Rs 1.5 lakh crores during the spectrum sale in July 2022.

However, the spectrum auction alone was not the sole focus. Equally important were the enabling conditions necessary for effective 5G deployment. For instance, the presence of a robust optic fibre backbone or fibreisatiion across the country was crucial for high-quality 5G service delivery. This fibre network had been developed over several years, facilitating the connection of base stations to fibre for optimal performance.

It is worth noting that 5G is not solely geared towards individual users but holds immense potential for enterprise applications in both the public and private sectors. Recognising this, we established a high-level inter-ministerial committee to showcase various 5G use cases to different government ministries. These use cases demonstrated the technology's potential for enhancing economic efficiency across sectors such as logistics, mining, and manufacturing. Thanks to the cooperation of various ministries and state governments, pilot projects to establish 5G use cases are now underway in various locations.

What specific challenges did you encounter during your tenure at the DoT, particularly in formulating changes to foster an environment conducive to 5G development?

A crucial concern that consistently loomed was making available local technology, particularly driven by geopolitical considerations and national security imperatives. Balancing the need for technological advancement with safeguarding national interests posed a significant challenge. We had to ensure that the telecom equipment selected met stringent security standards and was "secure by design," both from domestic and international suppliers. Collaborating with reliable technology providers, both within and outside India, was essential in addressing this challenge, and I'm pleased to note that it yielded positive outcomes.

Unlike previous generations of telecom technology where India lagged in local development, the scenario with 5G was markedly different. Presently, numerous Indian companies, including startups and established players, are actively involved in developing 5G technology products. For instance, Reliance has ventured into developing its own 5G technology following its acquisition of a US-based technology supplier, Radisys. Similarly, TCS is engaged in 5G development initiatives. Noteworthy startups such as Signal Chip have made significant strides in developing 5G chipsets, while companies like Tejas Networks are focusing on radio access network solutions for 5G.

Moreover, with the launch of its 5G NSA, India has demonstrated progress in various components of the 5G ecosystem. Although these advancements require further refinement to meet global standards, the collaborative efforts between the government, private enterprises, and public institutions have laid a strong foundation for India's indigenous 5G technology. It is a source of pride that these endeavours are poised to mature and contribute significantly to India's technological landscape in the coming years.

Your contributions to the telecom equipment manufacturing sector have been notable. However, India still has a distance to cover to emerge as a significant global supplier. Where does the country stand at present?

The telecom sector is heavily reliant on technology, which, in turn, hinges on patents. For India to carve a niche in the global market, we must bolster our technological prowess, particularly in patent filing and standardisation processes led by organisations like 3GPP, IEEE, and others. Traditionally dominated by a select few global players, entering this domain requires India to fortify its

> Efforts are underway to incentivise the "reverse flipping" of Indian startups registered overseas, based on the Padmanabhan Committee recommendations.

patent portfolio, a goal that is achievable with time and concerted efforts.

Encouragingly, India's telecom equipment manufacturing sector has made strides, with over Rs 10,000 crore worth of equipment exported globally in recent years. However, to address challenges such as high manufacturing costs and low volumes, the government introduced the Production Linked Incentive (PLI) scheme in October 2021. Additionally, the Design Linked Incentive (DLI) scheme incentivises companies with their patents and designs, nurturing indigenous innovation.

On the procurement front, government directives mandating the purchase of local equipment, like the directive to BSNL to buy 4G equipment from the local consortium, underscore India's commitment to fostering domestic manufacturing capabilities. Notably, the development and deployment of indigenous telecom technology, exemplified by the collaboration between C-DOT, TCS, and Tejas Networks, signifies a significant leap forward. Although India might have entered the race later than some, these efforts paved the way for enhanced competitiveness in the 5G era.

Moreover, active participation in standardisation bodies like ITU and ETSI, supported by partnerships with esteemed institutions like IITs, underscores India's commitment to establishing a robust standards ecosystem. It is heartening to see private companies like Tejas Networks and TCS establishing dedicated standards verticals within their organisations, recognising the importance of standards compliance in global competitiveness.

Considering your emphasis on supporting the startup ecosystem, does IFSCA have a role in enabling startups to raise capital from the global market?

Let me add a point to my earlier answer to begin with. The government is coming very strongly in support of R&D in the private sector with the launch of two instruments. First, the Telecom Technology Development Fund, makes available Rs 500 crore investment every year from the US in R&D by private and public sector organisations. Secondly, the government also enacted the National Research Fund Act that will put on the table nearly Rs 50,000 crore, of which about Rs 5,000 crore will find its way into the digital sector R&D. So, the pool of R&D investments is increasing in the country. However, the country needs to set up a Sovereign Patent Fund to support the local industry. This would facilitate access to essential patents for local manufacturers, expediting product development.

About IFSCA's role: it serves as India's premier offshore platform, offering comprehensive support to Indian corporates, startups, SMEs, and other businesses seeking cost-effective foreign exchange finance. With two stock exchanges under its purview, IFSCA facilitates the listing of bonds and soon, Indian companies will have the option to list on the IFSC Stock Exchange and conduct IPOs, raising capital in foreign currencies.

Moreover, IFSCA boasts a robust Alternative Investment Fund (AIF) industry, with over 113 registered fund managers managing more than 115 funds, including venture capital and angel funds. This creates ample opportunities for startups to access equity capital. Furthermore, IFSCA's focus on green finance aligns with the growing trend of climate-based startups seeking investment and 26 banks now have policies in place to extend green credit.

The recent announcement of a Rs 1 lakh crore debt financing provision in the Union Budget further underscores the government's commitment to supporting startups and innovative enterprises. Additionally, efforts are underway to incentivise "reverse flipping" of Indian startups registered overseas to return, based on the recommendation by a committee led by G Padmanabhan, Former Executive Director of RBI exploring policy initiatives for this purpose. Overall, IFSCA is playing a pivotal role in facilitating equity and debt capital flows for startups, providing access to global markets and fostering growth opportunities.

> To safeguard the national interest, DoT had to ensure that the telecom equipment used in setting up 5G infrastructure was "secure by design".

About standards, the initiative surrounding 6G, including the Bharat 6G Vision document and the Bharat 6G Alliance, bears your imprint. What triggered this initiative at the national level?

The interest within the government, whether at the ministerial or Prime Minister's level, has been remarkable. Their drive has inspired bureaucrats like us to deliver on such initiatives. The initiative was triggered partly by a geopolitical storm, prompting us to look inward and develop our products.

One key concern was the realisation that, in previous generations of technology such as 5G, Indian companies often ended up paying royalties to multinational corporations for essential patents embedded in standards. This underscored the importance of India entering the standards game to become a leader in technology development.

To achieve this, several measures were identified, such as increasing funding for R&D, establishing strong standards verticals within private companies and government research labs, and expanding the talent pool of highly trained professionals focused on R&D. Efforts were also made to embed topics like 5G and 6G into core curricula and to produce more PhDs in these areas.

Despite India's capability to produce top-line chipsets and radio access networks, there was a recognition of the need to develop high-quality research professionals who could generate patents for Indian companies. This required Indian companies to hire R&D professionals and incentivise them to deliver innovative solutions.

Satcom is emerging as a viable solution to address Digital Bharat's connectivity needs. However, some argue that India is late to the party. What are your thoughts on this?

Satellite communication serves two main purposes in India: strategic, such as for military use, and secondary, for remote and inaccessible areas like forests and hilly terrain. These regions, often considered the bottom of the pyramid, require reliable connectivity for socio-economic development. Unfortunately, the discussion about satellite spectrum allocation became tangled, delaying its implementation. Recognising this, the government included it in the Telecom Act, passed recently, resolving the issue.

With spectrum allocation settled, clearances are expected to be swift, facilitating rapid deployment. However, satellite communication also poses security challenges, necessitating stringent scrutiny. While there was a delay, I'm optimistic about the imminent rollout of Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) satellites. The government is committed to ensuring inclusive telecom services for all.

Reflecting on your tenure as the Telecom Secretary, what were the major challenges you faced at the DoT, and what were the toughest decisions you had to make?

The DoT has a rich history dating back to pre-independence times, with its legislation originating in 1885. Over time, however, the bureaucratic structure governing telecom became burdensome, impeding progress in the sector. Recognising this, the government initiated significant reforms to open up the telecom sector to private participation, leading to a surge in investment. Yet, bureaucratic hurdles persisted, imposing financial and operational strains on telecom service providers.

As part of the reform process, I spearheaded efforts to streamline regulations and reduce compliance burdens, notably through the Wireless Planning and Coordination (WPC) committee's comprehensive reforms. These initiatives significantly eased the compliance burden on the industry. Additionally, key financial reforms, such as eliminating bank guarantees and redundant procedures, were implemented in September 2021.

The passage of the Telecom Act 2024 marks a milestone, ushering in a new era of regulatory clarity and ease of doing business in the telecom sector. These reforms are crucial for achieving India's developmental goals outlined in the India 2047 goals.

shubhendup@cybermedia.co.in

Lifetime Achievement (2023)

MUKESH D AMBANI
Chairman and Managing Director,
Reliance Industries

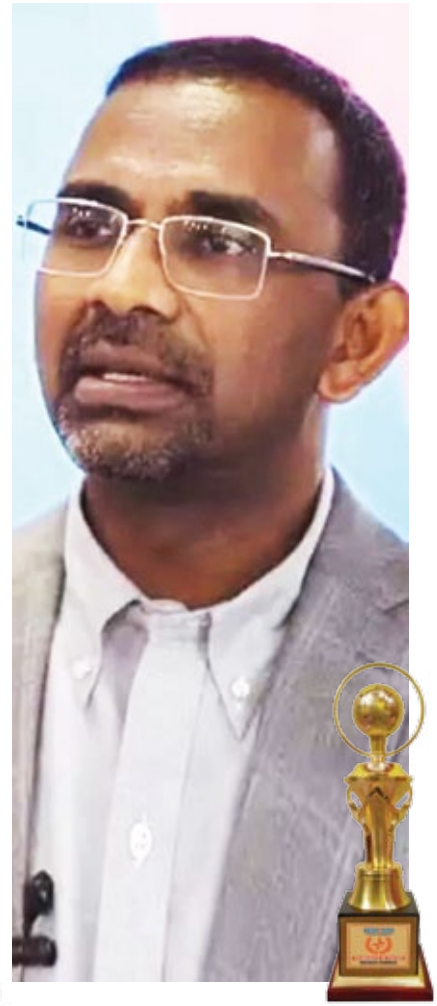
A luminary in India's telecommunications landscape, Mukesh D Ambani stands as a beacon of transformative leadership. His visionary outlook, strategic acumen, and relentless pursuit of innovation have not only revolutionised the sector but have also been instrumental in shaping India's digital aspirations.

Through his visionary leadership, he has democratised connectivity, catalysed the data revolution, and bridged the digital divide, empowering individuals across society. His steadfast commitment to fostering indigenous technological capabilities has contributed significantly to developing a homegrown 5G ecosystem, propelling India towards self-reliance and unlocking profound economic opportunities.

His indelible imprint on the telecommunications industry epitomises excellence and is a testament to his enduring legacy in the annals of Indian business history."

Pathbreakers of the Year (2023)

DR NEERAJ MITTAL
Chairman, DCC and Secretary – Department of Telecommunications



MATHEW OOMMEN
President, Reliance Jio

GOPAL VITTAL
Managing Director & CEO, Bharti Airtel

The vision, determination, and groundbreaking initiatives of three discerning telecom industry leaders have been pivotal in laying the foundation for the seamless deployment of the world's largest 5G networks within record time.

While the Department of Telecom under Dr Neeraj Mittal's expertise as an administrator and policymaker provided crucial government support and facilitated a conducive environment, Reliance Jio Infocomm under the guidance of Mathew Oommen and Bharti Airtel under the direction of Gopal Vittal played a pivotal role in enabling India to achieve an overall 100-million 5G subscriber mark by the end of December 2023. Together, their steadfast dedication propelled India to the forefront as the global leader in the 5G space, achieving the fastest deployment of its scale.

Their innovative strategies and unwavering commitment to technological advancement have not only transformed the telecommunications landscape but have also positioned India as a pioneer in the realm of 5G technology on the global stage.

CyberMedia

PCQUEST CYBERHOAX

Defending the Digital Realm

Coming Soon | New Delhi

Follow us: @pcquest #PCQCyberHoax

Participate in the PCQuest CyberHoax, a comprehensive day-long conference uniting cybersecurity professionals and critical infrastructure stakeholders from various sectors. CyberHoax serves as a platform for valuable collaborations aimed at safeguarding both physical and cyber infrastructure.

