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PLDT Global Expands Horizons with Enhanced Connectivity and Digital Innovations

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Chief Operating Officer
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Asian Telecom Leaders Unveil the Transformative Impact of 5G-Advanced

AALTO Zephyr Set to Revolutionize Global Connectivity

Managing Network Complexity in Asia-Pacific Telecoms

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Chief Operating Officer
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PLDT Global Expands Horizons with Enhanced Connectivity and Digital Innovations

In an exclusive interview with Telecom Review Asia Pacific, Edith Gomez-Cudiamat, Chief Operating Officer of PLDT Global Corporation, shared insights into the company's strategic initiatives. Focusing on key segments and partnerships, PLDT Global aims to bolster global connectivity, enhance digital offerings, and strengthen relationships with carriers, hyperscalers, and overseas Filipinos.

What will be the primary business focus of PLDT Global in the upcoming year?

As we play a vital role in the PLDT group's international strategy, PLDT Global aims to expand its global connectivity, focusing on key segments like enterprises, content aggregators, hyperscalers, and carriers while enhancing international consumer services for overseas Filipinos. With a strong regional presence in Hong Kong, China, Singapore, Malaysia, the U.S., Japan, and the UK, we deliver customized solutions and directly manage customer relationships.

Aligned with PLDT's broader goal to serve Filipinos globally, our international consumer program targets Filipinos living overseas with relevant digital products and services. Our robust digital distribution platform

enhances these efforts, supported by strategic partnerships that cater to the evolving needs of our customers and partners.

Strengthening our relationships with carrier partners is crucial to support the PLDT group's international voice, roaming, messaging, and data connectivity services. We will continuously pursue transformative partnerships with key players and adopt new technologies and practices, ensuring seamless integration and deliver innovative solutions.

Can you elaborate on the recent technological advancements and infrastructure developments implemented by PLDT Global?

Our parent company, PLDT, operates the Philippines' most extensive fiber infrastructure, with robust international network capacity spanning more than 1.1 million cable kilometers as of the end of March 2024, including 900,000 kilometers of domestic cable and 200,000 kilometers of international cable. This robust network allows PLDT Global to support transformative journeys for clients. PLDT Global is expanding and enhancing its regional points-of-presence (PoPs) with diverse routes and regional resilience. PLDT Global manages and supports PLDT's 15 subsea cable

systems, maintaining high-speed, reliable internet access, reinforcing the Philippines' position in the international digital landscape. PLDT Global is investing in platforms and capabilities to ensure that far-end network infrastructure is kept at the highest availability rate to support customer demands in the Philippines and internationally.

PLDT Global has also adopted full cloud operations for its in-house built digital distribution platform— VORTEX. This robust platform now houses more than 200 consumer SKUs, over a dozen payment gateways and fulfillment partners supporting the global B2B2C program. Through this platform, regional ecommerce operators requiring Philippine digital products are connected seamlessly and securely.

Participating in the digital trade, we have also launched our own marketplace called TINBO which aims to directly serve global Filipinos' fintech and commerce needs. TINBO now enables global consumers from over 30 countries to pay bills, purchase e-gifts, and use electronic loading services. Additionally, TINBO offers digital mobile identity to Filipinos overseas through the Smart Virtual Number.

> PLDT Global manages and supports PLDT's 15 subsea cable systems , maintaining high-speed, reliable internet access, reinforcing the Philippines' position in the international digital landscape

> The unveiling of our Guam Point-of-Presence (PoP) this year highlights our proactive approach and commitment to innovation as we anticipate the growing demand for alternate routes between the Asia Pacific and North America

PLDT Global boasts an impressive network infrastructure, fiber optic cables, and international submarine cable networks, including connectivity to data centers. How does the company ensure that these infrastructures remain adaptable to the evolving demands of customers across diverse geographical locations?
PLDT's extensive network infrastructure of 15 submarine cables including Jupiter, AAG, ASE, and APCN2, upcoming projects like Apricot and 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. This resilient and scalable network meets the high-capacity bandwidth demands of Tier-1 carriers, hyperscalers and global enterprises.

PLDT Global invests in regional network expansion and modernization and partners with service providers and data center operators to deliver end-to-end connectivity solutions, extending our reach into key markets across Australia, Taiwan, South Korea, Indonesia, Vietnam, and Europe. These initiatives expand our global footprint, offering superior connectivity options.

The unveiling of our Guam Point-of-Presence (PoP) this year highlights our proactive approach and commitment to innovation as we anticipate the growing demand for alternate routes between the Asia Pacific and North America.

By futureproofing our network infrastructure, PLDT Global is committed to advancing network capabilities to address the evolving demands of our customers.

As a market leader, what strategies do you employ to leverage the Philippines' potential as a digital hub in Asia? How does this contribute to your vision of transforming the country into a hyperscale hub?
According to S&P Global Market Intelligence, the Philippines' significant investments in high-capacity networks and data center facilities position it as a promising hyperscale hub. With growing demand for cloud

services, the country's strategic location and skilled IT professionals attract multinational companies seeking reliable digital infrastructure. This status enhances the digital economy, improving connectivity and technological solutions across Southeast Asia.

Over the last decade, PLDT has invested heavily in expanding and enhancing its network infrastructure, supporting the Philippines' role as a key hyperscale investment hub.PLDT Global, in collaboration with ePLDT, the ICT subsidiary of PLDT Group, and its data center arm, VITRO Inc, leads market development efforts to attract key locators to the Philippines' largest and first true hyperscale data center in Santa Rosa, Laguna.

VITRO Inc. operates the largest network of data centers in the Philippines, including the forthcoming VITRO Sta. Rosa, set to double its capacity to 99.5 megawatts. This initiative is crucial to transforming the Philippines into a hyperscale hub.

By leveraging cutting-edge technology and world-class facilities, PLDT Global drives forward-looking projects, strengthening our industry leadership and positioning the Philippines as a premier destination for digital innovation and investment.

Could you elaborate on any ongoing collaborations and partnerships that have significantly contributed to PLDT Global's service quality and long-term objectives?
PLDT Global has forged strategic partnerships with industry leaders like Equinix, AWS, and Google Cloud, enhancing our service portfolio with cloud services, connectivity, and data center solutions. These collaborations ensure access to the best technology and infrastructure for our clients.

For international voice services, we have teamed up with top carriers to deliver reliable, clear, and cost-effective voice solutions worldwide. One notable collaboration is our collaboration with Saudi-based, stc Group. The PLDT Global—stc partnership focuses on delivering secure and high-quality international voice service experience to Filipinos living overseas, as well as enterprise customers.

> Over the last decade, PLDT has invested heavily in expanding and enhancing its network infrastructure, supporting the Philippines' role as a key hyperscale investment hub

Another noteworthy collaboration is our partnership with GTA, the leading telecommunications and digital infrastructure provider in Guam. GTA's GNC iX Data Center has been selected for PLDT Global's Guam PoP, enabling us to provide a resilient route from the Philippines and Asia Pacific to the US.

This not only benefits PLDT Global but also contributes to the growth of Guam's data center industry, positioning the island as a hub for resilient, high-capacity connectivity. With GTA's GNC Data Center as a key point of presence, Guam solidifies its position in the Asia Pacific region as an essential hub in global telecommunications, furthering PLDT Global's commitment to growth, innovation, and the advancement of global connectivity.

PLDT Global also actively collaborates with the Department of Migrant Workers (DMW) to launch initiatives that directly benefit overseas Filipino workers (OFWs). Our partnership aims to enhance the welfare and connectivity of Filipinos abroad, allowing them to access essential services seamlessly. One of the key features of this partnership is the integration of our communication services with DMW's programs, which includes providing OFWs with vital information and support

through our digital platforms. This initiative ensures that the rights and needs of OFWs are prioritized, and they receive timely assistance wherever they are in the world. We also empower OFW beneficiaries through our various reintegration and upskilling programs, enabling them to successfully navigate the new chapter of their lives when they return to the Philippines for good.

Moreover, PLDT Global supports the Overseas Workers Welfare Administration (OWWA) through the OWWA Helpline 1348, a critical resource for OFWs needing assistance and advice. This hotline is accessible through our TINBO (Tindahan ni Bossing) platform, where OFWs can make free calls to seek help on various concerns ranging from employment issues to emergency response. The availability of this service plays a crucial role in our commitment to ensuring the safety and well-being of OFWs, providing them with a reliable and immediate line of communication to OWWA's support services especially during emergencies, just like earthquakes and disasters

TINBO, PLDT Global's digital marketplace, has been instrumental in bridging the gap between Filipinos living overseas and access to Philippine products and services.

Launched to cater specifically to the needs of the global Filipino community, TINBO has rapidly grown to include a wide range of services, from e-commerce to telco solutions and bills payment.

In addition, PLDT Global has teamed up with Ding, a global mobile top-up platform, for the international distribution of prepaid load and electronic gift cards. This partnership expands our reach and enables overseas Filipinos to conveniently recharge their prepaid phones and send e-gifts to their loved ones back home.

These strategic partnerships are essential to PLDT Global's mission: to deliver comprehensive, innovative, and high-quality services that meet the evolving needs of our customers and partners worldwide.

How does PLDT Global align with governmental visions for improved connectivity and the promotion of the ICT industry? Are there any notable partnerships or initiatives that PLDT Global has embarked on with the government that you could highlight?
PLDT Global is deeply aligned with the government's vision to improve connectivity and ICT industry growth. By actively participating in initiatives such as the GDP

Partnership and the TINBO for OFWs and DMW Partnership, PLDT Global is upholding this vision.

PLDT Global's initiatives are fundamental to the PLDT group's support of the GoDigital Pilipinas (GDP) movement, which aims to drive digitalization. GDP is an initiative pioneered by the government-mandated Presidential Private Sector Advisory Council (PSAC), of which PLDT is a founding member under the Digital Infrastructure pillar. In collaboration with the government, PLDT and Smart spearhead this initiative, aiming to enhance connectivity and tech accessibility across various sectors including education, healthcare, and public services. By aligning our resources with the government's objectives, we foster a digitally empowered nation capable of thriving in the global digital economy. This partnership serves as a cornerstone of our strategy to integrate digital solutions into the national infrastructure, significantly contributing to the ongoing digital revolution in the Philippines.

Additionally, our platform, TINBO, is specifically designed to serve the needs of OFWs by bringing them closer to home. Our partnership with the DMW enhances the reach and impact of our services for OFWs.

Through these initiatives, PLDT Global demonstrates its unwavering commitment to nation-building.

What are the long-term impacts of PLDT Global's current initiatives on the Philippine community, both locally and abroad?
PLDT Global and our parent company, PLDT, are dedicated to continuously improving and expanding our network infrastructure. These include forging collaborations and partnerships with global providers, enhancing our data center capabilities, and expanding our subsea cable networks. Together, these efforts significantly strengthen our network's resilience, creating opportunities, improving connectivity, and helping uplift the quality of life for Filipinos. Our initiatives ensure that Filipinos, no matter where they are, can access high-quality, reliable communication services.

These developments have significant benefits that reach beyond the Philippines' borders, particularly impacting Filipinos living and working overseas. Through our digital innovation and advanced technology, global Filipinos can maintain strong connections with their loved ones back home, fostering emotional well-being and social cohesion and making distances feel shorter. Our efforts aim to not only improve technological access and efficiency but also enrich the lives of every Filipino, reinforcing their ties to their homeland regardless of where they are in the world. 𝕋ℝ

> " Our initiatives ensure that Filipinos, no matter where they are, can access high-quality, reliable communication services "

Vikram Sinha, President Director and Chief Executive Officer, Indosat

Indosat Ooredoo Hutchison Reveals Remarkable Financials, Spearheads Indonesia's AI-Native Transformation

Indosat Ooredoo Hutchison (Indosat or IOH) has once again captivated investors and industry enthusiasts alike with its stellar financial performance in the first quarter of 2024, showcasing strong growth across all fronts. Bolstered by leadership under Vikram Sinha, President Director and Chief Executive Officer, Indosat has not only reported outstanding financial results but has also cemented its position as a trailblazer in Indonesia's technological evolution toward an artificial intelligence (AI) native technology company.

As Indosat embarks on the journey into 2024, buoyed by the successes of FY 2023, the company remains steadfast in its purpose to connect and empower Indonesia.

Leadership Propels Indosat's Soaring Success: Another Quarter of Record Growth

In the first quarter of 2024, Indosat achieved an exceptional 15.8% YoY increase in total revenue, reaching USD873 million, while its EBITDA surged by 22.1% YoY to USD411 million, outpacing revenue growth. This exceptional financial performance underscores Indosat's unwavering commitment to driving viable value for stakeholders and fueling Indonesia's digital economy.

Vikram, in reflecting on the quarter's achievements, emphasized, "We are dedicated to creating sustainable value for all Indosat's stakeholders and to empowering Indonesia's digital economy. We keep improving to enhance our network to ensure seamless connectivity and a marvelous experience for customers across Indonesia. At the same time, we have doubled down on operational excellence and efficiency, which has enabled us to deliver strong revenue growth, while further improving profitability."

Indosat's customer-centric approach has borne fruit, with its subscriber base expanding by 2.3% YoY to 100.8 million subscribers by the end of Q1 2024. This surge in subscribers contributed to a commendable 14.3% YoY increase in data traffic, reaching 3,858 Petabytes (PB). Tactical investments in network infrastructure, including a 20.8% YoY growth in 4G BTS to over 184,000, have ensured seamless connectivity and elevated customer experiences, culminating in a 13.9% YoY rise in Average Revenue Per User (ARPU) for cellular customers, which soared to IDR37,500.

Furthermore, Indosat's Outlook was revised to Positive from Stable by the international ratings agency Fitch and affirmed its AA+(idn) credit rating, attesting to its financial health and growth prospects. Inclusion in the LQ45 Index of the Indonesian Stock Exchange further spotlights Indosat's solid financial standing and growth potential in the capital market.

Taking the Lead on Indonesia's AI-Native Transformation

Indosat's ascent as a technology leader reached new heights through groundbreaking collaborations aimed at ushering Indonesia into the era of AI-native innovation. The partnership with NVIDIA, a global leader in AI computing, marks a significant milestone as Indosat becomes the first NVIDIA Cloud Provider Partner in the country. Through this historic alliance, Indosat, alongside its subsidiary Lintasarta, endeavors to democratize access to NVIDIA's cutting-edge AI platform, empowering enterprises with transformative GPU technologies to drive Indonesia's digital economic growth.

The collaboration between Indosat and NVIDIA, announced during the esteemed Mobile World Congress 2024 in Barcelona, marks a watershed moment in Indonesia's pursuit of digital transformation. Through a Memorandum of Understanding (MoU), the two entities pledge to elevate Indonesia's standing in the global AI cloud community, laying the groundwork for the widespread adoption of AI technologies across the country.

Indosat, alongside its subsidiary Lintasarta, plans to introduce NVIDIA's comprehensive AI platform to enterprises nationwide. This initiative aims to democratize access to AI capabilities, fueling economic growth, job creation, and technological innovation. Key figures within Indosat and Lintasarta, including Vikram and Bayu Hanantansena, emphasize the transformative potential of this collaboration in driving Indonesia towards becoming a global AI-powered digital nation.

Indosat aims to utilize the NVIDIA Tensor Core GPU, powered by the Blackwell platform, to accelerate inference workloads and enable real-time performance for language models. This technology, which also includes NVIDIA BlueField-3 DPUs, supports various aspects of cloud computing, such as network acceleration, storage, and security. The NVIDIA Tensor Core GPU will be accessible through the NVIDIA DGX Cloud, facilitating the training of advanced generative AI models.

As Indosat continues to spearhead Indonesia's digital transformation, it remains devoted in its mission to drive sustainable growth, promote innovation, and create lasting value for all stakeholders. With visionary leadership, strategic partnerships, and a relentless pursuit of excellence, Indosat stands poised to shape Indonesia's technological landscape and propel the nation toward becoming an AI-powered digital powerhouse.

Vikram encapsulates this, stating, "Our collaboration with NVIDIA marks a pivotal moment in Indonesia's journey towards becoming an AI-powered nation. With unwavering determination and a shared vision for success, we stand poised to shape the technology landscape in Indonesia and beyond. Let us continue to innovate, collaborate, and inspire to connect and empower every Indonesian and help turn Indonesia into a digital nation." **TR**

AALTO Zephyr Set to Revolutionize Global Connectivity

The era where internet access is no longer seen as a luxury but is readily available to the majority of the population, irrespective of their location or the lack of physical infrastructure, is gradually approaching. The age when billions of people worldwide can effortlessly connect online is set to emerge thanks to AALTO Zephyr's promise of The Stratospheric Age.

Zephyr, the most persistent fixed-wing High Altitude Platform Station (HAPS) on the planet, is set to reshape the future of communication and observation. It has emerged as a game-changer in a world where connectivity is an indispensable aspect of daily life.

The team's years of labor are evident in the Zephyr 8's remarkable wingspan of 25 meters and a maximum take-off weight of less than 75 kilograms. Furthermore, it is capable of reaching altitudes of 75,000 feet in the stratosphere. Its most notable achievement thus far was a continuous flight lasting 64 days, completing a distance of 140,000 nautical miles. The aircraft is designed for long-lasting performance and is equipped with two compact electric motors, solar arrays installed on the wings, and batteries that allow it to operate continuously.

Stratospheric Connectivity

The Zephyr provides unmatched Earth observation and connectivity capabilities, poised to revolutionize the aerospace sector by offering advanced capabilities such as persistent, high-resolution photography and low-latency direct-to-device services.

It boasts a coverage area of 7,500 square kilometers— equivalent to 250 ground towers— functioning as a terrestrial tower in the sky, seamlessly integrated into the networks of mobile operators. The D2D technology enables direct communication to devices, providing low latency 5G without requiring expensive user terminals or ground infrastructure.

Furthermore, Zephyr can also provide scalable connection with latency of less than 10 milliseconds, which competes with terrestrial infrastructure and outperforms satellite alternatives, while in the stratosphere. Mobile network operators (MNOs) now have the ability to extend their network coverage to underserved locations, thereby improving the quality of their services, attracting more customers and increasing profits. Tower companies are expanding their range of services by including economically superior stratospheric solutions, which provides them with new opportunities for growth.

Earth Observation Capabilities

The Zephyr aircraft can be equipped with Airbus' OPAZ payload, specifically developed for operations in the stratosphere, allowing the aircraft to capture up to 18cm of electro-optical imagery and up to 70cm of infrared imagery. Zephyr's Earth observation capabilities, aided by Airbus Intelligence, are unparalleled in their ability to provide near-real-time, high-quality video.

Zephyr offers both high resolution and frequent revisits, unlike satellite-based options that sacrifice one for the other.

The persistence of this technology enables the observation of an area for several months, making it useful for applications such as forest fire management, precision agriculture, and insurance evaluation.

