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KD DIZON
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TELECOM Review

KD Dizon, Head of Globe Business

Globe Business: Building a Stronger, More Connected Philippines

In the face of a rapidly evolving digital landscape, the Philippines requires more than just connectivity, it demands a strategic vision for its future. Globe Business, the enterprise and SME arm of Globe Telecom, rises to the challenge with its comprehensive suite of digital solutions and a deep understanding of the market.

Beyond building the necessary infrastructure to support these solutions, they set themselves apart by their "malasakit"—a profound, genuine care for the success of their clients. This unique ethos, combined with their extensive expertise in cloud, cybersecurity, and business applications, allows them to craft robust digital growth strategies that resonate with the Filipino spirit. They are not merely providers; they drive tangible results and foster national growth. Ultimately, operating with a vision to build a stronger and digitally transformed Philippines.

In an exclusive interview with Telecom Review Asia, KD Dizon, Head of Globe Business, expanded on the future of digital transformation, key challenges,

and how Globe Business remains a trusted partner in building a more connected Philippines.

In your opinion, what will be the key drivers of digital transformation in the Philippines over the next decade?
I see the next decade as a real turning point for the Philippines. It's not just about technology; it's about what technology enables. The government's push for digitalization is creating a strong current, and our digitally-savvy population is raising the bar. Everyone expects seamless experiences— that's where things like artificial intelligence (AI), cloud technology, and cybersecurity come in; they're the tools for courageous transformation, allowing businesses to meet those expectations and create exciting new possibilities. And at the heart of it all is reliable connectivity as it is the foundation we build everything on. At Globe Business, we're not just providing the infrastructure; we're enabling the dreams and ambitions of Filipino businesses by supporting them as they embark on their courageous transformations.

Globe Business offers a comprehensive suite of enterprise solutions, including connectivity, cloud, cybersecurity, and business applications. How can these services be integrated to provide a seamless experience for large enterprises?
Our comprehensive suite of enterprise solutions is designed to work seamlessly as a connected ecosystem rather than just a collection of products. Our robust connectivity serves as the backbone for cloud services, ensuring secure and reliable access, while cybersecurity is integrated at every layer to protect valuable data and maintain smooth operations. Business applications further streamline workflows, empowering teams to be more agile and efficient.

However, we understand that technology alone isn't enough— every business has unique needs. That's why our business solutions consultants work closely with customers to develop digital transformation strategies that align with their

KD Dizon with Globe Business leaders during G Summit 2024

business. The intention is to simplify operations, reduce complexity, and allow businesses to focus on what matters most: serving their customers and driving growth.

In terms of adoption, financial services remain at the forefront of leveraging AI, cloud, and cybersecurity, with other industries accelerating their digital transformation efforts.

In the context of the Philippine market, what unique challenges do businesses face in digital transformation?
Everyone deserves a fair shot at the opportunities digital technology offers. Bridging the digital divide is something I'm passionate about. It's about access that is affordable to as many Filipinos as possible. We must also focus on skills development, empowering our workforce to thrive in this digital age. Online safety is also top of mind, especially with Filipinos being such active mobile and internet users. Here, using cybersecurity as a guardrail is very critical.

And for smaller businesses, navigating digital transformation can be overwhelming. They are often

> We empower communities to navigate the digital world safely and effectively through initiatives such as the Digital Thumbprint Program (DTP) and the Senior Digizen campaign

KD Dizon during GSMA's Digital Nation Summit in Manila, where she talks about unlocking business innovation with the power of connections. Photo by GSMA Asia Pacific

> **It's our partnership approach, rooted in a genuine care for our customers' success, or what we call 'malasakit'**

focused on the day-to-day—cash flow, employees, customers—and the complexities of the digital world can feel daunting. But because the Philippine market is largely made up of these small- and medium-sized businesses (SMBs), these challenges must be addressed. We have encountered many business owners and leaders in these companies who simply don't know what next step to take in their digital transformation journey. That is where Globe Business comes in, providing right-sized solutions to meet their specific needs and making the process more manageable and less intimidating.

How is Globe Business aligning its strategies with national development goals, and how does this contribute to a more connected Philippines and a thriving digital economy?
At Globe Business, we are deeply committed to supporting the Philippines' national development agenda, recognizing that a digitally empowered business sector is key to driving economic growth and innovation. Our strategies focus on expanding digital infrastructure, promoting business growth, and fostering technological advancements.

A prime example is our significant investment in fiber optic and submarine cable systems, including the Philippine Domestic Submarine Cable Network (PDSCN), which enhances connectivity across the archipelago. These efforts not only support government connectivity targets but also position the Philippines strongly in the global digital landscape. This infrastructure is crucial for global service providers (GSPs) looking to expand into the country, providing them with a reliable and scalable platform to reach their target markets.

Beyond infrastructure, we also prioritize digital literacy. We empower communities to navigate the digital world safely and effectively through initiatives such as the Digital Thumbprint Program (DTP) and the Senior Digizen campaign, which provide lessons on digital citizenship, online safety, and ethical technology use.

As a leader at Globe Business, what is your overarching vision for enterprises, SMBs, and GSPs in the Philippines over the next five years?
I envision a future where Globe Business is seen as the trusted digital transformation partner for all businesses in the Philippines. This includes individual entrepreneurs and thriving SMBs as well as large enterprises and global service providers. I see a future where technology empowers these businesses to not only thrive domestically but also compete globally.

For Filipino enterprises and SMBs, this means providing them with access to the latest solutions in cybersecurity, cloud, analytics, the Internet of Things (IoT), and equipping them with the expertise to leverage them. We're committed to providing tailored digital tools and fostering digital literacy so courageous transformation becomes the norm.

For GSPs, we aim to be their essential partner for navigating the Philippine market. Our robust fiber network, including the likes of PDSCN, provides

the connectivity they need. We'll offer comprehensive solutions, from data center services to local support, simplifying their entry and enabling them to capitalize on the Philippine digital economy. Ultimately, we want to unlock the full potential of all businesses operating here, driving economic growth and creating opportunities.

How does Globe Business differentiate itself in empowering enterprises and SMBs compared to other providers in the market?
Several factors differentiate us, including our comprehensive portfolio of integrated solutions, our reliable connectivity, our deep understanding of the Philippine market, and our unwavering commitment to customer centricity. But perhaps most importantly, it's our partnership approach, rooted in a genuine care for our customers' success, or what we call 'malasakit.' We don't just provide technology; we build lasting relationships and strategic partnerships. We work closely with our clients, understanding their unique challenges and helping them develop strategies that make sense for them. We're invested in their success because their success is our success.

As a female leader in tech, what unique perspectives do you bring to Globe Business and the industry at large?
Diverse perspectives are essential for innovation and growth. My experience as a woman in tech has reinforced the importance of empathy, collaboration, and inclusive leadership. I strive to create an environment where everyone feels empowered to contribute their best ideas.

I also believe in the power of mentorship and supporting other women in the tech industry. Mentors have taught me crucial lessons. I learned from a mentor that, in a fast-paced and dynamic industry, when you're tired, you should learn to rest, not quit. Having a strong support system and a mindset of continuous learning helps navigate challenges. Setbacks are just opportunities to grow. And staying adaptable, while

KD Dizon during Globe Business Wholesale Partners' Night in Asian Carrier Conference 2024 held in Cebu, Philippines

staying true to your values, is key to long-term success.

On International Women's Day, it's an excellent opportunity to reflect not only on the progress we've made, but also the work that still needs to be done to create a more equitable and inclusive tech industry. As the leader at Globe Business, I'm dedicated to fostering a culture where courageous transformation is encouraged and nurtured from within. This starts with creating a diverse and inclusive team, where everyone feels valued and empowered to drive positive change.

Can you share some of your key achievements as a female leader in tech?
I'm incredibly proud of the growth and transformation of Globe Business. We've significantly curated our portfolio of solutions and strengthened our market position. We've become a trusted partner for businesses across the Philippines and, more importantly, for global service providers looking to expand here. Securing key partnerships, such as being appointed by Hexa as the MYUS cable landing party in Davao, which provides global service providers with a new, reliable, and high-capacity pathway to connect their customers in the Philippines and across Southeast Asia, is a

strong example of our commitment. Ultimately, my greatest achievement is seeing the tangible impact of our work: empowering businesses, connecting communities, and driving digital transformation across the nation. That's the legacy I strive to build. **TR**

> "
> I learned from a mentor that, in a fast-paced and dynamic industry, when you're tired, you should learn to rest, not quit
> "

A Single Word Can Change Lives

Globe Business' KD Dizon on how the uniquely Filipino concept of 'malasakit' can create the workplace that shapes women leaders.

> Being a woman leader isn't easy, KD."

That's what I kept hearing as I was moving up in my career, and as a result, I had this thought at the back of my mind for years. I wanted to unpack this mindset for the longest time, and I'm thankful for the opportunity to do so—and appropriately, right as the world celebrates International Women's Month.

Initially, the idea of leadership seemed straightforward: making decisions, managing teams, and crafting strategies to propel growth. And the media consistently portrayed it as a male-dominated domain. But that idealized version didn't reflect the nuanced reality of being a woman leader. I realized early on that there was an opportunity for me to forge a different path, one that acknowledges the unique challenges and opportunities women face. I was not just an observer; I recognized that I was in the best position to actively reshape what leadership means and create a space where women can truly thrive.

Let me tell you my story.

The Value of 'Malasakit'

I first started at Globe 24 years ago, during a time of significant growth and change in the Philippine telecommunications industry. It was a period where the focus was very much on mastering the latest technologies and delivering innovative solutions, which Globe did remarkably well. I learned a great deal from my talented colleagues, but I also began to realize that something more was needed.

While I appreciated the drive and dedication, I felt a pull towards cultivating a deeper connection and a sense of shared purpose that went beyond just hitting numbers. I recognized a need to bridge the gap between professional excellence and genuine care and understanding. Instead of searching for someone to show me the way, I began to see the opportunity to weave the values I held dear, especially 'malasakit,' into the fabric of my work. I understood that navigating the complexities of corporate culture required a more compassionate approach, and that I could be the one to foster that shift.

'Malasakit' is a Filipino value that's difficult to translate and condense into a single word. Some directly translate it into compassion, but it's more than that; it's a holistic approach to caring for another's wellbeing, from their physical health to their mental state, from what they plan to do that day to what they hope to achieve in the future. 'Malasakit' is about sharing their successes and failures and propping them up to stand confident as they face challenges in their corporate and personal lives.

While I built my skills and expertise as I went through the different stages of my career, I also made sure to build a strong foundation of empathy. I didn't want to lose the value of 'malasakit' whenever I encountered hurdles in the workplace. Early in my career, I was shown that it's

possible to be both competent and compassionate—and that's exactly what I want to continue doing.

Not Just a Boss

Being a woman in the telecom and tech industries means working doubly hard

to prove my mettle. Keeping up with the highly competitive telco market in the Philippines requires not only innovation, but also an unrelenting drive to deploy solutions and exceed customer expectations. And when I was appointed to a leadership position, I had to redefine my concept of what a leader is—and more importantly, what kind of woman leader I wanted to be.

Over the years, I've learned that true leadership isn't just about being "the boss"; fundamentally, it's about empowering my team to reach their full potential by guiding them through challenges and ensuring their work aligns with their values and personal lives. A woman leader's mission is not only to bring excellent people together and optimize their performance but, more importantly, to influence positive change within the team, the workplace, and the communities she moves into. As a woman leader, I wanted to rely on what was formerly thought of as mere soft skills—resilience, empathy, and adaptability—which have the power to transform people and industries.

Women as Catalysts for Transformation

As women, we have unique perspectives and skill sets we can bring to the table. I've observed that we're more open to collaboration and more invested in our colleagues' holistic growth, however, we need to find the courage within us to challenge the status quo, which can open the door to discoveries and opportunities. The "soft skills" often associated with us—'malasakit,' resilience, and adaptability—are our core strengths, which we leverage to keep up with the rapid pace of the tech industry.

In business, women leaders can help shape a stronger, more diverse workforce that can create insight-driven, consumer-centric, and built-for-purpose solutions for our customers. In my corner at Globe, I want to create a space where people feel empowered to contribute their best ideas. It's always a pleasant surprise to hear a multitude of voices contributing to a common goal: to find the best fit for the evolving needs of Filipinos.

Our responsibility as women leaders doesn't stop at our personal success;

we must strive for courageous transformation where everyone, not just women, can feel empowered and valued. We must nurture this culture of courage and inclusiveness from within and in everything we do. As leaders, we're best positioned to uplift other women to become leaders themselves. More women leaders mean employing more empathy and collaboration to shape our businesses, industries, communities, and countries for the better.

Lastly, I know many of us are more determined to prove ourselves in the workplace. When others work hard, women work harder. So, to my fellow women, my advice is this: give yourselves permission to pause, to recharge, and to be kind to yourselves. Only by allowing ourselves grace can we replenish our proverbial cup to give more of ourselves to others.

Being a woman in leadership isn't easy. But with the right support, seeking and giving mentorship, harnessing the power of collaboration, and 'malasakit,' the journey becomes transformative. **TR**

By KD Dizon, Head, Globe Business

> Our responsibility as women leaders doesn't stop at our personal success; we must strive for courageous transformation where everyone, not just women, can feel empowered and valued

Bridging the Market Share Blind Spot: Why Broadband Providers in Asia Need Granular Insights to Drive Growth

In today's hyper-connected world, the demand for high-speed broadband is surging globally. The rise of 5G fixed wireless access (FWA), fiber expansions, and increased digital adoption have fueled an era of rapid transformation for broadband providers. However, with this growth comes a critical challenge: understanding market share, subscriber movement, and competitive positioning at a granular level to drive acquisition and retention strategies and sharpen operational planning.

Many broadband providers struggle with market share blind spots, where traditional datasets provide an aggregated view of penetration but fail to capture how users switch between providers, where competition is gaining ground, and where hidden growth opportunities exist. Without access to detailed, neighborhood-level intelligence, providers risk inefficient investments, missed revenue opportunities, and face losing customers to more data-driven competitors.

The Challenge: Traditional Market Intelligence Falls Short

For decades, broadband providers have relied on high-level market intelligence to devise expansion strategies, customer acquisition efforts, and network optimization; however, these insights often lack the necessary depth to identify key opportunities and threats.

Three core issues stemming from conventional market intelligence include:

- **Lack of Granularity:** Many datasets provide city- or region-level statistics but don't break down which neighborhoods or household clusters are underserved, over-saturated, or in transition. This results in inefficient marketing spend and misaligned infrastructure investments.
- **Subscriber Flow Blind Spots:** Traditional reports don't track real-time subscriber movement between communication service providers (CSPs), leaving providers unaware of churn risks and competitor gains. Without visibility into which households are switching and the reasons behind it, internet service providers (ISPs) struggle to implement effective retention strategies.
- **One-Size-Fits-All Network Planning:** Without clear insights into residential versus SMB (small- and medium-sized businesses) broadband demand, building types, or technology preferences (fiber, FWA, or mobile broadband), providers risk overbuilding in some areas while overlooking high-value opportunities in others.

To truly capitalize on broadband growth, providers need high-resolution market intelligence procured from data that is precise, granular, and actionable.

Why Granular Insights Are Critical for Broadband Providers

The telecom industry is evolving rapidly, and providers who fail to incorporate micro-market intelligence into their decision-making risk

falling behind. Granular data enables providers to:

- **Pinpoint Underserved Areas:** Instead of broad regional views, internet service providers (ISPs) need to analyze broadband consumption and adoption at the neighborhood or block level to identify where demand outstrips supply.
- **Optimize Expansion Strategies:** By understanding market share trends and flow share patterns at micro-market levels, ISPs can prioritize investment in areas where they can capture high-value customers.
- **Reduce Churn with Competitive Intelligence:** Analyzing household-level subscriber movement between competitors helps ISPs understand who is switching, where they are going, and why, allowing for proactive retention measures.
- **Tailor Offerings for Specific Audiences:** By analyzing broadband demand based on residential versus SMB usage, fiber versus wireless preferences, and urban versus rural areas, providers can develop targeted service plans that better meet customer needs.

Market Flow: Powering Data-Driven Broadband Growth
Addressing these challenges requires a next-generation solution. Market Flow from Mobilewalla equips broadband providers with detailed, household-level data covering market share, subscriber flow movement, and competitive insights.

Market Flow offers:

- **Granular Market Share Insights:** Get precise market penetration and share data at the country, city, neighborhood, block, or even individual household level.
- **Subscriber Movement Tracking:** Understand which customers are leaving, where they are going, and the drivers behind these shifts.
- **Competitive Benchmarking:** See how your broadband penetration compares to competitors in

specific geographies, identifying opportunities to drive higher market share.
- **Technology Adoption Analysis:** Determine the distribution of fiber, mobile broadband, and FWA adoption to align service expansion with market demand.
- **SMB Versus Residential Identification:** Differentiate business and residential broadband demand to create targeted acquisition and retention campaigns.

By leveraging these insights, broadband providers can make smarter investment decisions, increase their market share, and reduce customer churn.

Real-World Application: Lessons from Indonesia's Broadband Expansion
A prime example demonstrating the need for granular broadband intelligence is Indonesia's fast-growing fixed broadband market. With over 98 cities and a rapidly expanding middle class, the country presents massive opportunities, yet also navigates complex challenges, such as network deployment and competitive positioning.