Indulge in Insights from Next-Gen Experts

- The Evolution of Cybersecurity
- Securing the Cloud
- Artificial Intelligence in Cybersecurity
- Safeguarding IOT
- Threat Landscape Navigation
- Cyber Awareness
- Product Demo
- Workshops & Masterclasses

Key Highlights

• Full day conferences • 10+ sessions • 30+ speakers • 150+ delegates • Workshops
• Masterclasses • CISO Awards • Live experience zone • Start-up zone • Networking lounge
• Live social feeds • Live polls & feedback

Write to us

Rajiv Pathak
Sr. Manager, Marketing

rajivp@cybermedia.co.in
+91 8010757100

The Silicon game: Reaping 5G gold

In-built hardware can be a big amplifier for 5G adoption, reshaping connectivity paradigms and fuelling innovations in telecom, IoT, and beyond

BY PRATIMA HARIGUNANI

Blackwell. Blackwell. Blackwell.

In the world of processors, that is the sound that was abuzz for the last few weeks when NVIDIA opened a new bag of chips with a strong AI flavour. But it was equally intriguing to see Intel announcing Sierra Forest at MWC this year. With this Xeon processor for 5G core that is coming in 2024, Intel, the OG processor giant, has iterated that 5G would not be an alien name in the terra firma of silicon. Not very far off, was Nokia which shared in February 2024, how it achieved approximately 40% runtime energy savings by tapping its cloud-native 5G core and Intel's Xeon processors and power management software.

> The launch of 5G has emerged as a significant catalyst for the growth in data usage, contributing to 15% of all data traffic in 2023.

"The shift towards custom and in-house silicon allows telcos to tailor chipsets for their specific requirements, optimising performance, energy efficiency, and cost."

Manish Mangal
Global Business Head, Network Services & 5G, Tech Mahindra

There are more in this fray. In September last, Qualcomm extended its partnership with Apple to supply 5G chips for the iPhone until at least 2026. Intel continues its strategic partnership with Ericsson to manufacture custom 5G system-on-chips (SoCs) for Ericsson's telecom networking equipment. The likes of Viettel High Tech are developing their own 5G chipsets.

Indeed. The space of 5G-ready, and specially-brewed, silicon has been stirring up since the day Intel talked about manufacturing custom 5G SoCs (system-on-chip) for Ericsson. The specific 18A manufacturing technology to be used here has been stated to be ready by 2025. It was around 2019 when Intel used the words 5G base station chips. Today we are looking at estimates from MarketsandMarkets that peg the 5G Chipsets market at about USD 81 billion by 2028.

As per Mordor Intelligence, the Global 5G Chipset Market size is surmised at USD 44.37 billion in 2024 and expected to hit USD 109.97 billion by 2029. This report also explains how 5G chipsets are expected to be a critical component of 5G networks, to be rolled out at a massive scale for smartphone OEMs and telecom players.

Looks like processors specifically minted, or adapted, for 5G will make a huge difference ahead for semicon players, 5G adopters, telcos, and all of them, maybe. Let us mine into this emerging catalyst. Is 5G silicon unique and will its availability be quick enough and impactful enough?

WHAT IS THIS SILICON?

5G is everywhere; if not on the ground, at least on serious whiteboards. As of January 2024, nearly 47 operators offered commercial 5G services on SA networks, while more than half of operators expect to deploy 5G-Advanced within a year after standards are released.

5G commercialisation is also gaining steam, with new models and infrastructure tailored to it. As of January 2024, as many as 261 operators in 101 countries globally had launched commercial 5G mobile services. Also, more than 90 operators from 64 markets have been committing to launch 5G in the coming years. There were 1.6 billion 5G connections at the end of 2023, and this number could shoot to 5.5 billion by 2030.

Now when all this is happening, operators and other players need to rely on underlying silicon that can run as fast as the data and capabilities that 5G is all about. That is where 5G Silicon comes in.

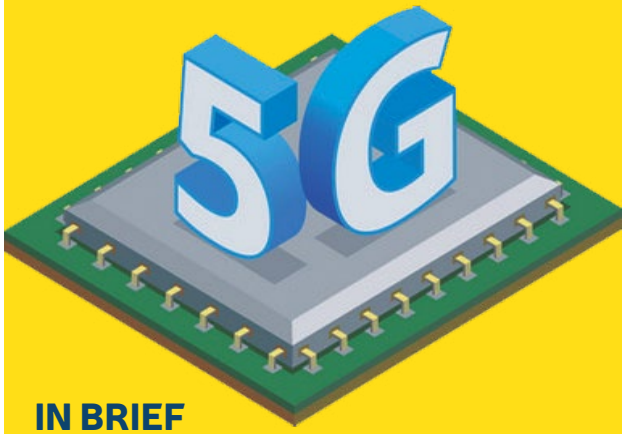
As 5G devices need to deliver higher bandwidth, lower latency and enhanced geographical coverage, chip designers and developers need to ensure RF performance, bandwidth and other crucial performance parameters, explains Nityesh Bhatt, Professor and Chairperson – Information Management Area, Institute of Management, Nirma University. "5G Silicon adds value as it is custom-made, application-specific and is optimised in terms of weight, size, and energy efficiency resulting into lesser total cost of ownership (TCO)."

Consider the pattern that came out in Nokia's annual Indian market-focused Mobile Broadband Index (MBiT). 5G users are using approximately 3.6 times as much mobile data traffic compared to 4G since its launch in October 2022. In 2023, users consumed 17.4 exabytes per month with a CAGR of 26% over the past five years. The launch of 5G has emerged as a significant catalyst for the growth in data usage, contributing to 15% of all data traffic in 2023.

The way to deliver well in this new 5G era is full of many possibilities. Telcos can whip up their silicon or use custom silicon, either by collaborating with or by sourcing from Semicon players. There is always the usual route of using general-purpose silicon, of course.

"Qualcomm, Cisco, Ericsson, and Huawei were deeply involved in creating 5G, and they would have been very careful to make it align with their competencies."

Jim Handy
General Director, Objective Analysis



IN BRIEF

- 5G silicon is emerging as a strong alternative to general-purpose processors in 5G scenarios.
- It is an approach to hardware and software built with specific attention to the latency, data volume, data velocity, efficiency, security and use case requirements of 5G.
- It brings strong add-on benefits like sustainability, interoperability and scalability with options ranging from in-house silicon in telcos to custom silicon.
- Deployments range from base station silicon to layers 1, 2, and 3 processors to Field-Programmable Gate Arrays or FPGAs.
- The choice of silicon depends on speed and signal priorities at every level.
- The challenges include security, chip-making expertise, fab supply chains, and ecosystem.

Telcos are increasingly gravitating towards a mix of in-house silicon, custom silicon, and general-purpose processors to meet the unique demands of 5G networks, observes Manish Mangal, Global Business Head of Network Services and 5G at Tech Mahindra. "The shift towards custom and in-house silicon is particularly notable. This strategy allows telcos to tailor chipsets specifically to their network requirements, optimising performance, energy efficiency, and cost. For example, custom silicon can handle the massive data throughput and low-latency demands of 5G applications, such as IoT, edge computing, and massive machine-type communications."

In-house development also gives telcos a competitive edge by differentiating their services and potentially reducing reliance on external vendors, explains Mangal. Agrees Glenn O'Donnell, VP and Research Director, Forrester: "While commercial chips from the likes of AMD and Qualcomm are being used at the moment, I expect the larger telcos to develop their chips in the future."

But general-purpose processors still play a crucial role, especially in areas where flexibility and programmability are key, adds Mangal. "The choice between these options depends on the application, cost considerations, and the strategic priorities of the telcos."

The use of 5G silicon also straddles the entire pipe of 5G, from the base station to physical layers to digital links (uplinks and downlinks) to back-haul and front-haul, areas up to the last mile.

Mangal delineates this in detail. "In the RAN market, Core Silicon, and base-station Silicon landscapes, the silicon strategy, indeed, diverges significantly across network layers due to their distinct functional demands. At layer 1 – the physical layer – there is a high priority on processing speed and efficiency, as it

"5G Silicon adds value as it is custom-made, application-specific, and optimised in terms of weight, size, and energy efficiency resulting in lesser TCO."

Dr Nityesh Bhatt
Professor & Chairperson – Information Management Area, Institute of Management, Nirma University

deals directly with signal processing. Custom silicon and Digital Signal Processors are often favoured here for their ability to handle high-throughput, real-time tasks efficiently."

"Moving to layer 2—the data link layer—the focus shifts towards managing data frames and error correction, requiring a balance between computational efficiency and flexibility. Field-Programmable Gate Arrays or FPGAs and Application-Specific Integrated Circuits or ASICs are common, enabling customisation for specific network functions. At layer 3—network layer—which manages packet forwarding and routing, general-purpose processors are often sufficient due to the higher-level nature of the tasks, prioritising flexibility over raw processing power." Hence, the silicon strategy must adapt to the requirements of each layer, balancing performance, cost, and flexibility to optimise network operations and capabilities, sums up Mangal.

DOES THIS SILICON MATTER?

Of course, the radio chips are important, O'Donnell says without a speck of doubt. "They handle the transmit and receive signals and use cognitive radio functions to optimise spectrum usage. All the major chipmakers like Intel, Qualcomm, and AMD are also vying for the RAN functions that integrate with the radio chips. Without these chips, there is no 5G."

Just consider how India is guzzling more and more data, even with 5G's full-tilt adoption still in progress. 5G traffic has shown substantial growth across all telecom circles, with metro circles leading the charge and reaching a 20% share in the overall mobile data traffic, as seen in Nokia's report.

The significance of 5G Silicon in the expansion and adoption of 5G technology, especially for new use-cases and enterprise domains, cannot be overstated, captures Mangal.

"As 5G networks promise to revolutionise industries by offering ultra-high speeds, lower latency, and increased reliability, the underlying hardware, particularly 5G Silicon, plays a crucial role in realising these benefits," reasons Mangal, adding that advanced 5G Silicon chips are designed to be more power-efficient, support higher data rates, and enable a broader spectrum range, including millimetre wave frequencies. "This is vital for emerging applications in IoT, autonomous vehicles, smart cities, and industrial automation, where these capabilities are critical," he says.

Not just that, security is a special glimmer that shines from silicon made for 5G. As Mangal reminds us, the enhanced security features embedded in 5G Silicon chips address growing concerns about data integrity and privacy.

Interestingly, 5G silicon can shuffle the chips in a new way for many other crucial industry concerns too. Like the ones around sustainability, interoperability and adoption pace of 5G itself.

From a sustainability perspective, advanced 5G Silicon chips are designed to be highly energy-efficient, reducing the carbon footprint of networks despite the massive increase in data throughput and connection density they support, affirms Mangal. "This efficiency is crucial as the global push towards sustainability becomes more urgent."

Chips are at the epicentre of sustainability concerns right now because they burn too much power, reckons O'Donnell. "All chipmakers are working to make their chips more efficient, but the market needs to apply more pressure. ARM-based processor designs are gaining some favour for this reason."

Interoperability is another key benefit, Mangal explains, pointing out that 5G Silicon can be engineered

"While commercial chips from the likes of AMD and Qualcomm are being used at the moment, I expect the larger telcos to develop their chips in the future."

Glenn O'Donnell
VP & Research Director, Forrester

to meet universal standards, facilitating seamless communication between different devices and networks, essential for the global adoption of 5G.

What is most fascinating is the way scalability is inherently built into 5G Silicon designs. "These chips can support a wide range of frequencies and network configurations, from dense urban areas to rural deployments, enabling network operators to scale their infrastructure as demand evolves. The development and adoption of 5G Silicon, therefore, are foundational to realising the full potential of 5G in a sustainable, interoperable, and scalable manner," underlines Mangal.

WHO IS SLICING THIS PIE? ANY STONES INSIDE?

So, who would shine the most here: a long-time player like Intel or AMD, a telco with hands-on experience, a collaboration between a telco and a processor company, or new offerings made from ARM Blueprints or something else?

Ask Jim Handy, General Director at Objective Analysis and he brings this question in context to how the specifications for new cell phone standards are developed by established suppliers of prior-generation cell phone chips and systems. "You can bet that Qualcomm, Cisco, Ericsson, and Huawei were deeply involved in creating 5G, and they would have been very careful to make it align with their competencies. They probably also started to develop the chips to support 5G even before the standard was finalised. This makes them the most likely winners."

It is anyone's game right now, augurs O'Donnell. "This is because the major chipmakers all have some footprint. Intel and Qualcomm are the leaders, but not by much. Look for partnerships in the future. As telcos will design their ships, they will still need someone like TSMC, Intel, or Global Foundries to manufacture them."

As per data from analyst firm Mobile Experts in 2023, Intel's share of this market was at 31% the previous year, planting it in the lead against names like Marvell, HiSilicon, ZTE (Huawei's smaller Chinese rival) and AMD.

