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TELECOM EGYPT
Game-Changing Projects, Advanced Tech, and Strategic Ambitions

MOHAMED NASR,
Managing Director and Chief Executive Officer, Telecom Egypt

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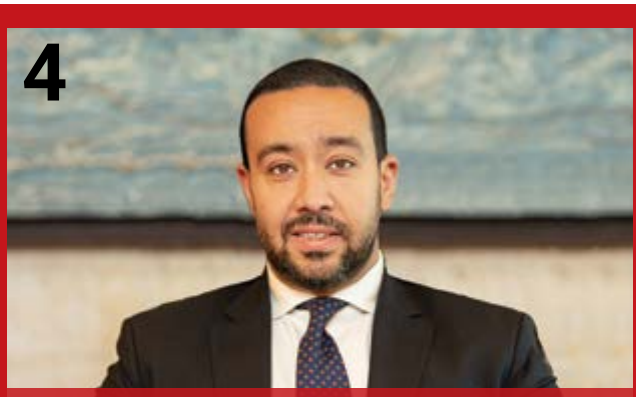

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Mohamed Nasr,
Managing Director and Chief Executive Officer,
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Telecom Egypt: Game-Changing Projects, Advanced Tech and Strategic Ambitions

In an exclusive interview with Telecom Review, Mohamed Nasr, Managing Director and Chief Executive Officer of Telecom Egypt, unveiled the company's visionary roadmap. Highlighting new projects and technological advancements, he detailed how Telecom Egypt is poised to redefine the telecommunications landscape. The company's center of attention is pioneering initiatives, avant-garde solutions, and a revolutionized ICT infrastructure, along with next-generation subsea cable networks. These efforts underscore Telecom Egypt's commitment to advancing connectivity in Egypt and beyond, catering to the surging demand for high-capacity traffic.

Can you start by giving us an overview of Telecom Egypt's current strategic priorities?

At Telecom Egypt, our strategic vision is deeply anchored around advancing the digital landscape on the national, regional, and global levels through a comprehensive, multifaceted approach. With over 170 years of experience in telecommunications, our foremost priority has always been to enhance connectivity, a mission we are pursuing through the comprehensive expansion of our telecommunications infrastructure. This year, we announced our new strategy, "WE-DRIVE," which encapsulates Telecom Egypt's core values and aspirations across six pillars: creating value in core business, enhancing customer relationships, fostering agility and sustainability, leading the digital wave, unlocking the potential of e-business and driving innovation and partnerships.

This strategy outlines our commitment to delivering exceptional customer

experiences and driving digital innovation. We are investing in network infrastructure, leveraging data and AI, expanding our B2B offerings, and fostering partnerships to create tailored solutions that meet the evolving demands of the digital era.

Our goal is to position Telecom Egypt as the preferred digital partner for businesses in Egypt. We aim to achieve this by providing secure, scalable, and innovative solutions that empower our customers to thrive in the digital age.

WE-DRIVE emphasizes enhancing operational efficiency, promoting sustainability, and creating value for our customers and shareholders. By focusing on these key areas, we are confident we can lead the digital wave and unlock the full potential of e-business in Egypt.

What are the main tactics that Telecom Egypt adopts to achieve these strategic priorities?

We are tackling several critical areas: First, we are significantly expanding our fiber optic networks, which form the backbone of modern high-speed communication and offer unparalleled bandwidth and latency improvements compared to traditional copper lines. By deploying state-of-the-art fiber optic cable systems across both urban and rural areas, we aim to deliver ultra-fast and reliable internet services. This expansion is not merely about increasing capacity, but also about ensuring resiliency needed to maintain service continuity and meet the growing data demands of both consumers and businesses. Second, we are investing in emerging technologies and innovations to ensure we remain at the forefront of the telecommunications industry. For example, by deploying next-generation networks, we are enabling higher speeds, lower latency, and greater connectivity density. We also secured Egypt's first 5G license, which is pivotal for supporting advanced use cases such as autonomous vehicles, smart cities, fintech, enhanced gaming, precise positioning, energy management, among others. Additionally, we are exploring advancements in network automation to enhance operational efficiency and improve service agility.

Third, our role extends beyond being Egypt's telecom infrastructure developer; we are also a key enabler of the country's broader digital transformation objectives. This involves integrating our services with national projects aimed at enhancing digital governance, e-commerce, and digital inclusion. By collaborating with government entities and private sector partners, we are contributing to initiatives that drive economic growth, improve public services, and foster a more connected and digitally empowered society.

In tandem with our fiber optic expansion, we are also currently focusing on the second phase of our largest data center, the Regional Data Hub or RDH, which serves as a critical node in our network. We are also actively exploring partnerships with global developers to address the growing market demand. Our data centers are designed to support high-capacity data processing and storage, ensuring that we can meet the demands of cloud computing and big data analytics. They are equipped with sophisticated security measures to protect sensitive data and maintain service security and integrity.

Last but not least, Telecom Egypt's strategic priorities are increasingly hitched on the expansion of subsea systems, which serve as a critical component of our growth strategy. By investing in and enhancing our subsea cable infrastructure, we are positioning Egypt as a pivotal player in global telecommunications and a key connectivity hub bridging Europe, Africa, and the Middle East. This expansion is designed to boost our capacity to handle the surging demand for high-speed internet and data services, aligning with our broader goals of enhancing digital connectivity, supporting innovation, and driving sustainable development in the telecommunication sector.