Market Flow is enabling broadband providers in Indonesia to:

- Identify high-growth neighborhoods with strong demand for fiber and FWA services.
- Track subscriber movement between competing providers to mitigate churn risk.
- Differentiate network strategies for urban and suburban communities, improving service allocation.

The lessons from Indonesia can be applied globally. Regardless of whether they are based in the U.S., Southeast Asia, or Europe, broadband providers must use data-driven decision-making to outsmart competitors and capture new growth.

Final Thoughts: The Future of Broadband Intelligence
The broadband industry is at a turning

point. Providers who rely on outdated, high-level market intelligence will struggle to compete in an environment where micro-market dynamics drive success. To stay ahead, ISPs must embrace granular insights that illuminate market share blind spots and provide a clearer understanding of subscriber movement, competitive threats, and high-value expansion zones.

Mobilewalla is leading this transformation, helping providers see beyond broad trends and dive deep into the real market forces shaping broadband adoption. **TR**

By Mobilewalla CEO Anindya Datta

> Market Flow from Mobilewalla equips broadband providers with detailed, household-level data covering market share, subscriber flow movement, and competitive insights

Seizo Onoe, Director of the Telecommunication Standardization Bureau (TSB) at the International Telecommunication Union (ITU)

Onoe on ITU's Vision: Connecting the World through Standards and Partnerships

Seizo Onoe, Director of the Telecommunication Standardization Bureau (TSB) at the International Telecommunication Union (ITU), is leading the charge in driving global connectivity and promoting sustainable digital transformation. His leadership in advancing telecom standardization is essential to realizing the ITU's vision for a more connected and inclusive world.

In an exclusive interview with Telecom Review, Onoe outlined the ITU's Strategic Plan 2024-2027, emphasizing the significance of telecom standardization in achieving universal connectivity. He also highlighted the value of partnerships in bridging the digital divide and shared his perspective on the progress being made in building a future where technology benefits all members of society.

How will continuous telecom standardization impact the ITU Strategic Plan 2024-2027's mission to achieve universal connectivity and sustainable digital transformation?

Continuous telecom standardization significantly contributes to achieving universal connectivity and sustainable digital transformation. Universal connectivity relies on affordable services, which are made possible by standards enabling economies of scale and competition among products built on common standards. Standardization reduces costs and prices, encouraging further adoption of technical standards.

Additionally, innovations created by combinations of different expertise are accelerating digital transformation. ITU standards support this digital transformation across various sectors, including financial services, agriculture, healthcare, transportation, and smart cities. These efforts collectively advance our global goals.

How will the ITU utilize the power of partnerships to achieve global goals and connect the unconnected?

Partnerships are essential for achieving our global goals and connecting the unconnected. The ITU's unique membership composition includes governments, private sector companies, universities, and research institutions. This diversity provides extensive opportunities for ITU partnerships and also facilitating partnerships among our members.

Through these partnerships, the ITU facilitates the exchange of best practices, fosters innovation, and stimulates investment. These collaborative efforts significantly contribute to advancing the ITU's mission to achieve universal connectivity and sustainable digital transformation.

Do you think we are on track in building a 'digital future' that will be beneficial to all members of society? Can you briefly elaborate on the ITU's commitment to this?

Yes, we are on track, but given the challenging nature of our targets, there is still much we need to overcome. The ITU remains committed to continuing our efforts and accelerating the progress.

For example, AI is a promising technology to accelerate achievement of the Sustainable Development Goals and ITU's goals. We continue to develop supporting AI solutions because emerging technologies will accelerate our progress. **TR**

Gilles Vaqué, President and Founding Partner of PMP Strategy

Gilles Vaqué Demystifies Network Innovation, Market Expansion, and Sustainability

In an exclusive interview at the 18th edition of the Telecom Review Leaders' Summit, Gilles Vaqué, President and Founding Partner of PMP Strategy, shared his expert insights on how PMP Strategy is helping telecom companies navigate the complexities of network innovation, market expansion, and sustainability.

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Gilles Vaqué discussed the key trends shaping the telecom industry, the critical transformations operators must undertake in the next three-to-five years, and the company's commitment to driving growth and operational excellence for its clients in the ever-evolving digital landscape.

How does PMP Strategy help telecom companies address key challenges like network innovation, market expansion, and sustainability?

PMP Strategy is a strategy consulting firm operating in many countries. This specificity ensures that more than 50% of our business is related to telco and tech, so we are experts in this sector. The ability to help operators get maximum value out of these new businesses is one of the key issues we are working on with several operators and telcos.

This specificity is also critical for sharing all the best practices we see in the different countries, thanks to our offices worldwide. The ability to be 'on-the-ground' to help telco companies as a true partner, enabling them to gain and catch the value of this new market and path of growth, is part of our DNA at PMP Strategy.

With technologies like 5G, AI, and IoT transforming the telecom industry, what advice does PMP Strategy have for telecom companies to remain competitive?

AI, 5G, and IoT are good growth paths for operators. As you know, in some regions, for instance, in Europe, there is no more growth for telcos and the telco sector. In others, such as North America and the GCC region, there is still huge growth potential in terms of connectivity, but the ability to capture all these new markets is key for all the companies.

We see a lot of potential in all things related to 'beyond the core' in both the B2B and B2C markets. On the B2B side, the ability to become a champion in ICT is key. In relation to this, cloud and cybersecurity is key for operators. It's an enormous market with huge, substantial worldwide players, and the ability to gain value is key for them. In the B2C market, the ability to become a payment, banking, and real marketplace player (not only a digital player) is important.

Operators have many, many, fields for growth, and that, I think, is key for them. For PMP Strategy, we have a lot of expertise in each of these sectors thanks to our many SME experts. We also know the capabilities and new business models very well.

To become a champion is not only to add a service or product to the roadmap you already have; it's about defining a strategy to build the capabilities, review the organization, and build the ecosystem. This is not the same business model as a telco model. The ability to implement operationally and reap the results of this growth in terms of P&L, is how we can help all telcos gain value in their P&L.

What key trends will shape the telecom industry in the next three-to-five years?

In the next three-to-five years, telco operators and companies will face two main issues and two main stakes. Therefore, they must be able to make two key transformations.

In terms of the core model, they must become lean, efficient, customer-oriented, and have a high sustainability target. They must revisit *all* their models. For instance, on the IT side, they need to transform legacy IT into smart IT that is very lean, reactive, and digital. In terms of customer care, they need to ask, 'How can I improve the NPS and use AI to improve my relationship with my customer?' as it's a key issue. On the network side, identifying how to build an intelligent network and drive and steer this network to get more value from the infrastructure and the network is key. So, there are several transformations the operator can apply to the core model in the coming year.

In parallel, it is crucial to leverage the full potential of ICT across various areas, such as cybersecurity, digital marketplaces, payment systems, and banking. This will enable active participation in multiple verticals, such as healthcare and education. There's a new path for growth, and telcos must adapt their models to create a new joint venture (JV), for instance, a new sub-company, to achieve their full value. They must also be able to manage both models.

I think the key champions in the future will be all the telcos with the ability to transform their core model and, in parallel, become champions in these new markets. **TR**

> "To become a champion is not only to add a service or product to the roadmap you already have; it's about defining a strategy to build the capabilities, review the organization, and build the ecosystem"

Summer Chen, Vice President and General Manager of Branding and PR Strategies, ZTE

ZTE's Summer Chen Delves into how AI Can be Leveraged to Deliver Customer-Centric Innovations

In an exclusive interview with Telecom Review during the 18ᵗʰ edition of the Telecom Review Leaders' Summit, Summer Chen, Vice President and General Manager of Branding and PR Strategies, ZTE, highlighted the company's initiatives and strategies to advance network technologies.

Driven by rapid technological advancements, what cutting-edge innovations are currently underway at ZTE?

There are many innovations ZTE has been involved in. To enhance performance, ZTE has achieved industry-leading commercial speeds in Istanbul. Through our collaboration with Turkcell, we reached speeds of up to 32 Gbps in a 5G-Advanced (5G-A) trial.

Adhering to the same precise sensing, ZTE constructed network coverage from land to air, utilizing ATG and NTN technologies. Leveraging ATG technology, we achieved 300 kilometers worth of coverage (up to 800 Mbps) in a single base station. This cutting-edge innovation focuses on our customers' requirements, and we embed this kind of innovation within technical solutions.

What are ZTE's strategic priorities in the next five years?

Considering our future strategy, ZTE will enable digital economies, focusing on four aspects: networks, computing power, devices, and new energy.

ZTE will focus on the mobile network, building a fiber network as an evolution of the mobile network in the future.

In terms of computing power, artificial intelligence (AI) is the future, making it fundamental. ZTE provides the computing power required and combines it with connectivity abilities. ZTE also focuses on the data center server. We have large language model (LLM). We are offering these kinds of capabilities to various industries.

In terms of devices, ZTE is not only providing individual devices (like smartphones) for customers but also smart home devices.

Lastly, new energy not only encompasses energy applications; it also includes energy storage and digital energy management systems. ZTE focuses on digital infrastructures, integrated connectivity, computing, intelligence, and growth solutions.

We offer all these capabilities to our customers and have joined hands with our collaborative partners to enable a brighter future.

In your opinion, how will AI reshape the future of the ICT landscape?

AI is a buzzword. Considering the ICT aspect, there are common commons; as in, there's 'AI for network' and 'network for AI.'

In the 'AI for network' niche, ZTE serves as an infrastructure solutions and manufacturing vendor. AI will benefit the whole network's capability for customers. We are using AI as a tool to manage all capabilities to enhance the best benefits for customer applications, according to different scenarios. AI will help the network offering with suitable capabilities, such as speed, low latency, and bandwidth, combining all connections. This will enable the best performance according to our customers' application or demand. Maintenance and operation are important for 'AI for network' success. With the network becoming more complex than ever, ZTE aims to build an autonomous-driven network. Using AI, the network will be easier to maintain, with fewer human resources involved.

In the 'network for AI' niche, we are focusing on different scenarios and places, with the network meeting the demands. We are using AI to build in-the-cloud and at-the-edge, equipping our own devices with the necessary computing and connectivity. ZTE is also using smart innovations in base stations. For example, we are using a GPU card in the base station, offering edge-computing power. This highly efficient AI application is a good choice to opt for when sampling 'network for AI' capabilities.

In general, AI has changed the ICT landscape. AI has the capability to influence the whole society and change the lives of everyone. **TR**

"

AI is a buzzword. Considering the ICT aspect, there are common commons; as in, there's 'AI for network' and 'network for AI'

"

Samer Mehaidly,
Vice President, Business Development

Peeyush Singh,
CEO, Telcovas

Telcovas Expands into LATAM and Southeast Asia, Betting Big on AI and 5G

During MWC Barcelona 2025, Peeyush Singh, CEO of Telcovas, and Samer Mehaidly, Vice President of Business Development, outlined the company's ambitious plans and recent achievements to Telecom Review.

When asked about Telcovas's focus for the year, Singh emphasized their dedication to addressing critical pain points for mobile network operators (MNOs).

"Telcovas has been busy working on different new products, focusing on some of the pain points for MNOs across roaming, customer satisfaction, core, and cybersecurity."

He highlighted their innovative approach to integrating artificial intelligence (AI) into their solutions to enhance MNO operations. "One of our solutions is Automated Roaming Assist, which is an AI-enabled troubleshooting application that can be embedded in the selfcare app for any MNO and integrated into the chatbot to solve roaming solutions for subscribers."

Singh elaborated. "This enables troubleshooting, reporting, and analysis of the problems from subscribers' handsets and destination MNO's, in addition to the whole roaming journey."

Mehaidly also introduced their AI Spam Call Controller, designed to pre-emptively identify and manage spam calls. "This solution uses AI to analyze calls before setup, alerting customers and allowing MNOs to blacklist or whitelist calls as per their preference," he added.

2024 Success

Reflecting on their achievements in 2024, Singh expressed satisfaction with Telcovas's growth trajectory. "We have been able to grow our business over the past year, enjoying great growth in revenue, profit, people, footprint, and customer reference."

"We are keeping our existing customers happy, and we have been able to grow our business with our existing customers in Africa and the Middle East."

Singh emphasized the key products driving this growth, including private 5G networks tailored for industries like mining, manufacturing, and defense, along with robust roaming VAS (value added services) and cybersecurity solutions. "We've also made significant strides in mobility solutions and regulatory compliance across Africa and the Middle East," Singh noted.

Looking ahead, Mehaidly revealed Telcovas's strategic expansion into Latin America and Southeast Asia in early 2025. Singh concluded:

"We're pushing our roaming and 5G private network solutions across diverse industry verticals."

Overall, the company's success is a testimony to Telcovas's commitment to innovation and customer-centric growth. **TR**

TELECOM Review

Femi Oshiga, VP Sales, MEA, and APAC for Outdoor Wireless, ANDREW

ANDREW's New Chapter: Growth, Innovation, and Excellence in Wireless Connectivity

The telecommunications industry is undergoing rapid transformation, and with Amphenol's recent acquisition of CommScope's Outdoor Wireless Networks (OWN) and DAS businesses, the ANDREW brand has been re-introduced to the market and entered an exciting new phase.

In an exclusive interview with Telecom Review, Femi Oshiga, VP Sales, MEA, and APAC for Outdoor Wireless at ANDREW an Amphenol company, elaborated on how this transition strengthens the company's ability to serve customers across the MEA and APAC regions while maintaining its legacy of reliability and innovation.

A New Era for ANDREW Under Amphenol

"Amphenol has a phenomenal scale that we will be able to benefit from following the acquisition," explained Oshiga. "Our worldwide presence, particularly in MEA and APAC, has vastly increased as a result of this transition."

He highlighted that Amphenol's financial strength will be a key advantage. "Amphenol has a strong financial capability and a focus on investment and innovation," he added. "This means we'll be able to develop more innovative products that directly address the region's specific challenges in the months and years to come."

This acquisition, Oshiga believes, not only expands ANDREW's market footprint but also enhances its ability to deliver cutting-edge solutions that cater to the evolving needs of telecom operators.

Ensuring Reliability and Excellence in Wireless Solutions

As the demand for wireless networks grows, the need for resilient and high-performing solutions becomes

even more critical. Oshiga assured that ANDREW's reputation for quality will remain unchanged, if not further strengthened, under Amphenol.

"The ANDREW brand is an 85-year-old brand, and it stands for quality. It stands for market leadership, innovation, and top-of-the-range products in every category in which we are present," he pointed out. "That's not going to change. In fact, we expect that to be strengthened going forward. We want to have a leadership position in every one of our product categories, specifically in the MEA and APAC regions."

By staying committed to its core values of reliability and excellence, ANDREW continues to set the benchmark for network solutions that operators can depend on.

ANDREW's Showcase at Mobile World Congress

At MWC Barcelona 2025, ANDREW is showcasing its latest solutions, designed to tackle some of the most pressing challenges in wireless connectivity. According to Oshiga, the brand's strength lies in simplifying complex problems with practical, high-performing solutions.

"What ANDREW does so well is take complex problems and provide simple solutions to them," he highlighted. "That's not always easy, but that's what we do well, and we're proud of our market leadership because of it."

Among the innovations on display are ANDREW's base station antennas, featuring high-efficiency and high-capacity designs for both 4G and 5G networks. "We have a small sample of our high-efficiency products and high-capacity products for 4G and 5G," Oshiga cited. "We're also showcasing our microwave products, which play a crucial role in network backhaul expansion worldwide."

One standout innovation in the microwave segment is ANDREW's E-band auto-align solution. "We're showing what you can do in the microwave space with E-band

products that automatically adjust direction to ensure that the optimum signal between the two antennas is maintained to enable high network performance" he mentioned.

ANDREW is also demonstrating its advanced distributed antenna system (DAS) solutions, highlighting real-world deployments. "We're very proud of our end-to-end, digital DAS solutions and we're showing customers some of the best-in-class projects we've completed around the world," he continued.

Another key showcase at MWC is ANDREW's fibre distribution solutions, designed to enhance network resilience. "We have a portfolio of fibre and fibre distribution solutions that make cell sites a lot more resilient and help avoid quality issues related to fibre degradation over time," described Oshiga.

The Future of Wireless in MEA and APAC

As the industry moves forward, Oshiga sees 2025 as a pivotal year for wireless networks in MEA and APAC. "2025 is exciting. There are a number of countries that could launch 5G for the first time," he defined. "That creates significant opportunities in several markets. At the same time, in many countries where 5G is already live, we're only 20–30% into full deployment, so there's still a lot of work to be done."

Beyond 5G, growing data traffic necessitates continued investment in 4G networks as well. "It's not just about launching 5G; it's about ensuring networks can support the increasing demand," he outlined.

Another major trend shaping the industry is network consolidation. "We see consolidation happening in many parts of the region," Oshiga observed. "Operators are either merging networks or working with tower companies to reduce their operational expenses (OpEx). These are some of the key challenges we're helping them navigate, and we see them as great opportunities for 2025."

By supporting operators in achieving network efficiency—whether it be through better infrastructure, cost optimization, or innovative technology—ANDREW is playing a vital role in shaping the future of wireless connectivity.

A Vision for the Future

As ANDREW moves forward under Amphenol, its commitment to innovation and customer success remains steadfast. "The wireless industry is evolving rapidly, and our focus is on making sure our customers have the right solutions to meet these changes head-on," Oshiga affirmed.