THE MINEFIELDS AHEAD

Meanwhile, in the evolving landscape of 5G Silicon, several additional considerations merit attention. In particular, stresses Mangal. "As 5G networks underpin critical infrastructure and a myriad of IoT devices, the embedded security features within 5G Silicon chips are crucial for protecting against cyber threats and ensuring data privacy."

India is witnessing exponential growth in the telecom domain and deep tech space (AIML, Blockchain, IoT etc.). However, unlike the Western countries, optimal alignment with government and academia is yet to be seen, Prof. Bhatt argues. "To realise the full potential and for sustained growth of new age technologies, synergistic efforts are needed from the government (policy paradigm), industry (implementation and scalability) and academia (skill-building, contemporary curriculum and research)."

It cannot be ignored that the manufacturing ecosystem for 5G Silicon poses challenges and opportunities as well. "Supply chain resilience and geographic diversification are becoming strategic imperatives to mitigate risks of disruption. The collaborative efforts between chipset manufacturers, network equipment vendors, and telecom operators are vital for driving innovation and ensuring that 5G Silicon meets the complex and evolving demands of the 5G era," points out Mangal.

Well-said and well-augured; this is exactly why the land of 5G silicon is a long stretch of road ahead for both silicon specialists and silicon users. Making battle-ready 5G Silicon is not going to be a one-time drill. It will take a lot of patience, prudence and gut feeling to mine this opportunity in the right spots. 5G silicon may look full of glimmer but its challenges are hidden in plain sight.

pratimah@cybermedia.co.in

Focused Digital Campaigns...

PCQUEST

VOICE&DATA

DATAQUEST

DQ Channels

CIOL

"IN THE MIDDLE OF DIFFICULTY LIES OPPORTUNITY"

Enable your business in this challenging time with CyberMedia digital offering...

We ENGAGE with your AUDIENCE

Large Enterprise / Medium Enterprise / Small And Medium / Channel Eco-System / Start-up / Developer / End Cosumers / Gaming Community

HOW TO BETTER A DIGITAL BRAND STRATEGY

Branding

Response Generation

Webinar

Virtual Round Table

Custom Program

Virtual Event

Create a successful brand focused campaigns with :

Harminder Singh, Associate Vice President - Online Expert, harminders@cybermedia.co.in

New video streaming to shake up the data market

D2M technology paves the way for data-free video streaming, offering broader content access while potentially unsettling the telecom sector

BY VERNIKA AWAL

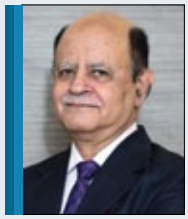
Early this year, the Ministry of Information & Broadcasting (I&B) announced that the government was preparing to conduct trials of direct-to-mobile or D2M technology in 19 cities using Prasar Bharti's infrastructure to assess its effectiveness. To achieve this the government has been closely working with the Indian Institute of Technology (IIT), Kanpur and Saankhya Labs, which has developed a chip that can help users stream live television feeds and even curated video content in the long run—all without the need to use mobile data.

While the development of D2M broadcasting standards has largely remained muted, the technology has created some degrees of optimism—and scepticism—in equal parts over the past month.

WHAT IS D2M?

Put simply, D2M broadcasting refers to the transmission of content airwaves directly from a broadcasting transmission tower to a user's smartphone. This does away with the need to use data services to stream content, especially video.

> D2M allows the transmission of content airwaves directly from a broadcasting tower to a user's smartphone without the need to use data services.



"Building a dedicated D2M network by earmarking spectrum for the broadcasting infrastructure would lead to a breach of a level playing field."

Lt Gen (retd) SP Kochhar
Director General, COAI

To do this, a purpose-built set of infrastructure is needed, including a specialised chip and receiver of airwaves on a smartphone itself. While all of this is a work in progress if it can be achieved, D2M will do away with the need for consumers to rely on telecom operators to get access to Internet connectivity, the backbone of all modern-day applications.

WHY IS D2M IMPORTANT?

To be sure, D2M is not drastic or new but is so far used only in limited capacities for emergency public broadcasting of central government notifications. D2M is key because the networks are getting increasingly congested and consumption of mobile data is on the rise. Further, D2M could expand mobile content consumption even to newer sections of society, thereby becoming a technology that could help power progress in many households that do not have access to a television unit.

Speaking to the media earlier this year, Apurva Chandra, former I&B secretary, had said that nearly one-third or 90 million of India's total 280 million households do not have access to a TV set. However, the number of smartphones in India is estimated at 800 million—and could cross the 1-billion mark within the next few fiscals. This, as per Chandra, has left a wide gap in rolling out content streaming services, a factor that D2M broadcasting can already help fill up.

Chandra further noted that nearly 70% of all data consumption on smartphones happens through video streaming, leading to 43.7 exabytes (or 43.7 billion gigabytes) of data usage every month. As per the I&B Ministry's statement to reporters, transferring 25-30% of this data consumption load to a separate mechanism could significantly help reduce the stress and load on telecom infrastructure and network providers.

All of this makes D2M an important new technology. A draft paper by DoT's Telecommunications Engineering Centre (TEC) is already in the works to bring D2M to the market and will look to release it in the coming weeks.

HOW DOES THE D2M TECHNOLOGY WORK?

Think of this in the same way that your home's direct-to-home (DTH) TV dish service works—except in this case, the transmissions are sent directly to a smartphone. To enable this, Saankhya has claimed to develop the custom chip required for D2M broadcasts for on-device videos on demand. According to Saankhya Labs Chief Executive Officer Parag Naik, the company is working with unnamed original design manufacturers (ODMs) to bring the chip to commercially available smartphones.

The company also plans to start selling a plug-and-play dongle that bulks up smartphones but can be used to market the product and the technology in India for just USD 2.5, or around Rs 200, within the next year.

One of these two components would be crucial for D2M broadcasts to work. According to estimates, a total of 10 million users are likely to be a part of the pilot testing process, which could potentially begin this year itself. This also echoes the Department of Science and Technology Secretary Abhay Karandikar's word on the need for applied research, which could potentially offer up a whole new format of technology itself. Karandikar has been involved in the development of D2M technology since he was the director at IIT Kanpur.

Once the chip or the dongle is installed on a smartphone, the Centre's pilot will use existing public broadcasting equipment in possession of the central audio broadcasting division, Prasar Bharati. Airwaves carrying video content will then be receivable on a smartphone, thus streaming video content without needing to buy data packs from telecom operators.

WHAT DOES IT MAKE THE TELCOS UNHAPPY?

The telecom operators in India have cried foul at the mention of the D2M technology, claiming that it will

Direct-to-mobile can broadcast educational programmes, entertainment channels, alert messages, and critical information during emergencies.

HOW DOES THE D2M WORK?

- **Radio tech for video broadcast:** D2M uses the existing Land Mobile Radio System (LMRS) to broadcast content. It is similar to radio where specific frequencies are tapped in to listen to the content, except that D2M technology can stream multimedia content as well.
- **Leveraging specific radio band:** It will operate on the 526-582 MHz frequency, currently used for terrestrial broadcasting channels, thereby eliminating dependence on satellite networks for video viewing.
- **D2M receiver in smartphones:** To receive D2M signals, smartphones need a built-in D2M receiver chip. Currently, most phones lack this chip, but future models may include it as standard. Alternatively, an external D2M receiver attachment can be used.
- **Content delivery and security:** Content providers like broadcasters or educational institutions can send their content to D2M service providers. These providers would then format the content for D2M transmission and encrypt it for security purposes. D2M receivers in mobile devices would be able to decrypt the signal and display the content.
- **Similar to Digital TV:** D2M transmissions can be based on the DVB-T2 or Digital Video Broadcasting – Second Generation Terrestrial standard, which is widely used for digital terrestrial television broadcasts. This ensures efficient data transmission and high-quality reception. However, South Korea and the US are currently deploying ATSC 3.0 for D2M services that enable broadcasters to use the ATSC 3.0 infrastructure to transmit D2M signals.

negatively impact their data and value-added services business, a key driver of higher per-user revenues for these operators. To be sure, telcos use data-based video streaming subscription services as a way to lure people into buying more expensive data plans, and this could take a major hit if a government-backed technology helps stream video content directly.

The Cellular Operators Association of India (COAI), the key industry voice for the telecom sector, published a statement expressing concerns about the implementation of the pilot D2M broadcast.

"The telecom industry is concerned with the aspects of the level playing field, spectrum allocation, network integration and regulatory and cost arbitrage, in favour of the proposed public-private partnership model and against the telecom service providers. Building a dedicated D2M network by earmarking spectrum specifically for the broadcasting infrastructure and providing competing or complementary services, would lead to a breach of a level playing field. A dedicated D2M network, built by a third party, will not be optimal," the COAI Director General Lt Gen (retd) SP Kochhar stated in a letter to the I&B ministry.

However, none of this has begun as yet, thus leaving D2M open to much speculation. It is undeniable that the technology holds much prowess to simplify live video content streaming—something that could be crucial in periods such as the ongoing Indian Premier League (IPL) cricket season.

Telcos, however, are unlikely to give in so easily—and chipmakers, too, will have their say. The latter will incur significant costs in trying to fit in a new chip to existing smartphone reference designs, making for yet another bottleneck that the draft policy by TEC will need to look into.

feedbackvnd@cybermedia.co.in

DATAQUEST 40+ YEARS THE BUSINESS OF INFOTECH

CyberMedia

DATAQUEST APRIL 2024 EDITION UNVEILS THE LEADING WOMEN IT MAVERICKS OF 2024.

GET DETAILED INSIGHTS ON

- 31st edition ICT Business Awards and Digital Leadership Conclave
- Know the winners of 31st ICT Business Awards
- There is a price to be paid to be the first - **Srikanth Velamakanni**
- Advancing Smelting AI-Driven Skilling? - **C Chandru**
- Explore the future of driving - **Vinod Khode**

SPECIAL FEATURE ON

Can EdTech Bridge the Gap with AI-Driven Skilling?

Scan QR Code
& Subscribe now...

DATAQUEST 40+ YEARS CELEBRATIONS: GET 40% EXCLUSIVE DISCOUNT ON DATAQUEST PRINT SUBSCRIPTION AND DATAQUEST DIGITAL SUBSCRIPTION AT FLAT 420/- ONLY. AVAIL THE OFFER NOW

LINK: https://bit.ly/3VYYE8y

FOLLOW DATAQUEST FOR REGULAR AND LATEST UPDATES ON THE BUSINESS OF ICT ECOSYSTEM.

Dataquest dataquestindia

#ImpactingICTfor4Decades

Leverage Dataquest platform & network
Write to Rajiv Pathak I Sr. Manager, Marketing I rajivp@cybermedia.co.in I +91 8010757100

The unexpected shift

Disillusioned from the Cloud, more organisations are now looking at cost-effective, secure prefab containerised Edge Data Centres for business agility

BY SHISHIR MIGLANI

Cloud computing was the hottest trend in the tech world promising to transform businesses, slash IT budgets and bring in a new era of agility. Companies boarded the cloud computing bandwagon shifting everything to the cloud, chasing a dreamlike state of cloud utopia.

But for many corporations, the dream turned sour with the realisation that the cloud is not a standard solution for every business. This delayed realisation is forcing companies to return to the familiar ground of on-premises cloud and data centres. What is expediting this trend is the unexpected fee and charges model of cloud

> While the public cloud providers promised significant cost reductions, the reality unveiled a complex pricing structure with hidden fees and unexpected charges.

> Prefab containerised EDCs are designed to meet compliance standards and adhere to tier-compliant infrastructure, ensuring data privacy and integrity.

companies and security concerns of public cloud that force costly resource costs on enterprises.

In these shifting scenarios, prefab containerised Edge Data Centres (EDCs) emerge as a compelling alternative, offering cost savings, security and flexibility. In essence, these private clouds fulfil the promise of cloud flexibility and agility. Besides, the predictable costs and direct ownership of data centres and on-prim cloud solutions have enhanced this appeal for companies.

COMPLEX PRICING STRUCTURES

Public cloud providers promised businesses a paradigm shift in terms of how they looked at infrastructure pricing, promising significant cost cuts. However, the reality painted a different picture. Not only did the complex pricing structures with hidden fees and unexpected charges burden IT managers with the tedious task of deciphering and auditing monthly bills it also exacerbated security concerns.

Ensuring compliance with intricate corporate requirements became a significant challenge. To compound these issues, tackling security aspects in the cloud inflated costs disproportionately, leaving IT teams constantly searching for ways to track and curtail monthly expenses without impacting applications.

Large organisations work on clearly defined cost centres and operate efficiently within predefined budgets. Data centres provided just that: a well-defined cost component. Resources were not dedicated solely to auditing expenses or combating unpredictable price fluctuations. Now, the cloud needs to establish full teams to control these issues before cost swings exceed budget allocations. The difficult challenge of determining cloud expenses is exacerbated by lengthy, page-turning invoices, making the 'paperless' movement laughable.