What are the main projects Telecom Egypt is working on, particularly those involving innovative technologies and infrastructure upgrades, and what impact do you expect them to have on the Egyptian market?

Telecom Egypt is currently implementing several pivotal projects that highlight our commitment to advancing telecommunications infrastructure and services. Spearheading a range of transformative initiatives designed to revolutionize the telecommunications sector in Egypt, these efforts have already resulted in substantial enhancement in fixed internet speeds and significantly boosted the infrastructure's capacity to manage the unprecedented surge in data traffic. These upgrades are playing an important role in driving Egypt's digital transformation, ensuring that the country's infrastructure is well-equipped to support the evolving needs of both consumers and businesses.

As the leading player in the Egyptian ICT market, Telecom Egypt is on track to achieve full fiber-to-the-curb (FTTC) connectivity for 100% of households by the end of 2024, with approximately 96% already completed. Concurrently, the international internet network capacity has seen a noteworthy 37% increase this year, alongside continuous upgrades to core and transmission network capacities. These advancements are integral to the company's vision of upgrading the ICT ecosystem through substantial investments in Egypt's ICT infrastructure.

With steady steps and fast pace, Telecom Egypt is actively modernizing the country's digital infrastructure by building and commercializing Fiber-to-the-Home (FTTH) and Fiber-to-the-Site (FTTS) networks. These efforts are integral to the company's goal of converting all areas to FTTH networks as part of the Ministry of Communications and Information Technology Strategy "Digital Egypt."

Telecom Egypt is also laying the groundwork for future applications of IoT, AI, and other next-generation technologies across various industry use cases by deploying or upgrading the fiber networks connecting industrial zones, business parks, and smart cities. In parallel, the company is deploying

fiber-backed mobile sites across the domestic market. These efforts will be further accelerated by the commercial launch of 5G, empowering businesses to effectively analyze larger volumes of data, thereby improving efficiency and scalability.

Additionally, Telecom Egypt is strategically positioning itself as a leading player in the data center industry, leveraging its extensive submarine cables network and international infrastructure to attract global hyperscalers and cloud service providers. By offering world-class facilities and connectivity solutions, Telecom Egypt aims to foster partnerships and attract key investors to establish new data centers in Egypt. This strategic move not only strengthens Telecom Egypt's position as a regional digital hub but also contributes significantly to the country's economic growth and development.

These initiatives reflect Telecom Egypt's commitment to enhancing service quality and connectivity for its customers by offering faster internet speeds, more reliable connections, and advanced cloud solutions. These advancements are set to significantly impact the Egyptian market by driving technological solutions, improving operational efficiencies, enabling the adoption of cutting-edge technologies across multiple sectors, and fostering a more connected, digitally empowered society. With more projects in the pipeline, Telecom Egypt remains focused on elevating the customer experience and addressing the ever-growing demands of the telecommunications industry.

How do these developments align with your strategic goals, and what impact do you anticipate they will have on your market share and future growth?

Telecom Egypt's strategic goals are centered on enhancing network capabilities, expanding digital infrastructure, and driving progress across the entire telecommunications sector. These initiatives are aligned with Telecom Egypt's vision to deliver top-notch solutions that meet the evolving needs of our customers while promoting Egypt's position as a leader in the digital economy.

By modernizing our digital infrastructure through strategic partnerships with global ICT players, we aim to significantly improve service delivery and expand our market presence. These developments are expected to enhance customer satisfaction, generate new revenue streams, and solidify Telecom Egypt's market position. As we continue to pursue our strategy of investing in innovative technologies and infrastructure upgrades, we anticipate further growth in our services portfolio, which will enhance our value proposition and drive sustained future growth.

Could you update us on the latest developments in Telecom Egypt's subsea cables sector? How does it contribute to enhancing global connectivity and data flow?

Telecom Egypt has made significant strides in the subsea cables sector, leveraging Egypt's strategic position at the crossroads of Africa, Asia, and Europe. As a key player in this domain, we are enabling more than 90% of the international Eurasian traffic that traverses Egypt's rich forum of subsea infrastructure. Our role extends beyond landing new cables, as we ensure a smooth, efficient process for local permits, approvals, and logistics related to cable landings. Additionally, we provide top-tier landing facilities and technical support in Egypt through qualified teams, complemented by new diverse terrestrial crossings that further enhance global connectivity.

In addition, over the past year, Telecom Egypt has embarked on a series of transformative projects that underscore its strong belief in advancing global connectivity. A landmark initiative was the launch of WeConnect in September 2023, a groundbreaking platform designed to revolutionize the subsea telecommunications landscape. WeConnect is an open and neutral ecosystem meticulously engineered to integrate an extensive array of more than 21 operational and forthcoming subsea systems, 10 strategically positioned cable landing stations and 10 distinct and varied crossing routes along Egypt's 3,000km coastline on both the Red Sea and the Mediterranean, offering higher levels of resiliency, diversity and protection.