"With Amphenol's support, ANDREW is in a stronger position than ever before," he concluded. "We are looking ahead to an exciting future where we will continue to lead through innovation, market expertise, and an unwavering commitment to quality." **TR**

> This acquisition, Oshiga believes, not only expands ANDREW's market footprint but also enhances its ability to deliver cutting-edge solutions that cater to the evolving needs of telecom operators

CelcomDigi Partners with Aduna to Advance Network API Innovation

CelcomDigi Berhad (CelcomDigi) has announced a strategic partnership with Aduna, a global initiative backed by some of the world's leading telecom operators and Ericsson. The collaboration aims to accelerate innovation by providing developers worldwide with access to standardized network Application Programming Interfaces (APIs).

Through this partnership, CelcomDigi will drive the adoption of common network APIs, equipping developers and businesses with advanced capabilities on a global scale. The company will offer seamless access to enhanced API solutions, including number verification and SIM swap

services, strengthening fraud prevention, security, and connectivity.

Aduna serves as a global marketplace for network APIs, enabling applications to function across multiple networks and regions. By streamlining access to advanced telecom capabilities, the initiative is expected to fast-track innovation across industries. Furthermore, network APIs are poised to unlock new opportunities within the telecom sector, allowing developers to leverage mobile networks for diverse use cases.

CelcomDigi's Deputy CEO, Albern Murty, emphasized the company's commitment to fostering a 5G-AI-powered digital ecosystem that drives innovation and improves digital experiences. He highlighted that the partnership with Aduna strengthens this goal by providing developers and enterprises with direct access to advanced network

capabilities. Murty noted that by integrating global connectivity with Malaysia's digital landscape, the collaboration paves the way for a new era of service innovation, enabling businesses to develop, expand, and implement digital solutions that benefit customers nationwide more efficiently.

The agreement was formalized through a Memorandum of Understanding (MoU) signed by CelcomDigi's Deputy CEO, Albern Murty, and Aduna's CEO, Anthony Bartolo, who added, "Our collaboration with CelcomDigi, a major mobile operator in Malaysia, will strengthen this vision. This partnership will create an expansive ecosystem, providing telecom operators and developers with unparalleled access to unified network APIs across partner networks, driving widespread adoption and innovation in the region."

Partnership Secured: M1, VNPT, SSI Solutions to Transform Vietnam's Maritime Sector with 5G

M1 Limited (M1), Vietnam Posts and Telecommunications Group (VNPT), and SSI Solutions have signed a strategic, non-binding Memorandum of Understanding (MoU) to promote the adoption of 5G technology in Vietnam Maritime Corporation's (VIMC) operations.

The partnership brings together M1's expertise in maritime 5G solutions, VNPT's 5G network infrastructure, and SSI Solutions's ability to integrate the technology into VIMC's

operations. The three companies aim to enhance efficiency in Vietnam's maritime sector through this initiative.

As part of the collaboration, advanced 5G-powered solutions will be introduced to optimize operations and accelerate VIMC's digital transformation. The initiative will explore applications such as remote-controlled equipment, improved automated guided vehicle (AGV) operations, and advanced surveillance systems. Leveraging M1's track record in maritime 5G projects, the partnership seeks to enhance technological innovation in the sector.

VNPT Group's Vice President, Nguyen Nam Long, highlighted the value of M1 and SSI Solutions's expertise

in implementing 5G for vertical industries, particularly in the seaport sector. He expressed optimism that the collaboration would benefit all parties and generate significant revenue from 5G technology.

M1 has been actively expanding its 5G capabilities beyond Vietnam. In late 2022, the company announced a multi-year project to establish widespread 5G Standalone (5G SA) offshore coverage along Singapore's southern coast and surrounding islands. Supported by co-funding from the Maritime and Port Authority of Singapore (MPA) and the Infocomm Media Development Authority (IMDA), M1 is deploying a 5G SA network to develop and trial new maritime use cases under MPA's Innovation Lab and IMDA's ecosystem testbed program.

Singtel, Palo Alto Networks Launch Two Cybersecurity Solutions

Singtel has launched two cybersecurity solutions in collaboration with Palo Alto Networks to enhance protection for both consumers and businesses.

The unified secure access service edge convergence (Unified SASE Convergence), powered by Palo Alto Networks's AI-driven Prisma SASE, combines software-defined wide area networking (SD-WAN) and SIM-based authentication to verify user identities and secure Internet of Things (IoT) devices on Singtel's network. Deployed via a cloud platform, the solution addresses vulnerabilities in IoT security, especially for devices that lack endpoint protection.

Anand Oswal, Senior Vice President and General Manager, Network Security at Palo Alto Networks, said, "Our expanded partnership with Singtel marks a significant step forward in delivering AI-powered, zero-trust security that is seamlessly integrated with Singtel connectivity. With Unified SASE Convergence and one of the world's

first 5G Security-as-a-Slice (SecaaS) offerings, businesses can now secure their mobile, branch, and data center environments with industry-leading threat prevention, ensuring a safer, more resilient digital future."

Additionally, Singtel has expanded its 5G SecaaS capabilities with Palo Alto Networks's Next Generation Firewall, equipping roaming customers with protection from foreign network threats, surveillance risks, and hacking attempts. By leveraging SecaaS and AI, Singtel can detect and block malicious websites, applications, and emails, further strengthening cybersecurity for mobile users.

Both solutions are part of Singtel CUBΣ, an AI-powered suite of network solutions designed to help enterprises modernize their digital infrastructure, enabling smarter, more efficient, and cost-effective operations.

Enhancing Cybersecurity with 5G Capabilities

The convergence of networking and security through SASE marks a shift in how businesses approach digital protection. Singtel's Unified SASE Convergence streamlines security management, enhances network performance, and ensures identity-based

access, regardless of user location. Meanwhile, its 5G SecaaS for IoT provides enterprises with:

- Enhanced access control for IoT devices
- Real-time monitoring and threat detection
- Insights into IoT assets and communication patterns
- Alerts on potential security risks and vulnerabilities

Since its launch, Singtel's Mobile Protect for 5G customers has safeguarded over 20,000 users, blocking over 5,000 cyber threats and filtering more than 600,000 malicious URLs daily.

Ng Tian Chong, Chief Executive Officer, Singtel Singapore, said, "That's why we developed CUBΣ and many other enterprise solutions to support businesses with their rapid digitalization and growth goals. This partnership with Palo Alto Networks marks another milestone in enhancing security for businesses and consumers who are increasingly operating in distributed environments. With our strong network and security capabilities, we're ensuring a zero-trust architecture that offers our customers an unparalleled level of security and performance so they can take advantage of all the opportunities that technology has to offer."

Starlink Close to Securing Approval for India's Satellite Broadband

Elon Musk's satellite-based internet service, Starlink, is getting closer to launching in India. After some delays, the company has now submitted the necessary paperwork to Indian

authorities, indicating a step forward in securing regulatory approval.

According to reports, Starlink has applied to the Indian space regulator, the Indian National Space Promotion and Authorization Center, for review along with the Ministry of Home Affairs and the Space Department. However, should Starlink gain the approval, the company still needs to acquire a license from the Department of Telecommunications (DoT) before it can start offering its services.

Starlink's satellite internet offers high-speed access, which is especially helpful in remote areas without traditional internet infrastructure. Although, the service may be expensive, limiting access for those in underserved regions.

This progress comes following discussions between Indian Prime Minister Narendra Modi and Elon Musk during Modi's visit to the U.S., raising hopes for a quick launch. Notably, Starlink boasts the capacity to revolutionize internet access in India's most remote areas.

APAC Mobile Revenue to Grow 2.8% Annually, Driven by 5G

The Asia Pacific (APAC) is expected to see a 2.8% annual growth in mobile communications services revenue, increasing to USD 346.1 billion by 2029. This growth is due to the rising number of mobile subscriptions and the expansion of 5G networks.

According to GlobalData, mobile data services will continue to be the main revenue contributor in the region, driven by the expansion and adoption of high average-revenue-per-user (ARPU) 5G services.

GlobalData telecom analyst, Srikanth Vaidya, explained that, "with 5G services launched in almost all developed markets including Australia, China, Japan, Hong Kong, and South Korea, and set to be launched soon in countries like Bangladesh and Sri Lanka, the revenue prospects for mobile data services will remain strong through the forecast period."

Government support for 5G expansion will further boost the mobile data services market in the region. Countries like Australia, China, India, South Korea, Japan, and Taiwan have introduced national 5G strategies to promote 5G ecosystems and coverage expansions through initiatives such as public sector investments, tax incentives, industry-government collaborations, and spectrum use enhancements.

China is expected to be the largest 5G market globally, with 90% of mobile subscriptions forecast to be based on 5G networks by 2029. The country's efforts in expanding 5G coverage to rural areas and industrial parks, along with significant telco investments, will drive this growth. The average monthly data usage in the region is projected to increase from 25.1 GB in 2024 to 48.6 GB in 2029, fueled by 5G launches and expansions. The growing consumption of online video and social media content on smartphones, supported by data-centric service plans from mobile network operators (MNOs), will also contribute to this growth.

APAC is at the forefront of the 5G race, with countries like South Korea, Japan, and China focusing on developing the wider 5G ecosystem to support their manufacturing and IT industries, as well as drive Internet of Things (IoT)/machine-to-machine (M2M) opportunities. Vaidya concluded that, while the mobile data segment will continue to grow, mobile voice service revenue is expected to decline at a 5.7% annual rate as consumers shift towards over-the-top (OTT)/internet-based communication services.

China Expands Telecom Market with VAS Pilot for Foreign Firms

The Ministry of Industry and Information Technology (MIIT) has approved pilot programs for value-added services (VAS) for 13 foreign-funded firms in Beijing, Shanghai, Hainan, and Shenzhen. This forms part of China's ongoing efforts to expand market access and promote high-level entry in the telecommunications sector.

Among the 13 approved companies are T-Systems P.R. China Ltd., an affiliate of Deutsche Telekom; Siemens Digital Technology (Shenzhen); and Airbus China. Past reports also indicated that Tesla and HSBC Fintech Services (Shanghai) were planning to apply for the pilot. The approvals include subsidiaries of major multinationals, reinforcing the initiative's global appeal.

Li Wenfang, Vice President of T-Systems P.R. China Ltd., said, "We can better integrate global resources, enhance technological innovation and service capabilities, and provide higher-quality solutions and services for multinational corporations, as well as industries operating in China such as the manufacturing and automotive industries; thereby leading more German companies to enter the Chinese market."

This expansion aims to offer more diverse and high-quality telecommunication services to Chinese consumers, invigorate the market, and meet the growing demand for digital experiences. By attracting foreign investment and learning from international counterparts, China hopes to improve efficiency and innovation within its telecom industry.

Information and communication are crucial for a digital society as it drives globalization, enhances global enterprise connectivity, and boosts economic growth.

"With this new policy, we can introduce more sophisticated digital solutions for fleet management and operational efficiency," added Xu Gang, CEO of Airbus China.

Data is increasingly becoming a key driver of economic growth, and China's proactive approach will help it stay ahead in the digital race. The establishment of 2,400 new foreign-invested enterprises in the telecommunication sector by the end of February, 2025, indicates a 30% year-over-year (YoY) increase, reflecting high investment enthusiasm. This demonstrates China's continuous efforts to optimize its business environment for foreign-invested companies.

Collaboration Drives 6G Metaverse and Sensory Innovations

TOPPAN Inc. and NTT DOCOMO, Inc. have agreed to work together to create innovative communication services for the upcoming 6G era. TOPPAN specializes in information processing and computer graphics, focusing on providing various metaverse services. Meanwhile, DOCOMO is leading the development of next-generation communication technologies through its FEEL TECH platform, aiming to enhance human sensory experiences over networks in the 6G era.

As part of the agreement, TOPPAN will combine its metaverse and advanced expression capabilities with DOCOMO's FEEL TECH platform. The two companies will collaborate on developing services related to education, skill transmission, and online shopping. The first step will involve integrating FEEL TECH with TOPPAN's Metapa app, which offers interactive educational content for museums. Development discussions will start in April, 2025.

By incorporating FEEL TECH's sensory sharing features into Metapa, the companies aim to create new content that allows users to feel the texture of materials and the tactile sensations envisioned by artists, improving art education through direct interaction. Moving forward, TOPPAN and DOCOMO will continue working together to provide innovative services that amaze and delight customers, utilizing FEEL TECH.

Aryaka® Appoints Key Leadership to Expand Market Presence

Aryaka® has announced a major go-to-market (GTM) investment strategy in the Asia Pacific, alongside key leadership appointments worldwide. As part of this expansion, the company has forged new partnerships with NI+C in Japan and ASV Platforms in Australia to extend its sales reach in these markets.

Aryaka has expanded its leadership team to drive GTM growth, bringing on industry veteran, Nick Alagna, as Global Channel Chief. With over 20 years of experience in technology and startups, Alagna will focus on scaling Aryaka's global channel ecosystem and equipping partners to enhance customer value with the company's Unified SASE solutions. His expertise includes global GTM strategies and partner ecosystem development in cybersecurity and cloud technologies. Alagna previously led Channel Sales and Strategic Partners at Akamai Technologies, where he played a key role in driving partner profitability and year-over-year (YoY) growth. Earlier in his career, he co-founded WholeSecurity, a cybersecurity startup later acquired by Symantec.

Aryaka has also appointed Nitin Ahuja as Vice President and General Manager of APAC/APJ. With over 20 years of experience in business and technology, Ahuja will oversee all go-to-market functions in the region. He previously held sales and GTM leadership roles at Imperva, VMware, HPE, and Microsoft.

Moreover, Aryaka has named William Ho, former CEO of Hong Kong Broadband Enterprise Solutions and adjunct professor at the University of Minnesota Carlson School of Management, as a strategic advisor for APAC.

Aryaka has added several other key go-to-market executives across the globe, including:

- Mike Ellis, Channel Sales Director, EMEA
- Elad Tzur, Channel Sales Director EMEA
- Meng Foo, Channel Sales Director, ASEAN
- Abhijit Neelgar, Channel Sales Director, India

Aryaka has also formed new partnerships with Nippon Information and Communication (NI+C) in Japan and ASV Platforms in Australia and New Zealand. NI+C, a network systems integrator founded by NTT and IBM Japan, will help bring Aryaka's fully integrated networking and security solutions to organizations across Japan.

Meanwhile, in Australia and New Zealand, Aryaka has partnered with ASV Platforms, a provider of cloud-first software and cybersecurity solutions. The collaboration will introduce Aryaka's Unified SASE-as-a-Service offering to enterprises and government entities in the region.

Enhancing User Experience with 5.5G in Malaysia

Malaysia's 5G journey officially began with a bold push from the government and industry stakeholders to establish a robust and high-speed 5G infrastructure.

Digital Nasional Berhad (DNB), the government-backed entity tasked with rolling out the 5G network in Malaysia, has been at the forefront of this initiative. The Malaysian government entrusted DNB with the responsibility of rolling out the infrastructure through a shared network model, aiming to foster equitable 5G access nationwide.

By the end of 2022, DNB had deployed 3,900 5G sites, achieving nearly 50% coverage of the population in major urban areas. This ambitious rollout aimed to cover 80% of populated areas by 2024. Despite ongoing debates regarding DNB's governance

and transparency, it remains at the forefront of Malaysia's efforts to transform its telecommunications infrastructure. The rollout of 5G services has sparked collaboration with major telecom players, including CelcomDigi, which became a key equity holder.

As the technology evolves, it's clear that 5G is not a one-stop destination but a steppingstone toward even more advanced networks. 5.5G—a bridging technology between 5G and 6G—is set to enhance user experience across Malaysia.

The Road to 5.5G Across Malaysia

In 2023, Digital Nasional Berhad (DNB), Telekom Malaysia (TM), and ZTE collaborated to create a pivotal launchpad for the development of 5.5G, conducting the world's fastest 28 Gbps 5G mmWave live trial. This achievement also marked the deployment of Malaysia's first 5G standalone (5G SA) core, laying the foundation for 5.5G advancement in Malaysia.

In 2024, ZTE continued to push the boundaries of 5G innovation by showcasing its latest developments at the 'Unfolding the Intelligent Future 2024' event in Kuala Lumpur. During the event, the company set the fastest 5.5G live trial record. The 5.5G setup leveraged ZTE's mmWave Active Antenna Unit (AAU), reinforcing Malaysia's position as a leader in next-generation telecommunications.

One of the first significant milestones for 5.5G in Malaysia came in the form of a successful trial by Maxis and Huawei, showcasing the potential of 5.5G technology in the Southeast Asian market. This trial, conducted in late 2024, was not only Malaysia's first 5.5G demonstration but also the first in the region. The collaboration between Maxis and Huawei aimed to demonstrate how 5.5G can significantly enhance user experience by delivering faster data speeds, lower latency, and more reliable connections.

During the trial, the teams successfully showcased a wide range of potential 5.5G use cases, including ultra-high-definition (UHD) video streaming, augmented reality (AR) and virtual reality (VR) applications, as well as immersive 3D content. These technologies, which rely on massive data throughput and low latency, are expected to benefit greatly from the enhanced capabilities of 5.5G networks, providing a glimpse into the future of entertainment, education, and virtual communication in Malaysia.

The trial further demonstrated that 5.5G could enhance existing 5G infrastructure, enabling more efficient spectrum usage and supporting higher numbers of connected devices, a key requirement as the number of Internet of Things (IoT) devices continues to grow exponentially.

Looking ahead to 2025, Malaysia's 5.5G landscape is set to evolve further with Ericsson's launch of 5G-Advanced in the country, following its successful deployment in Singapore. As one of the leading providers of 5G and 5.5G technologies, Ericsson's contribution has been instrumental in helping Malaysia achieve its goal of becoming a regional leader in digital transformation.