The aircraft carries out heavy-duty tasks and ensures emission-free flights by relying exclusively on solar power. This environmentally friendly technology not only preserves and enhances human lives but also demonstrates a deep regard for long-term sustainability, demonstrating that AALTO's dedication to the environment is equally strong as its expertise in connectivity.

Solutions Beyond the Surface

Government agencies can benefit significantly from Zephyr's flexibility, scalability and adaptability, providing them with tailored solutions for Earth observation and connection. With the help of Zephyr, government agencies can effectively respond to many occurrences, ranging from wildfire prevention to disaster aid and border control.

AALTO is actively working on obtaining accreditation for the Zephyr program, while also establishing industrial and operational plans. The company, which is a subsidiary of Airbus, intends to obtain certification from the UK Civil Aviation Authority by the end of 2025.

AALTO will also establish its AALTOPORTs globally, which will serve as both launch and recovery sites, as well as provide facilities for production and maintenance. Six ports are being considered for development around the world with the inaugural port situated in Kenya due to its favorable weather conditions and equatorial location, which will optimize the charging of solar panels during flights.

Zephyr's landing is also designed to be debris-free, further proof of AALTO's dedication to sustainability. AALTO Zephyr is a product of combined expertise, representing the integration of advanced technology, connectivity, Earth observation, and a strong commitment to the well-being and sustainability of our planet.

AALTO

" Zephyr is a very high level of innovation that is beneficial for humanity – that is, offering a service that is connecting people "

Samer Halawi, Chief executive, AALTO

Pavel Salatiuk, Executive VP, Sales & Partnerships

Stanley Manzini, Director, Strategic Partnerships,

Market Leader, Vox Solutions, Combats Flash Calls and Artificial Traffic in APAC

While flash calling can be a convenient way to convey a message or signal urgency without engaging in a full conversation, it also has the potential to be misused or cause harm in certain situations.

A flash call is an authentication method that verifies identification without asking the end user to perform any specified actions. It is a relatively new method for implementing two-factor authentication (2FA).

In an exclusive interview with Telecom Review, Director of Strategic Partnerships, Stanley Manzini; and Pavel Salatiuk, Executive VP of Sales & Partnerships shared insights into Vox Solutions' innovative strategies for tackling flash calls and artificial traffic in the APAC region. Together, they discussed how advanced technologies like AI and ML are being leveraged to combat these challenges. Additionally, they explored the company's strategic partnership with Bridge Alliance, through which they aim to elevate network and service offerings.

What is the frequency of flash calls in the APAC region, and how does Vox tackle this challenge?

Manzini: A new report from Juniper Research, foremost experts in emerging communications

technologies, has found that operators will lose $1.3 billion to undetected flash calls cumulatively between 2023 and 2027. Flash calling services are particularly in demand in regions with a high need for authentication services and where SMS mobile termination rates are elevated, as is the case in APAC.

In APAC, the demand for authentication services and the prevalence of high mobile termination rates has created an environment ripe for flash calling. Additionally, there is a notable issue of artificial inflation of traffic. Juniper Research has revealed that flash calls in APAC can cannibalize up to 20 percent of SMS volumes, posing a substantial threat to A2P revenues and overall traffic value.

Our main goal is to help address them and turn them into new profitability by capitalizing on the new revenue stream opportunity of monetizing flash calls. Vox Solutions is an innovation-centric company. Over the past 12 months, we have taken the lead in addressing the issues of flash calling and artificial traffic, both in terms of raising awareness and implementing effective solutions.

Through our case studies, we have demonstrated the efficacy of our solutions in mitigating the anticipated 20 percent loss. Our goal is to ensure the business of our partners remains commercially viable, irrespective of the threats.

Could you elaborate on Vox's approach to tackling AIT, trashing, and other associated fraud scenarios using advanced technologies such as AI and ML in the region?

Salatiuk: Publications from companies like Juniper Research highlight that the global cost of artificial inflated traffic for enterprises surpassed USD 9 billion in 2023—a significant sum. As a result, enterprises worldwide are keen to address this issue.

Unfortunately, forecasts indicate that by 2027, artificial inflated traffic will represent 11 percent of global traffic, necessitating action from enterprises to implement additional channels for traffic verification. This issue is particularly prevalent in Central and East Europe, as well as in Asia, where SMS market rates can reach 20 cents, leading to inflated traffic and SMS trashing.

This not only results in substantial revenue for fraudsters but also poses challenges in detection due to its complexity. Moreover, it doesn't directly impact MNOs' top-line revenue but significantly affects network performance and customer satisfaction, leading to increased churn.

AI is a buzzword; not every solution offers the necessary accuracy and algorithms to detect SMS trashing and artificial traffic. MNOs must invest in relevant tools and technologies to minimize revenue leakage and explore new revenue streams

Please outline Vox's market position and strategic approach in Asia.

Manzini: In Asia, the prevalence of flash calling is notably high, reaching up to 20 percent due to elevated rates and the presence of AIT and grey routes. This situation compromises service quality, leading to increased churn and increased customer complaints. At the end of the day, we all aim to deliver the best customer user experience. However, if we are delivering the messages via grey routes, that means that we are

compromising on the quality that the customer gets, which unfortunately causes a high churn. Our strategic approach focuses on restoring growth and sustainability to networks (vital for acquiring, retaining, and and growing the subscriber bases).

Our technology addresses these challenges effectively, offering dynamic pricing models and innovative solutions tailored to different messaging needs, including promotional messages. Currently, pricing strategies often lack differentiation, typically offering a single rate for MTR. However, our approach is innovative; we provide distinct pricing for notifications and promotional messages. This strategy is groundbreaking as it enables SMS' to compete with WhatsApp, a significant disruptor in today's market.

We also work with enterprises and having good relationships with them will ensure that you get back the volumes. We have more than 400 direct connections globally ensuring comprehensive coverage and support for MNOs.

We serve as a trusted one-stop partner, prioritizing MNOs' interests and providing best-in-class anti-fraud technology to combat flash calling and other fraud scenarios. With adaptable technology ready to tackle current and future network challenges, our goal in Asia is clear: to bring back the growth and sustainability to their networks.

How does Vox leverage its partnership with Bridge Alliance to enhance its network and service offerings across Asia?

Salatiuk: From our point of view, Bridge Alliance has consistently shown a commitment to investing in partners with cutting-edge technology. They have recognized the uniqueness of our flash call technology, which not only maximizes revenue but also effectively blocks alternative communication channels. As an alliance of premium MNOs, including market leaders like Telkomsel and Singtel, Bridge Alliance selects the best solutions for its partners.

We are proud to be part of this alliance and have presented our comprehensive product portfolio, including our innovative flash calling solution, VOX-360. The

response and interest from Bridge Alliance has been exceptionally positive, leading to advanced discussions with multiple MNOs within the group. We aim to deepen these discussions, integrate our technology into their networks, and become a strategic partner essential to their success.

Manzini: We are very proud to be among Bridge Alliance's technology partners as they work with the best in the group. In summary, Vox Solutions has spearheaded several industry-first initiatives that underscore our suitability for partnership with Bridge Alliance.

Firstly, we were the pioneering company to raise awareness about flash calling with the Mobile EcoSystem Forum (MEF), subsequently developing the first flash calling solution and implementing it effectively. Similarly, we led the way in raising awareness about artificial inflation of traffic (AIT) and creating a solution to address this issue, which we successfully implemented.

We believe that the technological landscape is forever changing and in order to remain relevant, collaboration remains a key element; and you don't just collaborate with anybody, you collaborate with the best in the market.

Bridge Alliance leads the market in terms of network quality, coverage, and the caliber of its partners, along with the exceptional support they provide. We believe none of us is as strong as all of us together.

What are key events that Vox has been involved in? How do these engagements align with the company's objectives and industry positioning?

Manzini: We're excited to announce that we'll be hosting the upcoming GSMA event—WAS#20 on 23 – 26 September , taking place in Indonesia, Bali—showcasing our alignment with MNO objectives and providing a platform for APAC MNOs. Additionally, we'll participate in Telecoms World Asia in Thailand on 19 -20 November 2024 and the Bridge Alliance CXO Forum in Singapore in October 2024, engaging with key players in the industry.

Furthermore, we're conducting webinars dedicated to APAC MNOs and organizing

events focused on the APAC region, demonstrating our commitment to supporting regional growth and sustainability.

Could you share recent awards or recognitions that demonstrate the quality of Vox's service offerings?

Salatiuk: One recognition we're particularly proud of is receiving the Antonio Meucci Award for 'Best Solution Provider,' acknowledging our excellence in AI and machine learning (ML) technology. Additionally, we recently achieved 'Tier One' status as a monetization and aggregation provider in the ROCCO SMS Monetisation Market Impact Report 2024, as voted by MNOs in the industry. This external validation is a testament to our commitment to innovation and customer satisfaction. We're immensely grateful to our customers and partners for their trust and support, and we remain dedicated to continuously improving our technology to meet their evolving needs.

Manzini: Vox Solutions has been honored with the 'Platinum' award for the 'Best Flash Call Authentication Solution' at the Future Digital Awards. Being recognized as the platinum winner for 3 consecutive years underscores our leadership in this field. Such consistent recognition reaffirms the effectiveness and quality of our solutions.

Vox Solutions has won:

* Tier 1 vendor in the ROCCO SMS Monetization Market Impact Report 2024

* Best AI/ML Innovation at the Global Carrier Awards 2023

* Best Solution Provider at the Antonio Meucci Global Telco Awards 2023

* Best Flash Call Authentication Solution at the Juniper Awards in 2022, 2023 and 2024

* Best Personal Data & Identity—A2P Voice Monetization Solution at the MEFFYS Awards 2022

* Best Anti-Fraud Innovation at the Global Carrier Awards in 2019 and 2021 **TR**

Eric Purcell, Senior Vice President Global Partner Sales & Alliances

John Boladian, Vice President of Partner Sales for Asia Pacific at Cradlepoint

Cradlepoint: Driving 5G Adoption in Asia Through Fixed Wireless Access

Fixed Wireless Access (FWA) meets rising global demand for wireless connectivity, enabling 5G for rapid, cost-effective, scalable, and dependable connectivity that catalyzes digital transformation across Asia.

In an exclusive interview with Telecom Review, Eric Purcell, Senior Vice President Global Partner Sales & Alliances, and John Boladian, Vice President of Partner Sales for Asia Pacific at Cradlepoint, delved into the myriad growth opportunities presented by leveraging FWA to harness the full capabilities of 5G technology.

Singapore is one of the global leaders when it comes to 5G adoption. Which factors are driving the country's rapid 5G adoption?

John Boladian: Singapore consistently leads in technology adoption, especially in Asia, case in point 4G rollout and adoption. This success stems from robust support from public sector entities, fostering rapid and enhanced connectivity amid ongoing digital transformation.

This transformation is evident across multiple sectors. For instance, emergency services are upgrading their communication methods to better track and enable workers, while ports are modernizing to streamline processes. An example would be the development of the new Tuas Port by the Maritime & Port Authority of Singapore, where 5G technology will enable the use of autonomous guided vehicles (AGVs) for tasks like container handling. With 5G's low latency, AGVs become feasible and essential for the seamless operation of critical infrastructure.

Even tasks like street sweeping can be modernized. Singapore's fleet of traditionally-manned street sweepers are transitioning towards driverless vehicles. Equipped with intelligent computer vision or remote piloting, these vehicles signify the next generation in street maintenance.

Cradlepoint excels in providing platforms that facilitate 5G connectivity for various use cases, especially in vehicles. Our platform acts as a hub, connecting IoT sensors, cameras, and other devices within the vehicle, leveraging high-speed, low latency 5G connectivity. This allows system integrators and customers to seamlessly integrate diverse use cases through a reliable connectivity solution from Cradlepoint.

Can you elaborate on how Cradlepoint contributes to the growth of FWA services for service providers? Additionally, what are the advantages of deploying Cradlepoint's FWA solutions?

Eric Purcell: Fixed Wireless Access (FWA) represents the fastest growing broadband solution globally, currently being offered by about 125 service providers worldwide and the number of FWA connections in Asia Pacific is expected to more than triple by 2029. Cradlepoint's primary objective is to assist service providers in effectively capitalizing on their investments in 5G technology, which encompasses the delivery of business services in addition to 5G infrastructure implementation.

Cradlepoint focuses on facilitating the provision of a better business-centric internet experience. To achieve this goal, we offer an enterprise-grade, cost-effective solution tailored specifically for service providers to deploy 5G technology optimized for Secure Access Service Edge (SASE). Through collaborative partnerships with service providers, we actively develop innovative solutions aimed at delivering a next-generation experience for businesses of varying scales, including small and medium-sized enterprises as well as distributed businesses, and temporary or pop-up locations.

Our focus extends beyond the provision of basic business-class internet connectivity. We endeavor to serve as a medium for transitioning businesses towards 5G connectivity through our cloud management platform, which makes a significant difference. This platform incorporates our NetCloud Manager, a user-friendly interface seamlessly integrated into existing management platforms. Complementing this platform is our purpose-built endpoint solution—the X10—which combines cost-effectiveness with enterprise-grade service capabilities. This solution also empowers service providers to offer additional services to their customers, starting with standard internet connectivity with cloud management and zero-touch deployment, thus optimizing cost efficiency while facilitating basic troubleshooting.

Moreover, Cradlepoint's offerings span a range of service tiers, enabling service providers to cater to diverse client needs, which entails improvements in network stability, traffic prioritization, Quality of Service (QoS) implementation, leveraging network slicing, and mitigating data loss. Ultimately, our aim is to facilitate the transition towards premium offerings, characterized by advanced features such as link bonding, failover and failback mechanisms, and enhanced security measures integrated into our 5G SASE portfolio.

In partnership with service providers, our streamlined management platform enables seamless customer onboarding, ensuring a superior experience supported by the flexibility and agility inherent in 5G technology.

John Boladian: Operators are really aiming to monetize their 5G investments, and the FWA avenue provides a great opportunity for them to do so. Depending on the country's infrastructure, such as if it's highly developed like Singapore with mature cabling infrastructure, the focus might lean towards a failover-type scenario. However, in countries where fixed infrastructure is still expanding and costly, such as the Philippines or Indonesia, where islands pose geographical challenges, a robust 5G network developed by operators offers a straightforward way to monetize their investment, while providing a cost-effective solution to customers. This creates a win-win situation where customers get a service at a lower cost, and operators see a significant increase in ARPU. It's a promising prospect for countries grappling with infrastructure challenges, making 5G fixed wireless access an appealing and practical option.

Could you provide an instance illustrating how Cradlepoint collaborates with service providers to capitalize on the growing demand for 5G, along with the outcomes of this collaboration?
Eric Purcell: Cradlepoint's collaboration with service providers goes beyond just offering a product portfolio; it encompasses how we package and deliver solutions, including accompanying software. We are keen on aligning our hardware and software models with the managed service approach adopted by service providers. Our aim is not just to provide a suite of services; we aim to help them create, deliver, and market those services effectively.

We have invested not only in developing our portfolio but also in ensuring that our packaging and pricing structures fit seamlessly into the managed service model. Moreover, we have dedicated people ready to support service providers at every stage, from conceptualizing service ideas to delivering them to customers.

Our key differentiators, such as the cloud management platform and purpose-built endpoints, are complemented by our comprehensive approach to support and execution. We're committed to enabling service providers to offer differentiated solutions to their customers.

While our solutions can serve as primary connectivity for a business or act as failover options, they can also serve as the foundation for broader connectivity strategies. Through our NetCloud platform, businesses can extend connectivity beyond their branches to include vehicles, fleets, digital signage, IoT applications, and more. We are working with service providers to showcase how 5G can truly transform enterprises, while also providing the capability to add additional services and enhance security for these organizations.

Looking ahead, how does Cradlepoint guarantee the flexibility of its FWA solutions amid rising demand for customized offerings and the gradual shift towards 5.5G in the industry?
Eric Purcell: As part of Ericsson, Cradlepoint gains access to a vast network and resources, propelling us into an advantageous position. Ericsson has been at the forefront of building the majority of 5G networks worldwide in collaboration with major operators. This presents a great opportunity for us to collaborate closely and leverage the connectivity benefits of these 5G cores within our 5G enterprise plan.

Our aim is to deliver differentiated solutions, such as standalone 5G (5G SA), which unlocks additional feature functionalities like network slicing, enabling us to provide truly unique and tailored services. Being part of Ericsson gives us a sense of comfort and confidence and positions us to continue leading the industry in delivering the benefits of core networks merged with enterprise 5G solutions.

John Boladian: With Ericsson's strong presence in Singapore and the broader Asia Pacific, and established relationships with operators, we've gained a deep understanding of network operations. This has enabled us to collaborate closely with operators to optimize Cradlepoint's device performance within their networks. **TR**

Pierre Le Corre, Associate Partner, PMP Strategy

Gregorie Clayes, Managing Director, PMP Strategy Seattle

Chrystelle Briantais, Partner, PMP Strategy

The Evolution of the ICT Market: How Can AI Help on Leveraging Profitability and Transformation?

The ICT market is undergoing significant upheaval. Traditional products such as connectivity, voice services, integration, and managed services are experiencing declining margins. This shift is largely due to the convergence of the telecom and ICT sectors, with major players like GAFAM leading the charge. These products risk becoming commodities and losing their distinctiveness in the market.

Moreover, the industry is not stable yet, as evidenced by major shifts such as the transition from copper to fiber, digitalization, and the move from on-premises to cloud computing. These changes are complicated by the presence of legacy components, making the transformation challenging. To maintain a competitive edge and ensure high-quality service, factors such as customer experience, understanding of the client's business, and proximity are becoming increasingly important.

ICT players are thus faced with a complex equation: they need to regain profitability to create value and invest, while maintaining quality service

without resorting to price cuts. This is crucial to avoid disintermediation and loss of client access, which are essential for future revenue opportunities.

Artificial intelligence (AI), when utilized effectively, offers a solution to control costs while enhancing service quality. However, AI must be applied judiciously, with clear use cases, to avoid disappointment.

ICT companies can benefit from AI in multiple areas of the organization. These include, but are not limited to:

- Customer Service (AI chatbots, virtual assistants, ticket generation and routing, intent prediction, call summaries, response generation, etc.)
- Sales (lead qualification, proposal and quote generation, personalized sales pitches, etc.),
- Marketing (content generation, generation of personalized marketing campaigns, etc.)
- Product (feedback analysis, product documentation, etc.)
- Customer (customer needs detection, cross sell and up-sell strategies, etc.),
- Field Services (virtual assistants, resolution guide creation, issue detection, etc.)

By leveraging AI in such focused areas, ICT players can enhance operational efficiencies, improve customer experiences, and drive revenue growth while navigating the industry's complex landscape.

At PMP Strategy, AI serves both clients and employees based on three pillars: a blend of business issue understanding and strategy, with a thorough knowledge of available technical solutions; tangible results achieved in short cycles (2-to-4-week cycles from need/feedback to Proof of Concept); and specific B2B use cases that are transferable to large corporations and SMEs.