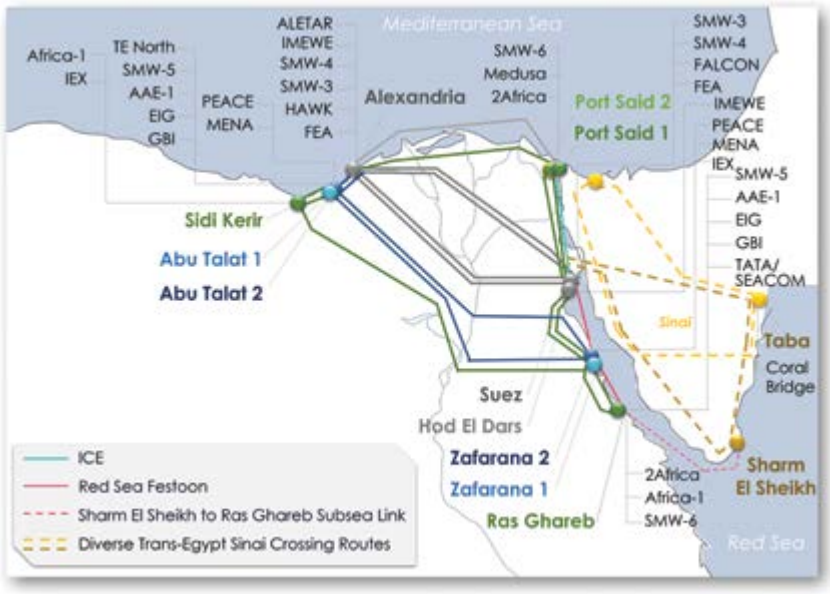
Leveraging cutting-edge optical fiber technology and advanced network management systems, WeConnect facilitates seamless interconnectivity and interoperability across diverse international networks. This initiative marks a significant leap in establishing a resilient and future-proof digital infrastructure poised to meet the escalating demands for high-speed data and global communications while reinforcing Telecom Egypt's pivotal role in the international telecommunications ecosystem.

What are Telecom Egypt's future plans and investments to expand its subsea cable network?

Connecting subsea cable systems in the Red Sea and the Mediterranean, Telecom Egypt's future plans in the subsea cable sector are basically to expand our footprint via the development of new subsea cable systems and routes as well as enhance our terrestrial infrastructure to maintain resilient and flexible networks. These initiatives are aimed at strengthening our position as a leading hub for international connectivity, better serving the surging demand for data traffic. This includes exploring new partnerships to develop additional subsea cable systems, building more diverse landing stations and trans-Egypt crossing routes in new territories, and offering more solutions.

One of our flagship initiatives is the expansion of our Sinai Peninsula infrastructure, which provides the global community with unique connectivity options between the Red Sea and the Mediterranean. Expanding our Sinai infrastructure with new, diverse layers of connectivity, positions it as a key hub in the international trans-Egypt network. This expansion involves the development of four cable landing stations, three of which are located in Sinai and a fourth in Port Said, named 'Port Said 2.' Of the three

stations in Sinai, two are situated along the Red Sea, while the third is positioned on the Mediterranean coast. This expansion also includes 4 diverse terrestrial crossing routes connecting the 4 landing stations—which are integrated with our rich existing network of 10 landing stations and 10 crossing routes outside Sinai. We also plan to land 7 additional systems in Sinai, 5 in Sharm El Sheikh, and 2 in Taba. These efforts will significantly enhance our global connectivity offerings and establish Sinai as a critical node in the international telecommunications landscape.



What are Telecom Egypt's strategies for partnering with other operators to expand its subsea cable network?

Telecom Egypt collaborates with more than 170 partners, including mega subsea players, to build and diversify subsea systems and infrastructure both in Egypt and around the world. Our strategy is to add value for our partners by supporting them in maximizing the use of their assets and ultimately echoing all the way through to the end-user experience. Our continuously-developing infrastructure, which carries more than 225Tbps of international traffic between East and West, has attracted significant partnerships. For example, we have teamed up with NaiTel to develop the "Coral Bridge," a new repeaterless, high-fiber subsea cable system linking Taba in Egypt with Aqaba in Jordan. This system is projected to enhance regional connectivity by providing a direct, high-capacity link across the Gulf of Aqaba.

Additionally, the Medusa Subsea Cable System, connecting the two shores of the Mediterranean, will utilize Sinai's new crossing routes and the Coral Bridge to connect to Jordan and onwards to other Middle Eastern destinations. These developments underscore Telecom Egypt's commitment to creating a resilient network, solidifying our position as a leader in the competitive industry.

Furthermore, we have established a joint venture with 4iG Group to create a new entry point to Europe via Albania through our joint EAGLE (Egypt-Albania Gateway Link to Europe) subsea system. This initiative promotes diversity in the Mediterranean basin and represents a revolutionary step in global communication, driven by a historic joint venture between Telecom Egypt and 4iG Group. EAGLE system addresses the critical need for alternative and resilient connectivity routes from Africa and Asia to Europe by leveraging the strategic geographical positions of Egypt and Albania.

Our strategy also involves investing in advanced technologies to better manage increasing data demand and improve route diversity. We actively participate in international consortiums to promote the establishment of new cables that connect emerging markets. This forward-thinking approach is critical to maintain Telecom Egypt's status as a major contributor within the evolving global telecommunications environment.

Any final thoughts you would like to share with our audience?

The significance of telecommunications in driving development and fostering communication cannot be overstated—fiber and data are indeed the new gold. At Telecom Egypt, we are devoted to development in order to maintain our excellence and offer cutting-edge solutions and services to our partners and customers.