5.5G to Enhance User Experience

DNB's ongoing efforts to roll out 5G infrastructure have provided a solid foundation for 5.5G development, enabling smoother transitions to next-generation technologies. The agency is also working on enhancing the capabilities of the existing 5G infrastructure by integrating 5.5G enhancements, such as ultra-reliable low-latency communications (URLLC), network slicing, and massive machine-type communications (mMTC). These features will improve the user experience by reducing network congestion, increasing reliability, and enabling the seamless connection of a wide range of devices.

5.5G networks are set to bring several advancements over the current 5G technology, offering faster speeds, lower latency, and improved capacity. With speeds up to 100 times faster than 5G, 5.5G will enable ultra-high-definition video streaming, immersive gaming, and data-heavy applications like 3D holograms and AR/VR. Latency will be reduced to just 1 ms, which is essential for real-time data processing and enhanced user experience. Smart cities will also benefit from real-time traffic management and AI-powered surveillance (supported by 5.5G technology), improving user experience across multiple facets of daily life.

Progress and Ongoing Initiatives

While 5.5G is still in its nascent stages, several initiatives are already underway in Malaysia to lay the groundwork for its widespread adoption. Building on their partnership, Maxis and Huawei established a 5G-Advanced Joint Innovation Center in mid-2024. This center focuses on exploring innovations in gigabit capacity to support mobile network expansions and 5G/5.5G technologies.

Industry regulators and stakeholders in Malaysia are already discussing the implementation of key 5.5G features such as ultra-low latency and enhanced mobile broadband (eMBB). These discussions are crucial for ensuring that Malaysia's 5.5G network is optimized for the diverse needs of both businesses and consumers.

The future of 5.5G in Malaysia looks promising. The Malaysian government and telecommunications industry stakeholders have set ambitious goals to make the country a leader in digital transformation, and 5.5G will play a key role in achieving these objectives. Additionally, the integration of 5.5G will be pivotal in Malaysia's ongoing efforts to foster a digital economy. As industries increasingly adopt digital solutions, the enhanced speed, capacity, and reliability offered by 5.5G networks will be critical in supporting Malaysia's growing tech ecosystem.

The future of mobile connectivity is bright, and Malaysia is poised to lead the charge. As 5.5G collaboration between global technology providers continues to evolve, consumers, businesses, and industries can look forward to enhanced multifaceted experiences. **TR**

Harnessing AI for Energy Efficiency in Telecom Networks

Telecom networks are highly energy-intensive, and as digitalization continues to advance, so does the demand for energy. Notably, telecom networks account for a substantial portion of global electricity consumption.

A s the number of 5G and IoT devices rises, energy consumption has grown exponentially, creating a pressing need for more sustainable practices within the telecom sector. However, given the vast amount of data, the complexity of infrastructure, and the demand for seamless connectivity, optimizing energy use in telecom networks has become a challenge.

To address this challenge, telecom operators are turning to artificial intelligence (AI) to unlock new opportunities for energy efficiency. AI allows for real-time monitoring, data analysis, and automated decision-making that can optimize network energy consumption, streamline operations, and enhance sustainability.

Are Energy-Efficient Networks Necessary Beyond CSR Compliance?

According to the International Energy Outlook 2011, energy demand in developing Asia is expected to grow by 2.9% per year until 2035, significantly outpacing the global average of 1.6%. The rise in energy demand brings with it a host of challenges, including environmental sustainability, affordability, and energy security. However, energy efficient networks stand out as one of the most cost-effective means of addressing these challenges. Energy efficiency in telecom networks is no longer just a Corporate Social Responsibility (CSR)-driven goal; it is a strategic necessity.

Energy efficiency is often hailed as the most affordable way to increase energy supply, particularly in Asia, where energy demand is projected to grow rapidly. The Asian Development Bank (ADB) highlighted that a megawatt of power saved through energy efficiency costs about half or even less than adding a megawatt of coal-fired generating capacity. As such, energy efficiency has been viewed as the least expensive and most efficient way to meet rising energy demands in Asia. This aligns with the broader view that improving energy efficiency can have multiple benefits.

According to the GSMA, energy consumption accounts for 20-40% of network operating expenses (OpEx) for telecom operators. Interestingly, Nokia found that replacing legacy site equipment improved efficiency by 44%, demonstrating that modernization efforts can significantly cut costs. Today, Asian operators are managing multiple network generations simultaneously—2G, 3G, 4G, and 5G—which increases overall energy consumption. Smart network load optimization, such as AI-driven traffic management and dynamic power scaling, can reduce energy usage without compromising performance.

Beyond cost savings, energy efficiency directly improves network performance. Lower energy consumption leads to reduced heat output, minimizing the risk of overheating and hardware failures. Energy-efficient networks also offer faster and more consistent service, ensuring a better user experience. In response, telecom operators are virtualizing the network core and modernizing RAN infrastructure.

The ADB further emphasized that energy efficiency initiatives help increase the sustainability of energy systems by contributing to energy security, reducing harmful environmental impacts, and mitigating greenhouse gas (GHG) emissions.

Building Energy-Efficient Networks in Asia

Telcos across Asia are increasingly leveraging AI to optimize energy consumption in their networks, creating more efficient networks that prioritize both economic and environmental sustainability.

The Philippines' Globe Telecom (Globe) has been a front-runner in utilizing AI to enhance energy efficiency. Through the integration of machine learning (ML) algorithms and AI-based analytics, Globe Telecom has significantly improved its network's energy consumption while enhancing its sustainability efforts. The impact of Globe Telecom's AI-driven energy management system has already yielded remarkable results. In just one year, Globe achieved significant energy savings, totaling approximately 187,774 kWh of electricity. This reduction in energy consumption helped curb 139 metric tons of carbon dioxide (CO_2) emissions, showcasing the effectiveness of AI and ML in not only improving operational efficiency but also reducing the company's environmental impact.

Furthermore, Globe Telecom successfully reduced its energy consumption by 4.2% through Qualcomm's AI-driven Edgewise

solution, which optimizes the management of network equipment. Joel Agustin, Head of Service Planning and Engineering, explained that this innovative technology dynamically adjusts network operations based on real-time traffic and usage, ensuring energy efficiency without compromising service quality.

Qualcomm's AI-powered Energy Efficiency solution has enabled us to significantly reduce energy consumption across our RAN while maintaining optimal network performance for our customers.

This partnership supports Globe's environmental goal of achieving net-zero carbon emissions by 2050 and exemplifies its commitment to sustainability in the telecommunications sector.

NTT DOCOMO and SK Telecom (SKT) are supporting this charge through their joint research on energy-efficient 5G networks. Their recent white papers detail that energy consumption can be reduced in base stations and telecom networks by analyzing current energy use and evaluating each sector to identify potential savings.

Nippon Telegraph and Telephone (NTT) is taking a futuristic approach with its Innovative Optical and Wireless Network (IOWN) initiative. Expected to be fully operational by 2030, IOWN aims to decentralize data centers in Japan using light-based networking, significantly reducing latency and cutting energy consumption by an astonishing 99%.

Nokia and Chunghwa Telecom (CHT) have expanded their partnership to optimize CHT's 5G network in Taiwan with AI-powered solutions. Nokia's MantaRay AI enables network monitoring and energy optimization, incorporating features such as deep-sleep mode and MIMO muting to conserve power. Meanwhile, Bharti Airtel (Airtel) and Nokia have also joined forces to deploy 'Green 5G,' integrating AI and ML to enhance energy efficiency in Airtel's extensive 4G and 5G Radio Access Networks (RAN). This collaboration is expected to cut Airtel's

carbon emissions by approximately 143,413 metric tons of CO_2 per year, reinforcing its commitment to sustainable telecom expansion. Nokia has also partnered with Vodafone Idea to strengthen India's mobile network by incorporating AI-powered automation, energy-efficient RAN technologies, and intelligent network management into Vodafone Idea's network, improving network performance while lowering power consumption.

In the Philippines, PhilTower and Huawei are collaborating to revolutionize telecom infrastructure using energy-efficient designs for shared towers and facilities. In Thailand, Huawei developed a green and intelligent campus network, while in Singapore, its optical backbone network solutions are enhancing the energy efficiency of the country's vital networks. Huawei's Fiber-to-the-Office (FTTO) solution has simplified network architectures, eliminating the need for extra-low voltage rooms, reducing optical module investments by 50%, and improving operations and maintenance efficiency by another 50%. Meanwhile, in Taiwan, Chunghwa Telecom aims to advance energy efficiency by establishing a network using All-Photonics Network (APN) technology. APN technology is inherently designed to optimize energy use by providing dedicated, streamlined network connections that reduce unnecessary power expenditures.

AI and the Future of Telecom Network Sustainability
The integration of AI into energy management is not only a current solution but also a pathway securing the future of sustainable telecom networks. As we look ahead, the potential of AI in optimizing energy usage will continue to evolve. In the near future, telecom networks could become fully autonomous, powered by AI that continuously learns from network data and optimizes energy consumption in real time.

AI is also expected to play an essential role in integrating renewable energy sources into telecom networks. By forecasting energy production from sources such as solar and wind, AI

will allow telecom operators to adjust their energy consumption based on the availability of clean energy. Wind turbine costs have also fallen by 37-56%, making renewables a more viable and cost-effective option for telecom networks than traditional power grids. According to Tupl, the integration of AI and renewable energy will further reduce the telecom sector's reliance on fossil fuels and contribute to the global effort to combat climate change.

Moreover, as telecom networks move beyond 5G, the complexity of the network infrastructure will increase. AI's ability to scale and adapt to these changes will be crucial in ensuring that energy consumption remains manageable. Advanced AI technologies, such as deep learning and reinforcement learning, will enable telecom operators to create self-optimizing networks that are not only more efficient but also capable of adapting to changing traffic conditions and energy demands. **TR**

> Qualcomm's AI-powered Energy Efficiency solution has enabled us to significantly reduce energy consumption across our RAN while maintaining optimal network performance for our customers

DeepSeek-R1 Shakes Up the AI Industry

In a development that has sent shockwaves through the tech industry, Chinese startup, DeepSeek, has unveiled its latest artificial intelligence (AI) model, DeepSeek-R1.

DeepSeek-R1 is designed to handle a variety of text-based tasks in both English and Chinese, including creative writing, general question answering, editing, and summarization. According to DeepSeek, the model is particularly strong in reasoning-intensive tasks that require clear, well-defined solutions, such as generating and debugging code, performing mathematical computations and explaining complex scientific concepts.

A New Benchmark in AI Performance

In a 2025 performance evaluation, published by Statista, DeepSeek-R1 demonstrated impressive results, performing on par with OpenAI's OpenAI-01-1217. This has drawn significant attention as DeepSeek's model was developed with a substantially lower budget.

DeepSeek-R1 is now available on the AI development platform, Hugging Face, under an MIT license, allowing unrestricted commercial use. DeepSeek claims that R1 outperforms OpenAI's o1 as per the following benchmarks: AIME, MATH-500, and SWE-bench Verified. AIME evaluates AI performance using other models, MATH-500 comprises a set of word problems, and SWE-bench Verified assesses programming capabilities.

As a reasoning model, R1 is designed to fact-check itself, reducing the risk of common errors that often plague AI systems. While reasoning models

generally take longer—sometimes several seconds to minutes—to generate solutions compared to non-reasoning models, they offer greater reliability in fields such as physics, science, and mathematics.

DeepSeek's technical report revealed that R1 features 671 billion parameters, a measure indicative of a model's problem-solving capacity. Generally, AI models with a higher parameter count deliver superior performance.

Recognizing the need for scalability, DeepSeek has also introduced "distilled" versions of R1, with parameter sizes ranging from 1.5 billion to 70 billion. The smallest version is capable of running on a standard laptop, while the full-scale R1 demands more robust hardware. Nevertheless, DeepSeek provides access to R1 through its API at costs 90%-95% lower than OpenAI's o1.

Hugging Face CEO, Clem Delangue, revealed in a post on X that developers on the platform have already created over 500 derivative models based on R1. These variations have amassed 2.5 million downloads, five times the number of downloads for the official R1 release, highlighting the model's rapid adoption and growing influence in the AI community.

Insights into the Asian Landscape
DeepSeek's breakthrough is part of a broader trend whereby Asian companies are making significant strides in AI development. A 2024 report by the Asian Development Bank highlighted several key insights:

- **Emerging Regional AI Hubs:** Beyond China, countries like South Korea, Japan, and Singapore are becoming AI powerhouses. Each is leveraging its unique strengths in electronics, robotics, and financial technology to carve out niches in the global AI ecosystem.
- **Sector-Specific Innovations:** Asian companies are increasingly focusing on domain-specific AI applications. For instance, South Korea's Lunit has become a global leader in AI-powered medical imaging, with its Lunit INSIGHT CXR demonstrating a 97%

accuracy rate in detecting early-stage lung cancer.
- **Ethical AI Frameworks:** Asian countries are taking the lead in developing comprehensive ethical guidelines for AI. Singapore's Model AI Governance Framework, launched in 2020, has since been adopted by over 15 countries in the region, setting a standard for responsible AI development and deployment.

China's Growing AI Prowess
The success of DeepSeek-R1 is emblematic of China's rapidly advancing AI capabilities. China leads the world in generative AI (GenAI) patent filings, surpassing the U.S., South Korea, Japan, and India, according to a World Intellectual Property Organization (WIPO) Patent Landscape Report on Generative AI.

The study documented 54,000 GenAI inventions between 2014-2023, with over 25% emerging in the last year alone. China accounts for more than 38,000 of these inventions—six times more than the U.S. India, ranked fifth, has the fastest growth rate at 56% annually.

DeepSeek Tops App Store, Triggers Historic NVIDIA Stock Plunge
DeepSeek's chatbot, powered by R1, has risen to the top spot on the Apple App Store, overtaking ChatGPT. This success challenges the notion that only the largest, most expensive models can achieve state-of-the-art performance, potentially leading to a shift in focus towards more efficient training methods and architectures.

The open-source nature of R1 is likely to spur collaborative improvements and adaptations, potentially accelerating the overall pace of AI innovation. Furthermore, DeepSeek may intensify the ongoing "AI race" between nations, potentially leading to increased government investment and regulation in the field.

The announcement of R1 also initially caused significant market reactions, including a historic drop in NVIDIA's stock price. This occurred after DeepSeek revealed it developed R1

using just USD 5.6 million worth of NVIDIA GPUs, challenging the chip giant's pricing model. However, recent market analyses suggest a stabilization as investors reassess the long-term implications of DeepSeek's innovations and NVIDIA's role in the AI hardware ecosystem.

Investigations into Hardware Procurement
Reports indicate that U.S. authorities have launched an investigation into DeepSeek over suspicions of circumventing export restrictions on advanced NVIDIA GPUs. The probe centers on whether DeepSeek acquired restricted AI chips through intermediaries in Singapore, effectively bypassing U.S. export controls.

The investigation comes amid growing concerns about DeepSeek's AI model, R1, which has demonstrated capabilities rivaling those of leading models from OpenAI and Google. Adding to the suspicion, Singapore's share of NVIDIA's revenue has more than doubled from 9% to 22% over the past two years.

While DeepSeek has not disclosed the specific hardware used to train R1, the company's previous model, V3, was reportedly trained using a limited number of H800 GPUs. This achievement was notably more efficient than similar efforts by competitors like Meta, raising questions about the resources behind R1's development.

U.S. officials, including representatives from the White House and FBI, are examining whether DeepSeek obtained restricted AI GPUs through Singaporean third-party firms. NVIDIA maintains that it complies with all legal requirements, and no official confirmation of law violations has been made public.

The Biden administration tightened restrictions on advanced GPU exports to China in 2023, however, Singapore was not included in the list of restricted countries. This omission has led some to believe it created a loophole for Chinese entities to access high-end NVIDIA GPUs.

In response to these concerns, U.S. representatives, John Moolenaar and

Raja Krishnamoorthi, have called for stricter licensing measures unless Singapore enhances its oversight on shipments. NVIDIA has clarified that while Singapore accounts for a significant portion of its revenue, most transactions involve shipments to other destinations, not necessarily China.

Competition Heats Up

South Korean tech company, Kakao, known for its dominance in online banking, ride-hailing, and messaging services, has recently joined forces with OpenAI to integrate ChatGPT into its AI offerings. The partnership comes amid heightened competition, particularly with the emergence of DeepSeek.

During a private discussion with South Korean AI developers, OpenAI CEO Sam Altman acknowledged that OpenAI has yet to formulate a clear strategy to counter the rise of open-source models like DeepSeek. Despite this, he admitted that OpenAI is closely monitoring the situation and considering ways to adapt.

Experts suggest that South Korea, with its highly engaged and tech-savvy user base, could serve as a testing ground for OpenAI before broader global expansion. Meanwhile, Altman has been meeting with major South Korean semiconductor manufacturers, including Samsung and SK hynix, to explore collaborations on AI memory chips, particularly high-bandwidth memory (HBM), which is crucial for AI applications.

DeepSeek's rapid advancement has also sparked allegations that it may have replicated elements of leading U.S. AI technologies. OpenAI has warned that Chinese firms are actively working to emulate its models using a technique called distillation, where smaller AI systems learn by mimicking the behavior of larger, more advanced models. At the same time, OpenAI itself faces ongoing legal challenges over alleged copyright violations in training its generative AI models.