On average, the use of AI in customer services by ICT players demonstrates gains in the 5% to 20% range within the call duration and increased

customer satisfaction sectors. Our experience with a U.S. Fortune 50 company demonstrated AI benefits in use cases such as:

- Predicting customer call topics and searching in the knowledge base to help care agents to identify the client's issues and corresponding solutions. Before the AI solution, call center agents sometimes spent tens of minutes per messaging conversation with customers, struggling to understand issues and manually locate information across different systems.
- Real-time conversation analysis to swiftly meet customer demands, enhancing both customer and agent satisfaction.
- Automatic call transcription and summarization, helping care agents to record key call information in their CRM solution. Thus, helping to increase both the accuracy and completion rate of post-call tasks while reducing the time required for them.

Such solutions evolved from initial tests with small teams to deployments at scale from 100+ to up to 10,000+ agents and provided estimated productivity gains of 5-10% across 10s of millions of conversations.

While such use cases are becoming common in B2C markets, they are far from being widely adopted in B2B, despite the potential technology available that could significantly support ICT players in regaining margins.

Many ICT companies are preparing for AI and assessing how it will impact their industry, products, processes, workforce, tools, ecosystems, etc. To embrace change, they are preparing for it.

PMP Strategy emphasizes the importance of innovation and strategic use of technology for this kind of transformation. We believe that by leveraging AI in thoughtful and strategic ways, ICT companies can navigate the challenges of the current market landscape, ensuring

sustainable growth and competitive advantage. Our B2B TMT team and AI Lab are dedicated to supporting businesses through this journey, providing insights, strategies, and technologies tailored to meet their unique needs and those of the ICT sector. **TR**

By Pierre Le Corre, Associate Partner, PMP Strategy; Gregorie Clayes, Managing Director, PMP Strategy Seattle; Chrystelle Briantais, Partner, PMP Strategy

> We believe that by leveraging AI in thoughtful and strategic ways, ICT companies can navigate the challenges of the current market landscape, ensuring sustainable growth and competitive advantage

du and Huawei Light up Nation-wide Commercial 5G-A Network

Eric Zhao
Vice President & CMO of Wireless Solution, Huawei

Saleem Alblooshi
du CTO

Toni Eid
Founder of Telecom Review Group & CEO of Trace Media International

du and Huawei Collaborate to Advance 5.5G Journey

During Mobile World Congress (MWC 2024), Toni Eid, Founder of Telecom Review Group and CEO of Trace Media International, engaged in an exclusive discourse with Saleem Alblooshi, CTO of du, and Eric Zhao, Vice President and CMO of Huawei Wireless Solution to share their perspectives on the progress of the 5G industry, particularly the commercial launch of 5G-Advanced (5G-A or 5.5G).

Introducing the topic, Eid mentioned how the 5G industry is moving forward at an unprecedented speed. "The 5G connection reached 640 million in 2023, and it will grow to 10 billion as forecasted. The more exciting news is that the commercialization of 5G-Advanced was launched, especially in the UAE."

Notably, du announced the launch of its commercial 5G-Advanced network in February 2024, and published its 5G-Advanced strategy together with Huawei.

du's 5G History and Progress
According to Alblooshi, du started its '5G Leading' strategy in 2019, and due to their cumulative efforts over the years, they now offer

telecommunications coverage across the entire UAE. "We are providing 5G service to 98.5% of the population. In 2023, we [achieved] a historically high 5G benchmark, conducted by several neutral parties."

Based in Dubai, UAE - a city filled with the highest building, the biggest shopping mall, the biggest indoor snow-park, the most luxury hotel, and

the widest highways - the du CTO affirmed their objective of providing the best experience to consumers, businesses, visitors, and other end users, as the top telecom service provider in the UAE.

Huawei: Leading 5G-Advanced with Innovative Solutions

Huawei recognizes the transformative power of evolving wireless networks for mobile users, offering enhanced convenience, superior network experiences, and innovative service possibilities. Introducing 5.5G, (boasting up to 10 times faster uplink and downlink rates compared to 5G) alongside cutting-edge features like passive IoT and endogenous intelligence unlocks new business avenues.

"Operators around the world have varied spectrum conditions and service requirements, but all roads can lead to 5.5G," Zhao declared. "For example, carrier aggregation can be performed on the existing sub-6 GHz large-bandwidth spectrum to quickly deliver a downlink peak rate of 5 Gbps."

Zhao emphasized that despite diverse spectrum conditions and service demands globally, 5.5G presents opportunities for all operators. For instance, du has pioneered the establishment of a large-bandwidth 3CC TDD commercial network, achieving a 5 Gbps download rate. Zhao explained that leveraging spectrum like mmWave can further enhance rates, providing 10 Gbps in the downlink and expanding service scenarios. Huawei's comprehensive 5.5G GigaGreen solution portfolio, comprising 'Native Giga,' 'Native Green,' and 'Native Intelligence,' supports du and operators worldwide in their journey towards 5.5G.

As the leading vendor within the 5G-Advanced Industry, Zhao expressed his enthusiasm regarding their collaboration with du. He stated, "Our cooperation goes deeper in 5.5G, with milestones realized one after another."

du Emphasizes Clear 5G-Advanced Business Case

Sharing his optimistic outlook,

Alblooshi emphasized that, "In the coming years, we are going to embrace 5G-Advanced to extremely increase our customer's experience." du's 5G-Advanced investment is mainly driven by their fixed wireless access (FWA) business. As per the telco's 2023 financial report, "home broadband users grew 12.6%, meeting 600K users; it is another historical high," described Alblooshi.

Despite du's lower fiber penetration rate compared to its competitors, the company introduced the FWA business in 2021, resulting in a doubling of user numbers by 2023. Simultaneously, the overall utilization of du's network exceeded 25%, with hundreds of sites achieving over 80% utilization.

"By launching a 5G-Advanced network, we can provide uncompromised, better experiences to customers while the traffic keeps growing," added Alblooshi, further stating that through "the FWA business, we can also explore new use cases, such as guaranteed experience, RedCap features, Passive IoT, and other capabilities."

5G-Advanced Has Progressed from Vision to Reality

Commenting on the standards and overall ecosystem of 5G-Advanced, Zhao outlined that, "After three years of efforts, 5.5G has progressed from vision to reality, and all of the standards, services, products, terminals, business, and policies are ready."

Zhao emphasized that the impending release of 3GPP Release 18 in the first half of the year marks a significant milestone, while the expansion of connectivity across people, homes, things, industries, and vehicles continues to push boundaries. Terminal technologies like 3CC terminals and RedCap terminal modules are advancing, accompanied by diverse business models supporting uplink and latency capabilities monetization.

Additionally, Zhao mentioned that numerous countries are issuing supportive policies for the development of 5.5G. Globally,

5.5G commercialization is rapidly progressing, with over 10 operators launching commercial plans and over 30 conducting technical verifications. In the Middle East, operators like du are spearheading large-scale 5.5G commercialization, while operators in Europe, the Asia Pacific, and Latin America are gearing up for commercial use in 2024 by actively verifying the 10 Gbps capability.

Joint Innovation for Building Digital UAE

Alblooshi confirmed that following five years of development, the 5G capabilities in mobile and FWA are much clearer now. However, it is imperative to think bigger and consider how to facilitate the digitalization of industries. "At du, we call it Beyond Core Revenue. We had one strategy named 'ENABLE' and we updated it to 'RENABLE', aiming to create more streams, which will help operators monetize the network," expounded Alblooshi.

Bearing this in mind, telcos such as du and leading vendors like Huawei should work together to address matters including but not limited to the following: opening network APIs to different industries, bundling the network and cloud together to provide differentiated services, improving the manufacturing industry with 5G-Advanced, and converging FWA and FTTH for better value and services.

Zhao concurred, stating that these "big topics" warrant "one dedicated study," each to ensure efficient evaluation and response. "As the strategic partner of du, Huawei will continually stand together with du to answer these topics," he indicated.

The Huawei executive revealed that they are introducing [5G-Advanced] use cases implemented in China to du, and that in the future they, "wish to have further cooperation with du to build a Digital UAE together."

The fruitful discussion concluded with the endorsement of encouraging actions, as both du and Huawei proceed to jointly explore further possibilities in the 5G-Advanced era. ◾

Vietnam's Digital Revolution Embracing Network Evolution

Amid the busy streets of Hanoi and the bustling markets of Ho Chi Minh City, a significant change is quietly taking place. Vietnam, known for its vibrant culture, stunning scenery, and resilient people, is now making its mark on the global stage through digital technology initiatives. As the country embraces the opportunities of the digital era, its economy is undergoing a major transformation that has the potential to revolutionize entire industries, empower entrepreneurs and lift millions out of poverty.

Over the past decade, Vietnam has been steadily improving its digital infrastructure. Fueled by a young population eager for change and a government committed to progress, the nation is laying the foundation for a thriving digital economy. This has resulted in a growing digital landscape that presents exciting opportunities for innovation and growth that were previously unheard of. As Vietnam embraces digital transformation, it's not just about economic progress; it's about enhancing lives.

This opens up more opportunities for businesses to expand and reach global markets, ultimately boosting the economy and creating jobs. However, the impact of Vietnam's digital revolution extends beyond business. It also involves using technology to address social issues and improve people's lives. From

enhancing government services to improving education through digital learning tools, the country is finding innovative solutions to problems and driving positive change.

Empowering the Backbone of the Economy

At the heart of Vietnam's digital transformation lies the empowerment of its people, particularly the small and medium-sized enterprises that form the backbone of the economy. According to a report, Vietnam's digitalization push aims to empower MSMEs and drive e-commerce forward. These businesses, often operating with thin margins and constrained by limited resources, are finding new avenues for growth and expansion through digital platforms and technologies.

Thus, the Vietnamese government has launched a digitalization initiative to support MSMEs and help them benefit from e-commerce. This initiative aims to help MSMEs transition to digital platforms, improve competitiveness, and integrate into the global digital economy. By providing targeted policies and support programs to address barriers like access to technology, digital skills training, and financial resources, the government hopes to create a favorable environment for MSMEs to expand their markets, streamline operations, and innovate services.

Digitalization is seen as crucial for MSMEs to grow, operate more efficiently, and offer new services. Vietnam's initiative not only aims to strengthen MSMEs but also boost the country's e-commerce sector. This highlights Vietnam's efforts to embrace digital transformation and emphasizes the importance of MSMEs in this journey. Vietnam's strategy for MSMEs encompasses infrastructure development, regulatory reform, financial support, and capacity building to harness digital technology for economic growth.

Through policy changes, financial aid, skills training, and partnerships, Vietnam aims to create an inclusive digital future for MSMEs, helping them thrive in the changing e-commerce landscape. Despite challenges, Vietnam is committed to supporting MSMEs in their digital journey. Through this dedication, the country aims to position itself as a leading digital economy within the region.

Enhancing Digital Skills and Capabilities

One key aspect of Vietnam's digital revolution is its focus on enhancing digital skills and capabilities across all sectors of society. As highlighted by the World Bank, the country recognizes that for digital transformation to be truly inclusive and sustainable, skills must transform too. Initiatives aimed at upskilling the workforce and fostering digital literacy are therefore paramount in ensuring that no one is left behind in the digital revolution.

The rise of Vietnam's digital economy is not only evident in the realm of commerce but also in its impact on governance, education, and social development. According to a study, the digitization of government services has led to greater efficiency, transparency, and accountability, transforming the way citizens interact with their government and vice versa. From online tax filing systems to e-government portals, Vietnam is leveraging technology to streamline bureaucratic processes and improve service delivery to its citizens.

Moreover, the digital revolution is reshaping the education landscape in Vietnam, with a growing emphasis on digital learning tools and platforms. In an article, the country's rich pool of talent is increasingly being harnessed to empower digital transformation across various sectors. Universities and educational institutions are adapting their curricula to equip students with the necessary digital skills demanded by the job market, ensuring that the workforce remains competitive in an increasingly digitalized world.

Opportunities for Innovation

In the country's rapid ascent towards a USD 45 billion digital economy by 2025, cybersecurity threats pose a significant risk, demanding robust measures to safeguard digital infrastructure and sensitive data. Bridging digital literacy gaps emerges as another hurdle, necessitating comprehensive initiatives to empower citizens across demographics. Navigating regulatory frameworks presents a delicate task, requiring agility to balance innovation with compliance.

However, within these challenges lie vast opportunities for innovation, from cybersecurity solutions to user-friendly digital interfaces. Thus, collaboration among stakeholders becomes crucial for collective problem-solving and resource pooling. Sustainable growth paradigms, adapting to technological shifts, and maintaining a delicate balance between challenges and opportunities are essential for Vietnam's digital journey, as it charts a course towards a resilient and prosperous digital economy. **TR**

> Vietnam's initiative not only aims to strengthen MSMEs but also boost the country's e-commerce sector.

Reshaping the Future of Pay-TV in APAC's Media Market: How Irdeto Empowers Leading Operators in an Industry Undergoing Constant Transformation

Fixed Wireless Access (FWA) meets rising global demand for wireless connectivity, enabling 5G for rapid, cost-effective, scalable, and dependable connectivity that catalyzes digital transformation across Asia.

Asia is an immensely rich and diverse continent, particularly visible in its media landscape which exhibits significant variations in digital maturity across different countries. The Asia-Pacific (APAC) region is experiencing a dynamic transformation in its media industry, fueled by robust economic growth, a youthful and technologically adept population, and rapidly advancing digital adoption. This evolution is not uniform, however; while some nations are just beginning to embrace digital technologies, others like Japan represent mature markets that are leaders in media innovation.

In this varied environment, the common thread is a rising consumer demand for high-quality and diverse media content. This demand is bolstered by high levels of broadband penetration and widespread access to digital devices, driving remarkable growth in the online subscription video market. According to Media Partner Asia, the online SVOD sector in the region witnessed a 15% increase in 2023, reaching a market value of US$28 billion. This growth underscores the region's escalating engagement with digital media, reflecting its complex and multi-faceted media landscape.

Industry analysts point to several factors accelerating this growth. Enhanced internet accessibility across Southeast and South Asia, coupled with the widespread use of mobile devices, enables more consumers than ever before to engage with streaming content.

Research like the ones from Media Partner Asia and AVIA indicates that the trajectory of APAC's online subscription video market mirrors the growth experienced in mature North American and European markets. This evolution underscores the immense opportunities available to service providers who can successfully adapt to the changing dynamics of the region.

Drivers and Challenges

Technological advancements, particularly the rollout of 5G networks, are revolutionizing streaming quality and service accessibility in APAC, enabling providers to deliver enhanced viewing experiences across the region. Additionally, there is a growing demand for local content, which is encouraging operators to broaden their content portfolios to include more culturally specific programming.

Despite these opportunities, pay-TV operators face significant hurdles in innovating their services, primarily driven by cost management issues, intense competition, and technological fragmentation. Building and maintaining platforms across various regions and devices can be prohibitively expensive, especially for operators adopting a "build it yourself" approach. Competition not only comes from other pay-TV services but increasingly from more affordable OTT streaming options, making subscriber retention challenging. Technological fragmentation due to strategies that mix multiple vendors and internal solutions complicates system maintenance, scales up operating costs, and prolongs launch times. Additionally, market maturity limits growth opportunities in saturated local markets, and piracy continues to cause substantial financial and reputational damage.

Adapting to a dynamic market with evolving consumer expectations and new content remains a significant challenge, especially for outdated systems that struggle with flexibility and innovation.

Key Differentiators

Moving away from the classic pay-TV business model to a new approach entails significant investments This poses the challenges of enhancing operational scale and monetization while keeping tight control over costs and accelerating time to market.

To differentiate and thrive in the evolving pay-TV market, operators should consider six strategic differentiators. First, becoming a super aggregator addresses customer fragmentation by creating a one-stop entertainment hub, blending a variety of content while ensuring user-friendly experiences. Second, improving operational efficiency is crucial, focusing on strategic cost management, integrating broadcast and streaming platforms, and adopting cloud technologies to reduce expenses and enhance service agility.

Operators should also enhance monetization. Pay-TV operators are encouraged to adopt a hybrid model combining subscription and advertisement-based revenues. This approach allows for varied payment plans catering to different market segments, thereby broadening audience reach and maximizing advertising returns. Moreover, incorporating advanced features like gaming, IoT, and online shopping can significantly enhance user engagement.

Enhancing user experience is also crucial; operators must facilitate easy content discovery through personalized delivery and innovative advertising formats that balance user engagement with revenue generation. Strategic partnerships can expand content offerings and integrate e-commerce to boost revenues.

Leveraging data is essential for tailoring user experiences. Pay-TV providers must effectively utilize viewership data to refine content recommendations and streamline search functionalities across platforms. The integration of a metadata aggregator can unify data handling, enabling a cohesive search and discovery experience across various applications. This strategic use of data not only improves user satisfaction but also informs operational adjustments and innovations.

Finally, enhancing security in the video entertainment industry is imperative to protect platforms, subscribers, and content. Operators must secure their platforms from malware and pirated apps, ensuring a safe user experience and meeting the security standards set by content rights holders to access premium content. Employing AI-powered security measures can help analyze user behavior, detect anomalies, and prevent piracy.

The Role of Irdeto Experience

In today's dynamic media landscape, traditional broadcasters offering content on both broadcast and streaming platforms should adopt a unified approach that converges strategies to maximize effectiveness.

The Irdeto Experience suite plays a pivotal role in revolutionizing the video entertainment industry by offering a comprehensive solution that enhances user experience and security. With streamlined operations, it simplifies video streaming back-ends, reduces fragmentation, and optimizes vendor interactions, facilitating fast-tracked deployments. Enriched offerings include a refreshed user interface, support for super aggregation of major apps, unified search, and personalized recommendations, catering to evolving consumer preferences. Enhanced security features ensure 360-degree content protection, supporting managed and unmanaged devices, and offering certification and piracy monitoring. By harnessing open-source platforms, such as Android TV and RDK, the suite enables efficient deployment across diverse device ecosystems.

Furthermore, it capitalizes on market expansion opportunities in the APAC region and maximizes revenue streams through advanced advertising solutions and data analytics tools, empowering operators to optimize platforms and adapt strategies to consumer behavior effectively. **TR**

By Andrew Bunten, COO of Video Entertainment at Irdeto

Managing Network Complexity in Asia-Pacific Telecoms

The Asia Pacific region has witnessed a rapid evolution in telecommunications, driven by technological advancements, increasing demand for connectivity, and a competitive market landscape. As telecom companies strive to meet the growing needs of consumers and businesses, they face significant challenges in managing network complexity effectively.

Understanding Network Complexity in Telecoms

Network complexity in telecoms refers to the intricate web of technologies, protocols, devices, and services that constitute modern telecommunications infrastructure. With the proliferation of mobile devices, IoT (Internet of Things) devices, and high-bandwidth applications, telecom networks have become highly complex systems that require careful management and optimization.