Looking ahead, the future of telecommunications will be defined by the integration of advanced technologies such as 5G, AI, IoT, and quantum computing. These innovations will not only transform how we connect with each other but will also revolutionize industries, from healthcare and education to finance and smart cities. At Telecom Egypt, we recognize the transformative potential of these technologies, and we are positioning ourselves at the forefront of this evolution.

To that end, we continue investing in evolving our infrastructure, adopting advanced technologies, and fostering global partnerships. We are fully embracing digital transformation to support economic growth while also exploring emerging trends to enhance our service offerings.

Our dedication to delivering exceptional services, fostering innovation, and contributing to Egypt's digital and economic development is unwavering. Through our projects and initiatives, we aim to drive positive change, close the digital gap, and open new opportunities for all our stakeholders. Our ultimate goal is to be recognized globally as a leader in shaping the telecommunications industry and to play a pivotal role in the digital future, where connectivity is seamless, inclusive, and transformative. TR


Jim Fagan,
CEO, EXA Infrastructure

New CEO, Jim Fagan, Steers EXA Infrastructure's Next Chapter in Digital Innovation

In an exclusive interview with Telecom Review Asia Pacific, Jim Fagan—the newly appointed CEO of EXA Infrastructure as of August 1—shared his strategic vision for EXA Infrastructure and highlighted the company's plans for sustained growth and innovation as it navigates the rapidly changing digital landscape under his leadership.

Congratulations on your appointment as CEO. What are you prioritizing as the new CEO of EXA Infrastructure? What are you most excited about?

Firstly, I am incredibly excited to take on this new role and lead EXA Infrastructure into the next phase of its growth journey. Before joining the business, I was impressed by the company's level of ambition and the way EXA Infrastructure innovated and competed in the market. It was clearly out-pacing other players in the industry in terms of investment, and in the digital infrastructure business, this is a must-have.

Settling into the CEO role, my first few weeks have been spent listening to our customers, our people, and our industry partners. We are a highly focused business, and as I think about my priorities, I intend to build on the foundations that are already in place.

Front of mind for me will be continuing and accelerating everything that differentiates us. This includes meeting our customers' needs with robust and scalable infrastructure through a solid network investment strategy, delivering complex and large-scale digital infrastructure projects also led by customers' needs, and forging industry partnerships that contribute to the broader ecosystem.

Central to what makes EXA Infrastructure special is our engineering capabilities and doing the 'hard stuff'. It is important to me that we are at the forefront of the industry by investing in the best available technology and providing the expected level of expertise in planning and delivering future-proof digital infrastructure.

Central to realizing this is a focus on our people, and we have a remarkable team at EXA Infrastructure. Making EXA Infrastructure a great place to work that attracts the very best talent in the industry is what will set us apart.

The third priority will be related to our geographical focus and presence. Today, EXA Infrastructure operates across Europe and North America, however, the U.S. business is relatively nascent for us. Growing our presence in North America to serve more customers across our focus segments will allow us to leverage our formidable trans-Atlantic capabilities. I am excited about the opportunity for EXA Infrastructure to be the digital bridge between North America and Europe.

As to what excites me? Lots of things excite me about this industry and the opportunities ahead for EXA Infrastructure, but one thing in

particular would be the challenge I see in front of us in terms of providing the best infrastructure platform to sustain the impact of the AI wave. We are increasingly seeing our customers dealing with larger amounts of data and expressing a greater desire for diversity and flexibility. They need a partner that can unlock access to a wide digital ecosystem in different geographies, is able to understand their needs, and is able to respond at the pace they need.

How does EXA Infrastructure ensure seamless and reliable wavelength delivery across diverse network paths, especially during peak traffic periods or in the event of disruptions?

EXA Infrastructure is Europe's largest digital infrastructure owner, backed by over EUR 300 million in new network investments since its launch in September 2021.

One of our key market differentiators is the sheer size of our established and growing network. We work hard to ensure that growth is always combined with the resilience the industry needs. We build with diversification in mind because it is fundamental for seamless and reliable connectivity.

For example, EXA Infrastructure is currently the only operator able to offer four diverse routes from Sicily, providing greater choice and resiliency for businesses. Additionally, we offer six fully-diversified Transatlantic Routes, resulting in the strongest U.S. and EU terrestrial combination, lowest latency and a variety of route choices. This means EXA Infrastructure is uniquely positioned to capture emerging connectivity demand waves due to its network presence in both the mature, growing and early-stage markets.

We also proactively survey our customers to understand where they need to be in three-to-five (or more) years' time, with the intent of being amongst the pioneers in these locations. Operating in such a strategic way not only enables EXA Infrastructure to grow with its customers but also drive industry developments.

From a technology perspective, in the past 12 months, EXA Infrastructure has upgraded over 90% of its network to flex-grid technology, enabling dynamic bandwidth allocation and 400G services, ensuring efficient and reliable wavelength delivery even during peak traffic periods, and facilitating faster service activation.

Can you describe how EXA Infrastructure's submarine cable systems are designed to scale efficiently and support the growing bandwidth demands of data-intensive applications?

EXA Infrastructure exists to serve high-growth customers with high-bandwidth requirements. With that as our core focus, our investment approach and network expansion are tightly interwoven. We aim to be the reliable operator capable of guaranteeing alternative routing, while being conscious of the fact that subsea and terrestrial routes are highly interconnected.