DeepSeek-R1's Alarming Vulnerabilities

Using algorithmic jailbreaking techniques, Cisco tested DeepSeek-R1 against 50 random prompts from the HarmBench dataset, which evaluates AI models on their ability to reject harmful behaviors like cybercrime, misinformation, and illegal activities.

DeepSeek-R1 reportedly exhibited a 100% attack success rate, meaning it failed to block a single harmful prompt. This stands in stark contrast to other leading AI models, which demonstrated at least some resistance to attacks.

According to Cisco, other frontier models such as o1 successfully blocked a majority of adversarial attacks due to built-in guardrails. One potential reason for DeepSeek's poor performance is its significantly lower development budget.

Despite its vulnerabilities to adversarial attacks, DeepSeek-R1 enforces strict content restrictions on politically sensitive topics, particularly concerning China. When tested on issues like the treatment of Uyghurs or the 1989 Tiananmen Square Massacre, DeepSeek refused to respond, stating, "Sorry, that's beyond my current scope. Let's talk about something else."

Global Scrutiny Over Emerging AI Technologies

Australia has banned the use of DeepSeek across all government systems following a risk assessment that flagged potential national security threats. Home Affairs Minister Tony Burke announced the immediate removal of all DeepSeek products from government networks, emphasizing that the decision was based on security concerns rather than the company's Chinese origins. While the restriction applies only to government devices, Burke urged Australian citizens to remain cautious about their digital security. This move is reminiscent of Australia's previous actions against Chinese tech firms, such as the 2018 exclusion of Huawei and ZTE from the country's 5G infrastructure over security risks.

The U.S. is also considering similar measures. Republican Senator Josh Hawley has introduced a bill that would prohibit individuals in the U.S. from using DeepSeek or engaging with any AI technology developed in China, with potential penalties including fines of up to USD 1 million or prison sentences of up to 20 years. While the U.S. has not yet imposed an official ban on government devices, congressional offices have reportedly been advised against using the platform. Agencies like NASA and the Pentagon's Defense Information Systems Agency have already restricted access, while the U.S. Navy has imposed a blanket ban on its personnel, citing security and ethical concerns. Texas has also become the first U.S. state to prohibit DeepSeek and other Chinese software on government devices.

Beyond the U.S. and Australia, other nations have taken action. Italy's Data Protection Authority issued a nationwide ban, citing potential data breaches and requiring the company to prove compliance with the General Data Protection Regulation (GDPR).

Data protection authorities in Belgium, France, and Ireland are investigating DeepSeek's data handling practices, while South Korea and India have indicated that regulatory action may follow due to privacy and security concerns

Taiwan's government agencies have also prohibited the AI platform, warning that it poses risks to national information security.

In the Philippines, the Armed Forces (AFP) has explicitly prohibited its personnel from uploading sensitive information to AI-powered platforms, including DeepSeek, to prevent potential national security breaches. During a recent congressional hearing, lawmakers questioned the military's stance on AI technologies, with officials emphasizing the need for caution. Brigadier General Constancio Espina II noted that while DeepSeek is not explicitly banned, overlooking its risks could have serious security implications.

The growing global response to DeepSeek highlights rising concerns over AI security. As AI technology advances, addressing these security challenges will be crucial to ensure safe and reliable integration into various industries. **TR**

APAC: Leading the Charge in Industrial IoT Innovation

The Asia Pacific (APAC) region is at the forefront of the global Industrial Internet of Things (IIoT) revolution, leveraging connected technologies to optimize production, enhance operational efficiency, and drive economic growth.

The APAC Industrial IoT (IIoT) market is rapidly expanding, driven by advancements in edge computing, 5G infrastructure, and strategic industry collaborations. According to Astute Analytica insights, edge computing, utilized by 72% of IT leaders, enhances data processing at the source, while the rollout of 5G significantly improves connectivity and reliability, both of which are vital aspects to consider when integrating IoT innovations within the industrial sector.

The market is segmented by components, deployment models, organization size, and industry verticals, with sensors emerging as a dominant technology segment in Industrial IoT. The benefits of IIoT adoption are substantial—productivity can be increased by 25%, malfunctions can be reduced by 70%, and maintenance costs can drop by 25%.

Six key technologies often deployed alongside IIoT include additive manufacturing, augmented and virtual reality (AR/VR), collaborative robotics, connected machine vision, drones/UAVs, and self-driving vehicles. Global spending on IIoT solutions is expected to reach USD 500 billion in 2025, with over 70% of new deployments utilizing wireless sensors. These solutions enable remote monitoring, cutting on-site inspections by 60%, increasing operational efficiency by 25%, and reducing unplanned downtime by 50%.

Advancing IoT Innovation in Industrial Sectors

Since 2015, governments and initiatives in APAC have laid the groundwork for Industrial IoT adoption.

The Made in China 2025 initiative has transformed China into a global leader in high-tech manufacturing by modernizing its IIoT infrastructure. Launched as part of the country's broader push toward intelligent manufacturing, the initiative focuses on strengthening key industries such as robotics, aviation, and electric vehicles (EVs). Made in China 2025 works in tandem with the Internet Plus initiative, which seeks to integrate cloud computing, big data, and IoT across various sectors, including manufacturing, healthcare, and finance.

China has made substantial public sector investments to support these initiatives, including allocating USD 4.4 billion to research and development (R&D) in smart devices. The country already dominates the machine-to-machine (M2M) market, accounting for nearly a third of the world's cellular connections in this sector. China Telecom estimates that over 60% of the IoT-driven GDP impact in China will stem from M2M implementation. This extensive connectivity positions China as a key player in the IIoT revolution, with significant economic benefits projected.

Meanwhile, the Digital India initiative, launched by the Indian government, has played a transformative role in modernizing the nation's digital infrastructure and accelerating industrial advancements, particularly in the IIoT. As highlighted by Union Minister Kirti Vardhan Singh, Digital India has not only empowered citizens but also positioned India as a global leader in technology-driven governance and innovation.

Digital India has inspired a culture of digital adoption and laid the groundwork for faster, more efficient governance.

Additionally, the success of the Parivesh portal, which has transformed the process of granting environmental approvals, is a testament to how digital tools are reshaping industrial operations.

Furthermore, Japan introduced the Industrial Value Chain Initiative (IVCI) to advance the country's industrial Internet revolution. Similarly, Singapore's Smart Nation initiative aims to harness digital technologies, including IoT, to enhance urban living, create economic opportunities, and build a digital government. Hong Kong introduced the New Industrialisation and Technology Training Programme (NITTP) to support enterprises in upgrading their manufacturing processes through advanced technologies, including IIoT. The Malaysian government introduced the National IoT Strategic Roadmap to drive IIoT adoption across various sectors, while New Zealand established the IoT Alliance to accelerate the adoption of IoT technologies across the industrial industry.

The Current Industrial IoT Landscape

In 2021, Nokia launched its mission-critical Industrial Edge solution to accelerate Industry 4.0 adoption. This platform enabled industries to leverage real-time data processing and automation, strengthening digital transformation efforts across manufacturing, logistics, and smart cities.

By 2022, the momentum for industrial digitalization grew stronger. True Corporation's 5G was recognized as a key engine for industrial transformation in Thailand, driving the country's shift toward a smarter, more connected economy. Huawei also introduced energy-efficient network solutions designed to accelerate industrial digitalization, reinforcing sustainability and smart manufacturing efforts across the APAC region.

In 2023, major advancements in Industrial IoT and connectivity reshaped industries, signaling a turning point in IIoT innovation. ABB and China Telecom joined forces to enhance digitalization and create an Industrial IoT laboratory, driving innovation in industrial automation. Additionally, Singtel successfully trialed the first 5G RedCap technology in Singapore, designed for mid-tier IoT devices such as smartwatches and industrial sensors, enhancing connectivity and efficiency.

Throughout 2023, several IoT-focused implementations bolstered APAC's industrial revolution. ZTE, China Mobile, and Changzhou Xingqi Technology collaborated to advance industrial quality inspection through IoT-driven automation. Meanwhile, IIJ and Murata launched a new IoT data service to optimize data transmission and management across connected industries. In India, Airtel Business became the first to connect over 20 million IoT devices, reinforcing its leadership in the region's growing IoT ecosystem. Cradlepoint introduced a zero-trust solution for cellular IoT scenarios, offering enterprises an S700 IoT router that connects light industrial, smart city, and portable devices via cellular and Wi-Fi networks. Finally, NTT and Cisco unveiled an Enterprise IoT-as-a-Service solution, simplifying the deployment and management of IoT infrastructure for businesses across APAC.

The Future of Industrial IoT in APAC

As evident in the aforementioned IIoT implementations, 2023 significantly impacted Asia's manufacturing sector, improving predictive maintenance and real-time production monitoring.

In 2025, AI-powered IoT solutions are continuing to gain traction, enhancing smart factories and autonomous operations. The APAC supply chain is undergoing a tech revolution, incorporating AI, blockchain, and IoT for improved efficiency.

Astute Analytica predicts that by 2032, the APAC IIoT market will experience significant growth, reaching an estimated value of USD 52.7 billion. This represents a substantial increase from the market's 2023 valuation of USD 26.4 billion. The market is set to grow at a compound annual growth rate (CAGR) of 8.0% from 2025 to 2032.

A major factor driving the growth of the IIoT market in APAC is the increased emphasis on automation and digitalization across various industries. As companies seek cost-effective and efficient industrial processes, the demand for IoT solutions that offer real-time monitoring, predictive maintenance, and operational optimization continues to rise. The rapid pace of industrialization in the region, along with the expanding manufacturing sector, is further fueling the need for smart technologies. Additionally, governments are actively pursuing digital transformation in key sectors such as manufacturing, energy, and utilities, contributing to the region's growing IIoT market.

As these industries continue to embrace IIoT, the APAC region is on track to achieve significant operational transformation, contributing to long-term productivity, sustainability, and economic growth. **TR**

Asian Telcos Are at the Forefront of Private 5G Network Adoption

Unlike public 5G networks, private 5G networks provide enterprises with dedicated spectrum, ensuring reliability, security, and operational efficiency.

This is particularly crucial for industries such as manufacturing, logistics, healthcare, and smart cities, where uninterrupted connectivity and data privacy are paramount.

In 2023, the Asia Pacific accounted for 29.1% of the global private 5G network market, solidifying its position as a key player. The region is expected to maintain its lead and dominate global revenue share through 2030.

Asian Private 5G Network Landscape in 2025

According to Grand View Research,

the private 5G network Asia Pacific market is expected to reach USD 12,007.2 million by 2030, growing at a compound annual growth rate (CAGR) of 53.9% from 2025 to 2030. In 2023, the market generated USD 587.6 million in value, with hardware being the largest revenue-generating segment. However, services are projected to be the fastest-growing segment during the forecast period. Country-wise, China is expected to register the highest CAGR from 2025 to 2030.

Adoption is currently concentrated in highly digitalized markets such as Australia, Japan, South Korea, and Singapore, where both public and private sectors are advancing rapidly.

However, other countries, including India and Thailand, are beginning to see growing interest, driven by Industry 4.0 initiatives and increasing ecosystem maturity.

A GSMA Intelligence survey found that 16% of operators in the Asia Pacific expect private networks to contribute over 20% of their enterprise revenues through 2025. Countries in the region are implementing three main private 5G deployment models: standalone enterprise-led, standalone operator-led, and hybrid approaches.

Despite growing demand, operators face competition from network vendors in private 5G deployments. Less than one-third of enterprises in the Asia

Pacific prefer operators as their private network partners, compared to the 55% who favor network vendors. However, operators still see strong demand for private networks, particularly in logistics, media, and healthcare. With over 15% of operators expecting private 5G to generate more than 20% of enterprise revenues in 2025, the sector presents significant growth opportunities, provided operators can position themselves as key enablers in the evolving ecosystem.

Key Drivers of Private 5G Network Adoption

Several factors are fueling the growing interest in 5G private networks:

- **Advanced Use Cases and IoT Integration:** The integration of 5G private networks with the Internet of Things (IoT) is revolutionizing industries. In manufacturing, for instance, autonomous guided vehicles (AGVs) and autonomous mobile robots (AMRs) require low-latency, high-bandwidth connectivity to function efficiently. Similarly, edge video analytics for real-time monitoring and security depends on the high-speed capabilities of 5G private networks.
- **Operational Resilience:** The COVID-19 pandemic highlighted the need for organizations to build operational resilience. With private 5G networks, enterprises can mitigate supply chain disruptions and future-proof their operations by ensuring reliable and secure connectivity for remote monitoring, automation, and predictive maintenance.
- **Enhanced Security Requirements:** Cybersecurity remains a top priority for businesses undergoing digital transformation. Compared to traditional Wi-Fi networks, private 5G networks offer superior security features, such as SIM-based authentication and on-premise user plane functions, reducing exposure to cyber threats.

How Telcos Can Approach Private 5G Network Adoption

To capitalize on the private 5G market, telecom operators must adopt a strategic approach by identifying high-impact industry verticals, such as manufacturing, logistics, and mining; developing tailored deployment models; creating value-driven propositions by offering integrated solutions, such as edge computing and cloud-based platforms; demonstrating return on investment (ROI) through tangible benefits, such as increased productivity, reduced downtime, and enhanced security; and building an ecosystem of partners to expand their service offerings.

Private 5G network development in Asia has gained significant traction in recent years, with major telecom operators and technology providers driving innovation across various industries. In 2020, PCCW Global partnered with RingCentral to establish on-demand private network connections for consumers, marking an early move toward private 5G adoption. By 2021, Chunghwa Telecom and Thai National Telecom collaborated to build a private 5G network, while ZTE introduced its i5GC solution to support private 5G networks for vertical industries.

The momentum continued in 2023 with several high-profile deployments. HKT leveraged private 5G to revolutionize healthcare, enhancing connectivity and efficiency in medical services. Ericsson deployed the first full-scale private 5G network for CJ Logistics, transforming logistics operations through automation and real-time data exchange. In the Philippines, PLDT and Nokia signed an MoU to develop private wireless networks, Globe launched the country's first private 5G standalone (5G SA) network, and Now Corp. partnered with Celona to deliver cutting-edge private 5G solutions.

Looking ahead, private 5G expansion is continuing in the nascent stages of 2025. Echelon Edge and BSNL recently announced a collaboration through which they will deploy private 5G for Coal India Ltd. to enhance mining operations with advanced connectivity and automation.

Challenges and Opportunities

While Asia's telcos are leading the charge, private 5G networks come with challenges. Spectrum allocation remains a critical issue, with some governments still defining regulations for enterprise 5G deployment. In contrast, countries such as China, South Korea, and Malaysia have allocated spectrum for enterprise use, encouraging rapid deployment. Additionally, the high cost of infrastructure and integration with existing enterprise systems may slow down adoption.

However, the opportunities outweigh the hurdles. The increasing adoption of Industry 4.0, the rise of edge computing, and the push for digital transformation are all fueling the demand for private 5G networks. Asian telcos that can offer seamless, cost-effective solutions will have a competitive edge in this rapidly growing market.

According to Kailem Anderson, Vice President of Portfolio and Engineering at Blue Planet (Ciena), private 5G and network slicing present key monetization opportunities for telcos, and the use cases vary by region. He explained that, in Australia, telcos are targeting the mining sector with private 5G networks. In Southeast Asia, private 5G/network slicing is being used to support gaming tournaments. Meanwhile, in manufacturing-driven economies, 5G is being leveraged for industrial automation and robotics.

To support all these use cases and more, automation is a critical pillar. Essentially, each telco has to chart out its strategy based on its footprint, geographic location, as well as vertical market appeal and competency to monetize 5G.