However, the cloud's main flaw is in its inability to meet the majority of business demands, which are frequently not as cutting-edge as Generative AI. This mismatch causes organisations to incur extravagant expenditures without delivering on the anticipated cost reductions. This unanticipated reality left them astonished, as they grappled with the newly generated issues of cost disparities and security concerns, all while worrying about privacy.

COMPELLING ALTERNATIVES

This exodus from the public cloud has created an opportunity for Prefab Container EDCs. Interestingly, these EDCs address most of the concerns that drove corporations away from the public cloud.

Security is a top priority, with prefab containerised EDCs being designed to meet compliance standards and adhere to tier-compliant infrastructure, ensuring data privacy and integrity. Additionally, they provide significant savings on real estate while still ensuring accessibility to a physical data centre with an on-premise cloud, often on an exclusive basis. Furthermore, these systems provide a fixed-cost approach, which enables optimal planning for future expansion without unforeseen charges.

Unlike public cloud services where pricing fluctuations can be unpredictable, there are no surprises in cost with prefab containerised EDCs, eliminating the need for extensive audits. Moreover, owning a data centre through this solution is often more cost-effective than traditional on-premise systems.

Clients may track and manage their EDCs easily using a mobile application that provides real-time monitoring, notifications, and remote management. The flexibility of prefab containerised EDCs allows corporations to tailor their infrastructure to their specific needs, enabling efficient adaptation to evolving requirements without the need for constant adjustments.

The author is a Co-Founder of Planckdot Technologies.
feedbackvnd@cybermedia.co.in

Where jellyfishes work better than whales

Edge Distributed Computing is revolutionising supercomputing, offering agility, cost-effectiveness, and real-time decision-making

BY PRATIMA HARIGUNANI

In a world besotted with big-bellied supercomputers and specially-encased Quantum wonders, it is interesting to consider that there are alternatives to handle huge computing workloads without worrying about space, fragility and tonnes of metal. It is an age where IoT devices, sensors and equipment-attached computing brains can be deployed and leveraged easily and all around, with or without the need to have a huge computing beast working in the mother-ship. It is an age where Edge Distributed Computing (EDC) is catching many eyeballs and wallets.

So how does it work? And why does it work?

DEEP WATERS – BUSY WATERS

In a recent discussion on supercomputing, Rohit Kochar, Founder and CEO of Bert Labs, elaborated, "Traditionally, supercomputers were seen as single devices having the

> Federated ML takes EDC to the next level by fusing the models developed on each device at a central server and pushing the fused model back to the devices.

"If data transmission is costly and in certain scenarios prohibitive, edge distributed computing is a viable and effective solution."

Prof Arun K Tangirala
Department of Chemical Engineering, IIT Madras

ability to store, process, analyse and compute multiple functions. However, for us, supercomputing means leveraging the Bert Platform Solution's distributed computing capabilities across the Bert Nova suite of software modules. Each module serves a specific function, extending this distributed computing ability to the Edge with Bert Titan and Bert Aksh Edge Computing Devices."

He further emphasised that supercomputing begins with Bert Maximus IoT-Powered sensing and Data Capture devices, where they've enabled super-computation on embedded boards. "Here, millions of data points are processed at the initial level, including numeric, alpha-numeric, digital images, and thermal images," he said.

Elaborating on the relevance of EDC for today's enterprises, Kochar highlighted its advantages over supercomputing in certain contexts: "A company may use it for HVAC, enabling real-time monitoring of chilling temperature, airflow, and volumes. Sensors can be integrated into various equipment to gather data on flow, temperature, and pressure, which serve as training data for AI software. Processing such vast amounts of data requires significant computational power, which can be overwhelming for a single location or plant. The solution lies in distributing this computing ability."

Prof Arun K Tangirala from the Department of Chemical Engineering at IIT Madras agrees that EDC is a beneficial model for factories and manufacturing data intelligence, especially for all large-scale industries and factories that integrate several small units to manufacture products.

"The advantages include decentralised computing, eliminating the need for significant computing resources, and quick availability of models for each unit. Moreover, in scenarios where data transmission is costly or prohibitive, EDC and Federated Machine Learning or FML offers a viable and effective solution," he stated.

Kochar adds how various IoT devices, themselves, work as the first layer of computing: "They capture data from plants or HVAC equipment and the first level of processing is done by Bert Mini. The solutions also make the data comprehensible for humans."

The beauty of the solutions, as Kochar adds, lies in how miniservices architecture takes care of various aspects of data and processing. "Real-time performance is tracked by one miniservice, data is captured and stored by another, the next level of processing is done by another one, analytics by the next one, and so on for AI computation, prediction and optimisation."

He adds "We are the only company in the world where AI creation, training and inference can be done on the device itself. There is no need to take it to a remote or Cloud server – although we have those options if

"The integration of 5G and edge computing delivers latency of less than 1 millisecond, significantly enhancing speed and responsiveness for applications."

Nitin Bansal
Managing Director, India Head – Networks, Market Area South East Asia, Oceania & India, Ericsson

> Telcos can now offer edge computing services, optimise content delivery networks, provide IoT solutions, and enhance AR/VR experiences.

IN BRIEF

- EDC has emerged as a pragmatic alternative to traditional supercomputing for handling massive computing workloads with IoT devices and sensors.
- Advantages of EDC include decentralised computing, quick model availability, and cost-effectiveness, especially in cases where data transmission is costly.
- Integration of 5G and edge computing promises low latency, high reliability, and security, fostering innovative IoT and IIoT applications across verticals.
- Challenges such as bandwidth limitations, maintenance of Edge devices, and model poisoning require attention, but the benefits of EDC outweigh the potential disadvantages.
- Ongoing research focuses on addressing data heterogeneity, efficient model updates, and Federated Machine Learning to enhance the capabilities of edge computing.

needed. In today's complex and dynamic ecosystems, computing power is better in a distributed way instead of being in one location. It also helps that we do not have one monolithic software architecture to perform all functions. It is broken down into modules which work cohesively for the desired outcomes. Incidentally, many functions need to be executed in parallel, and not sequentially."

As per Nitin Bansal, Managing Director, India Head-Networks, Market Area South East Asia, Oceania and India at Ericsson. "The integration of 5G and edge computing delivers latency of less than 1 millisecond, significantly enhancing speed and responsiveness for applications like automation, AR, VR, and real-time content delivery. This improved internet experience extends benefits to both consumers and enterprises. The proximity of data processing and storage to the source enhances security and privacy."

New revenue streams are generated through services such as cloud gaming, smart manufacturing, autonomous vehicles, smart grid, predictive maintenance, and remote asset monitoring in industries like oil and gas, Bansal adds. "Telecom operators can capitalise on this synergy by offering edge computing services, optimising content delivery networks, providing IoT solutions, and enhancing AR/VR experiences, creating diverse opportunities for revenue generation across industries."

BARNACLES: POWER, COSTS AND REACH?

Would distributed computing have its limitations of bandwidth and resources? "That is where our IP shines. It is a combination of hardware, circuit design, choice of SoCs, firmware and associated components. The trick is how the software is embedded and how the AI modules are made Edge-ready for real-time training on data fetched from edge devices. Everything comes together on our solutions. We have filed patents at hardware, software, application and integration levels." Kochar assures.

The success of edge computing entirely depends upon the comprehensive deployment of small-cell network architecture to ensure no latency drop, adds Bansal.

"In today's complex and dynamic ecosystems, computing power is better in a distributed way instead of being in one location."

Rohit Kochar
Founder & CEO, Bert Labs

"Improved street infrastructure not only accelerates the expansion of 5G coverage but will also enhance network reliability and capacity, crucial for delivering high-speed data and enabling emerging technologies."

The challenges are that each edge device needs to be equipped with reasonable computing power and well maintained, Prof Tangirala points out. "Moreover, the heterogeneity of computing power and data across devices have to be factored in. Finally, deployers of EDC and FML have to pay attention to model poisoning, essentially attacks from hackers."

An interesting corollary to the argument of resource-intensiveness of distributed computing is that currently many use cases, as shared by Bert Labs, are around sustainability. "Most of our clients want to reduce energy consumption, power and fuel usage at plants and control raw material costs across the asset lifecycle. IoT devices do the first level of processing efficiently."

EDGE: IS IT AROUND THE CORNER?

As to how easy this model is, Rohit cites many examples. "Like how a big FMCG major has used this in its Mumbai HQ. The platform integrated well with different equipment and BMS set-up via standard communication protocols. Only a few changes are needed to be made at the software and application level. These can happen easily and without touching their IP."

As Prof Tangirala echoes, with a proper security and edge device maintenance strategy, the advantages outweigh the potential disadvantages making EDC, federated ML, useful for large-scale plants and also for industries that fuse information from multiple sites. "Of course, the necessary infrastructure including a central server that maintains the library of models developed on each device, fuses such models and communicates with the devices would be required."

According to Bansal, the amalgamation of 5G, MEC, and IoT, IIoT is anticipated to effectively address the challenges and requirements of industrial applications, presenting a compelling proposition for various industries. In both consumer and enterprise verticals, the amalgamation of 5G and edge enables IoT and IIoT applications to run with high reliability, low latency, flexibility, and security.

The synergy between 5G and edge computing is expected to enable predictive analytics, optimise operational processes, and foster a secure operational environment by addressing digital security and privacy risks. The enhanced connectivity will contribute to increased productivity for field and remote workers, while also supporting the creation of innovative customer experiences. Real-time data insights, a key feature of this integration, will expedite decision-making. "The combined effect is predicted to introduce new products, revenue streams, innovative work methodologies, accelerated process automation, and reduced dependence on fixed connectivity, collectively enhancing overall operational efficiency," he says.

This is an evolving field with active research at many leading AI labs, Prof Tangirala reckons. "Our research group at Wadhwani School of DSAI is currently working on developing algorithms to address efficient model updates on edge devices, data heterogeneity and data drifts. As to FML: Federated ML takes EDC to the next level by fusing the models developed on each device at a central server and pushing the fused model back to the devices; essentially it works on model transmission and aggregation, as against data transmission and centralised model development on large datasets."

It is not just about distributed over centralised, but also about agility, cost-effectiveness and decision-enablers. Edge has to deliver that edge to turn truly super—without being wobbly, without being too jelly.

feedbackvnd@cybermedia.co.in

VOICE&DATA

CyberMedia

23rd TELECOM LEADERSHIP FORUM

EMPOWERING LEADERS IN TELECOMMUNICATIONS

Envisioning the Connected Future

21 March 2024, Hyatt Regency, New Delhi

Platinum AI Partner: PC Solutions | Hewlett Packard Enterprise

Gold Partner: ciena

Connectivity Partner: AT&T Business

Telecom Partner: Vi

Digital Transformation Partner: Jio Business

Academia Partner: Apeejay Education

Research Partner: CMR

Media Partner: DATAQUEST

Supporting Partners: BIF | COAI | CMAI | dipa | ICEA | Indian Space Association | TEMA | Telecom Sector Skill Council

@voicendata_

#tlfindia #tlfawards

Team Voice&Data thanks all for making 23rd edition Voice&Data Telecom Leadership Forum a stellar success.

240+ discussion points | **33** Speakers | **14** Sessions | Fireside chat

3 Voice&Data Leadership Awards | **9** Voice&Data Awards for Excellence

10k+ Social media engagement | **#tlfindia** in top 3 trending hashtag

Telecom Person of the Year
K. RAJARAMAN

Lifetime Achievement
MUKESH DHIRUBHAI AMBANI

Pathbreaker of the year

DR NEERAJ MITTAL

GOPAL VITTAL

MATHEW OOMMEN

Inaugural Session

5G and Beyond: Unleashing the Potential of Hyperconnectivity

Leveraging Communication, Connectivity, and AI for Business Growth

The IoT and AI Revolution: Maximizing Connectivity while Minimizing Total Cost of Ownership

The Next Wave of Content and Services: Delivering Value in a Connected World

Developing a Winning Mobile Marketing Strategy

Security in a Hyper-Connected World

From Vulnerable to Victorious: Building a Secure Connected Future

Sustainable Connectivity: Navigating the Intersection of Technology and Environmental Responsibility

Voice&Data Awards for Excellence

To get Event Report, write to

Rajiv Pathak | Sr. Manager, Marketing | rajivp@cybermedia.co.in I +91 80107 57100

V&D leadership forum explores the future of a connected world

The TLF was attended by 250+ technology and business decision-makers and policymakers across the communication and broadcasting sector

V&D BUREAU

India's leading communication magazine, Voice&Data hosted its 23rd Telecom Leadership Forum (TLF) on 21 March in New Delhi. The event attracted over 250 policymakers, business leaders, and technology professionals from various sectors including telecommunications, start-ups, academia, enterprises, and influencers.