According to a case study by CSG International (CSGI), telecom operators in the Asia Pacific region are grappling with the challenges posed by network complexity. As customer demands for faster speeds, seamless connectivity, and innovative services continue to rise, telecom companies must navigate a landscape that includes legacy systems, multiple network layers, and diverse service offerings.

The Evolution of Telecom Networks in the Asia Pacific

Historically, telecom networks in the

Asia Pacific region have transitioned from traditional circuit-switched networks to packet-switched IP networks. This evolution has been driven by advancements in digital technologies, including the deployment of fiber-optic networks, the adoption of 4G LTE (Long-Term Evolution), and the ongoing rollout of 5G networks.

In a study conducted by Arthur D. Little (ADL) on telecom network evolution, researchers highlighted the shift towards digitalization and the convergence of services such as voice, data, and video on IP-based platforms. This convergence has led to increased network complexity as operators manage hybrid infrastructures that support legacy services alongside next-generation technologies.

Challenges in Network Complexity Management

Managing network complexity in the Asia Pacific region poses significant challenges for telecom operators, encompassing scalability, interoperability, security, resource optimization, and service innovation. Scalability is a pressing issue as network traffic escalates exponentially, demanding infrastructure that can expand efficiently to meet rising demand without compromising performance or service quality. Interoperability presents another hurdle, given the coexistence of legacy systems and modern technologies, necessitating seamless integration across diverse network elements and protocols.

Security remains a paramount concern, with telecom networks being lucrative targets for cyber threats. Managing network complexity involves implementing robust cybersecurity measures to safeguard sensitive data and ensure the integrity of the entire network infrastructure. Resource optimization is crucial for telecom operators to strike a balance in resource allocation, encompassing spectrum utilization, network bandwidth, and hardware resources. Efficient resource management is essential for optimizing network performance while effectively controlling operational costs.

Furthermore, service innovation adds another layer of complexity to network management. Telecom operators must continually innovate and deploy new services to remain competitive in the dynamic market landscape. However, each new service introduced adds complexity to the network ecosystem, requiring careful planning and execution to maintain overall network efficiency and reliability amidst evolving customer demands and technological advancements. Addressing these challenges requires a multifaceted approach that combines technological innovations, strategic planning, and proactive management strategies tailored to the specific needs of the Asia-Pacific telecom sector.

Strategies for Network Complexity Management

To effectively manage network complexity, telecom operators in the Asia Pacific region are adopting various strategies and best practices. These include:

- Using NFV and SDN technologies to decouple network functions from hardware, allowing dynamic resource allocation based on demand.
- Leveraging AI and machine learning (ML) for automated network operations, fault detection, and performance optimization, reducing manual tasks and improving efficiency.
- Adopting cloud platforms to streamline operations, accelerate service deployment, and enhance scalability through cloud-native architectures.
- Utilizing big data analytics for actionable insights into network performance, customer behavior, and trends, optimizing resource usage and enhancing the customer experience.
- Engaging with ecosystem partners for innovation, knowledge sharing, and accelerating technology adoption, ensuring interoperability and industry best practices in network management.

These strategies collectively empower operators to navigate complexities and deliver superior services in a competitive market.

Managing network complexity is a strategic imperative for telecom operators in the Asia Pacific region as they navigate rapid technological changes, evolving customer demands, and competitive pressures. By adopting innovative technologies, automation, cloud integration, and data-driven insights, operators can enhance network efficiency, reduce costs, and deliver superior experiences to customers. Collaboration with industry partners and adherence to global standards further support effective network complexity management, ensuring sustainable growth and resilience throughout the telecom sector. **TR**

> Managing network complexity is a strategic imperative for telecom operators in the Asia Pacific region as they navigate rapid technological changes, evolving customer demands, and competitive pressures.

Hong Kong's Remarkable Climb in Global Data Center Rankings

Hong Kong has once again demonstrated its status as a leading data center hub on a global scale. According to the latest Global Data Center Market Comparison report by Cushman & Wakefield, the vibrant city-state has risen to fourth place in the overall rankings, reinforcing its status as a top contender in the field of data infrastructure.

The annual report meticulously assesses major data center markets around the world using 13 weighted categories. These categories include important considerations such as market size, fiber connectivity, power costs, and environmental risk. By scrutinizing these parameters, the report identifies the world's leading markets, shedding light on their strengths and growth trends.

Hong Kong's rise through the rankings can be attributed to a variety of factors. With strong connectivity, sustained demand, a plethora of cloud services, and a business-friendly tax structure, the city has managed to overcome challenges such as high land prices. This strategic combination of advantages has propelled Hong Kong from sixth place in the 2022 rankings to its current top quartile position.

John Siu, Managing Director of Cushman & Wakefield in Hong Kong, remarked on the city's burgeoning prominence, stating, "Hong Kong is one of Asia's leading and still-rising strategic locations for data centers, reflected in its move up in the overall global rankings to fourth place in the 2023 report. On the ground, Cushman & Wakefield Hong Kong recently advised pan-Asia data center operator, BDx, to pre-lease the majority area of the 38 Wing Kei Road building in Kwai Chung, as their third data center location in Hong Kong. The transaction further demonstrates the global demand and market confidence in Hong Kong's data center market by multinational players. We anticipate the data center segment will continue to grow as the city continues to expand and develop its innovation and technology industry in the upcoming years."

Hong Kong and Singapore Stand Tall Among Global Data Center Titans
Notably, Hong Kong and Singapore are the only two metropolitan areas outside of the United States to have achieved top-ten overall rankings.

Singapore, ranking third globally, excelled across key categories such as market size, fiber connectivity, and cloud availability.

In the United States, Northern Virginia, long hailed as the largest data center market globally, shared the top rank with Portland in the latest report. Surging land prices and development constraints in Northern Virginia led to this unprecedented tie, with Portland rising from 10th place in 2022 to claim joint supremacy. Other American hubs like Atlanta, Chicago, and Silicon Valley also secured positions in the rankings.

Todd Olson, Head of Asia Pacific Data Centre Practice Group at Cushman & Wakefield, emphasized the expanding footprint of hyperscale tenants and the increasing interest in secondary markets offering favorable land and power dynamics. He anticipates significant advancements in secondary markets' rankings in the coming years, signifying a broader trend toward diversification and expansion.

Continued Growth in Hong Kong's Data Center Market
The most recent analysis of the Hong Kong data center market has revealed an expected surge in market size, with a projected increase from USD 2.67 billion in 2023 to USD 5.28 billion by 2028. With a projected CAGR of 14.60% over the forecast period, the region's significant growth highlights its position as a key player in the Asia-Pacific data center landscape.

Recent investments have increased the availability of data centers in Hong Kong, attracting global investors due to the region's competitive tax policies, low energy costs, strong connectivity, and favorable climate.

The market's dynamism is characterized by the presence of top-tier cloud and hosting service providers establishing operations, resulting in a dense infrastructure of 42 colocation facilities, 29 cloud nodes, 13 internet exchanges (IX), and ten DRBC sites.

As a key international finance and trading hub, Hong Kong's demand for high-quality data storage and management services is increasing significantly. The presence of numerous multinational corporations in the city, as well as its strategic proximity to Mainland China, have consequently resulted in a significant impact.

As technology continues to reshape industries and redefine connectivity, the role of data centers as the foundation of digital infrastructure grows increasingly important. Hong Kong's significant improvement demonstrates its resilience, adaptability, and unwavering commitment to promoting global innovation and technological advancement. **TR**

> Hong Kong is one of Asia's leading and still-rising strategic locations for data centers, reflected in its move up in the overall global rankings to fourth place in the 2023 report

SK Telecom Accelerates Global Expansion of 'ifland' Metaverse Platform

SK Telecom (SKT) is optimistic about its metaverse platform, ifland, and aims to expand its influence in the Asia Pacific region by forming new collaborations in Malaysia and the Philippines. ifland is SK Telecom's metaverse service, which provides a variety of social networking features and is expanding globally through collaboration with various partners.

The metaverse concept, popularized by science fiction and, more recently, by technology companies, represents a convergence of virtual reality, augmented reality, and the internet. SK Telecom's entrance into this arena signifies its acknowledgment of the metaverse as a significant trend that heralds the potential for widespread adoption and economic impact.

Fostering Growth
The South Korean operator announced in a translated statement that it has expanded its ifland partner list to include Malaysian telco, CelcomDigi, and CHERRY—a Philippine Internet of Things (IoT) platform.

The agreements will provide a locally-optimized metaverse platform, with CelcomDigi and CHERRY focusing on local brand partnerships, specialized marketing, and primary customer support in their respective markets.

The objective is to expedite the growth of ifland into Southeast Asia. Additionally, it's important to highlight that CelcomDigi had previously committed to partnering with SKT on metaverse initiatives. Both companies previously announced their collaboration on expanding ifland and innovating new business concepts.

Yang Maeng-seok, the head of SK Telecom's metaverse division, cited Malaysia and the Philippines as key markets for ifland's international expansion. He went on to say that through collaboration with local companies and the introduction of AI, the company will be reborn as a 'global AI metaverse.'

CelcomDigi's Chief Innovation Officer, Kugan Thirunavakarasu, stated that the company will work to innovate in the metaverse and increase customer value through CelcomDigi's network technology and AI-based solutions.

HTHK, HK Electric Improve Cable Tunnel Surveillance with Robotic Solution

Hutchison Telecommunications Hong Kong Limited (HTHK) has deployed its advanced 5G 'Smart Inspector' Robotic Solution to The Hongkong Electric Co., Ltd (HK Electric), aiming to conduct continuous monitoring and examination of a confined cable tunnel.

The implementation of the Smart Inspector is crucial for continuous surveillance and inspection of the cable tunnel, guaranteeing the safety of power supply equipment and upholding dependable electricity distribution. This system utilizes high-speed, low-latency 5G technology, significantly enhancing patrol efficiency within the enclosed tunnel.

Transforming Smart Cable Tunnels
The cable tunnels play an essential role in HK Electric's power transmission and distribution network, and they can be quite challenging to inspect manually due to the confined spaces. HK Electric intends to transform these tunnels into 'smart cable tunnels' by incorporating the Smart Inspector Robotic Solution.

The solution was deployed for the first time at a cable tunnel in Cyberport, allowing the robot to conduct inspections—a task usually completed by certified workers. The robot is equipped with cameras, gas, humidity, and temperature sensors, allowing it to safely navigate the tunnel environment and gather important data.

Jess Mak, HTHK Senior Vice President of Enterprise Market, reiterated the company's dedication to promoting digital transformation across various industries with solutions such as the Smart Inspector.

"The Smart Inspector Robotic Solution was tailored to help make cable tunnel inspections at HK Electric more convenient and flexible. It also helps to ensure staff safety during inspections in an enclosed space, showcasing the scalability and possibility of 5G," said Mak.

HTHK's 3Business successfully installed 5G receivers into the cable tunnel, enabling the seamless real-time transmission of high-definition images and data. This solution highlights the versatility of 5G robots in various industries, including retail, catering, and property management, contributing to the advancement of Hong Kong's smart city development.

The success of the Smart Inspector Robotic Solution highlights the effectiveness of the 'Subsidy Scheme for Encouraging Early Deployment of 5G,' led by the Office of the Communications Authority. Under the scheme, the government subsidizes 50% of the actual cost directly relevant to the deployment of 5G technology in an approved project, subject to a cap of USD 500,000.

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USD 3 Billion Acquisition to Create a Stronger Multi-Orbit Satellite Operator

As agreed by both parties, SES is set to acquire Intelsat through the purchase of 100% of Intelsat Holdings' equity for a cash consideration of USD 3.1 billion (EUR 2.8 billion).

Once unified, the entity will forge a stronger, multi-orbit satellite operator that will amplify coverage, bolster resiliency, broaden its array of solutions, empower profitable innovation investments, and leverage the collective talent, expertise, and track record of both companies.

"In a fast-moving and competitive satellite communication industry, this transaction expands our multi-orbit space network, spectrum portfolio, ground infrastructure around the world, go-to-market capabilities, managed service solutions, and financial profile," said SES CEO, Adel Al-Saleh.

Going forward, the combined entity will provide customers with a more competitive portfolio of solutions with end-to-end offerings in the government and mobility segments, along with value-added, efficient, and reliable offerings for fixed data and media customers.

"By combining our financial strength and world-class team with that of SES, we create a more competitive, growth-oriented solutions provider in an industry going through disruptive change. The combined company will be positioned to meet customers' needs around the world and exceed their expectations," remarked Intelsat CEO, David Wajsgras.

Improved Financial and Operational Profile

The implied Enterprise Value of the transaction is set at USD 5 billion (EUR 4.6 billion). By integrating the two companies, SES expects to deliver synergies with a total net present value (NPV) of EUR 2.4 billion, with around 70% of this value expected to be realized within three years after the transaction is completed.

With a combined fleet of more than 100 GEO and 26 MEO satellites, the combined SES will benefit from enhanced coverage, greater network resiliency, complementary spectrum (C-, Ku-, Ka-, Military Ka-, X-band, and Ultra High Frequency) rights, and improved service delivery utilizing an expanded network of ground segment assets.

SES said 60% of the combined group's revenue would come from "high growth segments" and based on the 2024 financial outlook, the combined company is expected to generate approximately USD 3.8 billion in annual revenue.

Digital Tech Giants Collaborate to Introduce "Climate Technology Platform"

True Digital Group has unveiled a partnership with Alibaba Cloud, the digital technology and intelligence arm of Alibaba Group, to introduce its "Climate Technology Platform." This platform aims to assist businesses in identifying energy efficiency challenges, adopting established technologies for sustainable growth, and accelerating Thailand's transition towards environmental sustainability.

Climate Technology Platform Capabilities

Crafted with intricate and sophisticated architecture, the Climate Technology Platform seamlessly integrates cutting-edge technologies, including cloud computing, Internet of Things (IoT), and big data analytics. Leveraging various data sources on DataVisor, an integrated data management platform, and Alibaba Cloud's Energy Expert, the platform is equipped to provide comprehensive energy management solutions for enterprises.

The integration of sensors and IoT devices facilitates the seamless transition of traditional physical systems into advanced digital environments, enabling real-time data collection, analysis, and management.

Integrating multiple energy sources into a unified energy management system allows for a smooth transition towards renewable energy sources like solar power, hydroelectricity, and grid electricity.

Utilizing AI technology for comprehensive analysis and predictive insights, the companies are constructing an automated energy management system capable of precise real-time energy regulation. This system features a user-friendly dashboard and detailed reports for monitoring energy consumption and greenhouse gas emissions, including calculations for carbon emissions and measurements of carbon footprint resulting from business operations and activities. Additionally, leveraging AI algorithms, the system offers predictive recommendations to optimize energy efficiency and sustainability practices.

Globe Telecom Transforms Service Assurance with MYCOM OSI

MYCOM OSI, a top independent provider of network assurance and service experience assurance solutions for some of the largest communications service providers (CSPs) globally, announced at FutureNet World 2024 in London on April 16-17 that its Service Experience Assurance Solution (enhanced with SOC Automation) has delivered impressive results for the NOC/SOC (network operations center/service operations center) of Globe Telecom—the leading mobile network operator and digital solutions platform in the Philippines.

The Service Experience Assurance solution from MYCOM OSI, which includes service quality management, service impact analysis, and an enterprise portal, along with SOC Automation, operates on the AWS public cloud to monitor the quality of premium 4G/5G services using automation, intelligent traffic profiling, and predictive algorithms. This unique solution allows for a zero-touch NOC/SOC approach.

Improving Call Center Operations
Globe Telecom is a major CSP in the Philippines, serving over 57 million mobile customers with fixed, broadband, data, internet, and managed services. It is a subsidiary of Ayala Corporation and Singtel, both well-known industry leaders in the region. The MYCOM OSI Service Experience Assurance offering with SOC Automation Solution on Amazon Web Services' (AWS) infrastructure provides analytics and converged IT and network root-cause analysis to automate fault handling processes.

By deploying the MYCOM OSI solution across its mobile, broadband, and enterprise networks, Globe Telecom achieved proactive customer outreach for fixed line and mobile services, leading to pre-emptive remediation. This resulted in an 80%+ reduction in MTTx (mean time to detect, identify, correlate, and remediate) at the NOC and SOC; 100% automation of ticket creation at Globe Telecom's NOC and SOC; and a 25% decrease in network complaints at Globe Telecom's call center, improving the average handling time of call center agents.

Pioneering Digital Transformation
Dennis Abella, Vice President and Head of OSS at Globe Telecom, stated, "The MYCOM OSI Service Experience Assurance offering with SOC Automation Solution aligns with our commitment to customer satisfaction and supports our digital transformation goals."

Dialog Axiata PLC Teams Up with Telin to Combat Spam and Fraud

Dialog Axiata PLC, the top connectivity provider in Sri Lanka, and Telekomunikasi Indonesia International (Telin), the international arm of Telkom Indonesia, have signed a new Master Service Agreement (MSA). Under this agreement, Telin will exclusively provide managed services for international A2P SMS traffic and international voice termination traffic to Dialog.

The goal of this agreement is to produce revenue from international traffic while offering convenience, security, global coverage, and consistent service quality to Dialog customers. The signing of the agreement highlights both companies' commitment to improving telecommunication services worldwide.

The telecommunications industry is facing challenges due to an increase in spam, fraud, and unsolicited SMS messages. Furthermore, the growth of mobile communication and digital connectivity has made it difficult for consumers and service providers to deal with unwanted messages. Telin manages Telkomsel's international voice and messaging—its sister company—to protect the Telkomsel brand and provide quality connectivity for hyperscalers and carriers to reach Telkomsel customers.

Budi Satria Dharma Purba, CEO of Telin, expressed satisfaction with the partnership with Dialog. He praised Dialog for prioritizing customer and network protection and being reasonable in negotiations. He hopes that other mobile network operators will follow Dialog's example to restore trust in A2P and voice businesses globally.

Supun Weerasinghe, Director/Group Chief Executive of Dialog Axiata PLC, also commented on the partnership with Telin. He expressed pleasure in joining forces with Telin to protect customers and improve the integrity of international communications. This collaboration not only addresses spam and fraud challenges but also demonstrates a commitment to providing consistent service quality and enhanced security to customers.

Together with Telin, they aim to lead the way in safeguarding communication channels and building trust in the digital age.

PLDT, Smart Communications Launch Cloud Center of Excellence in the Philippines

PLDT Inc. and Smart Communications, Inc. in the Philippines are taking their cloud initiatives to the next level by establishing the Cloud Center of Excellence (CCOE). This move aims to create a more customer-focused and future-proof workforce.

According to Robin R. Ramos, FVP and Information Technology Officer-in-Charge at PLDT and Smart Communications, their cloud journey has been instrumental in their leadership position, and now they are further committing to cloud initiatives to prepare for future growth.