By forging strategic partnerships, investing in cutting-edge infrastructure, and working closely with governments and enterprises, leading telcos in the region are shaping the future of enterprise connectivity. As more industries embrace private 5G, Asia is set to remain a global leader in next-generation network solutions. TR
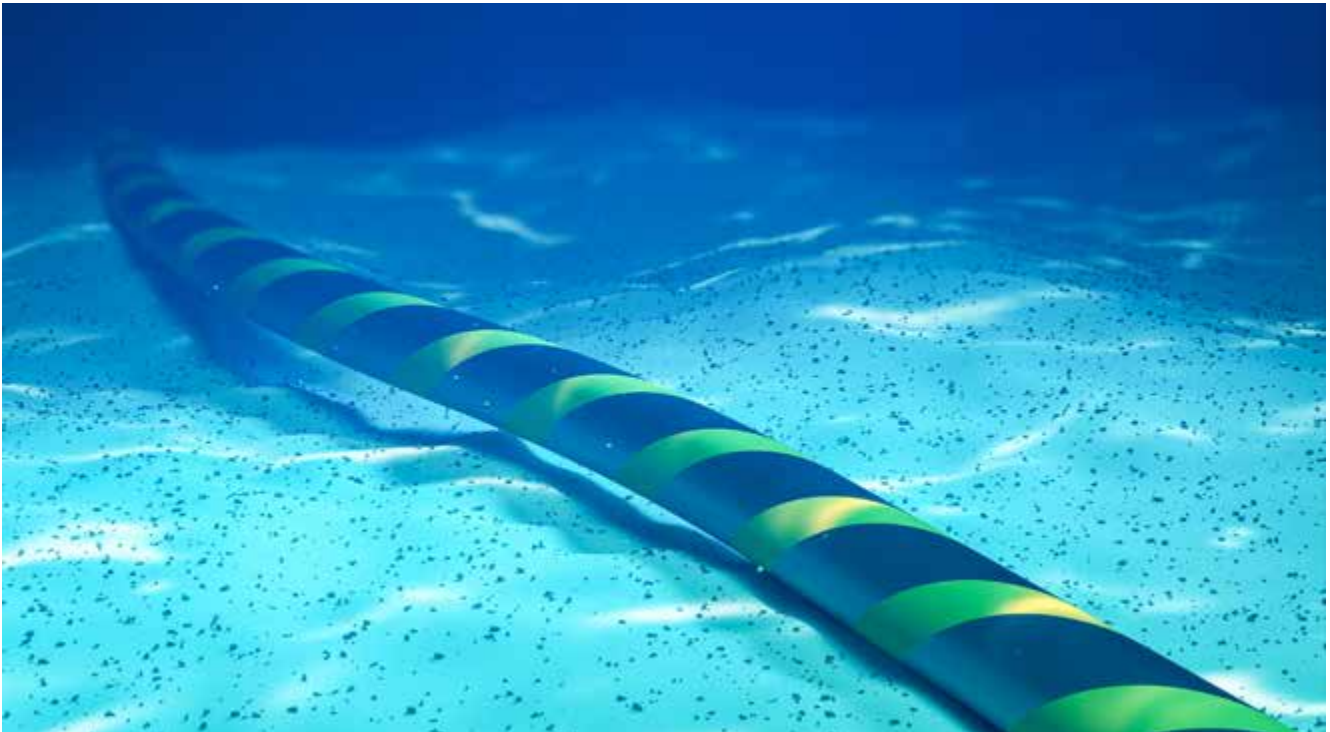
The Asia Direct Cable System and Its Role in Shaping the Region's Digital Future

The Asia Direct Cable (ADC) is set to revolutionize the digital landscape of East and Southeast Asia. Spanning 9,988 kilometers, this submarine cable system connects critical hubs in China, Japan, Singapore, the Philippines, Thailand, and Vietnam. Designed to meet the growing demand for high-capacity bandwidth in the region, the ADC cable promises to significantly boost digital connectivity, providing a foundation for future technological advancements in industries such as artificial intelligence (AI), 5G, and the Internet of Things (IoT).

T he ADC cable system, which officially became operational in November, 2024, is the product of collaboration from several major telecommunications players. The ADC consortium includes nine key investors: National Telecom (a merger of CAT and TOT), China Telecom Global, China Telecom Corporation, China Unicom, PLDT Inc., Singtel, SoftBank Corp., Tata Communications, and Viettel. This consortium has brought together the resources and expertise necessary to create one of the most advanced communication infrastructures in the Asia Pacific.

Core Functionalities and Capacity

At its core, the ADC system can carry over 160 terabits per second (Tbps)

of data traffic, positioning it as one of the highest-capacity submarine cables in Asia. This immense capacity will not only facilitate traditional data traffic but also support the region's rapid digital transformation, which is being driven by emerging technologies like cloud computing and big data.

Koji Ishii, MC Chairperson of the ADC Consortium, highlighted that this cable system will greatly benefit the development of the AI industry in Asia.

Boasting eight fiber pairs, the ADC cable will play a pivotal role in alleviating the pressure on regional networks, ensuring that countries in the Asia Pacific can support increasing data demand while maintaining reliability and speed.

The infrastructure is particularly timely, as Southeast Asia has been experiencing a surge in investment in hyperscale data centers, which are essential for powering AI- and other data-intensive applications. As more businesses and governments in the region embrace digitalization, the ADC cable will be crucial in supporting these efforts. In particular, it will help bridge the growing digital divide and provide more equitable access to the high-speed connectivity required within industries ranging from finance to healthcare.

Billy Li, MC Co-Chairperson of the ADC Consortium, highlighted that the cable offers the necessary capacity and diversity for Asia's major information hubs, allowing telecom carriers and service providers to enhance their networks and service planning to achieve sustainable growth.

Telco Support
China Telecom, the largest investor and the project's lead operator, has assumed a central role in the project's development and ongoing management. With more than 50 submarine cable resources and a network spanning 254 Points of Presence (PoPs) across the globe, China Telecom's involvement brings both expertise and technical strength

to the ADC project. The company has ensured that the ADC cable system employs the latest open cable technology, which will not only increase transmission capacity but also provide better scalability for future growth.

Furthermore, the ADC cable aligns with China Telecom's broader strategy to expand its digital footprint, particularly in the wake of the Belt and Road Initiative. The company plans to continue investing in submarine cables, further strengthening its role as a global leader in telecommunications.

NEC aided in connecting key locations like the Philippines, Hong Kong, and Japan, along the ADC gateway, by delivering high-capacity bandwidth with ultra-low latency.

PLDT Inc., also played a pivotal role in this initiative, ensuring that the Philippines serves as a critical hub in the ADC's expansive network. "The Asia Direct Cable, and five cable landing stations in La Union, Batangas, Baler, Daet, and Davao form the backbone of PLDT Global's core regional network," shared Edith Gomez-Cudiamat, Chief Operating Officer of PLDT Global Corporation, in an exclusive interview with Telecom Review Asia.

This resilient and scalable network meets the high-capacity bandwidth demands of Tier-1 carriers, hyperscalers, and global enterprises.

With these advancements, PLDT Global is not only enhancing connectivity but also accelerating digital innovation across the Asia Pacific.

Uninterrupted Regional Connectivity
While the ADC cable was initially slated for completion by the end of 2022, delays, often attributed to bureaucratic and permitting challenges, pushed the timeline back. However, the official launch in November, 2024, was met with much anticipation, marking the culmination of over four years of planning and construction. The inauguration

ceremony, held in Hanoi, Vietnam, in December, 2024, was a celebration of the collaborative efforts that went into creating this transformative infrastructure.

The ADC cable is expected to serve as a vital tool for enhancing network redundancy and stability across the region. By offering diverse routing options, the cable will provide telecom carriers and service providers with more flexibility in optimizing their networks. This improved reliability will be crucial for businesses, ensuring uninterrupted connectivity in a region that is increasingly dependent on digital services.

As countries in the Asia Pacific continue to embrace the digital future, the ADC cable represents more than just an infrastructure project; it is a key enabler of the region's economic growth, technological progress, and digital inclusion. As the region navigates the complex demands of a rapidly evolving digital landscape, the ADC cable will ensure that Asia remains connected, competitive, and ready to tackle the challenges of tomorrow. **TR**

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This resilient and scalable network meets the high-capacity bandwidth demands of Tier-1 carriers, hyperscalers, and global enterprises

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GenAI Sparks Telco-Hyperscaler Collaboration

The convergence of telcos and hyperscale cloud providers (hyperscalers) has become a focal point, especially since the emergence of generative artificial intelligence (GenAI).

This trend is particularly pronounced in Asia, where both entities are striving to harness GenAI's transformative potential. The dynamics between telcos and hyperscalers oscillate between competition and collaboration, each seeking to leverage their unique strengths to capture emerging opportunities.

Interestingly, a recent report by McKinsey estimates that nearly USD 100 billion in incremental value, and up to USD 180 billion in productivity gains, can be realized by telcos that position themselves at the forefront of this transformation.

The GenAI Matchmaker: Why Are Telcos and Hyperscalers Collaborating?
Traditionally, telcos have been the custodians of extensive network infrastructures, providing connectivity services across vast regions. With the advent of GenAI, telcos are recognizing the imperative need to evolve beyond mere connectivity providers. This evolution involves integrating advanced AI capabilities to offer innovative services, thereby enhancing customer experiences and operational efficiencies. Marcin Kaleta, Vice President and Director of the Telecommunications Division at Comarch, emphasized the reasoning behind this shift, stating:

The transition from traditional telcos to tech companies creates opportunities for service providers to expand into new areas and compete with businesses from different industries.

On the other hand, hyperscalers like Amazon Web Services (AWS), Google Cloud, and Microsoft Azure have established themselves as leaders in cloud computing and AI services. Their expansive infrastructure and expertise in data analytics position them favorably to offer GenAI solutions. In Asia, these hyperscalers are forging strategic partnerships with local telcos to deploy GenAI applications.

Despite the competitive undertone, there is a growing recognition of the mutual benefits that collaboration between telcos and hyperscalers can yield. Telcos bring to the table extensive network coverage and a deep understanding of local

markets, while hyperscalers contribute advanced AI technologies and scalable cloud infrastructures.

By partnering with hyperscalers, telcos can integrate GenAI capabilities into their existing services without the need for substantial in-house development. Conversely, hyperscalers gain access to the telcos' extensive customer bases and localized expertise, facilitating the deployment of their AI solutions in diverse markets.

Elaborating on the consequences of this symbiotic collaboration, Vikram Sinha, President Director and Chief Executive Officer of Indosat Ooredoo Hutchison (Indosat), highlighted, "Indosat is transforming from a traditional telecom provider into an AI-techco, integrating AI into its core strategy and operations to boost innovation and efficiency. By reshaping its business model, Indosat is diversifying its services beyond telecommunications into sectors such as digital finance, e-commerce, and health tech."

GenAI-Driven Telco-Hyperscaler Partnerships

Notably, in September, 2023, KDDI partnered with AWS Japan to accelerate the adoption of GenAI and private 5G for businesses and municipalities, addressing workforce shortages and operational inefficiencies. Through this collaboration, KDDI provided a one-stop solution for GenAI integration, offering customized AI models developed by startups and open-source platforms.

In February, 2024, during MWC Barcelona, CelcomDigi partnered with AWS to integrate GenAI into its operations to enhance customer service, optimize network functions, and develop AI-driven enterprise solutions. The company also developed Bahasa Melayu language models using Amazon Titan and Anthropic Claude to create AI-powered chatbots tailored for Malaysia's diverse population.

Maxis also collaborated with AWS to drive AI-powered enterprise solutions for sectors such as retail, manufacturing, and financial services. This initiative complemented Maxis's existing partnership with Google Cloud, where

it expanded GenAI applications within the cybersecurity, data analytics, and workforce training sectors.

Similarly, SK Telecom collaborated with the AWS Generative AI Innovation Center to fine-tune a telco-specific model using Anthropic Claude and Amazon Bedrock. This initiative significantly benefited industries such as manufacturing, logistics, and transportation, improving automation, computer vision, and cost efficiency.

Meanwhile, Telkomsel expanded its strategic collaboration with Microsoft, integrating Azure AI across its customer and business platforms to enhance digital experiences and network performance. A key outcome of this collaboration was the enhancement of Telkomsel's AI-powered virtual assistant, Veronika, which significantly improved customer self-service interactions from 19% to 45%.

GenAI for Sustainability, Service, and Security

From bolstering network security and improving customer experiences to aligning with sustainable development goals, GenAI is ensuring telco-hyperscaler collaborations are designed for longevity.

During the 18th Telecom Review Leaders' Summit in Dubai, Kenji Takemura, Head of EMEA Transport Center of Excellence (CoE) and Director, Service Provider Solution Department, NEC, underscored GenAI's ability to deliver revolutionary services while aligning with sustainable development goals. NEC's focus on harmonizing AI and sustainability highlights the broader implications of this technology in driving positive change within the telecom sector.

Innovative applications of GenAI extend to network operations as well. KT's AI Meister, a GenAI-driven system, supports next-generation network management by optimizing software within network equipment. Similarly, AIS Thailand and Huawei are leveraging GenAI to propel intelligent wireless innovation forward, demonstrating the technology's potential in enhancing operational efficiency and network performance.

Through advanced GenAI-driven solutions, SoftBank is enhancing service

delivery, streamlining operations, and improving customer satisfaction. Similarly, Netcracker is expanding its collaboration with Microsoft and integrating GenAI into its offerings to simplify processes and drive efficiency in service delivery.

Indosat and Ericsson have taken a significant step by unveiling the world's first full-stack digital monetization platform (DMP) powered by GenAI and ML. This partnership highlights the role of GenAI in reshaping business support systems (BSS).

On the security front, Nokia is utilizing GenAI to simplify complex network operations through natural language prompt engineering. Arvinder Khanna, Pre-Sales Applications and Networks Leader for APAC at Nokia, emphasized:

GenAI helps simplify highly complex networks and operations into more straightforward natural language prompt engineering. This enables macro-level business intent to be translated into service intent, and then into complex network engineering and management actions. This significantly speeds up decision-making, driving time-to-value for all network investments.

GenAI in Asia in 2025: What Telcos and Hyperscaler's Need to Know

According to Cisco's 2024 AI Readiness Index, only 19% of companies in ASEAN are fully prepared to harness AI's capabilities. With the GenAI market in Asia projected to grow by an impressive 41.51% between 2025 and 2030, reaching a market value of USD 83.42 billion, the region is poised to become a global leader in AI adoption.

IDC Asia Pacific's predictions for 2025–2029 reflect a growing emphasis on accountability, as business leaders in the region demand an 80% success rate for GenAI projects. Countries like China are already leading the charge, dominating the global race for GenAI patents and setting the pace for innovation. Meanwhile, Southeast Asia's fertile environment for digital transformation, as highlighted in the 2024 e-Conomy SEA report, is positioning it as a hub for AI development and adoption. **TR**

Vision for AI in Telecom: A Collaborative Approach to Ethical Growth

The United Kingdom, Australia, Canada, Japan, and the United States of America collaborate through the Global Coalition on Telecommunications (GCOT) to advance telecommunications technology innovation, fostering security, growth, and societal benefits across all participating jurisdictions.

Out of 73 economies evaluated by an AI maturity index, only Canada, Mainland China, Singapore, the UK, and the U.S. are recognized as AI pioneers. More than 70% of economies scored below the halfway point in critical categories such as ecosystem participation, skills development, and research and development (R&D) capabilities.

As future networks evolve over the next decade and beyond, AI will play a transformative role, becoming an integral "AI-native" component of telecommunications infrastructure.

Unlike traditional systems that incorporate AI as an add-on, these networks will seamlessly integrate AI and data capabilities into every layer of their operations.

To maximize the benefits of this transformation while addressing potential risks, GCOT partners have established key principles

for the responsible use of AI in telecommunications. These guidelines are designed to help industry leaders, researchers, and AI developers ensure AI technologies are implemented safely, securely, and with trustworthiness at their core.

1. Innovation and Competition
AI systems in telecommunications should drive innovation, enhance competition, and respect intellectual property rights. GCOT partners emphasize investing in infrastructure, data access, skills, and R&D to promote interoperability and support new market entrants. Regulatory measures must remain fair and minimally restrictive.

A key example of this is how the UK is leading AI regulation with a GBP 100 million investment, ensuring ethical and accountable deployment. Similarly, the Latin American Artificial Intelligence Index (ILIA) 2024 highlights Chile, Brazil, and Uruguay as regional AI pioneers, excelling in governance, research, and adoption. Meanwhile, responsible AI (RAI) is poised to transform the Asia Pacific telecom industry, unlocking new revenue opportunities and promoting sustainable growth.

2. Transparency, Explainability and Human Oversight
AI systems in telecommunications must ensure transparency and explainability to build trust and accountability, especially for critical functions. Transparency should cover the entire supply chain, with clear details on AI development, methods, and data sources. Best practices include governance measures, audits, and stakeholder engagement. AI-driven decisions, such as network traffic rerouting, must be understandable and open to challenge, while retaining human oversight for critical decisions.

To advance AI transformation, TM Forum and Amazon Web Services (AWS) have introduced GAMIT, a Generative AI Maturity Interactive Tool. Based on insights from over 200 AI decision-makers globally, GAMIT helps CSPs benchmark their GenAI maturity, identify key use cases, and accelerate scalable production.

3. Privacy
Continuous improvement is key to aligning with evolving privacy regulations. AI systems in telecommunications must prioritize privacy by safeguarding user data and individual rights through privacy-preserving technologies, strong data governance, and ongoing monitoring.

The GSMA has introduced the first industry-wide Responsible AI (RAI) Maturity Roadmap to help telecom operators assess and improve their ethical use of AI. With AI's potential value in telecom reaching up to USD 680 billion, the roadmap provides tools and guidance for telecom organizations to advance AI while adhering to responsible practices and ethical standards.

4. Fairness
AI systems in telecommunications must ensure fairness by minimizing bias and promoting equitable outcomes. This includes implementing governance measures to identify and address biases, engaging stakeholders, conducting audits, using diverse datasets, and maintaining transparency in decision-making.

For example, the European Union's AI Pact, effective sinceAugust 2024, encourages organizations like Nokia to refine processes and comply with evolving regulations, including conducting rights impact assessments. Additionally, the AI Convention, a global treaty signed by multiple countries, represents a significant step toward regulating AI technologies while protecting human rights.

5. Security and Resilience
AI systems in telecommunications must be designed for security and resilience, protecting against cyber threats and ensuring operational stability. These systems should be resistant to attacks like dataset poisoning and backdoor intrusions, and capable of recovering from disruptions.

Resilience involves advanced cybersecurity measures, such as real-time threat detection, automated responses, and regular security audits. It also includes testing AI models before, during, and after deployment, and sharing information about security incidents across networks.

The US AI Safety Institute Consortium (AISIC) brings together a diverse group of stakeholders, including AI creators, users, researchers, and government organizations, to focus on the safe and responsible development of AI technologies.

TELUS, the first Canadian telecom to join this initiative, also signed Canada's voluntary code of conduct for generative AI. This code establishes principles for the responsible development of AI, emphasizing transparency, fairness, and ethical considerations in AI use, serving as a model for others in the industry.