Redundancy, business resiliency, and continuous planning, together with risk mitigation strategies, are some of the items we bring to the table when we start any discussion around subsea services.

From a technical perspective, let me point out the following aspects:

- **High-Capacity Upgrades:** Our extensive submarine cable systems, including the recent additions of high-capacity Trans-Atlantic cables like HAVFRUE, Dunant, and Amitié, are designed to handle growing bandwidth demands, with capacities exceeding 144 Tbps to support data-intensive applications across continents.
- **Scalable Flex-Grid Technology:** Our upgrade to flex-grid technology allows for scalable wavelength provisioning, enabling efficient bandwidth expansion and rapid service activation to meet the evolving needs of high-bandwidth applications and hyperscale data centers.
- **Strategic Submarine Landing Stations:** We have built and maintain 20 CLSs across Europe, Canada and North America. Our new open cable landing stations in Genoa and Mazara (both in Italy) enhance network diversity and scalability, and improve service quality, resulting in lower costs and better network resilience.

Can you discuss recent developments or strategic partnerships that have enhanced the company's submarine cable connectivity in the region?

Partnerships are a key focus for EXA Infrastructure, particularly when it comes to the interconnection of subsea cables with terrestrial infrastructure. Some recent highlights include:

- **HAVFRUE Cable Integration:** EXA Infrastructure partnered with Bulk Fiber Networks and NJFX to integrate the HAVFRUE subsea cable with its pan-European network. The cable, spanning 7,851 km and boasting a system capacity of over 144 Tbps, marks the first transatlantic system connecting Norway and provides onward connectivity to hundreds of data centers and cable landing stations, allowing customers to benefit from diverse options, extremely high availability and green data centers in the Nordic region.
- **Telecom Egypt Partnership:** EXA Infrastructure's strategic partnership with Telecom Egypt connects its European infrastructure with Telecom Egypt's cable landing stations in Egypt. This collaboration enhances connectivity between Europe, Asia, and the Middle East, and now provides customers from Asia and the Middle East with two routes from Egypt to Europe. The partnership essentially makes us a one-stop-shop for traffic between the regions.
- **The Mediterranean Region**: Overall, this region has seen major developments and partnerships—involving different partners such as the Trans Adriatic Pipeline (TAP), Grid Telecom, and Islalink—all aimed at delivering leading edge data connectivity for Greece as well as neighboring countries across southern Europe, the Balkans and the Middle East. TR

Budi Satria Dharma Purba, CEO, Telin

Telin CEO Charts Indonesia's Path to Telecom Powerhouse

In an exclusive interview with Telecom Review Asia during the Bali Annual Telecommunication International Conference (BATIC) 2024, Telin CEO, Budi Satria Dharma Purba, discussed Indonesia's significant impact on the global digital landscape.

As the host of BATIC 2024, Telin aimed to elevate Indonesia's presence in the telecom industry and foster collaboration and innovation across the Asia Pacific.

Could you elaborate on why Telin decided to host the Bali Annual Telecommunication International Conference 2024?

We know that most of the global telecom and digital events are held in the U.S., Europe, and some Asian countries. Indonesia, being one of the largest populations with significant growth in digital services, deserves more representation in these spaces. We want to increase the presence of local players and drive the development of the digital ecosystem here.

Traveling overseas can be costly, and not all players can attend international events. As an Indonesian telco company, it's our responsibility to facilitate this industry growth locally. That's why we're hosting the Bali Annual Telecommunication International Conference—to provide a platform for stakeholders in the digital ecosystem to collaborate, share ideas, and grow their businesses together.

What themes and urgent issues are being explored and discussed at BATIC 2024?

The theme for BATIC 2024 focused on the significant developments in the digital area, with a particular emphasis on AI.

AI is a hot topic globally, and supporting its growth in this region requires robust infrastructure, especially data centers and connectivity. On the first day of the conference, we discussed how ready the region is to support AI, especially in terms of connectivity and infrastructure. The urgency lies in the rapid surge in demand due to AI, and we need to ensure the region can handle it.

On the second day, the focus shifted to sustainability. AI and data centers require substantial energy, so it's crucial to align their development with sustainability goals. We discussed energy-saving technologies, the expansion of renewable energy use, and reducing carbon emissions toward net-zero goals.

This discussion is vital as it reflects our industry's responsibility to contribute to a sustainable future, and we hope to adopt initiatives from other regions that can be implemented here.

Can you share some key initiatives or partnerships that Telin is pursuing to shape the company's future in the global digital landscape?

Telin is primarily focused on digital infrastructure, with a particular emphasis on subsea cables. We are actively involved in several international subsea cable projects, such as SJC-2, Bifrost Cable, and SMW-6. Additionally, we've initiated a new project called ICE Systems—the Indonesia Cable Express—with the vision of making Indonesia a hub for subsea cables in the Asia Pacific.

This initiative aligns with the development of data centers in the region, which require increased capacity and connectivity. To achieve this, we collaborate with other carriers, players, and hyperscalers. It's a collaborative effort; no one can do it alone. We've already formed conversations with global players for six out of seven planned systems as part of the ICE project. This project will connect Indonesia to other Asian countries, including Korea, Japan, and the U.S., as well as Australia, South Asia, and the Middle East. These partnerships are crucial for accelerating infrastructure development and strengthening Indonesia's position in the global digital landscape.