A Catalyst for Innovation
The Cloud Center of Excellence (CCOE) serves as a linchpin in the organizational roadmap, leveraging cloud computing to propel efficiency, agility, and innovation. It plays a pivotal role in enhancing workforce agility by enabling rapid scaling of resources and fostering collaboration through agile methodologies and DevOps practices. By centralizing cloud governance and best practices, the CCOE ensures operational excellence, driving consistency, security, and compliance across cloud deployments. Through automated monitoring and optimization tools, it facilitates cost savings, performance enhancement, and reliability, while fostering a culture of continuous improvement through knowledge sharing and training initiatives.

Moreover, the CCOE acts as a catalyst for innovation, providing a platform for experimentation and rapid prototyping to bring new products and services to market swiftly. By embracing emerging technologies like artificial intelligence (AI) and machine learning (ML), it drives digital transformation initiatives, empowering organizations to deliver unique value propositions and elevate customer experiences. Overall, the CCOE's strategic orchestration of cloud features empowers organizations to navigate the evolving digital landscape, accelerating their journey to the cloud, and positioning them for sustained success in an increasingly competitive market.

Becoming More Responsive to Market Forces
Gilbert Gaw, FVP and Transformation Office Officer-in-Charge at PLDT and Smart, emphasized that investing in cloud technology will improve customer experience, stability, and efficiency, making the company more responsive to market forces and more competitive.

The CCOE, aligned with the PLDT Group's purpose and values, will enhance cloud expertise and customer focus among the workforce. ePLDT, the group's ICT subsidiary, will support this initiative by providing secure, multi-cloud solutions to drive outcomes and achieve objectives.

Myanmar's MOTC Establishes its Private Cloud

The Ministry of Transport and Communications (MOTC) in Myanmar has deployed TrueConf's self-hosted software for the implementation of its private cloud for video conferencing and team messaging.

The system will allow MOTC to improve operational efficiency, strengthen information security, and promote seamless operation at all levels of the Ministry.

The Ministry plays an essential role in promoting Myanmar's growth by overseeing important sectors such as postal services, telecommunications, and public transportation, thus, updating its communication channels would be crucial not only from a savings perspective, but also for improving efficiency and promoting collaboration.

TrueConf Server, an all-in-one self-hosted collaboration platform, was utilized by MOTC to serve as the core of its communication network. By leveraging TrueConf's proprietary protocol and hosting the server within their infrastructure, the Ministry ensures data integrity and mitigates unauthorized access. This setup grants MOTC's IT specialists full control over conferences, maintaining a secure environment for confidential discussions.

Additionally, the Ministry has successfully incorporated the current video conferencing into the new corporate network by utilizing the TrueConf MCU, a software transcoding server that facilitates SIP and H.323 endpoints and is compatible with hardware vendors like Polycom and Cisco. The result is a cohesive communication system that enables MOTC personnel to seamlessly interact across different departments.

The Need for a Private-Cloud Infrastructure
The implementation of the new private cloud enables MOTC's day-to-day operations to become more efficient, thereby enhancing decision-making processes within the organization. TrueConf has also accelerated seamless organizational functions and productivity by enabling around 400 employees to hold meetings, trainings, workshops, and live events without any difficulties.

Pawel Workiewicz, Head of Business Development Division in APAC & MEA of Comarch

Innovation in Action: Comarch's Initiatives and Projects in APAC and MEA

In an exclusive interview with Telecom Review, Pawel Workiewicz, Head of Business Development Division in APAC & MEA of Comarch, delved into the company's extensive experience in delivering innovative IT products across multiple industries, particularly within telecommunications. He shared insights into Comarch's latest initiatives, the impact of cloud solutions on businesses, and highlighted key projects undertaken by the company.

Comarch recently received the license to use 4-4.1 GHz bandwidth for private 5G networks in Poland. What does this mean for the global enterprise customers in APAC and the MEA region?

Undoubtedly, the recent acquisition of the license 4-4.1 GHz bandwidth represents a significant milestone for our organization, signifying a pivotal step forward in our journey towards establishing an end-to-end solution. This license not only grants us the authority to function as a test laboratory but also opens up a plethora of opportunities for us to validate and refine our solutions. With this newfound capability, we are empowered to conduct rigorous testing, particularly in cutting-edge technologies such as 5G. Beyond merely evaluating the performance of our own systems, we are poised to explore and address various use cases that are currently in demand by operators, thereby enhancing the versatility and efficacy of our offerings.

In addition to facilitating comprehensive testing procedures, the acquisition of this license enables us to build and operate a private network within our facilities. This infrastructure plays a pivotal role in our innovation endeavors, allowing us to closely monitor network operations, conduct thorough evaluations, and implement real-time optimizations. Furthermore, it serves as the cornerstone of our innovation space— a dynamic environment where customers and stakeholders can engage with our solutions firsthand.

Within this innovation space, customers have the unique opportunity to witness our systems in action, gaining invaluable insights into their functionalities, capabilities, and performance. Through interactive demonstrations, they can observe real-world scenarios, explore diverse use cases, and experience the seamless integration of our solutions into their existing networks. Moreover, our innovation space serves as a collaborative hub, fostering open dialogue, knowledge sharing, and co-creation among industry stakeholders.

In an increasingly cloud-native environment, how are Comarch's cloud solutions helping businesses boost efficiency and productivity? Are there any challenges that you are facing?

Being cloud-native is paramount in today's technological landscape. The shift towards cloud computing, whether it be private or public, is undeniable. From an architectural standpoint, our system is fully cloud-native, with our modules leveraging the latest technologies. Moreover, we have the capability to monitor cloud environments, a crucial aspect given the telecommunications industry's increasing reliance on cloud infrastructure. Our system excels in managing and orchestrating network transportation, providing dedicated support for these evolving networks.

What sets us apart is our innovative AI module, specifically designed for network orchestration. Known as multi-criteria intelligent resource allocation (MIRA), this module autonomously adjusts network parameters based on various policies and information gathered by our solution. This adaptive approach ensures optimal network performance and efficiency, further solidifying our position at the forefront of technological innovation.

Could you provide details on Comarch's investments in significant projects that are aligned with your expansion strategies in APAC and the MEA region?

In general, our strategy is to expand our presence in the Middle East and Asia. We've observed an increasing number of projects in the region and have consequently opened several offices, such as the recent one in Jakarta, Indonesia. However, the most significant project, which we're proud to have delivered recently, is in Japan. Comarch provided a comprehensive OSS solution for management of all aspects of KDDI's 5G SA network. This project marks a significant milestone for us in the Japanese market. We anticipate significant transformations in terms of 5G technology in this region. Another noteworthy project we've successfully executed is in Korea, focusing on comprehensive OSS Transformation including 5G, 4G and fixed network. The key driver for the project was the preparation for a massive deployment of 5G network as well as optimization of internal company processes and improvement of the overall end-user experience. **TR**

> "Our system excels in managing and orchestrating network transportation, providing dedicated support for these evolving networks

Asian Telecom Leaders Unveil the Transformative Impact of 5G-Advanced

Telecom Review, the Asia-Pacific's leading ICT platform, under its parent company, Trace Media International, organized a webinar entitled, "Unleashing Network Capabilities with 5G-Advanced, Asia Edition," held on April 29, 2024. The groundbreaking webinar was hosted by Telecom Review Group's CEO, Toni Eid, and moderated by David Turkington, Head of Technology for GSMA Asia Pacific. The webinar brought together industry leaders to explore the transformative potential of 5G-Advanced (5.5G) in Asia.

Led by industry experts such as Shanshil Shibly, Asia Technology Head of Telenor Asia; Ir Fadli Hamsani, GM Enterprise Solution Management of Telkomsel; Nor Hisham Md Nordin, GM Mobile and Wireless of TM One; and Cheong Hai Thoo, Vice President Mobile Engineering of Singtel; the webinar covered a wide range of topics including industry-specific use cases, technological advancements, deployment strategies, and the socioeconomic impact of 5G-Advanced in Asia.

Transition Towards 5G-Advanced
The panelists provided insights into their companies' journeys and

discussed their notable initiatives within the realm of 5G. Hamsani recounted Telkomsel's journey, highlighting the company's 5G demo in May 2017 and impactful trials during the 2018 Asian Games, leading to the official launch of 5G in May 2020. These use cases targeted consumer and enterprise markets, particularly sectors like mining, manufacturing, and agriculture.

Meanwhile, Hai Thoo highlighted Singtel's early 5G adoption, achieving nationwide coverage by July 2022. Singtel pioneered network slicing during the Formula One Singapore Grand Prix in October 2022, with subsequent enhancements including security slicing and application-based slicing, reinforcing their commitment to advancing network capabilities. Hai Thoo also mentioned the role of URSP obligation detection in February 2024. This accentuates the ongoing efforts Singtel is taking to enhance security protocols and compliance measures.

Additionally, Nordin shared TM One's journey, highlighting collaborative efforts dating back to 2019, and the establishment of the DNB special purpose vehicle (SPV), which played an instrumental role in accelerating nationwide 5G deployment. Private 5G deployments for patrons demonstrated significant cost savings and enhanced safety in hazardous environments, laying the foundation for broader public adoption.

Furthermore, Shibly emphasized the challenges faced by Telenor Asia in adopting 5G, despite significant network coverage across Thailand. Drawing inspiration from Nordic counterparts' advancements in 5.5G, Telenor Asia aims to leverage advanced capabilities to drive enterprise success in Asia.

Key Features of 5G-Advanced Networks

When asked about the key features of 5G-Advanced networks, and how they differ from 4G and/or 5G networks, Shibly emphasized the evolutionary path from 4G to 5G, and now onto 5.5G, underlining the gradual transition driven by technology capabilities and business interests. Shibly highlighted the company's focus on artificial intelligence (AI) and machine learning (ML), aligning with enterprise needs in sectors like manufacturing, mining, and port authority.

Hamsani echoed Shibly's sentiments, stressing the shift towards business enterprise solutions and the pivotal role of 5G in addressing industry pain points.

Hai Thoo underscored the significance of low latency as a cornerstone feature of 5G-Advanced networks (essential for supporting latency-sensitive applications such as augmented reality (AR), virtual reality (VR), and real-time gaming). Additionally, he emphasized that high density, referring to the ability to accommodate a large number of connected devices within a confined area, is emerging as a key imperative for 5G-Advanced networks.

> Hai Thoo highlighted the regulatory framework set by the IMDA, emphasizing the importance of a standalone 5G network as the foundation for both 5G and its advanced iteration

Another pivotal aspect highlighted by Hai Thoo was the importance of network slicing in the context of 5G-Advanced networks. Moreover, the focus on uplink speed over downlink speed signifies a strategic shift towards prioritizing symmetrical data transmission, particularly relevant for applications requiring high upstream bandwidth such as video conferencing, cloud gaming, and remote collaboration. The integration of AI and ML further augments the efficacy of network slicing, enabling intelligent resource allocation and dynamic traffic management.

Tech, Spectrum and Regulatory Considerations when Transitioning From 5G to 5G-Advanced

When asked about the network and tech requirements needed for the transition from 5G to 5G-Advanced, Hai Thoo highlighted the regulatory framework set by the IMDA, emphasizing the importance of a standalone 5G network as the foundation for both 5G and its advanced iteration. He noted that the evolution from 5G to 5G-Advanced is a natural progression, primarily driven by market demand. Despite significant investments in 5G infrastructure, Hai Thoo observed a lack of new applications demanding high bandwidth and low latency.

However, he expressed optimism about emerging demands from enterprises for guaranteed quality of service. Hai Thoo highlighted enhancements in 5G-Advanced, such as improved radio performance, enhanced coverage, support for passive IoT, and increased efficiency through AI and ML technologies. He also emphasized the importance of aligning these enhancements with specific use cases to ensure effective solutions without creating unnecessary problems. He added that the integration of Multiple Input Multiple Output (MIMO) technologies and passive IoT solutions are emerging as key enablers of network efficiencies and performance optimization.

Nordin emphasized the critical role of spectrum allocation in facilitating the transition to 5G-Advanced networks. Specifically, he noted that

the utilization of C-Band and high throughput frequencies is emerging as a cornerstone strategy to unlock enhanced network performance and capacity. The advocacy for leveraging the 17-18 gigahertz spectrum underscores the imperative of tapping into higher frequency bands to accommodate growing data demands and enable future innovations.

Furthermore, Nordin highlighted the significance of considering RAN vendor differences and ensuring compatibility across end-to-end core and RAN infrastructure. In addition to spectrum considerations, Nordin underscored the importance of integrating green technology solutions to promote sustainability and environmental stewardship.

Successful 5G-Advanced Deployments in Asia and Their Challenges

When asked about successful 5G-Advanced deployments in Asia and the challenges faced, Hamsani mentioned the importance of learning from past experiences in 5G deployment. He highlighted key challenges such as the maturity of the device ecosystem supporting 5G technology and the need to address issues within the network, device, and application ecosystem. Moreover, Hamsani highlighted the robust technical investment in Indonesia, where significant portions of the GDP are allocated to drive innovation and infrastructure development, further fueling the momentum towards 5G-Advanced adoption.

Meanwhile, Hai Thoo talked about the significant adoption of networks across various countries, achieving over 100% penetration and leveraging economies of scale. He further discussed the deployment of 5G-Advanced networks during events in Singapore featuring renowned artists like Taylor Swift and Bruno Mars, which showcased the transformative potential of advanced networking technologies in enhancing user experiences and enabling innovative applications. Through high-definition video streaming services and immersive multimedia experiences, attendees were able to enjoy split viewpoints and multiple angles, creating

a truly immersive and interactive environment.

Hai Thoo highlighted the remarkable capacity of 5G-Advanced networks, which can accommodate high traffic loads with an average of 60-70 thousand people connected simultaneously during peak periods. He noted that this seamless connectivity and low-latency communication facilitates a wide range of activities, from real-time communication and social interaction to multimedia content consumption and sharing.

Through meticulous planning and leveraging advanced network slicing techniques, Singapore achieved unprecedented levels of connectivity and service quality, exemplifying an "economy of scope" where resources were optimized to deliver maximum value and performance.

Fueling Economic Growth Across Asian Industries

With a shared vision of leveraging advanced networking technologies to unlock new opportunities and propel innovation, the panelists emphasized the critical role of collaborative efforts in realizing the transformative potential of 5G-Advanced.

Shibly emphasized the rapid evolution of the ecosystem, sharing the imperative for collaboration with hyperscale companies and industries transitioning towards AR and VR technologies. He stressed the pivotal role of CSPs in effectively delivering these services to customers, thereby advancing 5G and potentially paving the way for the transition to 6G.

The moderator, David Turkington, interjected, reiterating the importance of uplink capabilities and emphasizing its critical role in ensuring seamless connectivity and optimal performance, particularly in applications requiring real-time data transmission and interaction.

Nordin, on the other hand, discussed the benefits and challenges of 5G and 5G-Advanced deployments, particularly in private networks. He emphasized the need for a cost-benefit analysis,

highlighting industries such as oil and gas, manufacturing, ports, and mining as prime candidates for private network adoption due to the specific requirements and remote locations involved. Additionally, delving into TM One's spectrum allocation challenges, Nordin highlighted the significance of private networks tailored to specific industry requirements, citing LTE as a focal point for enhancing connectivity and reliability, especially in environments where traditional Wi-Fi solutions may prove inadequate.

Hamsani underscored the importance of showcasing tangible use cases to demonstrate the value proposition of 5G-Advanced technologies and encourage investment. By leveraging AI, IoT, and VR technologies, industries such as mining and automotive have pioneered innovative solutions that optimize operations, enhance productivity, and drive efficiency.

> Nordin highlighted the significance of considering RAN vendor differences and ensuring compatibility across end-to-end core and RAN infrastructure

The implementation of connected machines, sensors, automation, and logistics serve as compelling examples of the transformative impact of 5G-Advanced in enabling Industry 4.0 initiatives. Hamsani emphasized the concept of "seeing is believing," highlighting the importance of tangible demonstrations to instill confidence and drive adoption among stakeholders. Furthermore, Hamsani's notion outlining the "elastic customer" underscores the importance of agility and responsiveness in meeting evolving market demands, positioning 5G-Advanced as a catalyst for sustainable growth and competitiveness.

Spectrum Allocation: Key Considerations and Strategies

In terms of spectrum allocation and key 5G-Advanced considerations, Shibly emphasized the importance of spectrum efficiency and carrier aggregation in maximizing spectrum usage for 5G and 5G-Advanced. He also discussed the potential for spectrum reform and collaboration with regulators to optimize spectrum utilization.

Hai Thoo shifted the focus to Singapore's approach, commending the country's prioritization of network quality over revenue in spectrum allocation. He further highlighted the indispensable role of spectrum bands like the mid-band and low-band in constructing high-quality 5G networks pivotal for economic growth and innovation. Hai Thoo also emphasized the strategic imperative of securing adequate frequencies to support the rollout of 5G-Advanced networks, ensuring optimal performance and coverage.

Nordin outlined the key technological considerations and challenges in deploying 5G-Advanced networks, emphasizing the need to transition from private to public networks and optimize spectrum usage. While mid- to C-Band frequencies offer promising opportunities for 5G deployment, he emphasized that challenges related to mmWave propagation in areas with thick vegetation highlight the importance of adapting deployment strategies to local conditions.

Moreover, Nordin highlighted the importance of addressing gaps in the device ecosystem and implementing dual-network solutions to enhance coverage and reliability.

Shibly further underscored the importance of maximizing spectrum usage and exploring opportunities in the 6 GHz frequency band to support future iterations of 5G technology. He emphasized that reform initiatives aimed at streamlining regulatory processes and promoting efficient spectrum management are essential to realizing the full potential of 5G-Advanced networks.

The Power of Regional Collaboration

As the webinar came to a close, the discourse turned to the importance of regional partnerships. Shibly underscored the strength of Telenor Asia's alliances with major OEMs such as Ericsson, Nokia, ZTE, and Huawei. He stressed the pivotal role of collaboration in propelling network advancements and maximizing the potential of cloud platforms for various applications. He noted that the involvement of hyperscale cloud providers signifies the convergence of telecommunications and cloud computing ecosystems, facilitating the integration of advanced services and applications.

Hai Thoo echoed this sentiment, emphasizing the significance of collaboration among service providers across the region. He mentioned key players like AIS in Thailand, Telkomsel in Indonesia, Optus in Australia, Globe in the Philippines, and others, once again, noting the importance of sharing experiences and expertise to promote 5G adoption across diverse environments and use cases.

Moving forward, continued collaboration will be essential for promoting 5G adoption across various environments and use cases, ensuring the seamless integration and advancement of telecommunications technologies throughout the region.