In 2023, Canada introduced the Voluntary Code of Conduct for Advanced Generative AI Systems, providing guidelines for organizations to ensure the ethical management of generative AI. This was followed in 2024 by the launch of the Regional Artificial Intelligence Initiative (RAII), including PrairiesCan and PacifiCan, aimed at enhancing Canada's ability to address AI safety challenges. Additionally, the Canadian Artificial Intelligence Safety Institute (CAISI) was created to further strengthen Canada's capacity to manage AI safety risks and maintain ethical standards in AI development and deployment.

6. Environmental Sustainability
AI systems in telecommunications should actively contribute to environmental sustainability by minimizing their own impact. This includes deploying energy-efficient systems, optimizing data centers, and using low-carbon energy sources where possible. The US-based Artificial Intelligence Competition Center (AICC) is working to establish AI energy efficiency standards, explore AI's role in transforming the energy sector, and create a roadmap for grid modernization to meet future AI energy demands.

Chunghwa Telecom Achieves World's First 5G NR NTN Satellite Video Call

Chunghwa Telecom, in partnership with the Institute for Information Industry of the Industrial Technology Research Institute, has successfully integrated the ST-2 high-orbit satellite with a 5G base station, marking a global first in achieving two-way video calls using the 3GPP 5G NR NTN (new radio for non-terrestrial networks) standard.

This milestone not only aligns with the latest 3GPP Release 19 specifications but also represents a significant step toward seamless satellite-5G network integration.

The collaboration established a 5G NR NTN verification site at Chunghwa Telecom's Yangmingshan Satellite Station, incorporating the ST-2 satellite, a newly developed NR NTN base station, an NR NTN mobile device, and Chunghwa Telecom's satellite transponder.

Leveraging extensive expertise in mobile and satellite communications, the team successfully navigated technical hurdles such as high latency and signal attenuation in the Ku band, operating at a 36,000-kilometer orbit. The tests validated end-to-end satellite video calls and data transmission, underscoring Chunghwa Telecom's leadership in mobile-satellite system integration.

Chung-Yung Chia, President of Network Technology Group, Chunghwa Telecom, said, "With our deep network technology and R&D (research and development) strength, Chunghwa Telecom will continue to promote the layout of satellite technology and industry cooperation. In the future, we will work closely with the government, enterprises, and satellite research institutions to integrate multiple satellite network service resources and jointly promote the upgrade and globalization of Taiwan's satellite industry."

Chunghwa Telecom's involvement in the 3GPP mobile communication standards organization played a crucial role in this breakthrough. As the lead operator for the 3GPP NR NTN Ku band (10.7-14.5GHz) project and a key contributor to satellite communication standardization, the company's efforts have laid a strong foundation for advancing next-generation satellite communication technologies.

HKT Launches Asia's First 800 Gbps2 AI Superhighway WAN Solution

HKT has launched Asia's first 800 Gbps2 wide area network (WAN) solution, the AI Superhighway, based on CE2.0 technology, catering to enterprises in Hong Kong.

The 800 Gbps2 AI Superhighway is a private, fiber-based network offering ultra-fast, low-latency, secure, and reliable connections. It is designed to meet the growing demand for advanced supercomputing capabilities, which is being driven by the advent of artificial intelligence (AI), machine learning (ML), cloud services, edge computing, and other data-intensive applications that require high-performance computing.

This innovative solution facilitates the swift transfer of large data sets

for training large language models (LLM) and supports AI inference applications, including genomics, scientific simulations, and virtual agents in contact centers.

Ricky Kwong, Head of Network Planning and Operations at HKT, and CEO of Fibre Link Global, explained, "As a leading technology solutions enabler, HKT is committed to offering future-proof services for our customers. Our AI Superhighway solution, with specification speed of up to 800 Gbps, facilitates the interconnection of AI and supercomputing clusters between data centers and remote access from R&D (research and development) centers. Particularly, our AI superhighway is designed with optimized fiber routes among Tseung Kwan O, Chai Wan, and Kwai Chung data center regions, delivering low latency connections with 800 Gbps links."

Key benefits of the AI Superhighway include:

- **Robust Protection:** AI requires large datasets for training, which raises privacy concerns. As a private circuit, it ensures robust security for sensitive data transfers.
- **Enhanced Productivity and Efficiency:** The solution offers unmatched speed and efficiency, enabling real-time data processing and faster completion of data-intensive tasks.
- **Scalability:** It facilitates easy bandwidth upgrades and the rapid deployment of new AI services and applications without bandwidth limitations.
- **High Reliability:** It provides superior reliability with robust redundancy and failover mechanisms.
- **Cost Effectiveness:** By consolidating multiple lower-speed connections into a single ultra-speed link, businesses can reduce infrastructure complexity and potentially reduce costs.

SoftBank and Quantinuum Forge Quantum Computing Partnership

SoftBank Corp. and Quantinuum have partnered to develop groundbreaking quantum computing solutions that aim to surpass the limitations of classical artificial intelligence (AI).

By leveraging their respective expertise, the collaboration seeks to push the boundaries of AI capabilities and drive the creation of next-generation technologies.

The initiative aligns with 2025's International Year of Quantum Science and Technology (IYQ), which promises to create new business avenues by integrating AI and quantum computing.

Going Beyond Traditional AI
While AI continues to achieve remarkable advancements, challenges remain in areas like complex optimization, causal analysis, and high-precision simulations. A hybrid approach that combines Central Processing Units (CPUs), Graphics Processing Units (GPUs), and Quantum Processing Units (QPUs) offers the potential to overcome these barriers. This synergy could allow for more sophisticated computations and innovative solutions beyond the scope of traditional AI.

Two Initiatives for Advancement
SoftBank and Quantinuum are collaborating to advance quantum computing through two main initiatives. They will conduct market research and develop business models for a quantum data center that integrates CPUs, GPUs, and QPUs, starting with Japan and expanding globally.

Additionally, they will focus on use cases in quantum chemistry and network analysis, with SoftBank providing real-world business challenges. Together, they aim to optimize hardware resources and explore linking CPUs, GPUs, and QPUs to create more effective quantum computing applications.

True, GalaxySpace Partner to Advance Thailand's Space Telecom Sector

True Corporation (True) has entered the space technology industry by partnering with GalaxySpace, a Chinese company specializing in low Earth orbit (LEO) satellite internet services.

Through this collaboration, both entities aim to improve Thailand's digital telecom infrastructure and enhance the competitiveness of the sector, ultimately driving the country's digital economy forward. True recently signed a Memorandum of Understanding (MoU) with GalaxySpace to work together on joint studies, knowledge exchange, and the development and validation of information and telecom technologies.

Exploring Innovation
The entities will explore LEO satellite broadband communication technology, convergence solutions for space-based and terrestrial networks, and direct-to-cell (D2C) satellite communication technology, as well as hardware development innovation. The partnership will also explore possible satellite use cases and applications in Thailand.

Manat Manavutiveth, True's CEO, explained, "True is committed to upgrading the country's digital telecom infrastructure to improve the quality of life for Thais, enhance our business competitiveness and strengthen Thailand's digital economy. We believe the outcomes derived from joint studies, research, and sharing of experiences and expertise between the two companies will lead to the creation of innovative LEO satellite technology services that will create significant changes and benefits for Thais and the country in the future."

Xu Ming, the Founder, Chairman, and CEO of GalaxySpace, highlighted the strategic partnership with True as a key step in the company's global expansion in satellite internet and LEO satellite technology advancement. GalaxySpace has already made significant progress in this field, including the successful testing of China's first LEO satellite broadband communication test constellation.

Ming noted that Thailand's dynamic business environment and market potential make it a priority market for GalaxySpace in Southeast Asia. The collaboration with True will accelerate the research and validation of D2C (direct-to-consumer) satellite technology and promote innovative applications of LEO satellite internet in various sectors such as maritime, agriculture, education, and connected vehicles in Thailand and the region, driving industry advancements.

Overall, the partnership between True and GalaxySpace reflects the rapid growth and potential of the commercial space industry, showcasing the transformative impact of innovation and market-driven applications on the global economy.

Rakuten Mobile Introduces AI Service to Boost Productivity

Rakuten Mobile, Inc. has introduced the Rakuten AI for Business generative AI service to assist corporate clients with various business activities.

This AI service has advanced language comprehension and task processing abilities, allowing it to quickly provide appropriate responses to user requests. It supports tasks like document creation, translation, brainstorming, analysis, and research through a chat interface.

Regional Specifity
The Rakuten AI for Business service is specifically tailored to Japanese culture, regulations, and business practices, drawing on the experience and expertise of the Rakuten Group in sales, operations, and marketing to benefit businesses. Customers can easily access the service through their web browser without any setup requirements, making it a convenient and cost-effective option.

The monthly rate for the service is JPY 1,100 per license, and new customers can enjoy a free one-month trial to explore its benefits for their business operations. This service offers a range of useful business tools in a secure environment, ensuring that user input is not utilized for AI model training without consent.

Companies can also manage the registration of confidential information to prevent sensitive data from being shared with the AI model. Additionally, the service includes customizable prompt templates, a function that connects to internal documents for up-to-date information, and a dashboard to track employee usage.

AI Expertise
Rakuten Mobile will leverage its expertise in AI implementation from the Rakuten Group to provide successful AI use cases and personalized online training for customers. Optional consulting services are also available to support customer success post-deployment.

The company is committed to enhancing the service based on customer feedback to improve usability and performance. Moving forward, Rakuten Mobile will continue to utilize data and AI technology from the Rakuten Group to deliver value to clients in various business scenarios.

PLDT Global, stc Group Extend Partnership for Premium Voice Services

PLDT Global Corporation (PLDT Global), the international business unit of the PLDT Group, has announced the expansion of its exclusive partnership with stc Group for a second year. This strategic collaboration strengthens both companies' commitment to providing high-quality international voice services to Filipinos worldwide, ensuring seamless and reliable communication.

The extended partnership allows PLDT Global to utilize stc Group's advanced technological capabilities, such as AI-powered routing optimization, fraud prevention systems, and robust network security. Together, the companies guarantee premium voice quality, minimal disruptions, and optimized international long-distance (ILD) traffic for users across Asia, the Middle East, Europe, and Africa.

Borderless Connection
Albert V. Villa-Real, President and CEO of PLDT Global Corporation, highlighted the impact of the extended partnership, stating, "Our partnership with stc Group demonstrates PLDT Global's mission to connect people, families, and businesses regardless of their location. By combining stc's technical expertise with our customer-first approach, we ensure that our customers receive top-notch international voice services that bring them closer to what matters most."

Eng. Mohammed Abdullah Alabbadi, Group Chief Carrier & Wholesale Officer at stc Group, emphasized, "stc Group is proud to expand our partnership with PLDT Global, a company that shares our passion for providing exceptional connectivity services. Together, we are dedicated to meeting the increasing demand for reliable communication through cutting-edge solutions and a strong focus on customer needs."

This collaboration reaffirms both companies' shared commitment to the United Nations (UN) Sustainable Development Goals (SDGs), particularly SDG 9: Industry, Innovation, and Infrastructure. By bridging the digital divide and promoting access to technology, PLDT Global and stc Group are contributing to societal progress and enhancing the quality of life for communities in the Philippines and beyond.

As PLDT Global continues to grow its global presence, partnerships with leading digital innovators like stc Group underscore its dedication to empowering communities and delivering transformative communication solutions.

Maxis Partners with Nokia to Modernize Data Center Infrastructure

Nokia is set to upgrade the data center infrastructure of Maxis, Malaysia's leading integrated telecommunications provider, by integrating its data center switches and Event-Driven Automation (EDA) platform to improve connectivity and scalability.

The deployment will support Maxis's business growth by providing a scalable, secure, and efficient data center architecture.

Modernizing Network Operations

The modernization of Maxis's data center connectivity technology will help the company simplify its network operations, solve issues faster, and automate workloads,

all on a robust and secure infrastructure.

Nokia will deploy its cutting-edge 7220 Interconnect Router (IXR) data center switches and EDA technology across Maxis's multiple data centers. This upgrade will enable Maxis to provision infrastructure resources without delay, will reduce complexity, and will ensure that Maxis's current applications running on the network can scale gracefully.

"This expansion of our longstanding collaboration with Nokia will drive next-generation connectivity in anticipation of customers' growing needs. It reflects Malaysia's emergence as a hub for data centers and hyperscalers, in line with greater adoption of AI-enabled cloud infrastructure. This initiative will enhance our network capabilities, ensuring we are able to continue providing best-in-class, connectivity-adjacent solutions powered by fast, secure, and reliable connectivity," said Goh Seow Eng, Chief Executive Officer at Maxis.

Balancing Data Center Network Deployments

Nokia is helping cloud builders worldwide to construct modern data center networks that are highly reliable, secure, and easy to operate, which is essential to meet the growing demands of artificial intelligence (AI) workloads globally. Nokia's EDA ensures faster response times, reduces manual effort, minimizes errors, consumes less compute resources, and handles network-wide operations at-scale with consistent performance. By proactively resolving issues, it boosts reliability and reduces operational costs.

The Nokia 7220 IXR, a key component of Nokia's Data Center Fabric solution, provides fixed-configuration, high-capacity platforms that offers unmatched scale, flexibility, and operational simplicity within data center and cloud environments. These scalable, next-generation platforms are designed to meet the high connectivity and density demands of webscale companies, service providers, and enterprises.

Telkomsel, Tencent Cloud Expand AI and Cloud Collaboration

Telkomsel is partnering with Tencent Cloud to develop artificial intelligence (AI) and cloud-based solutions to improve customer experience and operational efficiency. The collaboration will integrate AI-generated content (AIGC), AI translation, and electronic know-your-customer (eKYC) technologies such as palm verification, alongside cloud cost optimization initiatives.

Wong Soon Nam, Director of Planning and Transformation of Telkomsel, said, "The partnership demonstrates Telkomsel's commitment to optimizing our business operations and enhancing

customer experiences through innovative digital solutions. It also aligns with our vision to accelerate Indonesia's digital transformation and improve its technology sector."

The partnership focuses on three key areas:
1. eKYC Solution Development
Telkomsel and Tencent Cloud now provide palm verification technology for the business-to-business (B2B) segment, improving the security and reliability of digital identification systems.

2. AIGC and AI Translation Development
Both companies are developing AIGC, AI translation, and other AI-based capabilities for the B2B and business-to-consumer (B2C) segments.

3. Cloud Cost Optimization
Tencent Cloud will help Telkomsel

optimize its cloud costs by supporting both public and hybrid cloud solutions in collaboration with the company. Through this partnership, Telkomsel will improve its operational efficiency and digital infrastructure scalability, providing faster, more stable, and cost-effective services.

This collaboration builds on previous joint efforts, including a successful pilot of palm verification technology at Telkomsel's GraPARI outlets in 2024. The latest initiative will extend these capabilities to enterprise clients, further strengthening Telkomsel's digital business solutions.

Poshu Yeung, Senior Vice President of Tencent Cloud International, emphasized that the partnership aims to drive the adoption of more efficient and secure digital solutions, supporting digital transformation across various applications.

Leveraging Light-Based Networks to Decentralize Data Centers in Japan

Japan is turning its attention to light-based communication technologies to expand data centers beyond crowded urban hubs. The government plans to offer financial support to develop optical technology, a fast and energy-efficient solution that promises to revolutionize data transmission.

With discussions underway between the Ministry of Internal Affairs and Communications and the Ministry of Economy, Trade, and Industry, the initiative could see subsidies and aid packages in place as early as 2025, according to reports.

Photonic-Electronic Convergence

Japan's decentralized data center initiative is rooted in the convergence of photonics and electronics, which enables data to be processed and transmitted as light instead of relying on conventional electrical signals. The appeal of this technology lies in its ability to carry vast amounts of data with minimal power consumption, offering a sustainable alternative to traditional electronics.

The rise of technologies such as generative artificial intelligence (GenAI) and autonomous vehicles (AVs) has highlighted the increasing need for rapid, high-capacity communication networks. These technologies generate massive amounts of data that require a robust, high-speed infrastructure.

In response, Japan is looking to harness the potential of light-based

communication systems to meet the surging demand as one of the key advantages of light-based networks is their speed and efficiency.

Telecommunications giant, Nippon Telegraph and Telephone (NTT), is at the forefront of this transformation with its Innovative Optical and Wireless Network (IOWN). This ambitious initiative, expected to be fully operational by 2030, aims to reduce latency to 1/200th of its current level and cut energy consumption by 99%. Such capabilities could transform the way data is processed and transmitted, making it more feasible to decentralize data storage and processing outside of Japan's highly congested urban areas.

Additionally, last year, Nokia and OPTAGE successfully trialed symmetrical 25G PON technology for the first time in Japan, a milestone that sets the stage for the ultra-high-speed, low-latency data transmission required for decentralized data centers. Meanwhile, at the end of last year, NEC completed the Asia Direct Cable (ADC), a submarine cable boasting multiple pairs of high-capacity optical fibers capable of handling over 160 Tbps of traffic. Owned by the ADC Consortium, this infrastructure significantly enhances regional connectivity and supports the bandwidth demands of modern data centers. These advancements collectively pave the way for Japan's transition to cutting-edge, decentralized data ecosystems powered by light-based networks.

Why Decentralize Data Centers?

Japan's data center market is experiencing rapid growth, with its forecast value expected to climb from USD 23 billion in 2021 to USD 30 billion by 2026, driven by a CAGR of 6.5%. This expansion is largely being fueled by the increasing demand for public cloud services, making decentralization a strategic necessity to support this surge.