Delivering the Opening Address, CMR's Head of Industry Intelligence Group Prabhu Ram, set the tone with insights into the rapidly evolving technological landscape. He highlighted the pervasive nature of technology, emphasising that India's connectivity is poised to reach 1 billion by 2027. Ram underscored the transformative impact of emerging trends such as AI, 5G, and sustainability across industries.

He further noted the rise of consumer AI and the increasing interest in enterprise AI, as organisations prioritise enhancing customer experiences and

> With the focus on 'Envisioning the Connected Future' the TLF delved into the possibilities of a seamless, connected world in driving business and growth.

> The forum explored the impact of 5G and potential future technologies like 6G on different sectors, user dynamics, and manufacturing in India.

navigating technical challenges. Additionally, he discussed the rising adoption of cloud technologies and the imminent era of hyperconnectivity driven by 5G, which is expected to significantly impact mobile consumption and phone shipments. Ram also touched upon the evolving gaming landscape, emphasising the shift towards hybrid and immersive experiences fueled by regional content consumption.

Welcoming the attendees, Pradeep Gupta, Chairman of CyberMedia Group, reflected on the changes witnessed in the Indian telecom industry, highlighting the industry's resilience during challenges such as the COVID-19 pandemic. Gupta stressed the importance of innovation in driving future advancements. He also pointed out that the magazine will be completing its 30 years in July.

THE KEY GROWTH ENABLERS

Dr RK Upadhyay, CEO of C-DoT, stressed the role of telecom as a key driver of economic growth, contributing significantly to GDP and job creation. He discussed India's achievements in the 5G rollout and outlined the government's initiatives to boost the telecom sector, including regulatory sandboxes and the introduction of a new Telecom Act. Upadhyay also highlighted the government's focus on boosting electronics production and attracting foreign investment to foster innovation.

Looking ahead, Upadhyay emphasised the importance of India's leadership in future telecom standards and technological development. He discussed initiatives to promote indigenous manufacturing and research, including partnerships with global players and support for startups.

Lt. Gen. AK Bhatt, Director General of ISpA, provided insights into India's burgeoning space sector, noting the growth of startups and the government's liberal policies to promote investment and innovation. He discussed the potential of satellite communications and the role of disruptive technologies in shaping the future of space exploration.

Digvijay Sharma, Senior Director of Sales at Ciena India, highlighted the increasing importance of network infrastructure in driving digital transformation. He emphasised the evolution of networking platforms to support the growing complexity and scale of digital operations, marking a new era of Networking 3.0.

TECHNOLOGY, DRIVERS, AND CHALLENGES

With the focus on 'Envisioning the Connected Future' the TLF 2024 explored the vision of a seamless, connected world brought about by advancements in telecommunication technologies, mobile platforms, and digital infrastructure.

The speakers delved into the potential for collaboration, innovation, and transformative changes that can occur when communication service providers, businesses, and individuals harness the power of hyperconnectivity. They also explored the impact of 5G and potential future technologies like 6G on different sectors, user dynamics, and manufacturing in India.

Businesses must foster innovation, embrace digital transformation, and create compelling offerings to stay ahead, and this cannot happen without the integration of newer technologies. To understand this, the TLF took a deep dive into how businesses can leverage communication, connectivity, and AI for growth. The speakers also shared insight into the opportunities and challenges of connecting billions of devices, the use of AI in managing data and security and building a robust IoT ecosystem to drive Industry 4.0.

Managing content in the broadband-driven new digital era is a big challenge and the TLF deliberated on the evolution of content consumption, the rise of immersive experiences like AR/VR, and the need for innovative service offerings beyond connectivity. It also delved into the challenges and concerns of threats and vulnerabilities in the connected world, as well as the approach to developing a winning mobile marketing strategy. The industry leaders also explored the current environmental impact of technology.

> The V&D Excellence Award was presented to nine companies for their initiatives and excellence in different aspects of their business.

Several prominent speakers attended the TLF, including Arun Karna, Managing Director and CEO, AT&T India; Anku Jain, MD, Media Tek; Himanshu Gupta, Country Manager – Telecom, Media, and Entertainment (CME), HPE; Anshuman Tripathi, Member, National Security Advisory Board, Government of India; Dr Pavan Duggal, Chairman, International Commission on Cyber Security Law; Golok Kumar Simli, Principal Advisor and CTO, Global Passport Seva Programme;

Rahul Vatts, CRO, Bharti Airtel; Sudakshina Laha, Head of Services – MSIT and ADM, Cloud Software and Services, Ericsson; Saurabh Mittal, Head, Standards and Tech Ecosystem, Bharti Airtel; and Puneet Chopra, Telecom CTO, HPE India.

The list also includes Himanshu Mishra, Vice President - Digital, Vodafone Idea; Dharmender Khajuria, Head – Network Partnerships, Bharti Airtel; Tushar Gupta, Customer Engineer – Infrastructure Modernisation Specialist, Google Cloud; Hitesh Tailor, Director, Sales Engineering, Ciena India; Salil Khanna, National Head – Enterprise & Govt Business, Reliance Jio; Sheena Joseph, National Head – Customer Service & Operations, Enterprise Business, Vodafone Idea; Saibal Roy, SVP & Business Head-North & East India, Bharti Airtel; Bhushan Sethi, VP – IoT Product, Vodafone Idea Business; and Anand Bhandari, Vertical Head – Internet of Things, Reliance Jio.

Other speakers included Pankaj Mohindroo, Chairman, ICEA; Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA; Jaideep Ghosh, former Partner, KPMG India; Dhaval Gupta, Executive Director & Head – Digital Initiatives, CyberMedia; Sukanta Dey, Founder CEO, Sdela Consulting; and Anil Chopra, VP – Research & Consulting, CyberMedia Research.

Overall, the Telecom Leadership Forum served as a platform for industry leaders to exchange ideas, discuss challenges, and explore opportunities for innovation and growth in the connected future and the role India can play.

THE V&D AWARDS

The highlights of the event included the presentation of the Telecom Leadership Awards and the V&D Excellence Award for the year 2023. The Telecom Person of the Awards for 2023 was conferred upon K Rajaraman, Chairman, International Financial Services Centres Authority (former Telecom Secretary), while the Lifetime Achievement Award was conferred upon Mukesh Dhirubhai Ambani, CMD of Reliance Industries.

The Pathbreaker of the Year Award for 2023 was conferred upon the enablers of the world's largest 5G network rollout in the shortest time. It was given jointly to the Department of Telecommunication under the leadership of Dr Neeraj Mittal, Reliance Jio President Mathew Oommen, and Bharti Airtel Managing Director and CEO Gopal Vittal

The TLF also saw the presentation of the V&D Excellence Awards for the year 2023 in nine (9) categories, for their initiatives in different aspects of business, including network infrastructure, network services, business process innovation, communication platform, Make in India, multilingual internet, and Internet of Things. The award is an industry recognition based on nomination and through an internal evaluation process of the V&D team.

The TLF was attended by over 250 technology and business decision-makers and policymakers across telecommunication, enterprise, start-ups, academia, and the influencer ecosystem. With the focus on 'Envisioning the Connected Future', the TLF 2024 delved into the essentials of a seamless, connected world brought about by advancements in telecommunication technologies, mobile platforms, and digital infrastructure.

The TLF is powered by Platinum AI Partners HPE and PC Solutions, and supported by Gold Partner Ciena, Connectivity Partner AT&T Business, Telecom Partner Vodafone Idea Limited, Digital Transformation Partner Jio Business, Research Partner CyberMedia Research, and Media Partner Dataquest. It is also supported by Broadband India Forum, CMAI, Digital Infrastructure Providers Association, ICEA, Indian Space Association, TEMA, and Telecom Sector Skill Council of India.

feedbackvnd@cybermedia.co.in

V&D Excellence Awards 2023

NETWORK INFRASTRUCTURE

AT&T Global Network Services India Private Limited
For Managed Digital Infrastructure

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (extreme left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (extreme right) presenting the V&D Excellence Award for Network Infrastructure. It was received by Arun Karna, Managing Director & CEO (centre right) and Vikram Sharma, Director Sales – Network Integration Business (centre left), both from AT&T Global Network Services India.

BUSINESS PROCESS INNOVATION

Reliance Jio Infocomm
For Customer Experience Digital Twin

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (right) presenting the V&D Excellence Award for Business Process Innovation. It was received by Rahul Joshi, AVP & Lead - Network Analytics & Automation, Reliance Jio Infocomm (centre).

NETWORK INFRASTRUCTURE

Reliance Jio Infocomm
For Jio Network

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (right) presenting the V&D Excellence Award for Network Infrastructure. It was received by Atul Singh Hada from the Enterprise Marketing team, Reliance Jio Infocomm (centre).

Vodafone Idea Business
For IoT Smart Central

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (extreme left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (extreme right) presenting the V&D Excellence Award for Internet of Things. It was received by Amit Satpathy, Executive Vice President & Business Head – IoT (centre right) and Bhushan Sethi, VP-Head, IoT Product, (centre left), both from Vodafone Idea Business.

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (extreme left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (extreme right) presenting the V&D Excellence Award for Internet of Things. It was received by Mitali Chauhan, Product Marketing IoT Solutions (centre right) and Puneet Aggarwal, Head - Smart Mobility, Sustainable IoT (centre left), both from Reliance Jio Infocomm.

Reliance Jio Infocomm
For Jio Unified Mobility Platform (JUMP)

Jio Things Limited
For JioCX Platform

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (extreme left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (extreme right) presenting the V&D Excellence Award for Communication Platform. It was received by Rajat Dhawan, Industry Vertical Head & Sr. Vice President (centre right) and Rahul Garyali, GM – Government Business (centre left), both from Reliance Jio Infocomm.

MAKE IN INDIA

Tejas Networks Limited
For TJ1400 Access and Aggregation Routers

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (extreme left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (extreme right) presenting the V&D Excellence Award for Make in India. It was received by the Tejas Networks team of Ranoo Malhotra, General Manager – R&D; Somnath Ojha, Associate Vice President; Rajeev Kumar Pandey, Senior Manager – R&D; and Pradeepa Shastry, Senior Product Architect.

MULTILINGUAL INTERNET

Reliance Jio Infocomm
For AI-powered Skill Development for Ed Tech

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (extreme left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (extreme right) presenting the V&D Excellence Award for Multilingual Internet. It was received by Shatrughan Yadav, General Manager and Head – Strategic Alliances & Ecosystem Engagements (centre right) and Neha Shah, AVP – Enterprise Products (centre left), both Reliance Jio Infocomm.

NETWORK SERVICES

Jio Platforms
For FWA, 5G Hyperscale Mobility Services, and Hyperlite Enterprise Services

Himanshu Gupta, Country Manager – Telecom, Media & Entertainment (CME), HPE (extreme left) and Prof NK Goyal, President, CMAI & Chairman Emeritus, TEMA (extreme right) presenting the V&D Excellence Award for Network Services. It was received by Kapil Kapoor, Deputy General Manager – 5G Networks (centre right) and Jeevan Talegaonkar, Vice President (centre left), both Jio Platforms.

Tomorrow's network: A 'wow' juggler's Act

Navigating the complex landscape of tomorrow's networks requires a blend of innovation and adaptability while remaining scalable, reliable, and secure

BY PRATIMA HARIGUNANI

The networks of the future will have to be simple, scalable, reliable, Edge and AI-ready, and green; they will have to become as multi-limbed, as problem-proof and as powerful as a Super Mom. This was highlighted by Digvijay Sharma, Senior Director, Ciena India at the Voice&Data Telecom Leadership Forum.

Sharma delved into Next-Gen Network Architectures, outlining their various dimensions and highlighting their evolution to meet modern challenges. "From scalability to simplicity, networks now embrace new-age mandates including Edge computing, AI integration, resilience, and cost efficiency," he remarked.

> To provide ubiquitous experiences to users with the desired level of latency and reliability, the cloud is also shifting to the edge.

> We need two strong platforms: one, a cloud platform where apps can reside, and the other to facilitate connectivity and enable the digital infrastructure.

He underscored networks' integral role in daily life, noting how increasing complexity, scale, and capacity have driven architectural evolution. Sharma reflected on the evolution from connectivity and coverage to data-centric networks and today's focus on platforms for the digital economy.

C FOR CLOUD AND E FOR EDGE

In the past, networks were mostly about connectivity and coverage, he reflected before spelling out today's contours. "The second generation of networks revolved around data," he explained adding that the new generation networks are focused on creating platforms to drive the digital economy. "It is similar to IT infrastructure, which was previously on-premises but is now shifting to the Cloud. The intriguing aspect is that the flow of money does not always follow the flow of data."

He further explained that all the services one needs today, from shopping to travel to errands, are now available on apps and the cloud. "This is where we need two strong platforms: one being cloud platforms where these apps reside, and the other platform exists to facilitate connectivity and enable this infrastructure," Sharma pointed out.