As the journey towards realizing the full potential of 5G continues, continued dialogue, strategic partnerships, and proactive problem-solving will be essential for overcoming challenges and maximizing the opportunities that lie ahead. ▣

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> Shibly emphasized the importance of spectrum efficiency and carrier aggregation in maximizing spectrum usage for 5G and 5G-Advanced
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Evolving Automation Requirements for Advanced Communications Networks

As next-generation 5G and satellite networks increase in operations complexity, CSPs can leverage automation technology and best practices, including AIOps and E2E service orchestration, to monetize cutting-edge services and maintain the highest levels of customer experience.

The next generation of telecom technology is revolutionizing the way we live, work and think. With faster transmission speeds, higher bandwidth and reduced latency, advanced communications networks such as 5G and the rapidly growing satellite communications sector offer nearly limitless possibilities. However, this also exponentially increases the complexity of network operations, partner ecosystems and service delivery, resulting in the need for a new way of approaching traditional manual processes.

Communications service providers (CSPs) cannot just flip a switch to upgrade their networks and support rapid provisioning and scaling to dynamically adapt to fluctuating demands. The challenge of increasingly complex networks is further compounded by high-performance network needs, with both B2C and B2B customers requiring on-demand services anytime, anywhere. In addition, CSPs will want to identify ways to monetize their significant investments within the network to fully realize the business benefits.

The Operations Environment of the Future

In order to fully realize the potential and practical benefits of modern networks, the operations environment of the future must meet three major criteria:

- **It Must Be Cloud Native:** Container-based microservices create a loosely coupled architecture with modular components to break down and simplify the complexity of legacy frameworks. Along with open APIs and DevOps, cloud-native architecture provides near instantaneous scalability, deployment and redeployment to any cloud platform, resulting in optimized flexibility, upgrades and partner ecosystems.

- **It Must React in Real Time:** 5G networks and satellites will need to provide simultaneous responses and support for millions of devices running billions of applications and services. Each device, application and service will have different needs at different times, making low latency a necessity for progress. A network that cannot automatically and rapidly scale and adjust to accommodate these needs will defeat the entire purpose of automation by wasting a staggering number of resources.

- **It Must Support Intent-Based Orchestration:** Intent-based orchestration uses preconfigured service models, policy and context with closed-loop control to automate the entire service and network slice life cycle. Closed-loop service management can establish effective intent-based orchestration; it uses AI/ML and analytics to monitor, manage and optimize everything from design to assurance for smooth operations within complex networks.

E2E Orchestration: Catalyst for Network Automation

By breaking away from the traditional monolithic approach, CSPs can ensure their operations environments are equipped to handle the rapidly changing demands of these dynamic networks. The 'divide-and-conquer' strategy evident in domain orchestration offers one way forward. It separates networks into self-sufficient operational domains, such as core, RAN, transport and multi-access edge computing (MEC), creating smaller and more manageable network sections, as well as the ability to address specific and sudden demands.

However, in the complex multivendor and hybrid world of 5G, a network is only as good as its slowest segment.

CSPs should consider implementing E2E service orchestration, which automates network design, provisioning, full life cycle management and E2E optimization. Its open API-based architecture ensures flexible programming and seamless partner integration, while its closed-loop AI/analytics capabilities enable intelligent resource management and service deployment without human intervention.

CSPs looking to invest in E2E orchestration solutions should keep a few key aspects in mind:

- **Consider AI/ML-Driven, Intent-Based Automation Solutions:** Operators should look for intent-based automation with advanced analytics capability. This will help create closed-looped, zero-touch service management with proactive assurance and advanced capacity planning capability.
- **Make Sure the Automation Solution is Future-Proof:** Key capabilities of intelligent intent-based automation will depend on how seamlessly it can manage E2E 5G operations automation. This entails managing core and RAN, which can be proprietary or Open RAN-based. The solution should also have proven interoperability and support cloud-based networking.
- **Real-Time Active Resource Inventory is Also a Must-Have**: Dynamic on-demand networks need real-time inventory capability. Hence, CSPs should verify if federated active inventory for a single network view with capabilities for massive data intake and processing is a feature. Active resource inventory should be able to provide real-time visibility for all logical networks, resources and infrastructure while serving as a consistent and accurate source of data for the entire BSS/OSS and enterprise application ecosystem.
- **Enable Partner-Based Business Models:** In order to fully embrace partner-based business models, automation solutions should be able to provide rapid onboarding of partners across multivertical industry segments. This will help operators reduce time- and cost-to-market

with pre-configured packages, standard support, DevSecOps automation and pre-onboarded partners. It will also help operators gain or maintain leadership in the digital ecosystem through strong strategic partnerships and evergreen products.

Leveraging AI for Automated Operations

Once the foundation of digital transformation is built, the intricacies of automation and AI to ensure seamless connectivity and buoy customer experience becomes self-evident, and the combination of OSS with AI/analytics will lead to significant advancements in the areas of service lifecycle management and service assurance. As service providers continue to evolve from telcos to techcos and take advantage of E2E service management, artificial intelligence for IT operations (AIOps) is an essential component.

By applying automation and AI technologies to the service operations layer, significant advancements can be achieved in a number of key areas that will benefit telecom service providers:

- **Use AI Automation for Assurance:** In an increasingly saturated market, customer experience is the battleground for differentiating service. When basic performance measures such as speed and coverage are similar, customer experience will make CSPs stand out. Combining AI, operational tools and observability enables service providers to create several AIOps use cases that ultimately improve customer experience, which leads to better retention and longer customer lifetime value. Common use cases include problem detection, impact analysis, root-cause analysis and service optimization.
- **Communicate Proactively with Customers:** Most customers only contact customer service when they have a problem. Problem detection means that a huge percentage of issues can be detected and resolved before the customer is even aware. Root cause analysis accelerates fault resolution, meaning that downtime is

minimized, and intent-based service optimization allows the operator to prioritize services based on their importance to the subscriber.
- **Improve Operational Performance Through GenAI:** While AI-driven assurance enables a substantially better customer experience, Generative AI (GenAI) will further improve operational performance by augmenting AI with innovative content creation and natural language interactions. From assisting technicians in the field to creating service designs, or correlating alarms across domains, it will bring a further degree of automation and efficiency.

GenAI will also provide an important trust function for AI-automated operations by explaining (in natural language) every step of the AI analysis and proposed resolution. This level of explanation will help operations experts gain confidence in the technology to further accelerate its adoption across the business and continue the connectivity evolution.

This technology can also be used to improve network performance as AIOps holds the ability to monitor, collate, analyze, assess impact, and implement changes to the network without manual intervention, thereby improving overall performance, preventing the escalation of minor issues and reducing the duration of any outages. This ability to understand and mitigate future issues makes AIOps a key component of the digital future.

5G and satellite networks deliver an entirely new class of powerful technological capabilities and innovative business models. However, these advances come with the price of vastly greater complexity and scale, and require an updated approach to automation to capitalize on these investments and offer new services. CSPs that take the time to reinvent their operations environment now will reap the benefits of streamlined networks and differentiated services in the future. **TR**

By Ari Banerjee, Senior Vice President, Strategy, Netcracker Technology

Implementing AI in Defensive Cybersecurity Strategies in Asia

Cybersecurity is essential in safeguarding the integrity and privacy of data, infrastructure, and organizations in today's technological landscape, which is being driven by digital innovation. In response to the swift advancement of cyber threats, countries in Asia are strengthening their security measures by adopting emerging technologies, specifically artificial intelligence (AI), to counter more sophisticated cyberattacks and address the inadequate number of cybersecurity professionals.

According to Kaspersky, the Asia Pacific is currently experiencing a scarcity of 2.1 million cybersecurity specialists as of 2022. This highlights the necessity for interventions to strengthen digital safeguards against progressively-advanced threats. Thus, experts are recommending the use of AI in cybersecurity frameworks to address the shortage.

Deploying AI as a Defensive Strategy
The expanding scale and complexity of cyber threats has resulted in the inadequacy of existing defensive measures, highlighting the need for an overhaul towards proactive and adaptive solutions. The potential of AI dwells in its ability to enhance cyber security through data analysis, pattern recognition, and automation.

Countries such as China, Japan, South Korea, and Singapore have pioneered efforts to focus on utilizing AI for added cybersecurity measures.

In 2020, Japan's Ministry of Defense reportedly invested about USD 237.12 million in the development of advanced AI systems to protect the digital infrastructure of the country.

The Japanese government set out to create an extensive AI system capable of identifying malicious emails, coordinating automated responses to cyber-attacks through machine learning (ML) capabilities, and ultimately mitigating the impact of such attacks on both public and private organizations.

Japan's cybersecurity defense strategy also reportedly focused on acquiring a Cyber Information Gathering System. This system provides the Self-Defense Forces (SDF) with vital intelligence on the tactics, techniques, and procedures (TTP) employed by cybercriminals. This enables the SDF to take proactive measures and make informed decisions in safeguarding against cyber threats.

Last year, Singapore introduced the National Artificial Intelligence Strategy (NAIS) 2.0, which serves as a robust framework in Asia's battle against increasing cyber threats.

Singapore has also implemented a comprehensive governance framework that prioritizes transparency, safety, and accountability, building upon previous projects such as the Model AI Governance Framework and AI Verify. These frameworks prioritize security in the ongoing evolution of technology, ensuring that AI development remains centered around safeguarding systems and data.

Even the advanced defense of Singapore is susceptible to vulnerabilities posed by cyber threats. According to the Asia-Pacific Small Business Survey, 50% of small enterprises in Singapore believe that they are vulnerable to cyberattacks. This highlights the necessity for both strong governance and technological advancements in order to effectively address the growing concerns in cybersecurity.

Boosting Cybersecurity Capabilities
Meanwhile, an executive from Amazon Web Services believes that the Philippines has the potential to establish itself as a frontrunner in the field of cybersecurity by using the revolutionary capabilities of GenAI.

The Philippines has approximately 200 cybersecurity professionals, a stark contrast to the roughly 3,000 in Singapore. This underscores the significant potential for expansion and the cultivation of more talent in the cybersecurity field within the Philippines.

Microsoft has also shared its plans to provide training in AI technology and cybersecurity to 100,000 women in the Philippines, which could empower women in the IT sector and boost the country's cybersecurity capabilities.

The company also intends to implement an AI-driven reading progress tool for around 27 million

children in the Philippines, in partnership with the Department of Education. This project was launched in response to a survey conducted by the World Bank in 2022, which showed that 90% of ten-year-old Filipino students face difficulties in comprehension.

The incorporation of AI and other emerging technologies such as quantum computing, blockchain, and IoT promises a significant transformation in the cybersecurity frameworks in Asia. This integration has the potential to offer increased levels of resilience and flexibility in safeguarding digital assets. **TR**

> The incorporation of AI and other emerging technologies such as quantum computing, blockchain, and IoT promises a significant transformation in the cybersecurity frameworks in Asia

India's Digital Journey: Promoting Sustainability in 5G and ICT

Connectivity has become the foundation of progress and experts anticipate that the widespread adoption of 5G technology—and the upcoming 5G-Advanced and 6G—will revolutionize several aspects of communication, innovation, and sustainable development.

India is promoting the implementation of 5G technology in a more sustainable manner, as the country gradually embraces this technology. India's strategy for deploying sustainable 5G technology is supported by a strategic mixture of innovation, legislative measures, and engagement with industry stakeholders.

India's Sustainable Efforts

According to Invest India, the country has the second-largest telecommunications market globally with a subscriber base of about 1.079 billion, as of December 2023. It has experienced significant growth in recent years, facilitating the connection of millions of people across the country.

Yet, while this advancement has ushered in numerous benefits, it has also brought forth both positive and negative impacts. One significant concern arises from the ecological consequences stemming from conventional telecommunications infrastructure. Among the 770,000 towers dispersed across the country, a substantial portion continues to rely on diesel generators. This reliance not only poses environmental hazards but also exacerbates the release of carbon emissions.

Thus, 'Green Telecom' was established to address the environmental challenges that come with India's industrialization. The initiative focuses on lowering carbon footprints, using renewable energy sources, and promoting environmental responsibility.

The Indian government has been actively implementing measures to bridge the gap in access to digital technology, aiming to boost the number of telephone connections and ensure high-speed internet availability in both urban and rural areas across the country. However, the progress towards establishing connectivity in rural India has been impeded by the lack of a reliable power source, posing a persistent challenge in the implementation of these initiatives. In response, telecom operators have explored alternative power options to ensure continuous service delivery, such as diesel generators and inverter-battery systems.

According to India's Department of Telecommunications, sustainability has become a top priority for telecom providers due to rising energy costs, which account for about 25% of operating expenses (OpEx). Consequently, renewable energy sources like solar and wind power have become better alternatives. Furthermore, the DoT has also proposed integrating alternative energy systems into grid-connected and remote off-grid locations.

In response to this, the government has launched projects within the USOF Phase I sites, through BSNL, focusing on addressing environmental concerns, cutting costs, and improving the energy efficiency of mobile communication networks. By incorporating sustainable energy sources like wind and solar, these initiatives have not only made a significant impact in reducing carbon emissions but have also greatly reduced the need for diesel generators.

Future Plans

During the recent interim budget speech for the fiscal year 2024-2025, Finance Minister, Nirmala Sitharaman, outlined India's ambitious plans for key sectors such as telecommunications and information and communication technology (ICT), aligning them with India's Vision 2047.

Vision 2047 will guide India's journey towards becoming a developed country by 2047. The foundation of this approach is a comprehensive integration of various elements, including economic infrastructure growth, technological progress and sustainability.

Advancements in the telecommunications and information technology industry aim to attain a significant milestone: capturing a 20% share of the global production of mobile telecommunications technologies. Additionally, India intends to establish predominantly self-sufficient domestic telecommunications networks.

India has set ambitious objectives in the telecommunications sector, including increasing its global market share in optical and network equipment supply to 25%. Additionally, India aims to have at least one telecom manufacturing company ranked among the top five globally in optical and network technology.

Furthermore, India is striving to position itself among the top five countries in communication technology research. The country also seeks to enable two Indian companies to rank among the top 10 global firms in quantum communication. Finally, India aims to establish C-DoT as a globally recognized institution in the field of telecommunications.

India's efforts to promote sustainable 5G adoption in Asia are marked by a holistic approach that integrates innovation, policy intervention, and international cooperation. India is laying the foundation for a future in which progress is propelled by technical advancement, while also supporting sustainability. **TR**

> " sustainability has become a top priority for telecom providers due to rising energy costs, which account for about 25% of operating expenses (OpEx) "

Empowering Smart Cities in Asia with Edge Computing
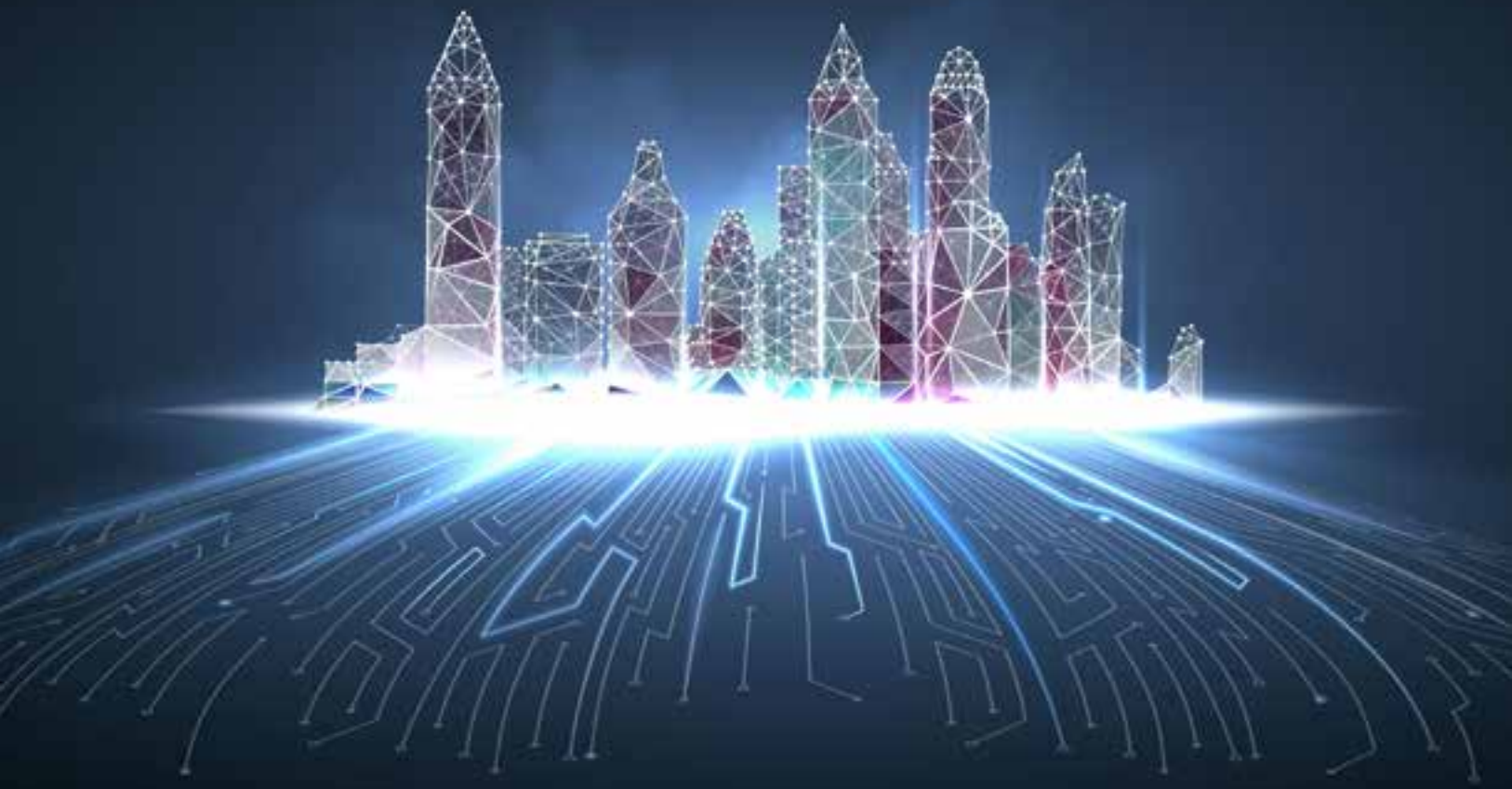
Asia is home to some of the most densely populated cities worldwide, presenting significant challenges for urban planning. Governments across the region must confront a myriad of issues, including congestion, pollution, inadequate infrastructure, and depleting resources.

One noteworthy solution to addressing challenges brought about by rapid urbanization is the development of smart cities. Smart cities incorporate Internet of Things (IoT), artificial intelligence (AI), and data analytics to improve efficiency, sustainability, safety, and quality of daily life.

Emergence of Smart Cities

Cities across Asia have increasingly relied on technology to digitize and automate processes and tasks that can improve all aspects of urban life. Smart city technologies have various applications depending on their locations, such as smart traffic management which can improve traffic flow and decrease congestion, while energy-efficient streetlights and smart grids promote environmental sustainability by conserving energy and reducing waste.