The decentralization of data centers is a central element of the Japanese government's resiliency plan. Urban

areas in Japan, particularly cities like Tokyo and Osaka, face significant space constraints, limiting the development of new data hubs. By encouraging the construction of data centers in less populated regions, Japan hopes to reduce pressure on urban infrastructure and spread the benefits of technological development more evenly across the country.

Moreover, decentralizing data centers enhances natural disaster resiliency. Japan is prone to earthquakes, tsunamis, and other natural calamities that can severely disrupt concentrated data hubs. Distributing data centers across the country can mitigate the risk of system failures due to regional disasters, ensuring that critical data remains accessible even in times of crisis.

Decentralizing data centers in Japan offers additional advantages, including improved scalability, enhanced security, and greater energy efficiency. Supporting the shift to decentralized data centers, NTT Global Data Centers Japan (NTT GDCJ) and TEPCO Power Grid are working together to establish advanced data centers that combine cutting-edge infrastructure with sustainable power solutions. Singtel and Hitachi have also partnered to develop next-generation data centers.

Supporting the sustainability vertical, Rakuten, in collaboration with Ampere, is implementing Ampere-based platforms within its data centers, serving as a use case that accurately depicts the potential of Japan's data center decentralization efforts. Trials since 2023 have already achieved a 36% reduction in energy consumption, showcasing the environmental benefits of decentralized infrastructure.

On the technical side, in 2024, NTT Communications' Osaka 7 Data Center earned NVIDIA DGX-Ready certification, emphasizing the broader data center sector's readiness for, and the potential of, AI-intensive, optical-supported workloads.

Hokkaido: The Ideal Location

A key focal area of the government's data center decentralization initiative

is Hokkaido, Japan's northernmost island. Known for its abundant renewable energy sources, Hokkaido presents a promising location for energy-intensive data centers. The region's commitment to sustainability is reflected in recent data from Hokkaido Electric Power Network, which showed that renewable energy accounted for 41% of the region's total electricity generation last year, far exceeding Japan's national average. Hydropower, solar energy, wind, and biomass all play a significant role in the region's energy mix, making it a prime candidate for powering data centers in an environmentally friendly manner.

The region's 'Hokkaido Valley' initiative, spanning areas such as Ishikari and Tomakomai, aims to attract renewable energy firms to support the growth of data centers and other high-tech industries, including the burgeoning semiconductor sector. This aligns with Japan's vision to achieve 36−38% renewable energy by 2030. Furthermore, a reference target of 50−60% by 2050 has been set out by the Organization for Cross-Regional Coordination of Transmission Operators (OCCTO).

Developing at the "Speed of Light"

The Japanese government's support for light-based communication technologies and the development of decentralized data centers is a forward-thinking strategy that aims to future-proof the country's technological infrastructure. As global demand for data services soars at a compound annual growth rate (CAGR) of 20% through 2030, Japan is positioning itself to lead the way in high-speed, energy-efficient solutions.

By leveraging its strengths in optical technology and renewable energy, Japan aims to build a more resilient, sustainable, and equitable data infrastructure. The expansion of data centers across the country will not only meet the needs of emerging technologies but also ensure that Japan remains at the forefront of global digital innovation in the years to come. TR

Edge Computing Fuels Innovation Across Asia's Key Industries

As 2025 commences, the world of enterprise computing is poised for a major transformation, especially in the Asia Pacific.

Edge computing is no longer a futuristic concept but rather critical infrastructure that many businesses are now integrating into their operations. It enables real-time data processing at the source, reducing latency and bandwidth usage, and supporting the increasing demand for instant decision-making in industries ranging from manufacturing to healthcare.

Edge computing in the Asia Pacific is being driven by rapid digitalization, the rise of IoT, and the demand for low-latency applications in sectors such as telecommunications, manufacturing, and healthcare. The edge computing market in Asia is expected to grow

at a CAGR of 46.1% from 2023 to 2030, driven by both the demand for faster computing and the need for localized data processing. The region's expanding infrastructure, including smart cities, 5G networks, and AI, is also helping to create a more favorable environment for edge solutions.

The Key Drivers of Edge Computing in Asia

Several factors are propelling the growth of edge computing in Asia, making it an essential part of the enterprise computing ecosystem for the upcoming years. First and foremost, the shift towards Industry 4.0 is a powerful catalyst.

The increasing penetration of 5G networks is another significant driver of edge computing adoption. The high speeds and low latency offered by 5G are expected to provide the necessary backbone for edge computing infrastructure, allowing businesses to process vast amounts of data with minimal delay.

Moreover, businesses are increasingly pursuing edge computing to enhance security and reduce data privacy risks. By processing data at the edge rather than sending it to centralized data centers, companies can mitigate the risk of cyberattacks, which is a growing concern in today's digital-first world.

The Growing Edge Computing Ecosystem in Asia

The edge-computing ecosystem in Asia is evolving rapidly, with countries such as Japan, South Korea, China, and Singapore leading the charge in adoption. These countries are at the forefront of integrating edge solutions into their digital infrastructures, driving innovations in smart cities, autonomous vehicles (AVs), and industrial automation. For example, Japan has been actively investing in edge computing technologies to support its manufacturing sector, leveraging real-time data processing for more efficient production lines and supply chains. According to IDC, the country's edge computing expenditure is projected to reach USD

12 billion (JPY 1.6 trillion) in 2024, marking a 12.3% increase over 2023.

Singapore's Smart Nation initiative exemplifies the potential of edge computing in urban environments through projects like Virtual Singapore, a 3D digital twin enabling real-time urban planning; the Smart Nation Sensor Platform, which uses IoT sensors for real-time data processing to optimize traffic, environmental monitoring, and public safety; and the region's first 5G mobile edge computing platform for holomedicine, advancing healthcare with real-time, high-fidelity diagnostics.

China's massive investment in edge computing—a nation-wide project worth over CNY 43.5 billion (USD 6.12 billion)—is closely tied to its broader technological ambitions. With 5G rollout plans in full swing, edge computing is expected to play a crucial role in supporting the infrastructure needed to handle the country's burgeoning data requirements.

What to Expect in 2025 and Beyond

In 2025 and beyond, several key trends are set to shape the future of edge computing in Asia, offering exciting new opportunities for businesses to adopt, scale, and innovate with edge technologies. One significant trend is the integration of AI and machine learning (ML) with edge computing, enabling enterprises to deploy smarter, and more responsive systems by processing and analyzing data at the edge. This will facilitate the introduction of applications such as predictive maintenance and automated production processes in industries like manufacturing.

Additionally, the hybrid cloud model, which combines both on-premises and cloud-based computing, will continue to gain traction, enabling businesses to balance centralized cloud computing benefits with the low-latency advantages of edge computing, thereby enhancing scalability and real-time performance. Lenovo is driving advancements

with its sophisticated hybrid cloud platforms and services, enabling businesses to unlock AI's potential while maintaining flexibility. Similarly, Telekom Malaysia and ZTE's development of a hybrid, cloud-based 5G core network underscores the region's commitment to integrating cutting-edge cloud technologies with next-generation connectivity.

Sustainability will drive further adoption as businesses seek energy-efficient alternatives to traditional data centers, reducing the need for long-distance data transmission and minimizing energy consumption and carbon footprints, particularly in energy-intensive industries such as manufacturing.

Lastly, the rise of Edge-as-a-Service (EaaS) will democratize access to edge computing solutions, allowing businesses to leverage these technologies without heavy upfront infrastructure investments, thus, fostering innovation across various sectors. TR

The country's edge computing expenditure is projected to reach USD 12 billion (JPY 1.6 trillion) in 2024, marking a 12.3% increase over 2023
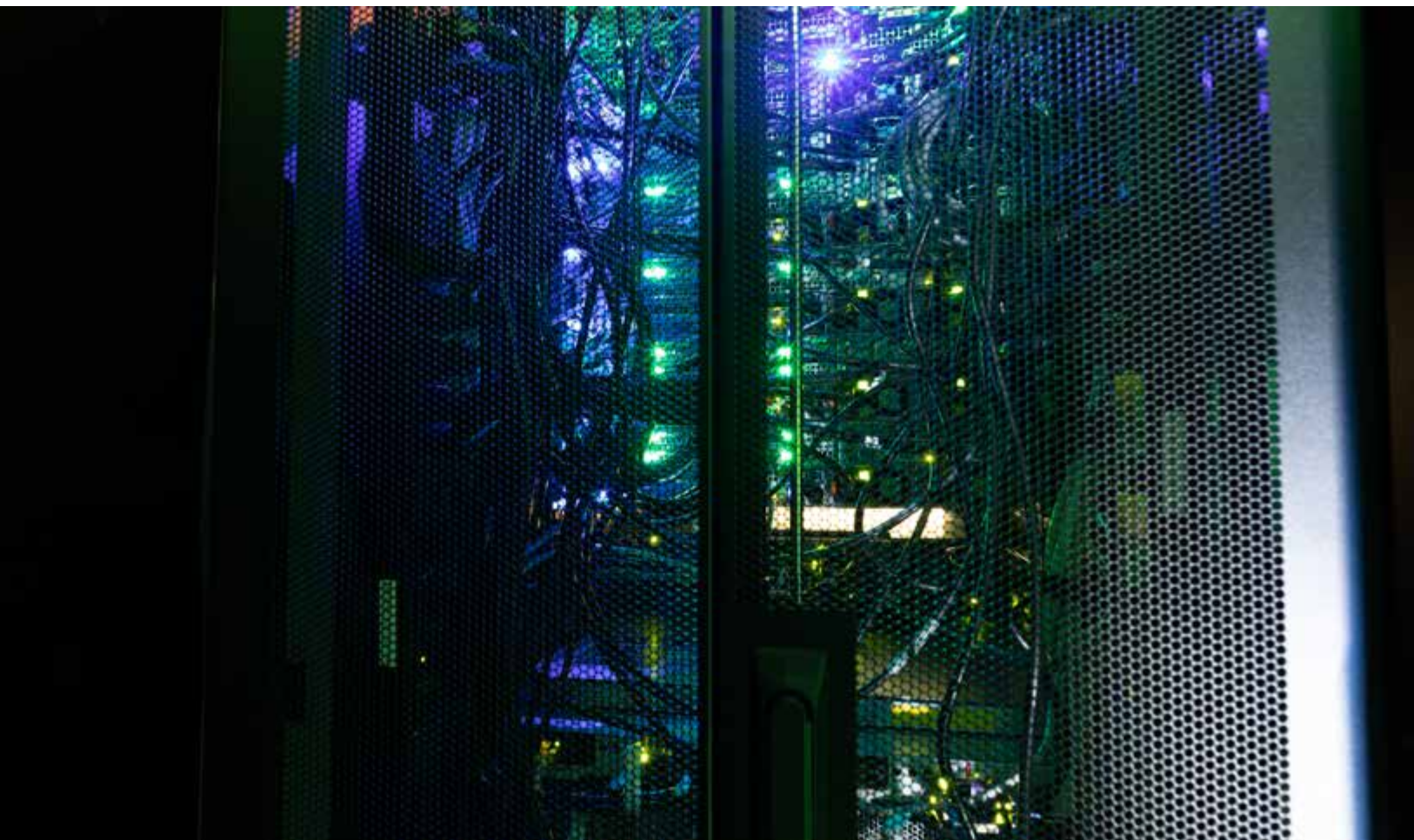
DoT's Key Strides in Shaping India's Telecom Future

In 2024, the Department of Telecommunications (DoT) continues to lead the transformation of India's telecom sector, making substantial strides in infrastructure development, policy reforms, and the expansion of high-speed internet services.

Through a series of initiatives, India is increasingly emerging as a global leader in telecom by introducing 5G, policy reforms, and digital inclusivity.

The DoT's efforts have not only bolstered the country's telecom infrastructure but also created opportunities for economic growth and social empowerment.

The Path to Telecom Modernity
A landmark moment in

India's telecom history came following the introduction of the Telecommunications Act, 2023—a modern and efficient regulatory framework which replaced the century-old Indian Telegraph Act of 1885 and the Indian Wireless Telegraph Act of 1933. The new law

lays the foundation for simplified authorization processes, better spectrum management, and enhanced national security. With the enforcement of 43 out of 62 sections underway, this act is already proving to be a game-changer for the sector, offering clearer guidelines for telecom operators and fostering a conducive environment for rapid technological advancements.

The DoT's commitment to modernization is evident in its push to make India a global hub for advanced telecom technologies. Through initiatives like the Telecom Technology Development Fund (TTDF), the department is facilitating the development of 5G and 6G technologies, ensuring that India remains at the forefront of global telecom innovations.

India's telecom landscape has witnessed one of the world's fastest 5G rollouts. As of October, 2024, more than 4.6 lakh 5G base transceiver stations (BTS) have been installed, covering over 99% of the country's districts. The rapid deployment of 5G has significantly boosted internet speeds and connectivity, setting the stage for a host of next-generation applications such as smart cities, autonomous vehicles, and IoT innovations.

The government's strategic move to auction sufficient spectrum for mobile services, along with reforms to ease spectrum sharing, trading, and surrender, have been crucial in accelerating 5G deployment. These efforts have not only ensured the timely rollout of 5G across the country but also laid a foundation adept at future-proofing India's telecom infrastructure.

Expanding Digital Inclusivity

One of the cornerstones of the DoT's strategy is fostering digital inclusivity, and significant progress has been made in this area. The internet subscriber base in India surged to 96.96 crore as of June, 2024—a remarkable 285% growth from just 25.15 crore in 2014. Additionally, broadband connections have skyrocketed, growing by over 1452% from 6.1 crore in 2014 to nearly 95 crore in 2024. This vast expansion of connectivity has created immense opportunities for economic and social empowerment, particularly in rural and underserved areas.

A key initiative in this regard is the 4G Saturation Project, which aims to provide 4G coverage to every village in the country. Currently, over 2.14 lakh Gram Panchayats have been connected, and 6.9 lakh kilometers of optical fiber cable (OFC) have been laid to extend high-speed internet access to even the remotest parts of India.

Moreover, in July, the Minister of Communications and Development of North Eastern Region, Jyotiraditya Scindia, convened a meeting with the Stakeholder Advisory Committee (SAC) for telecom service providers, where he met with Sunil Bharti Mittal, Founder and Chairperson of Bharti Enterprises; Akash Ambani, Chairperson of Reliance Jio; Gopal Vittal, CEO of Airtel; and Akshaya Moondra, CEO of Vodafone Idea, to discuss the status of 5G deployment and strategies for improving service delivery. Additionally, the DoT is exploring innovative solutions such as balloon and drone deployments to ensure seamless 5G connectivity during emergencies, along with geo-tagging telecom infrastructure to improve network planning and access.

A Safe and Secure Telecom Ecosystem

As cybercrimes increasingly exploit telecom resources, the DoT has taken proactive measures to safeguard users and prevent misuse of telecom services. The launch of the Sanchar Saathi portal has proven instrumental in empowering citizens to report fraud, unsolicited communication, and even stolen mobile devices. With nearly 9 crore visits and over 3 lakh daily visitors, the portal serves as a critical tool for consumers seeking to protect themselves from telecom-related scams.

The DoT has also introduced the Digital Intelligence Platform (DIP), a secure online platform for sharing information on telecom-related cybercrimes among telecom service providers, law enforcement agencies, and financial institutions. The DIP's collaborative approach has led to the disconnection of over 2.67 crore fraudulent mobile connections and the blacklisting of nearly 71,000 SIM agents.

Additionally, the DoT's efforts to combat spoofed international calls have significantly reduced telecom fraud. By December, 2024, over 90% of incoming international spoofed calls were successfully blocked, safeguarding Indian subscribers from fraudsters exploiting Indian phone numbers to carry out scams.

Furthermore, recent initiatives include implementing USSD call-forwarding suspensions to combat fraud and rolling out new rules for phone interception to safeguard citizens' privacy. The DoT is also encouraging the pursuit of R&D projects to advance quantum communications, further reinforcing India's commitment to a secure telecom future.

Policy and Regulation

The DoT has taken a progressive stance on policy and regulation by rejecting telcos' requests to regulate OTT services, such as WhatsApp and Telegram. However, these platforms might still face regulation under other legal frameworks. Furthermore, the establishment of a working committee to promote telecom exports reflects the department's focus on elevating India's position in global telecom markets. These measures align with the government's vision of creating a robust and forward-thinking regulatory framework.

With the rollout of 5G, the forthcoming launch of 6G projects, and continued policy reforms, the Department of Telecommunications is not only transforming the telecom sector but also contributing to India's digital future; one that is connected, secure, and inclusive for all. **TR**

— 2025 —

Artificial Intelligence: Asia's Engine for Growth

Telecom Review Asia will be hosting a webinar titled 'Artificial Intelligence: Asia's Engine for Growth.' This event will bring together industry experts to examine the forces driving AI adoption in the telecom sector and its long-term impact.

https://us06web.zoom.us/webinar/register/WN_eT6yEzQbT8CleixmQ0Owlg#/registration

Place: Virtual

26 MARCH

Asia Tech x Singapore

Asia Tech x Singapore (ATxSG), organized by IMDA and Informa Tech with support from the Singapore Tourism Board, is an Asia tech event featuring two main segments: ATxSummit and ATxEnterprise.

Place: Singapore Expo, Singapore

27 – 29 MAY

MWC Shanghai

An international event connecting global operators, vendors, and the Chinese connectivity ecosystem, fostering collaboration and business growth.

Place: SNIEC, Shanghai, China

18 – 20 JUNE

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