How does Telkom Group perceive the role of BATIC in strengthening Indonesia's position on the global telecommunications stage?

Telkom Group sees BATIC as a key platform for fostering collaboration between local players and international technology and telecom companies. By hosting BATIC, we aimed to accelerate the growth of Indonesia's digital economy, which is a critical pillar in our nation's vision to become one of the top five economies in the world.

BATIC is not just about enhancing our brand's global presence; it's about contributing to Indonesia's broader digital ambitions. By bringing together industry leaders from around the world, BATIC helps position Indonesia as a key player in the global telecommunications arena. It allowed us to showcase our capabilities, share knowledge, and explore partnerships that can drive both local and international growth. Ultimately, BATIC strengthens Indonesia's role in shaping the future of global telecommunications. TR

> We've initiated a new project called ICE Systems—the Indonesia Cable Express—with the vision of making Indonesia a hub for subsea cables in the Asia Pacific


Ian McLean, Director, APTelecom

APTelecom Leads in Converged Connectivity and Subsea Cable-Driven Digital Infrastructure Development

In an exclusive interview with Telecom Review Asia, Ian McLean, Director at APTelecom, discussed the company's innovative approach to meeting the evolving needs of clients in the telecom sector. As industries become increasingly driven by digital transformation, the demand for reliable, high-capacity networks has never been more critical. APTelecom, a global leader in telecom consulting, specializes in developing connectivity and digital infrastructure in both established and emerging markets worldwide.

APTelecom's extensive experience in the subsea industry, marked by the celebration of its fifteenth anniversary this week, positions the company at the forefront of shaping the future of global communication networks, bridging the digital divide, and driving the next generation of telecom advancements.

As a leader in converged connectivity consulting, how does APTelecom balance innovation with the practical needs of clients in the telecom sector?

Since 2009, APTelecom has built a strong reputation as a global consulting firm, providing expert advice and pre-sales support across the technical, commercial, and financial aspects of the telecom industry. Our ability to balance innovation with the practical needs of our clients lies in our comprehensive approach to solving challenges in subsea cable development. With an extensive track record of commercializing new subsea cable systems and monetizing existing assets, APTelecom excels in guiding clients through complex projects, from site surveys and vendor selection to financial modeling and international wholesale pre-sales.

Leveraging our extensive network and industry expertise, we have facilitated more than USD 400 million in pre-sales outcomes and generated over USD 2 billion in enterprise value through M&A transactions across 25 countries. Our unique expertise and successful track record has been recognized in driving sales and transactional outcomes in more than 20 emerging markets globally. We also work closely with some of the world's largest network providers and institutions, enabling us to offer unparalleled insights and strategies.

As the demand for global connectivity increases, do you think the subsea finance landscape will change over the next few years? What new opportunities do you anticipate arising for investors and stakeholders?

We believe the subsea finance landscape is set to undergo significant transformation in the coming years. With cloud services, video streaming, IoT, 5G, and AI all rapidly growing, it has led to a surge in data demand, driving the need for expanded subsea cable systems. This digital evolution presents substantial opportunities for investors and stakeholders in the industry.

As demand for capacity continues to grow, submarine cable investments have shifted from conventional telecom consortiums to more diversified models, involving OTTs, private equity, and infrastructure investment funds. The ongoing expansion of cloud services is

accelerating the need for direct connections between subsea cables and data centers, making investments in landing stations and interconnects more attractive.

Strategic partnerships and pricing strategies, coupled with regulatory and geopolitical navigation will play crucial roles in shaping the future landscape, unlocking value in both emerging and established markets. APTelecom's expertise and strategic relationships place us in a strong position to help stakeholders navigate these opportunities, ensuring sustainable growth and maximizing returns in this evolving sector.

How have recent global economic shifts influenced investment strategies in the subsea cable industry, and what adjustments do you foresee being necessary for continued growth in this sector?

Recent shifts in the global economy have significantly impacted investment strategies in the subsea cable industry, increasing the need for strategic, data-driven approaches to sustain growth. At APTelecom, we have observed a heightened focus on validating demand, securing presales, and adhering to regulatory standards as investors seek to mitigate the risks associated with economic uncertainties. Comprehensive market research, robust modelling, and thorough risk assessment are now more important than ever in guiding investment decisions for both new and existing subsea cable systems.

As the global demand for secure and high-speed internet connectivity rises exponentially, particularly in underserved regions, investment strategies are likely to pivot toward projects that enhance digital infrastructure resilience and expand broadband capacity. Building robust partnerships that leverage the expertise and resources of diverse stakeholders—such as project developers, government agencies, and financial institutions—will be essential for continued growth. APTelecom's involvement in projects like Bagha-1 (an early-stage proposed cable linking Bangladesh and Singapore) demonstrates the importance of these partnerships in directing investments toward initiatives that promote long-term, sustainable growth in the digital infrastructure sector.

Looking to future years, key adjustments will likely include a stronger emphasis on competitive pricing forecasts, customer segmentation, and asset monetization strategies for existing systems. Adapting to changing market needs, ensuring the viability of new routes, and fostering strong alliances across different regions will be critical for sustained growth. With our deep understanding of both global and local market trends, APTelecom is well-equipped to navigate these challenges and continue adding value to the subsea cable industry.

How will APTelecom contribute to the development of digital infrastructure in underserved regions, and what role will partnerships play in this development?