There is another challenge as well. "To provide ubiquitous experiences to users with the desired level of latency and reliability, the cloud is also shifting to the edge. Initially, there was one data centre at a single location, then we saw regional data centres, and now we observe a significant shift towards edge computing. All of this is inducing a lot of architectural changes in networks, altering the way they are structured and their capacities," he explained.

G FOR 5G

Sharma further elaborated on another aspect of networks: the market. "India, boasting over one billion broadband subscribers, presents an environment with some of the cheapest data rates and highest consumption levels. This necessitates scalable networks with substantial capacity. Transitioning from 3G to 4G, we witnessed a 40x increase in capacity. 5G is yet to experience that kind of growth. However, when we fully utilise it, the growth may be much higher. This also means that the networks will need to be scalable."

"Moreover, given the vast population, our networks are extensive, yet average revenue per user (ARPU) remains relatively low. Thus, there is a critical need for networks that are not only scalable but also cost-effective," Sharma stressed.

He emphasised another crucial point: the proliferation of highways poses challenges for the overall telecom infrastructure, resulting in numerous fibre breaks. Hence, reliable networks are imperative. "We must incorporate redundancy and resilience, albeit at an additional cost," he added. Furthermore, as we integrate technologies like AI, automation becomes paramount. This underscores the importance of network programmability, he pointed out.

S FOR SIMPLICITY AND SUSTAINABILITY

Sharma also laid thrust on the significance of simplicity and sustainability. "Moreover, there are multiple layers within networks, which add complexity for service providers. All these layers must collaborate effectively to simplify network constructs, making them easier to manage and operate. We aim for a flatter structure, where layers are consolidated into simpler ones."

He further added: "Sustainability cannot be overlooked. Reducing the carbon footprint is a key priority for us. Amidst these network challenges, we aim to offer our customers and end-users simplicity while also prioritising environmental responsibility."

pratimah@cybermedia.co.in

Forging the path for business renaissance

Connectivity, communications, and AI are the three pillars of digital transformation, bringing forth innovation in products and services

BY AANCHAL GHATAK

Businesses must foster innovation, embrace digital transformation, and create compelling offerings to stay ahead. No wonder then, leveraging communication, connectivity, and Artificial Intelligence (AI) for business growth has become imperative in today's digital economy. This was highlighted at the panel discussion during the Voice&Data Telecom Leadership Forum, recently in Delhi.

Kickstarting the discussion, the moderator and CyberMedia Research VP for Research and Consulting Anil Chopra highlighted the significance of the three key pillars in driving digital transformation and

> Telcos and enterprises across sectors must integrate AI throughout their operations to accelerate innovation and deliver better service.

> 5G is not just about connectivity. It is the gateway to transformative business outcomes and unparalleled customer experiences.

business growth. He underscored India's ambitious goal of becoming a USD 1-trillion digital economy by 2030, adding that, everything revolves around connectivity.

Sharing his insight, Arun Karna, Managing Director and CEO of AT&T Global Network Services India stressed the symbiotic relationship between communication, connectivity and AI, describing them as cornerstones of digital transformation. "These advancements accelerate innovation within enterprises, with connectivity serving as the backbone of operations," he emphasised.

TELCOS' EVOLVING ROLE AS TECHNOLOGY SOLUTIONS PROVIDERS

Karna highlighted the criticality of modern communication tools such as instant messaging and video conferencing, particularly when integrated with cutting-edge technologies like 5G and potential advancements like 6G and Fixed Wireless Access (FWA). He pointed out that these advancements accelerate innovation within enterprises, with connectivity serving as the backbone of operations.

Discussing the evolving role of telecom service providers, Karna said: "Telcos are building flexible and agile networks. AI and Machine Learning (ML) are disrupting how enterprises do business. It is bringing the power of data to enterprises. GenAI is happening, with integration sparking huge innovation. We are seeing more efficient products and services."

He further pointed out that enterprises can now connect on-prem infrastructure to the cloud seamlessly. "We are now called to provide composable elements. Composability has become a reality. We have Total Access Orchestration or TAO. Digital ecosystem solves problems; it can take in customisable solutions, and also bring new solutions. A lot of action is also shifting to the edge, while 5G with multi-access cloud compute and software-defined networking are also there. We need to have a global network, with SLAs as an advantage," he said.

AI AS THE DRIVING FORCE OF FUTURE INNOVATION

Himanshu Gupta, Country Manager – Telecom, Media and Entertainment at HPE India, echoed the sentiment, emphasising AI as the most crucial pillar in the evolving landscape.

Highlighting that 73% of enterprises are now prioritising their AI investment, he touched upon its significance in driving future innovation. Delving into AI's historical evolution and contemporary predictions, Gupta traced its roots to Alan Turing's work during World War II and highlighted futurists' forecasts, such as Ray Kurzweil's prediction of Artificial General Intelligence (AGI) by 2029 and the concept of Singularity by 2047.

Gupta emphasised AI's disruptive impact on industries, its technical underpinnings in deep learning, and the importance of collaboration between telecom networks and technology providers in driving generative AI. He concluded by urging telecom providers and enterprises to integrate AI throughout their operations, indicating its potential to accelerate innovation across industries in the digital age.

JIO's APPROACH TO DIGITAL TRANSFORMATION

Salil Khanna, National Head of Enterprise and Government Business at Reliance Jio Infocomm, highlighted the company's strategic vision during the panel discussion, stressing on its role as India's premier Digital Services Company. He outlined a layered approach to the digital landscape, spanning devices, communication, cloud infrastructure, platforms, and applications, with AI integration at every level.

Stressing Jio's commitment to democratise AI accessibility he predicted a significant increase in ICT spending as India transitions to a 5-trillion-dollar economy. Khanna stressed the transformative potential of 5G as a key enabler for holistic digital solutions, with Reliance Jio's investments in deep tech startups aimed at delivering tangible business outcomes. He underscored the profound impact of 5G across sectors like healthcare, education, retail, and manufacturing, heralding a new era of superior customer experiences and economic growth.

Summing up his perspective, Khanna noted, "5G is not just about connectivity. It is the gateway to transformative business outcomes and unparalleled customer experiences."

A lot of action is shifting to the edge, while 5G with multi-access cloud compute and software-defined networking is defining the way forward.

ENHANCING CUSTOMER EXPERIENCES THROUGH INTEGRATED SOLUTIONS

Sheena Joseph, National Head– Customer Service and Operations, Enterprise Business, Vodafone Idea, highlighted an important aspect when she emphasised the organisation's responsibility towards both external customers and internal employees, who are also considered customers. She underscored the importance of internal collaboration and the role of technology in enhancing employee experiences.

"The possibilities are great, and it is just about how much we leverage and how we leverage it to deliver what we want as an experience to customers," she said, highlighting the vast potential of integrated technologies in delivering exceptional customer experiences and driving business outcomes.

"Today, we have the cloud that helps download digital notes, book meeting rooms, and connect with offices across the globe. It helps transcribe minutes of the meeting on the fly and even translates it in multiple languages," she said sharing some use cases.

THE ROLE OF CSPs IN FOSTERING COLLABORATION

Saibal Roy, SVP and Business Head-North and East India, Bharti Airtel, eloquently described his company's partnership approach, emphasising their evolution from a telco to a technology company or techco. He underscored Airtel's market leadership in sectors such as fintech and IoT, highlighting the crucial role of partnerships in delivering comprehensive solutions. "We provide complete solutions that truly benefit the customer... we have earned the trust of our Enterprise customers," he highlighted.

The panel offered valuable insights into the changing landscape of communication, connectivity, and AI, demonstrating the transformative potential of integrated technologies in driving business growth and enhancing customer experiences.

aanchalg@cybermedia.co.in

PCQUEST
TECH TODAY & TOMORROW

CyberMedia

PCQUEST APRIL '24 EDITION UNVEILS THE ROLE OF GENERATIVE AI IN SHAPING THE TECH INDUSTRY.

ALSO READ MORE ON

- AI soundscapes: From speech synthesis to composing symphony
- AI driven low code solutions
- The top 20 free steam games
- How AI is revolutionizing Assitive technology
- Navigate the intersection of AI and privacy
- Importance of data privacy and security measures for secure digital learning

Scan QR Code
& Subscribe now...

PCQUEST IS OFFERING SPECIAL DISCOUNTS FOR NEW SUBSCRIBERS AND ITS READERS. AVAIL THE OFFER NOW

Link: https://bit.ly/3QvNQh8

FOLLOW PCQUEST FOR THE REGULAR UPDATES ON TECH AND TRENDS

@pcquest @pcquest @pcquest

Leverage PCQuest platform & network. Write to:
Rajiv Pathak | rajivp@cybermedia.co.in | +91 8010757100

Tech revolution, transformation, and privacy concerns

AI and IoT are together transforming businesses across sectors, but experts warn about privacy, security and the need for fair algorithms

BY AANCHAL GHATAK

In the ever-evolving landscape of technology, the convergence of Artificial Intelligence (AI) and the Internet of Things (IoT) stands as a beacon of transformative potential. Speaking at the panel discussion on "IoT and AI Revolution: Maximising Connectivity while Minimising Total Cost of Ownership" at the TLF, experts dissected this dynamic synergy and its profound implications for connectivity and business growth.

Central to the discussion was the recognition of AI and IoT as catalysts for innovation, efficiency, and cost optimisation across diverse sectors. Bhushan Sethi, VP-Head of IoT Product at Vodafone Idea

> AI-enabled orchestration engines automate network management, predict faults, and optimise performance, bolstering operational efficiency.

> By harnessing the combined power of AI and IoT, organisations can unlock new opportunities for growth, efficiency, and enhanced customer experiences.

Business and Anand Bhandari, Vertical Head – IoT, Reliance Jio Infocomm, along with insights from Puneet Chopra, Telecom CTO at HPE India, echoed a resounding message: the fusion of AI and IoT not only revolutionises industries but also poses pivotal questions about privacy, security, and algorithmic transparency. The session was moderated by Minu Sirsalewala, Executive Editor – Special Projects, CyberMedia.

THE POTENCY OF AI AND IOT

Emphasising the transformative power of AI and IoT integration, Sethi highlighted their revolutionary impact on industries. "Both AI and IoT are very powerful technologies, and when they combine, they can transform the industry," he stated.

Sethi pointed to significant impacts across various sectors, notably automotive, underscoring the growing significance of connected cars. He noted that "connected cars today have more than 100 million lines of code," highlighting the shift towards software-driven vehicles. Moreover, he anticipated the integration of over 200 IoT sensors in autonomous cars, emphasising the symbiotic relationship between IoT sensors and AI systems.

Identifying Industry 4.0, healthcare, and smart energy as key areas ripe for disruption, Sethi stressed the importance of adopting technologies like AI, Cloud, and IoT to enhance efficiency and quality in manufacturing. He further emphasised their role in enabling personalised patient monitoring in healthcare and facilitating the evolution towards dynamic power grids in the energy sector.

However, amidst the optimism, Sethi cautioned against overlooking concerns such as privacy, security, and algorithmic transparency. He underscored the need for fair, transparent, and human-centric AI algorithms to mitigate unintended consequences.

THE UBIQUITOUS NEED FOR AI AND IOT

Providing profound insights into the symbiotic alliance between IoT and AI, Bhandari emphasised the pivotal role of acquiring pertinent data. "The strategy is simple: apply human intelligence... utilise the data," he affirmed, elaborating on the multifarious applications spanning healthcare to autonomous vehicles, reflecting Jio's commitment to innovation across diverse domains.

Moreover, Bhandari spotlighted Jio's groundbreaking initiatives in enhancing cattle and plant health within agriculture, epitomising the expansive utility of these technologies. He delved into the trajectory of autonomous vehicles and the quest for energy sustainability, emphasising AI's pivotal role in bolstering vehicle-to-vehicle communication and realising net-zero aspirations.

LEVERAGING AI AND IOT TO REDUCE TCO

"Every new technology is supposed to bring some top-line benefits or bottom-line benefits," remarked Chopra, delving into the intricacies of managing and scaling core networks. He highlighted historical challenges with vertical silos and operationalising difficulties, advocating for a transformative shift towards horizontal cloud platforms and cloud-native architectures. Emphasising the advantages of Kubernetes over bare metal for cost reduction and efficiency improvement, Chopra underscored the necessity for innovative approaches in network management.

Puneet elaborated on HPE's pivotal role in validating Telco Blueprints, ensuring compatibility with leading platform vendors, and streamlining deployment processes. Furthermore, he discussed the significance of AI-enabled orchestration engines in automating network management, predicting faults, and optimising performance, thereby enhancing operational efficiency.