The benefits of smart cities extend beyond offering convenience, they also serve as effective ways to address challenges, such as crime and overall security in the city. By utilizing real-time monitoring and predictive analytics, they are able to recognize and manage potential threats, such as locations that have a high rate of criminal activity or areas that are currently experiencing natural disasters. The integration of sensors with the Internet of Things enables the development of early warning systems, offering vital time for implementing mitigation measures. This technology has the potential to decrease the severity of disasters by providing timely alerts and facilitating proactive responses.

Smart cities can also reduce energy consumption, thereby minimizing their impact on the environment and enhancing sustainability. According to the United Nations, industrial and commercial activities in cities account for around 75% of energy consumption and around 60% of carbon emissions globally. By using technologies like renewable energy sources and digital infrastructure, cities have the potential to significantly reduce their impact on the environment.

Edge Computing in the Development of Smart Cities

Edge computing has been an essential technology in developing smart cities across Asia. This entails the processing of data in close proximity to its source, as opposed to relying on distant data centers. This methodology reduces the delay and data transmission requirements, enabling real-time decision-making and quicker response time.

In smart cities, edge computing enables the smooth integration of IoT devices, sensors, and other data-generating endpoints, which allows cities to efficiently collect, analyze, and process data in a more personalized and adaptable manner. This indicates that systems like self-driving cars navigating busy streets or emergency response teams reacting swiftly can make instantaneous decisions with confidence, thereby ensuring the safety and well-being of all individuals involved.

Recent IDC reports show that Japan is expected to increase its investment in edge computing, reaching USD 12 billion by 2024, a 12.3% compared to the previous year. It will have a strong and steady growth pattern until 2027, with investments expected to reach USD 17 billion.

Meanwhile, Singapore has established itself as the smartest city in Asia, according to IMD's 2023 Smart City Index. This highlights Singapore's exceptional use of technology to address urban challenges and improve the quality of life for its citizens.

Singapore's success in developing smart cities can be attributed to its commitment to continuous investment and improvement, which includes the integration of advanced solutions in areas such as health and safety, mobility, and education.

Edge computing not only addresses the challenges related to the speed of data transfer, but also provides a solution to the bandwidth limitation commonly experienced in typical cloud-centric designs. Due to the rapid increase in data volume in smart cities, sending all this information to a centralized cloud might result in network congestion and much higher bandwidth expenses. Edge computing directly addresses this problem by conducting data processing and analysis directly on edge devices. The cloud receives only necessary and consolidated data, which optimizes the utilization of bandwidth and enhances network efficiency, while also decreasing operational expenses.

Furthermore, edge computing improves the dependability and robustness of smart city systems. Through the allocation of computing resources to edge devices, essential services can maintain local operation, even during network failures or outages, which is essential in applications used within the public safety, healthcare, and traffic management sectors.

The advancement and accessibility of technology has allowed for the widespread adoption of edge computing in urban settings. The benefits of edge computing have the potential to significantly transform city life across Asia. ▣

> Through the allocation of computing resources to edge devices, essential services can maintain local operation, even during network failures or outages

Indosat Achieves Strong Q1 24 Financial Performance

Indosat Ooredoo Hutchison (Indosat) has achieved outstanding financial and operational performance in the first quarter of 2024.

During the first three months of 2024, Indosat recorded a 15.8% year-on-year (YoY) growth in total revenue, amounting to IDR 13,835 billion (USD 873 million). Meanwhile, EBITDA continued to grow faster than revenue, resulting in a 22.1% YoY increase to IDR 6,509 billion (USD 411 million).

Key Performance Indicators
Indosat's stellar financial performance was driven by an increase in all business segments and a strong commitment to cost optimization, which also helped improved the company's EBITDA Margin

by 47.0%. Net profit increased to IDR 1,295 billion (USD 82 million), representing a 39.4% YoY increase.

Vikram Sinha, President Director and Chief Executive Officer of Indosat Ooredoo Hutchison, shared that the company's remarkable performance during the first quarter of the year is a testament to their dedication to creating sustainable value for all their stakeholders and empowering Indonesia's digital economy.

"We keep improving to enhance our network to ensure seamless connectivity and a marvelous experience for customers across Indonesia," said Sinha.

When it comes to its customer base, Indosat recorded a 2.3% YoY growth, reaching 100.8 million subscribers, which contributed to a 14.3% YoY increase in data traffic, equivalent to 3,858 Petabytes (PB).

Indosat also maintained its strategic investments to improve its network

infrastructure, resulting in a 20.8% YoY increase in the number of 4G BTS to 184,000. As a result, the Average Revenue Per User (ARPU) for cellular consumers experienced a strong 13.9% YoY growth, reaching IDR 37,500.

In Q1-24, Indosat's outlook underwent a positive revision by the international ratings agency, Fitch, shifting from 'stable' to 'positive', while also affirming its AA+(idn) credit rating. Additionally, the company received idAAA (Stable) ratings from Pefindo.

Moreover, Indosat has been newly incorporated into the LQ45 Index, denoting its status as one of the most liquid equities traded on the Indonesian Stock Exchange (IDX). This inclusion serves as additional validation of the company's stable financial position and promising avenues for growth. It also underscores Indosat's substantial transaction value and frequency within the Indonesian capital market.

CelcomDigi, PETRONAS to Deploy 5G for Energy Industry Modernization

CelcomDigi has partnered with PETRONAS to deploy 5G in accelerating the digital transformation and sustainability efforts for the energy industry in Malaysia.

The two-year collaboration will allow PETRONAS and CelcomDigi to jointly explore the possibility of employing 5G technology to enhance PETRONAS' operations in the techno-digital industrial sector. This encompasses the implementation of exclusive 5G networks, which have already demonstrated optimistic outcomes in improving operational efficiency and safety.

"We pioneered the adoption of 5G technology for enterprise in Malaysia last year when we successfully adopted the 5G private network at its Regasification Terminal Sungai Udang (RGTSU) and witnessed increased efficiency in our operations," said Aadrin Azly, PETRONAS' Vice President, Group Technology and Commercialization.

Additionally, the collaboration will prioritize the incorporation of environmentally friendly energy solutions into CelcomDigi's enterprise offerings, with the objective of promoting their usage among Malaysian enterprises and encouraging sustainability in the energy industry.

Albern Murty, Deputy CEO, CelcomDigi, emphasized the importance of 5G technology in modernizing operations within the oil and gas industry and advancing sustainable practices.
"We look forward to scaling 5G-related improvements across other business

areas, leveraging real-time connectivity and data analytics to optimize operations and actualize our shared clean energy aspirations for the oil and gas sector," said Murty.

The new collaboration between PETRONAS and CelcomDigi builds upon its longstanding partnership from 2019 with the establishment of the first private 4G LTE network on Angsi, one of PETRONAS' largest offshore platforms. Since then, the collaboration has resulted in 21 fully 4G-connected offshore platforms.

The newly established Memorandum of Understanding (MoU) was signed by Azly, Murty, and Shah Yang Razalli, Deputy Chief Executive Officer of Gentari and Chief Executive Officer of Gentari Green Mobility. Mohd Yusri Mohamed Yusof, PETRONAS' Senior Vice President, Project Delivery and Technology was also present at the signing ceremony.

Singtel, Viettel to Develop Direct Submarine Cable System

Singtel and Viettel Group have announced the joint development of a submarine cable system that will directly link Singapore and Vietnam.

The Vietnam-Singapore Cable System (VTS), the first subsea cable to directly connect the two countries, will have a configuration of 8 fiber pairs, and utilize advanced wavelength division multiplexing (WDM) technology.

Being the first subsea cable to directly link Vietnam and Singapore, the VTS provides a dedicated and efficient communication pathway between the two countries. By bypassing intermediate nodes or hubs, it reduces latency and enhances network reliability, ensuring seamless connectivity for businesses and individuals across borders.

With a configuration of 8 fiber pairs, the VTS offers significant bandwidth capacity to meet the growing demand for data transmission between Vietnam and Singapore. This abundance of capacity enables the support of bandwidth-intensive applications, such as high-definition video streaming, cloud computing, and real-time collaboration tools, without compromising performance.

The utilization of wavelength division multiplexing (WDM) technology allows the VTS to transmit multiple data streams simultaneously over a single optical fiber, each on a different wavelength or color of light. This increases the overall capacity of the cable system by maximizing the utilization of the available optical spectrum.

The subsea cable will be the shortest cable connecting the two countries and have landing stations in Cambodia, Thailand, and Malaysia. These landing stations act as hubs, offering broad geographical coverage and enhanced

network redundancy and resilience. Moreover, they provide interconnection opportunities with local networks, and stimulate infrastructure development and economic growth in the region.

The VTS is scheduled to be operational by the second quarter of 2027 and is expected to revolutionize Viettel's international connections. Additionally, it will provide high speeds and significantly increase capacity by hundreds of terabits per second.

Furthermore, it is expected to enhance the robustness and security of the network while creating new pathways in the southern region.

The development of the new subsea cable is in line Vietnam's 2030 strategic plan, which aims to enhance the country's submarine cable network by including at least 15 systems with a combined capacity of 334 Tbps. Viettel is committed to supporting the government's plan by establishing at least two Vietnamese-owned cables by 2030.

Rakuten Mobile Tests 700 MHz "Platinum Band"

Rakuten Mobile has pioneered the radio frequency testing for its 700 MHz spectrum, also known as the "platinum band", allocated by the Ministry of Internal Affairs and Communications.

Leveraging its proficiency demonstrated in pioneering Japan's inaugural fully-virtualized cloud-native network adhering to Open RAN standards within the 1.7GHz band, the company is now preparing to initiate base station operations utilizing the 700 MHz band.

Following the completion of radio frequency testing, Rakuten Mobile

intends to swiftly commence the deployment of commercial services utilizing the 700 MHz platinum band.

Strengthening Network Quality and Coverage
In April 2020, Rakuten Mobile launched its full-scale mobile carrier service. Since then, the company has consistently strengthened its network quality and coverage through the build-out of 4G and 5G base stations in addition to roaming agreements with its partners.

The 700 MHz band offers superior coverage capabilities compared to higher frequency bands. By deploying services in this band, Rakuten Mobile can extend its network coverage to a wider geographic area, including rural and remote regions where connectivity might have been previously limited.

Lower frequency bands, such as the 700 MHz band, have better penetration

characteristics, especially indoors and in densely populated urban areas. This allows for more reliable connectivity for users located indoors or in areas with obstacles that may obstruct signal propagation.

The deployment of services in the 700 MHz band enables Rakuten Mobile to augment its network capacity. This is particularly advantageous in areas experiencing high data demand, such as urban centers and event venues, where the network may be congested.

As Rakuten Mobile continues to expand its 5G network infrastructure, utilizing the 700 MHz band for commercial services lays a foundation for seamless integration with future 5G deployments. The band's compatibility with both 4G and 5G technologies ensures a smooth transition and optimal user experience as customers migrate to next-generation networks.

NEC Corporation's FY2024 Success Fueled by AI Innovation and Strategic Growth

NEC Corporation has released its consolidated financial results for the fiscal year ending on March 31, 2024. The results surpassed expectations across the board due to the increasing popularity of a high-performing generative AI Large Language Model (LLM) and progress towards achieving the goals outlined in the Mid-term Management Plan 2025.

Net Revenue
The consolidated financial results demonstrate NEC Corporation's strong performance across various financial metrics. The revenue increased by 5.0% compared to the previous year, reaching JPY 3,477,262 million, indicating growth in NEC Corporation's core business activities. This growth in revenue contributed to an operating profit of JPY 188,012 million, marking a 10.3% increase year-on-year, highlighting NEC Corporation's effective cost management and operational efficiency. Similarly, profit before income taxes also saw a 10.3% rise, reaching JPY 185,011 million, showcasing NEC Corporation's ability to generate profits before accounting for taxes.

Net Profit
Net profit for the year experienced a significant surge of 25.3%, totaling JPY 164,752 million, indicating NEC Corporation's strong bottom-line performance and profitability. This increase in net profit was even more pronounced when considering the net profit attributable to owners of the parent, which soared by 30.6% to JPY 149,521 million, reflecting the enhanced value delivered to NEC Corporation's shareholders. The total comprehensive income for the year saw a substantial increase of 74.1% compared to the previous year, amounting to JPY 342,508 million, suggesting a comprehensive improvement in NEC Corporation's financial position and performance.

Basic Earnings Per Share
Basic earnings per share rose notably by 32.1% to JPY 561.25, indicating the increased earnings generated per share of NEC Corporation's stock. The financial position of NEC Corporation as of March 31, 2024, remained robust, with total assets reaching JPY 4,227,514 million and total equity attributable to owners of the parent standing at JPY 1,915,613 million, resulting in a healthy equity ratio of 45.3%. Furthermore, NEC Corporation maintained a strong cash position, with cash and cash equivalents totaling JPY 476,490 million, providing liquidity for future investments and operations.

Cash Flow
Cash flow from operating activities remained strong at JPY 271,228 million, reflecting NEC Corporation's ability to generate cash from its core business operations. However, cash flow from investing activities resulted in an outflow of JPY 76,015 million, primarily due to investments in assets such as property, plant, and equipment. Similarly, cash flow from financing activities also experienced an outflow of JPY 155,508 million, mainly attributed to debt repayment, dividend payments and lease liabilities.

Fiscal Year (2025)
Looking ahead to the fiscal year ending March 31, 2025, NEC Corporation forecasts a slight decrease in revenue to JPY 3,370,000 million, potentially influenced by various market factors and strategic decisions. However, NEC Corporation anticipates an increase in adjusted operating profit to JPY 255,000 million, indicating continued profitability and operational efficiency. Despite this positive outlook, NEC Corporation expects a decline in non-GAAP profit attributable to owners of the parent by 7.2%, totaling JPY 165,000 million, potentially due to factors such as increased expenses and changes in market conditions.

Mauritius Telecom Expands Asia Connectivity

Mauritius Telecom is currently in discussions with operators such as Reliance Jio and Orange to construct a new undersea cable that will connect Africa, the Indian Ocean islands, and Asia. This initiative aims to prevent network disruptions similar to the outage experienced last month.

According to a report by Bloomberg, Mauritius Telecom's CEO, Kapil Reesaul, announced that the new cable, named T4, will have 1,000 times more capacity than the current South Africa Far East (SAFE) cable that it will replace.

Reesaul stated, "With the frequent cable breakdowns we are facing, we want to ensure connectivity to the Far East with a cable running from Mauritius to India and Singapore." The decision to build the new cable was influenced by a recent service outage on April 26 that affected customers for five hours.

This incident followed the severe damage sustained by four cables near the Ivory Coast the previous month, with three lines off the coast of Yemen remaining offline since late February. The T4 cable will follow a similar route to the existing 13,500-kilometer SAFE cable, which connects South Africa, Madagascar, La Reunion, Mauritius, India, and Singapore.

Notably, Mauritius Telecom previously invested USD 60 million in the T3 cable to South Africa, and the island-nation is also connected via the LION/LION2-EASSy-EIG cable on the northern route.

ZTE Recognized with 2023 Climate Leadership Award

ZTE Corporation, a global leading provider of information and communication technology solutions, has been honored with the 2023 Climate Leadership Award (A list) for its exemplary contributions to climate change mitigation and sustainable development.

ZTE received the award at the "Embracing International Disclosure Standards and Amplify the Voice of Chinese Companies - CDP China 2023 Annual Report Release and Award Ceremony." This recognition coincided with the inclusion of ZTE's case study, titled "Target-Driven, Layered Decoding: Pathways and Actions to Achieve Climate Goals," in the 2023 CDP China Corporates Disclosure Report.

"Green and sustainable development is a global consensus, with digital intelligence playing a pivotal role. In line with this trend, ZTE has dedicated itself to green and low-carbon innovations and received an 'A' rating for its leading climate action in [the] CDP Climate Change 2023 Questionnaire—an honor achieved by only 2% of global participants," Summer Chen, Vice President and General Manager of Branding & PR Strategies at ZTE, said in her speech.

Dedication to 'Green' Dimensions

ZTE is dedicated to promoting environmentally friendly development through four main dimensions: green operations, green supply chain, green digital infrastructure and green empowerment, which contributed to its steady progress towards its aim of reaching carbon peak and carbon neutrality goals.

The company has, so far, achieved notable milestones in each key dimension. ZTE achieved a 9.7% YoY decrease in greenhouse gas (GHG) emissions across its entire value chain in the field of sustainable operations. Additionally, there was a 14.58% YoY decrease in the physical intensity of GHG emissions related to its telecom products. The company also achieved 700% YoY growth in the installed capacity of photovoltaic (PV) power generation in 2023.

When it comes to making its supply chain more sustainable, ZTE has conducted carbon reduction audits of more than 150 suppliers. Through its green logistics initiatives, ZTE has successfully achieved a 3.26% reduction in carbon emissions intensity. Moreover, ZTE has been awarded with the "National Level Green Supply Chain Management Enterprise" accolade.

VOX Solutions Achieves Tier 1 Vendor Status in SMS Monetization

VOX Solutions, a leading innovator in the telecom sector, has been voted as a Tier 1 vendor in the 2024 SMS Monetization Market Impact report by ROCCO Research.

VOX Solutions achieved its Tier 1 rank among 28 rated vendors by obtaining the approval of 273 Mobile Network Operators (MNOs), who provided insights on critical aspects of SMS monetization.

Market Leadership

The ROCCO report evaluates vendors based on direct feedback from MNOs globally. VOX Solutions' Tier 1 status was determined based on key criteria, such as reliability, customer service, flexibility, and value for money, highlighting the company's exceptional performance in these areas and solidifying its position as a leader in the market.

Ehsan Ahmadi, CEO of VOX Solutions, was delighted with the company's recognition among the global telecom community. "This accolade is a testament to our team's dedication, hard work, and our continuous drive to excel in serving our customers," emphasized Ahmadi.

Additionally, VOX Solutions' Tier 1 vendor status demonstrates its strong presence in the market, wide range of products, and the considerable effect of its solutions on the telecom industry.

Meanwhile, ROCCO's SMS Monetization Market Impact report serves as an essential guide for MNOs as they navigate the vendor environment in this sector.

Tailored SMS Monetization Solutions

VOX Solutions stands as a leading provider in the realm of telecommunications, offering tailored SMS monetization solutions designed to empower Mobile Network Operators (MNOs) in optimizing their revenue streams.

Moreover, at the heart of VOX Solutions' offerings lies a commitment to security and compliance, recognizing the paramount importance of safeguarding sensitive data and adhering to regulatory standards. Through robust security measures and stringent compliance protocols, VOX Solutions provides MNOs with peace of mind, knowing that their operations are fortified against potential threats and aligned with legal requirements.