APTelecom plays a pivotal role in developing digital infrastructure in underserved regions, and a notable recent example includes our involvement in the Central Pacific Cable (CPC) subsea system. The U.S. Trade and Development Agency (USTDA) awarded a grant to Tuvalu Telecom for a feasibility study, and we were selected to conduct the study, provide system design insights, and assess the technical and financial aspects of developing a new submarine cable. The system aims to connect the U.S. territories of American Samoa and Guam with up to 12 Pacific Island countries.

APTelecom actively partnered with Google and Telstra on this project. Together, we are working to establish the CPC system, enhance digital access, and foster economic growth in underserved areas. These collaborations not only ensure the success of such projects but are also vital to provide a platform for extending connectivity to more islands. This collaborative approach is vital in the deployment of reliable, high-performance digital infrastructure across the Pacific, ultimately contributing to the region's overall development.

More recently, in May the USTDA awarded a feasibility study grant to Bangladeshi telecommunications company, CdNet Communications Limited. APTelecom was selected as the vendor to partner with CdNet and will lead the feasibility study with the intent to further expand reliable connectivity across Bangladesh through the development of the Bangladesh International Submarine Cable (Bagha-1). We are excited to contribute to this key initiative in one of the world's most rapidly expanding telecom markets. By leveraging our expertise and collaboration, we aim to support Bangladesh's growth and strengthen its position in the global telecommunications landscape.

As the digital landscape continues to evolve, APTelecom is committed to driving the next wave of connectivity solutions and empowering communities worldwide." TR

> We have facilitated more than USD 400 million in pre-sales outcomes and generated over USD 2 billion in enterprise value through M&A transactions across 25 countries

Giuseppe Valentino,
EVP Marketing & Product Management
Backbone & Infrastructure Solutions, Sparkle

Sparkle Transforms its Submarine Cable Network and the Market

In an exclusive interview with Telecom Review Asia, Giuseppe Valentino, EVP Marketing & Product Management Backbone & Infrastructure Solutions at Sparkle, outlined Sparkle's submarine cable network. He also expanded on the company's market position, the future challenges it may face, and how it will respond to new market needs. Valentino concluded the discussion by explaining how Sparkle will develop and transform its key markets in the Asia Pacific.

Can you give an overview of Sparkle's submarine cable network and market positioning?

Sparkle is an established player in the submarine cable industry, with an advanced proprietary fiber network of over 600,000 km across the globe and a higher asset concentration in Europe, the Mediterranean Basin and the Americas.

As the first international service provider in Italy and among the top global operators, Sparkle offers a full range of infrastructure and global connectivity services—capacity, IP transit, SD-WAN, colocation, IoT connectivity, roaming and voice—to national and international carriers, OTTs, ISPs, media/content providers, and multinational enterprises.

Sparkle's global IP Backbone, 'Seabone', ranks 4th worldwide (according to CAIDA) and is a leader in the Mediterranean, Middle East, Africa, and LATAM regions where Sparkle continues to invest in cable systems and hubs to create new digital corridors, expand capacity and facilitate the creation of gravitational interconnection ecosystems.

All infrastructural investments implementing state-of-the-art technologies are designed to improve the performance and security of services offered to customers and ensure diversification.

What do you think is the biggest challenge facing the subsea industry in the near future, and how is Sparkle responding to these new market needs?

The past two decades have been characterized by an explosion of data, internet, and digital services. In the next decade, traffic will continue to grow, requiring constant and consistent development of the international transmission network. This involves enabling global communications by upscaling needs (bandwidth demand), performance improvement (latency), and resiliency (where physical diversification is becoming more and more crucial). At Sparkle, we are very committed to following this development.

BlueMed is the most recent example of this strategy. With four fiber pairs and an initial design capacity of more than 25 Terabits per second (Tbps) per pair, BlueMed creates a digital highway throughout the Mediterranean Basin between Europe, the Middle East and Africa (together with Blue), and South Asia (a future extension with Raman), establishing a new reference in terms of diversification, scalability and latency on this route.

These new systems introduce diversification by following completely innovative physical and submarine paths compared to the existing and planned cables connecting Europe with the Middle East and Asia. The cable's key European landing point is in Genoa. It then passes through the Strait of Messina (rather than through the Sicilian channel), and charts a path through Israel, Jordan and Saudi Arabia, thus, establishing a new route between the Red and Mediterranean Sea.

The Tyrrhenian and the Middle-Eastern terrestrial sections are already in operation, while further Mediterranean landings and the full segment from Genoa to Aqaba are expected to be completed this year.

The extraordinary success of BlueMed encourages us to continue with this approach to the market by developing new cables—such as GreenMed, which will connect Italy through the Adriatic Sea to the Balkans and Central-Eastern Mediterranean countries—thus, opening a brand new and diversified intercontinental digital corridor.