The discussion illuminated the transformative potential of AI and IoT in driving innovation across industries. By harnessing the combined power of AI and IoT, organisations can unlock new opportunities for growth, efficiency, and enhanced customer experiences. However, addressing challenges such as privacy, security, and interoperability remains paramount to realising the full potential of AI and IoT. Through collaborative efforts and strategic partnerships, stakeholders can navigate these challenges and pave the way for a future powered by AI and IoT.

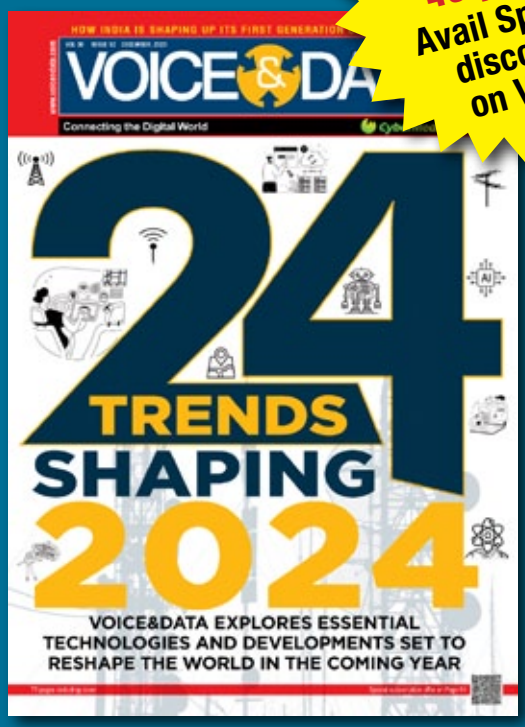
aanchalg@cybermedia.co.in

VOICE&DATA

CyberMedia
Celebrating 40+ years
of Tech Journalism

TO STAY AHEAD OF THE CURVE IN TELECOM READ VOICE&DATA

Celebrating Dataquest 40 years: Avail Special discount on V&D.



Digital subscription also available on Magzter, Zinio, Readwhere, & Readly

Book Digital Subscription Now!

Web: subscriptions.cybermedia.co.in/voicendata.aspx, For Digital subscription Contact: Aalove Thakur
Email: aalovet@cybermedia.co.in, Call: 7993574118

Yes! I want to subscribe to Voice&Data

Scan QR Code
& Subscribe now...

Subscribe to Digital Edition @ ₹735/-

	Period	Issues	Print Subscription Rate		Digital Subscription Rate
			New	Renewal	
☐	1 year	12	₹1,140/-	₹1,050/-	₹735/-
☐	2 years	24	₹2,190/-	₹2,020/-	₹1,470/-
☐	3 years	36	₹3,285/-	₹3,020/-	₹2,205/-

or Subscribe online: subscriptions.cybermedia.co.in/voicendata

Please tick your subscription choice above, fill the form below in CAPITAL LETTERS and mail it to us at rse@cybermedia.co.in

☐ I want to avail premium service of receiving your copy by courier. Tick which ever is applicable.

☐ ₹ 600/- 1 year ☐ ₹ 1200/- 2 years ☐ ₹1800/- 3 years

Name [•]: Mr/ Ms _____ **Date of Birth:** M M Y Y Y Y

Organisation: _____ **Designation:** _____

Delivery Addess: _____

_____

City: _____ **State:** _____ **Postal Code:** _____

Mob [•]: _____ **Tel:** _____ **Email [•]:** _____

GST No. [•]: _____ **PAN No. [•]:** _____

☐ **I am paying ₹** _____ **by DD/Cheque No.:** _____ **Dated:** M M Y Y Y Y

Payable at (specify bank and city) _____

OR

☐ **Please Remit for ₹** _____ **Through RTGS/NEFT to our A/C details given below:**

Bank Name: ICICI Bank Limited, A/c no. 017705000132, Branch & IFS Code: Gurgaon, ICIC0000177

[•] Essential fields

Signature _____ **Date:** M M Y Y Y Y **Subscription No. (for renewal)** _____

Order form can be mailed with payment (cheque/DD) to:
Cyber Media (India) Ltd, Cyber House, B-35, Sector-32, Gurgaon-122003
Contact: Alok Saxena, Tel: 0124-4822222 (Extn-347), 91+9953150474, Email: aloksa@cybermedia.co.in

Terms & Conditions:

• This offer is valid for a limited period. • Rates and offer valid only in India. • NEFT/UTR No., Email & Mobile number mandatory. • Please allow 4-6 weeks for delivery of your first copy of the magazine by post. • Send crossed Cheques in favour of Cyber Media (India) Ltd. • Please write your name and address on the reverse side of the cheque or DD. All outstation cheques should be payable at par. • Cyber Media (India) Ltd. will not be responsible for postal delays, transit losses or mutilation of subscription form. • Cyber Media (India) Ltd. reserves the right to terminate or extend this offer or any part thereof. The decision to accept or reject any or all forms received is at the absolute discretion of the publishing company without assigning any reason. • Please include pin code for prompt delivery of your copy. • In case payment is through credit card, date of birth must be mentioned. • All disputes shall be subjected to Delhi jurisdiction only.

The 'service fee' spat

Google's notices to Indian startups on Play Store fees have sparked a battle with regulators, highlighting broader market dominance concerns

BY VERNIKA AWAL

In a move that sent ripples through India's startup ecosystem, Google recently sent notices to 10 domestic companies for alleged non-payment of its "service fee." This fee applies to companies selling digital services through apps listed on the Play Store. This move triggered an uproar within the startup community over the past month, evolving into a larger conflict involving India's Ministry of Electronics and Information Technology (Meity) and the Competition Commission of India (CCI).

Since the initiation of this dispute in March, Google has been compelled to reinstate the suspended apps, which include prominent names like Shaadi.com by People Interactive, Bharat Matrimony by Matrimony Group, and the audio streaming platform KukuFM, among others. Nonetheless, the issue remains unresolved as a Supreme Court hearing is presently underway, while the CCI is poised to issue two directives—one concerning Google's compliance with a prior CCI order, and another initiating a fresh investigation into its Play Store service fee structure.

> Regulators have argued that Google bundles and prioritises its services, not allowing competing app marketplaces to list fairly on the Android platform.

> "App developers appear to have insignificant bargaining power vis-à-vis Google and are forced to accept terms that deter legitimate competition."
>
> **Competition Commission of India**

With these developments, the stage is now set for a showdown to determine whether Google will secure any rulings safeguarding its business interests. In contrast, the startups, buoyed by the intervention of Union Communications and Electronics & IT Minister Ashwini Vaishnaw in the controversy, feel more assured about their position amidst the ongoing turmoil.

BUT FIRST, SOME CONTEXT

This is hardly the first time that Google's Play Store policies and activities have come under regulatory scrutiny around the world. Since 2021, regulators in the European Union have flagged what it has deemed to be anti-competitive practices by Google. The regulators have argued that Google protects its interests by bundling and prioritising its services, not allowing competing app marketplaces to list fairly on the Android platform, and also charging service fees that are heavy and discriminatory.

Google's service fee is levied on apps that sell "non-real world" services on the Play Store. For instance, companies like Uber, which provides ride-hailing services and Amazon which provides e-commerce services for purchasable products qualify as real-world services, are exempt from sharing revenue with Google as they provide real-world services. On the contrary, dating and audio streaming services are categorised as digital services and are thus subject to service fees under Google's policies. Regulators have raised concerns about this categorisation, questioning Google's rationale behind not considering it arbitrary and potentially detrimental to smaller businesses.

The service fees vary from 11% to up to 30% of an app's annual revenue, depending on the earnings; up to 15% for the initial USD 1 million earned, and up to 30% thereafter. Google offers a 4% discount for apps employing a third-party payment system to accept subscriptions for its

While Uber and Amazon are exempt from revenue sharing, dating and audio streaming services are subject to service fees under Google's policies.

IN BRIEF

- **The trigger:** Google's notices to 10 Indian startups over Play Store fees spark a regulatory battle and scrutiny.
- **The impact:** Startups like Shaadi.com, Bharat Matrimony, and KukuFM get caught in Google's service fee dispute.
- **Policy concerns:** Indian regulators, including the CCI decide to probe Google's pricing practices amid startup uproar.
- **Misuse of dominance:** Google's service fees for digital services are under scrutiny over abuse of market power.
- **Ecosystem worries:** The battle between Google and Indian startups highlights broader tech ecosystem concerns.
- **Stakes for Google:** High stakes for Google as it defends Play Store service fees amidst regulatory scrutiny.

services from users. This entails that companies must remit to Google either 11%, 15%, 26%, or 30% of their earnings from digital services and subscriptions—a charge that numerous regulators worldwide have criticised as an abuse of Google's dominant market position.

This criticism holds merit. According to StatCounter data from December of the previous year, Google's Android commanded a 71% market share of all mobile operating systems and nearly 38% of the world's operating systems. An estimate by the International Telecommunications Union, as published by the World Economic Forum in April last year, placed the total number of mobile devices globally at nearly 8.6 billion—granting Google significant market leverage over small ventures seeking to establish themselves in the smartphone ecosystem in India and globally.

It is this that led to the contention between the domestic startups and Google in India, as well.

WHERE THINGS STAND IN INDIA: A TIMELINE

After a blanket suspension and notice served by the company, Google reverted to relisting some of the over 200 suspended apps on the Play Store the very next day. However, it only allowed these apps to be present on its Play Store, and not accept payments through the apps. Instead, it asked the apps to use the 'consumption model'—wherein the apps could ask a user to visit their webpage on a browser and use it to buy a digital service or subscription.

Anupam Mittal, Founder and Chief Executive Officer of People Interactive, said in a statement that the move would disrupt all startups and destroy the user experience—and would thus be detrimental to all businesses. Murugavel Janakiraman, Chief Executive Officer of Bharat Matrimony, underlined the same.

Following this debacle, Vaishnaw held meetings with both Google and the aggrieved startup founders. He later stated that the ministry would examine the entire incident and appeal, but urged Google to reinstate the apps to full effect urgently. Google

> A 60-day probe is now underway on whether Google's service fee pricing is unfair and the CCI is expected to announce its judgement by mid-May.

relisted all suspended apps on 5 March with the ability to accept in-app payments but stated that it would start invoicing apps for their services effective immediately. However, it did offer a longer gestation period for the startups ferrying these apps to pay up the service fee, failing which Google would "enforce its policies."

Such a policy, as things stand, would remain fair in Indian law as the Supreme Court, on a 9 February verdict in an appeal by a group of startups against Google, refused to issue a stay on the latter's right to conduct business and enforce its business model as deemed fit.

While the matters remain under scrutiny by the Ministry of Electronics and Information Technology (MeitY) and the Supreme Court, the CCI on 15 March, ordered to commence a probe against Google for its pricing practices. In its 21-page order that was seen by Voice&Data, the Competition Commission stated that Google's pricing practices could be deemed unfair and stifling of healthy market competition.

"In the present matter, app developers appear to have insignificant bargaining power vis-à-vis Google and are forced to accept terms that deter legitimate competition and increase their costs of operation. The app developer has no choice but to agree to the terms and conditions unilaterally decided by Google, otherwise, they will not be able to access a vast pool of potential Android users in India," the CCI order said.

A 60-day probe is now underway on whether Google's service fee pricing is unfair and the CCI is expected to announce its judgement by mid-May. The context for this probe lay in Google's submission to the CCI that its cost of offering the Play Store service amounted to around 6% of the revenue that apps on its platform earned. CCI, on this note, said that since Google's admission pegged its cost at 6% of what the overall app ecosystem earned from the platform, a fee of up to 30% would seem to be a steep leverage that the Big Tech firm charges on account of it being a dominant platform—one that most modern-day businesses simply cannot do without. Android, after all, is the world's most popular mobile operating system and has over 90% market share in India, too.

WHERE DOES THIS LEAVE EACH PARTY?

While it is too early to issue a verdict, Google's defence of its service fee will hinge upon its ability to prove that its levying of service fee between 11-30% is legitimate, and is not an abuse of market power.

In the latest December quarter (Q4CY23), Google earned USD 10.79 billion (Rs 89,988 crore) worldwide from subscriptions, platforms, and devices. The latter vertical includes Play Store, which forms the majority part of this earnings. While India continues to remain a minuscule contributor (around 2%) of its global net revenue and the same or less should reflect in its Play Store revenue too, the issue here is not just about Google seeing a drop in earnings.

India, today, is a major consumer market by its sheer size, as well as its increasing importance as one of the world's largest democracies and economies. As a result, any order issued in India that adversely affects Google's business model could lend precedent to the latter's overall businesses globally—and thus force it to relook at its entire operating strategy. It is because of this that Google will likely hope that its defence holds in Indian courts and the scrutiny.