Establishing Governance in AI Deployment in Southeast Asia

The emergence of artificial intelligence (AI) has opened up new opportunities and possibilities for progress, which has revolutionized several industries globally. Consequently, these opportunities have come with a lot of responsibilities, especially regarding its ethical deployment.

Southeast Asia, known for its diverse culture, is also an emerging hub for AI adoption. To successfully implement AI use cases, strong governance should be implemented to safeguard against potential threats and utilize the potential of AI.

Regional Policies in AI

A recent International Data Corporation report revealed that several companies in the Asia Pacific, referred to as the A1000, will allocate more than 50% of their primary IT spending to AI projects by 2025, stimulating an increase in both product and process innovations.

According to the World Bank, recent milestones, such as Southeast Asia's attainment of USD 200 billion in Gross Merchandise Value (GMV) in 2022, underscores the rapid growth and potential of the digital economy in the region.

The use of AI in product development and operational procedures has garnered significant impacts and results. In recent years, AI has emerged as a driving force for innovation, offering businesses new opportunities to tailor products and services to address the evolving demands and preferences of customers. According to reports, the Asia Pacific region is at the forefront of adopting generative AI (GenAI), with an impressive 70% of organizations actively investigating its potential use cases.

However, the progress in deploying AI comes with substantial obligations and responsibilities, including ensuring the security and adherence to regulations of this technology.

In February, the Association of Southeast Asian Nations (ASEAN) introduced its governance model, known as the ASEAN Guide to AI Governance and Ethics, in response to the various potential problems presented by AI.

The implementation of this framework signifies a crucial advancement in promoting responsible AI development throughout the region, demonstrating ASEAN's dedication to leveraging the advantages of AI, while minimizing its potential dangers.

The ASEAN Guide outlines seven fundamental principles—transparency and explain-ability, fairness and equity, security and safety, human-centricity, privacy and data-governance, accountability and integrity, and robustness and reliability—which will serve as the foundation for the creation, advancement, and implementation of AI systems in Southeast Asia.

Promoting Accountability in Deploying AI

Effective regulatory frameworks are essential in tackling the ethical considerations that arise from using AI. Active participation from civil society, policymakers, and industry stakeholders is critical for the development of adaptable regulatory frameworks that fall in sync with technological progress.

In order for policies to work, the public has to be actively involved in facilitating AI governance and promoting inclusiveness. Government bodies should cultivate avenues for public discourse that actively seek the opinions and contributions of marginalized communities, civil society organizations, and their citizens. The participation of stakeholders in decision-making processes improves the legitimacy, responsiveness, and accountability of AI governance frameworks.

ASEAN aims to cultivate an environment conducive to innovation while also safeguarding the welfare and interests of its population by prioritizing the principles outlined in its framework.

Moreover, the framework presents a comprehensive strategy that incorporates recommendations at both the national and regional levels. At the national level, there is a strong focus on cultivating AI expertise, enhancing the skills of workforces, and allocating resources towards research and development (R&D). Meanwhile, the creation of a working group at the regional level intends to assist the implementation of recommendations and the development of use cases, with the goal of encouraging collaborative efforts among member nations.

The effectiveness of the ASEAN guide will be evaluated based on its regional implementation. This will also serve as a common reference point for Southeast Asian countries that are developing their own regulations. The growing digital economy of the ASEAN highlights the significance of AI as a driving force for both economic growth and digital transformation. The potential impact of AI on Southeast Asia's GDP by 2030 will profoundly shape the region's future. **TR**

> AI. Active participation from civil society, policymakers, and industry stakeholders is critical for the development of adaptable regulatory frameworks that fall in sync with technological progress

Inside China's Smart City Boom: Leveraging AI, 5G, and IoT for Urban Innovation

As the world's urban population grows year after year, cities face increased pressure to adapt and innovate. According to the United Nations, over half of the world's population lived in cities in 2019, with that figure expected to rise to 68% by 2050, according to a study presented at the 21st International Scientific Conference Globalization and its Socio-Economic Consequences 2021. This exponential growth highlights the critical need for cities to strengthen their infrastructure and implement comprehensive urban development strategies.

A global trend has emerged that incorporates innovative technologies such as the Internet of Things (IoT), artificial intelligence (AI), and blockchain technologies into urban management practices. This trend has gained traction as cities around the world deal with the challenges posed by rapid urbanization. The COVID-19 pandemic has highlighted the importance of smart city technologies in managing crises and protecting public health.

The inevitability of digitalization in urban centers is evident, with the proliferation of smart cities expanding across the globe. These cities serve as incubators for innovative solutions, continuously refining their development models to meet the evolving needs of their inhabitants.

Understanding China's Emergence in Smart Cities

A notable player in this landscape is China, renowned for its rapid digitalization efforts and the proliferation of smart cities within its borders. To gain insights into the

trajectory of smart city development in China, researchers have undertaken a comprehensive analysis of global trends and the Chinese market landscape.

Drawing on a wealth of scientific articles, reports, and statistical data from reputable sources such as the International Data Corporation (IDC) and PwC, researchers have identified key patterns and trends shaping the smart city market.

Cities, as hubs of human activity and economic growth, wield significant influence across various spheres. However, this concentration of resources often comes at a cost to the environment, prompting concerns regarding sustainability and ecological balance. The emergence of the smart city concept stems from the imperative to mitigate these environmental impacts while fostering urban development.

Early iterations of smart cities focused primarily on environmental sustainability, leveraging 'green technologies' to address pressing ecological challenges. Sensor technologies were deployed to monitor air quality, traffic flow, and waste management, laying the groundwork for more sophisticated urban management systems.

As new technologies emerge from decades of research and development, a small number of companies have taken the lead in the transformation of cities. Alibaba, Baidu, DiDi Chuxing, Huawei, and Tencent have all integrated their respective technologies in Hangzhou, Suzhou, Shenzhen, Shanghai, and Beijing, among others. These technologies serve as the foundation for 'digital brains,' which leverage cloud computing, AI, and the IoT to create smart city infrastructures.

For example, Alibaba's City Brain—which is an AI-powered system integrated with network infrastructure—revolutionizes urban management by automating traffic systems, optimizing public transportation routes, and identifying environmental issues. Initially piloted in Hangzhou, where

Alibaba's headquarters are located, City Brain has significantly improved transit times, reduced ambulance arrival times, and lowered overhead for law enforcement through AI surveillance of traffic violations. Moreover, the system has been deployed in parking lots and hospitals, enabling innovative 'park-first, pay later' schemes and supporting medical treatment with Alibaba's Medical Brain, which utilizes AI and big data to enhance patient care.

China's Five-Year Plan

In 2011, China's 12th Five-Year Plan announced its intention to develop 'digital cities.' The plan aimed to accelerate the construction of new-generation IT infrastructure, mobile communication networks, internet infrastructures, digital and television broadcasting networks, satellite communication facilities, and an ultra-high-speed, large capacity, and highly intelligent national trunk transmission network. The government also wanted to build broadband connections in both urban and rural areas to improve interconnectivity.

This infrastructure now serves as the foundation for China's smart cities. Smart cities are urban areas that collect vast amounts of data and harness it to enhance city operations. Developers can build technological applications on a city's critical communications infrastructure, transforming data into insights and insights into tools. These applications, in turn, serve as a form of public-private collaboration, generating opportunities for the government, businesses, and the public. For example, in the case of public transportation, bus riders could use a real-time traffic monitoring application to determine the best time to travel with less traffic, thereby reducing the overall strain on the public transportation system.

In subsequent five-year plans, Beijing has focused on smart city development. Policymakers have directed significant resources toward advancing the technological innovation and public-private partnerships that underpin smart cities. This includes development in the fields of 5G, AI, new energy vehicles, cloud computing, blockchain

technology, and the IoT, all of which play critical roles in the infrastructure of many of China's cities. China's ruling National People's Congress approved a USD 1.4 trillion fiscal plan in early 2020 to spur technological innovation in these fields.

The evolution of technologies such as AI, blockchain, and big data has propelled smart cities beyond their environmental roots, ushering in a new era of connected urban infrastructure. Digital twins, AI-driven analytics, and IoT networks have enabled cities to optimize operations, enhance service delivery, and improve the quality of life for residents.

In essence, the journey towards smart cities demonstrates humanity's ability to innovate and adapt in the face of urbanization's complex challenges. As cities evolve and embrace digital transformation, the smart city paradigm provides a blueprint for sustainable, resilient, and inclusive urban development in the modern century. **TR**

> The evolution of technologies such as AI, blockchain, and big data has propelled smart cities beyond their environmental roots, ushering in a new era of connected urban infrastructure

Assessing the Role of Public-Private Partnerships in Telecom Infrastructure Development

Public-Private Partnerships (PPPs) have emerged as a vital strategy in promoting telecom infrastructure development globally. By combining the resources and expertise of both public and private sectors, PPPs play a crucial role in bridging the infrastructure gap and meeting the growing demand for telecommunication services.

According to the Asian Development Bank (ADB), PPPs have the potential to address the financing and operational challenges associated with telecom infrastructure development in Asia. The ADB emphasized the importance of creating an enabling environment for PPPs through supportive regulatory frameworks and risk-sharing mechanisms. PPPs can attract private sector investment and expertise, leading to improved infrastructure quality and service delivery in the telecom sector.

The International Monetary Fund (IMF) also acknowledged the significance of PPPs in infrastructure development, including the telecom sector. In its publication, the IMF highlighted the role of PPPs in mobilizing private capital and technology for infrastructure projects. PPPs can enhance efficiency and innovation in telecom infrastructure development by leveraging the strengths of both public and private entities.

The United Nations (UN) Economic and Social Commission for Asia and the Pacific (ESCAP) underscored the importance of infrastructure financing and PPPs in fostering sustainable development. The UN ESCAP advocates for a strategic approach to

PPPs, including project preparation, risk assessment, and stakeholder engagement. Effective PPP frameworks can attract long-term investment and promote inclusive growth in the telecom sector.

Furthermore, the World Intellectual Property Organization (WIPO) emphasized the role of innovation in telecom infrastructure development. PPPs can facilitate technology transfer and knowledge sharing, leading to the adoption of advanced telecommunications solutions. WIPO emphasizes the importance of intellectual property rights protection in fostering innovation and investment in the telecom sector.

Importance of Telecom Infrastructure Development

Telecom infrastructure is the backbone of modern communication systems, including telephone networks, internet services, and mobile networks. It enables individuals, businesses, and governments to connect, share information, and access essential services. Robust and reliable telecom infrastructure is crucial for economic development, social inclusion, education, healthcare, and disaster management.

PPPs bring together the strengths of both the public and private sectors. Private companies often have the technical expertise, innovation capabilities, and financial resources required for large-scale infrastructure projects. In contrast, governments provide regulatory frameworks, public resources, and long-term planning perspectives. By partnering with the private sector, governments can leverage these advantages to accelerate telecom infrastructure development.

Examining successful PPP projects in the telecom sector can provide valuable insights. For example, in the Republic of Congo, PPPs have facilitated the expansion of telecom services in rural and remote areas. By collaborating with telecom companies, the government has been able to bridge the digital divide and improve connectivity for underserved populations.

Moreover, financing is a critical aspect of infrastructure development. PPPs allow governments to tap into private sector investments, reducing the burden on public budgets. Private investors are attracted to PPPs due to revenue-sharing models, long-term contracts, and the potential for higher returns on investment. These investments enable the deployment of advanced technologies, such as fiber-optic networks and 5G infrastructure, which are essential for modern communication services.

A conducive regulatory environment is essential for the success of PPPs in the telecom sector. Governments need to establish clear rules, fair competition policies, and transparent procurement processes. Regulatory frameworks should also address spectrum allocation, licensing requirements, and quality of service standards. By providing policy support and regulatory certainty, governments can attract more private sector participation in telecom projects.

Digital Divide and Inclusivity

One of the goals of PPPs in telecom infrastructure is to ensure inclusivity and bridge the digital divide. This involves reaching rural and underserved areas with affordable and reliable telecom services. PPPs can incentivize private companies to invest in infrastructure rollout in these regions, improving access to communication, education, healthcare information, and economic opportunities.

PPPs drive innovation in the telecom sector by encouraging the adoption of new technologies, sustainable practices, and green initiatives. For instance, telecom companies can deploy energy-efficient networks, recycle electronic waste, and promote eco-friendly practices in their operations. This contributes to environmental sustainability and aligns with global efforts to mitigate climate change.

Effective monitoring and evaluation mechanisms are crucial for assessing the impact and performance of PPPs in telecom infrastructure. Key

performance indicators (KPIs) such as network coverage, service reliability, affordability, and user satisfaction need to be monitored regularly. Feedback from stakeholders, including consumers and industry experts, can help identify areas for improvement and steer future PPP initiatives.

As technology continues to evolve and digital connectivity becomes increasingly essential, governments and private companies must continue collaborating through PPPs to build resilient, sustainable, and accessible telecom networks that benefit societies worldwide. Ongoing research, knowledge sharing, and capacity building in PPP practices will further enhance the effectiveness and impact of telecom infrastructure development initiatives. **TR**

> One of the goals of PPPs in telecom infrastructure is to ensure inclusivity and bridge the digital divide

The Growth of ICT and the Digital Evolution of the Philippines

The Philippines has experienced a significant increase in the use of digital technology in several industries, primarily driven by a tech-savvy population, government policies that encourage digital adoption and investments both locally and internationally.

The e-commerce industry has also been gaining traction in the country following the emergence of e-commerce platforms. According to a report by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the Philippines ranked fifth in terms of e-commerce traffic in East Asia.

Investments in Digitalization

The digitalization in the Philippines was heavily affected by the COVID-19 pandemic. The pandemic has highlighted the digital divide in the country, especially in remote and underserved areas.

The obvious digital gap prompted a surge in both private and public

funding, revitalizing the country's ambitions towards digitalization.

According to the Philippine Statistics Authority (PSA), the digital economy in the Philippines reached USD 36.5 billion in 2022, an 11% increase compared to the previous year. This growth includes digital transactions across infrastructure, e-commerce, and digital media.

The Philippine Development Plan (PDP) was established to serve as a road map for the country to reach its targets by 2028. The plan delineates strategies essential for driving substantial economic and social transformation, focusing on revitalizing job creation, accelerating poverty eradication, and prioritizing digital transformation as a cornerstone of national progress.

The government has since taken various steps to digitalize essential public services, such as improving telecommunication infrastructure, integrating online government services into a single platform through the eGov PH Super App, implementing the national broadband plan to improve internet and mobile services, and prioritizing cloud-based policies.

The amendment to the Public Service Act—which previously allowed 100% foreign ownership of public services like telecoms—is also a significant legislative achievement that demonstrates the country's dedication to creating a supportive atmosphere for ICT innovation and investment.

The Philippines has also opened its doors for more investments through initiatives such as, GoDigital Pilipinas, led by the Private Sector Advisory Council, to drive the country's digital journey. These efforts align with the vision of global internet access, promoting inclusivity and empowerment nationwide.

Digitalization and Inclusivity Efforts
The Philippines' dedication to the development of the ICT sector has resulted in an increase in investment approvals, as documented by the Board of Investments. The country reportedly achieved its highest-

investment approvals yet, amounting to PHP 1.16 trillion, a 59% increase compared to 2022.

The ICT sector played an essential role in promoting economic progress, with investment approvals amounting to PHP 96.16 billion.

Partnerships between the public and private sectors have contributed to the growth of investments in the Philippines, such as the PHP 5.6 billion investment from Japanese telecoms company, IPS Incorporated. Additionally, IPS affiliate, InfiniVAN, has also invested PHP 4 billion to accelerate the implementation of the National Broadband Plan—a key infrastructure initiative set to transform nationwide connectivity.

The Department of Information and Communications Technology will prioritize establishing secure and reliable internet connections to provinces in remote locations.

The National Fiber Backbone program, which consists of a fiber backbone that is neutral and responsive to demand, is expected to transform the country's digital infrastructure. Its purpose is to provide easy access to the internet for government institutions and other DICT last-mile projects, such as the Free Public Internet Access Program (FPIAP). The FPIAP aims to provide zero-cost internet access in public spaces nationwide.

This is also expected to serve as the foundation for the country's National Broadband Program (NBP), designed to enhance ICT infrastructure and enhance internet connection across the entire country.

While undergoing digitalization, the government is also expected to improve its cybersecurity measures, especially following several reported attacks and threats to its websites in recent months.

DICT has also put the National Cybersecurity Plan in place. This comprehensive framework seeks to strengthen cybersecurity policies, protect national interests, and enhance

the capabilities of the cybersecurity profession through 2028.

The creation of the National Security Operations Center (NSOC) and the inclusion of the Armed Forces of the Philippines (AFP) in the National Computer Emergency Response Team (NCERT) demonstrate the country's commitment to successfully countering cyber threats.

As the Philippines embarks on its digital journey, there are numerous opportunities for international and local investors to take part in its digital transformation. The ICT landscape of the Philippines is a work in progress that promises a bright future where the digital divide does not exist. ∎

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The Department of Information and Communications Technology will prioritize establishing secure and reliable internet connections to provinces in remote locations

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MWC Shanghai

MWC Shanghai is Asia's leading connectivity ecosystem event, bringing together global leaders and innovators to shape the industry's future.

Place: Shanghai New International Expo Centre, Shanghai, China

26 – 28 JUNE

ACC

On its 20th year, the Asia Carriers Conference (ACC) has become a widely recognized event that promotes innovation and collaboration in the telecommunications and ICT industry.

Place: Shangri-La Mactan, Cebu, Philippines

2 – 6 SEPTEMBER

FutureNet Asia

FutureNet Asia brings together the telecommunications industry leaders and facilitate the advancement of innovation through the promotion of partnerships and technology collaborations.

Place: Marina Bay Sands, Singapore

17 – 18 SEPTEMBER

Submarine Networks

Submarine Networks features the world's leading annual submarine communications gathering to exchange knowledge, explore the latest projects, develop strategies and form lucrative new partnerships to drive the industry forward.

Place: Suntec Convention Centre, Singapore

25 – 26 SEPTEMBER

Cloud Expo Asia

Discover the latest cloud innovations and strategies transforming technology and business at Asia's premier cloud computing event.

Place: Marina Bay Sands, Singapore

9 – 10 OCTOBER

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14 – 18 OCTOBER

Innovate Asia

Innovate Asia 2024 spearheads Asia's autonomous network revolution, fostering intelligence, connectivity, and impactful growth for a thriving future.

Place: Centara Grand at CentralWorld, Bangkok, Thailand

5 – 7 NOVEMBER

ITW Asia

Network with industry leaders and explore advancements in IT and telecommunications shaping Asia's future.

Place: Shangri-La Singapore, Singapore

4 – 5 DECEMBER

Telecom Review Leaders' Summit

The Telecom Review Leaders' Summit is among the largest C-level industry gatherings, bringing together the leaders of the ICT industry and governments from around the world.

Place: Dubai, UAE

10 – 11 DECEMBER

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