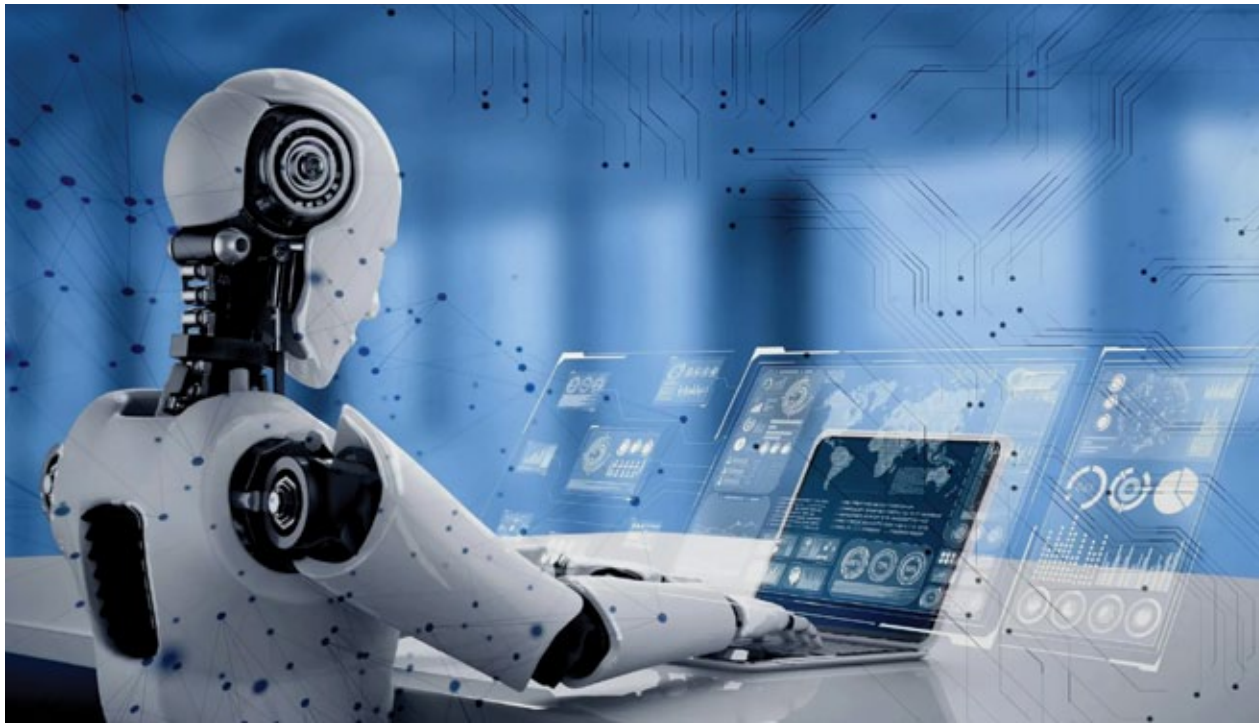
For the startups, Google enforcing invoicing while relisting the apps could come as a detriment—most have claimed that they spend nearly 50% of what they earn in ads across Google's Search and Play Store platforms, to remain discoverable. The levying of up to 30% in further fees can potentially, as per the startups' arguments, see Google take home up to 80% of their revenue earned through apps listed on Android—the primary medium of usage today for most smartphone users. This could have a considerable impact on the startups, as a result.

However, most legal and policy experts maintain that Google will get at least some leeway to enforce its business policies as it deems fit. As a result, the largest tech battle in India is far from over; in fact, it has likely only gotten started.

feedbackvnd@cybermedia.co.in

Data, chips, and India's AI mission

The Rs-10,372-crore initiative seeks to position the country as a global AI powerhouse, enhancing its capacity for research and innovation



BY VERNIKA AWAL

Ever since the advent of ChatGPT in November 2022, the world has never been the same. Every industry and way of life has been touched by Artificial Intelligence (AI), a field that had until then remained a matter for researchers, techies and tech journalists to discuss.

Fast forward to today, and AI has emerged as an all-pervasive field that involves data, policies, governance, education, civil society and geopolitics—all under one umbrella. It is perhaps because of this that the Rs 10,372-crore India AI Mission, announced on 7 March, has proved to be a seminal moment.

Before we delve into the Mission and what it could potentially achieve, it is important to understand why nations around the world are looking to establish their own AI policies and strategies. AI today is feeding upon what we call the currency of the modern world—data. The latter is not just proprietary and sensitive—it is what populous nations such as India have as leverage over smaller economies. To safeguard this, though, cyber security strategies are just not enough.

To leverage the data, global corporations and governments today need computing power, which in the modern-day AI world is supplied through graphic processing units (GPUs). The latter was once only known for producing ultra-high fidelity graphics resolutions on computers and consoles while playing games. Today, GPUs have emerged as the most efficient processors of vast troves of data. Companies that operate data centres, such as Mumbai-based Hiranandani Group's Yotta Data Services, are procuring such GPUs en masse

> AI has emerged as an all-pervasive field that involves data, policies, governance, education, civil society and geopolitics—all under one umbrella.

to offer paying clients a platform to get access to AI processing capability.

GPUs are perennially short-supplied today, and the availability of high-quality, structured and anonymised data is also slim at hand. It is because of this that the India AI Mission makes considerable sense and stands a chance to make India a significant nation to look at when it comes to the development of AI.

WHAT DOES THE MISSION OFFER?

To begin with, over the next five years, the Government of India will spend Rs 10,372 crore or nearly USD 1.2 billion to promote open-source AI datasets, create computing infrastructure with 10,000 GPUs, and more.

There are seven key breakdown areas in the AI Mission, which will be implemented by IndiaAI, a business division under the Ministry of Electronics and Information Technology's (MeitY) Digital India Corporation. The seven key areas include compute capacity, innovation centres, datasets platforms, application development initiatives, future skill set, startup financing, and safe and trusted AI

Each of these seven subdivisions of the mission will get collective funding from the total corpus. While an exact framework for the business and a breakdown of total funding for each is still being made by IndiaAI within MeitY, at least two senior industry officials stated that the first 'compute capacity' vertical is likely to get at least 60% of the corpus since this is what will cost the most.

The compute capacity vertical, as per MeitY's release, will "build a high-end scalable AI computing ecosystem to cater to the increasing demands from India's rapidly expanding AI startups and research ecosystem."

"The ecosystem will comprise AI compute infrastructure of 10,000 or more GPUs, built through a public-private partnership. Further, an AI marketplace will be designed to offer AI as a service and pre-trained models to AI innovators. It will act as a one-stop solution for resources critical for AI innovation," it further stated.

Innovation centres, meanwhile, will be responsible for the development of India's Large Language Models (LLMs) and domain-specific foundational models that could be applied in specific sectors such as healthcare, market regulation and more. The datasets platform will create a unified database, which will be open-sourced and made available to researchers, academia, startups and enterprises as required. This database will include non-personal, anonymised data from across all 22 official Indic languages.

The app development initiative, meanwhile, looks to boost startups working on specific problem statements. This will be promoted through the Mission's framework. This initiative will "focus on developing, scaling and promoting the adoption of impactful AI solutions with potential for catalysing large-scale socio-economic transformation."

Finally, the FutureSkills initiative will seek to establish an AI curriculum across all levels of senior education in India, from undergraduate to research. There will also be an as-yet-undefined startup financing part of the overall mission's corpus that will be allocated for eligible ventures, which will likely not see overlaps with the Rs 1 lakh crore deep-tech fund for sunrise sectors that the Union Finance Minister Nirmala Sitharaman spoke about during the interim budget.

Each of these developments will tie up with India's efforts to create a globally trending demand—responsible AI. The latter will see the Mission lay down guide rails for specific governance frameworks associated with building AI projects—and could be merged with India's discussions globally so far at Bletchley Park in the UK, and the Global Partnership for Artificial Intelligence (GPAI) Summit, New Delhi.

IS THIS CORPUS ENOUGH?

Most industry stakeholders believe that the corpus of the Mission is enough to at least begin with—further revisions, as per demand, will always be on the cards. The costs seem to match, too, based on the present market rates of GPUs made by Nvidia, the brand that is supplying almost all of the world's requisite GPUs.

For reference, the Nvidia 'Blackwell' GPUs, unveiled recently at Nvidia GTC 2024, have been touted to cost around USD 35,000-40,000 per unit. At such a scale, the Centre's outlay to produce just the GPUs would be around

India's AI mission could successfully replicate the US model of funding applied research to establish the education system as a frontier innovation base.

IN BRIEF

- The Union Cabinet on 7 March approved the India AI Mission to foster AI development, research, and innovation through a collaborative PPP model.
- India plans to build a high-end scalable AI computing ecosystem to meet the demands of its AI startups and researchers.
- The AI marketplace will offer AI-as-a-service and pre-trained models to innovators, serving as a one-stop solution for resources critical for AI innovation.
- Innovation centres will focus on developing Large Language Models and domain-specific foundational models for specific sectors such as healthcare.
- The app development initiative will focus on developing, scaling, and promoting the adoption of AI solutions for socio-economic transformation.
- The FutureSkills initiative will seek to establish an AI curriculum across all levels of senior education in India, from undergraduate to research.
- The datasets platform will create a unified open-source database available for researchers, startups and enterprises as required.fees amidst regulatory scrutiny.

USD 400 million or 40% of the entire corpus. Further budgets could be allocated depending on maintenance and requirements, as well as investments made by private sector enterprises.

The next most important factor lies within Bhashini, MeitY's Indic language datasets platform. The latter already has functioning libraries that are available for researchers, and this unit, coupled with a special office catering only to this need, will likely be set up to handle all the data. There will also likely be the need for security checks and audits to verify the non-personalisation of data despite it being a government resource.

This will take care of two of the most important aspects of AI development. In research and academia, media reports have regularly flagged the lack of financial resources at eminent universities and institutes as being the biggest reason for the lack of applied research in the field of AI in India.

With the success model of the US being evident in terms of funding applied research at colleges and subsequently promoting them through venture capital funding and go-to marketplaces, India's own AI mission could successfully replicate this, and establish the nation's education system as a frontier innovation base.

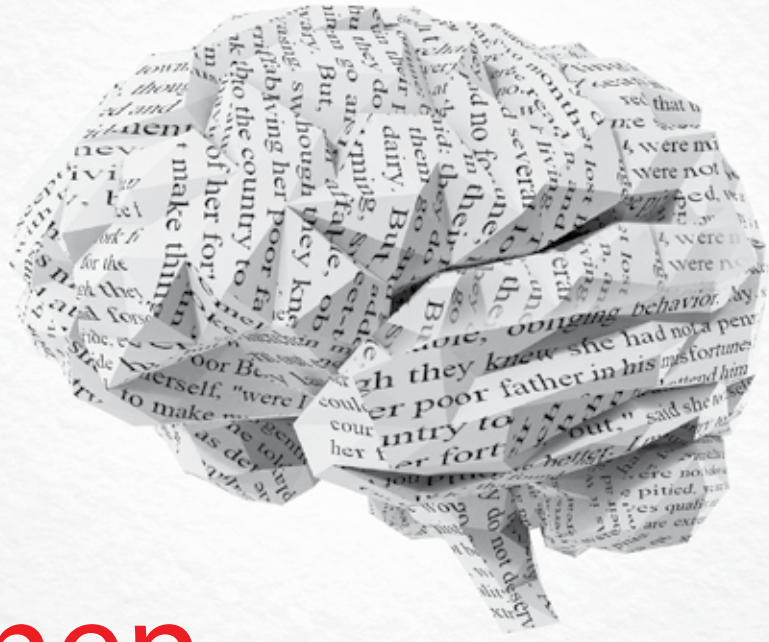
Early signs of this progress can be seen as well. For instance, IIT Madras-backed BharatGPT group, as well as Vizzhy's Hanooman LLMs promise to offer India domain-specific AI models that could be trained on locally relevant datasets. This will help take on biases and also promote responsible and explainable AI results—factors that will be crucial for enterprise adoption of AI products and services.

The present corpus, in its present shape, has enough room for most such ventures. How the real-world implementation of the Mission and its subsequent framework takes place, however, is yet to be seen. All of this is likely to further develop after the next government is formed, where AI is expected to take a front seat of importance.

feedbackvnd@cybermedia.co.in

VOICE & DATA

CyberMedia



When print talks, the brain remembers.

That's the power of print. In addition to 70% higher recall, according to neuroscience research it's proven that print content is 21% easier to understand and more memorable than digital media. That is why, print content connects with our brain more efficiently and effectively. So, choose to read newspapers.

INS

THE INDIAN NEWSPAPER SOCIETY

Source: Study by TrueImpact (A Canadian neuromarketing firm)

RNI No. 59233/94. Published on 1st of every month. DL(s)17/3114/2021-23. Licensed to Post WPP. U(SE)62/2020
Posting Date: 13&14 of every month. Posted at Lodi Road HPO.
Advance Payment Facility Customer ID # 3000052248. Voice&Data Magazine Post DL (DS)-58/MP/2023-24-25