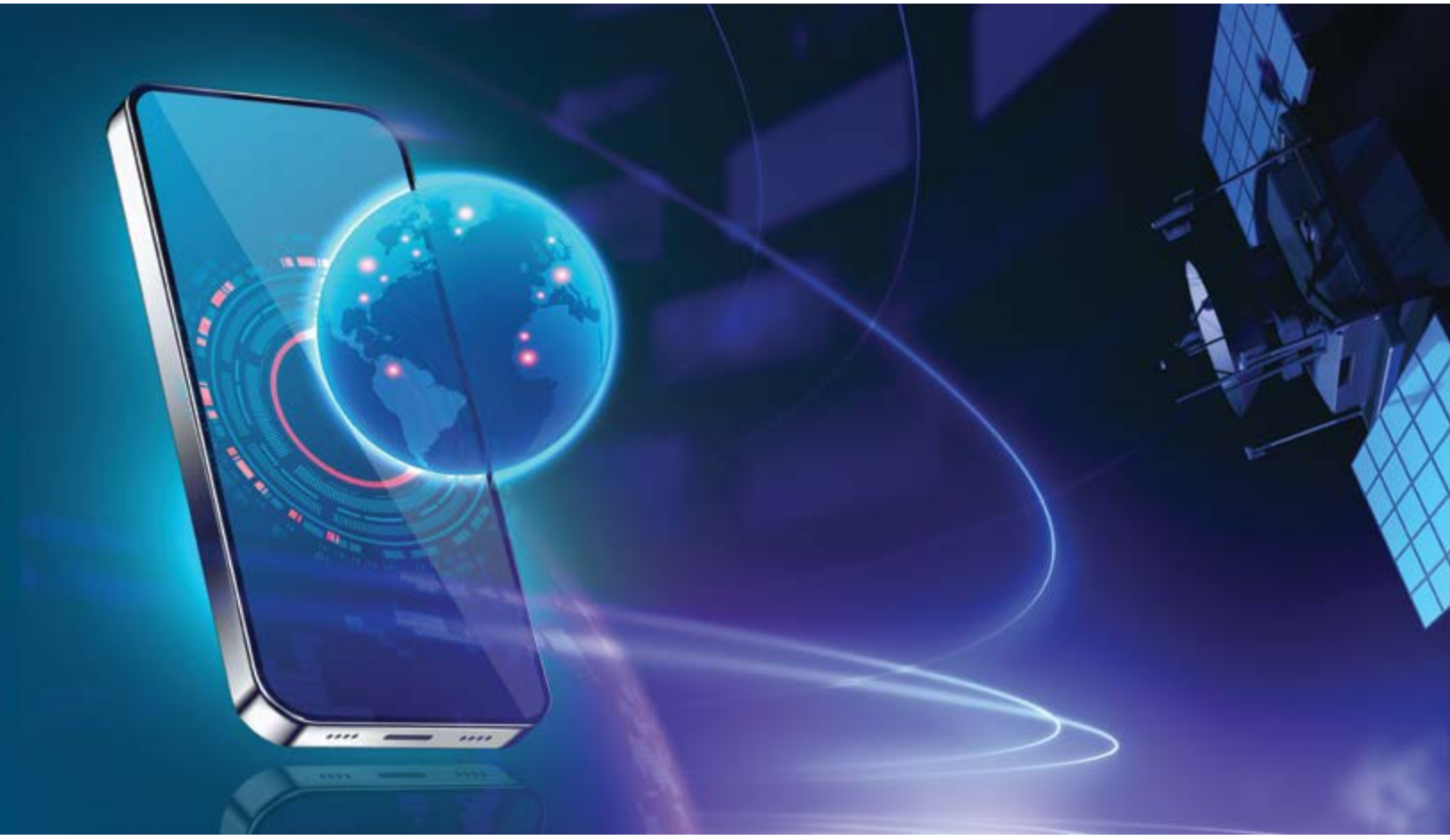
What development prospects do you see on the Asian continent?

Asia, with its high economic and demographic growth rates, is a huge digital market with very attractive and varied opportunities for network operators.

The whole Middle East—South Asia—South/East Asia corridor will go through major development and transformation when it comes to backbone diversification and routing.

Sparkle is currently studying various new investments along that corridor and in some of its key markets, starting with the Indian subcontinent. TR

“The extraordinary success of BlueMed encourages us to continue with this approach to the market by developing new cables—such as GreenMed, which will connect Italy through the Adriatic Sea to the Balkans and Central-Eastern Mediterranean countries—thus, opening a brand new and diversified intercontinental digital corridor”



Enhancing Business Continuity with Iridium's Satellite Solutions

Effective communication is essential for the smooth operation of any business. This becomes even more critical during emergencies when traditional communication networks might fail.

In the event of a natural disaster that disrupts terrestrial communication lines, businesses need a reliable alternative. Iridium Communications Inc. (Iridium), a leading provider of satellite communication solutions, offers a range of products to ensure business continuity through satellite phones, Push-To-Talk (PTT) services, and in-building units.

With its extensive global satellite network, Iridium provides robust backup communication services, which is crucial for maintaining operations during crises.

Reliable Satellite Phones and Real-Time PTT Services

Iridium's satellite phones are recognized for their exceptional reliability and global coverage. Unlike conventional cell phones that depend on terrestrial towers, Iridium's satellite phones connect directly to satellites orbiting the Earth, providing connectivity even in the most remote locations. This makes them indispensable for businesses operating in areas with limited or no terrestrial network coverage.

Iridium's PTT services provide another layer of reliability and immediacy. PTT enables instant communication across vast distances, making it ideal for coordinating teams in real-time. This service is particularly beneficial for industries such as logistics, public safety, and disaster response, where timely and clear communication is crucial.

With Iridium's PTT, businesses can establish talk groups and manage communication channels efficiently, ensuring that the right information reaches the right people promptly. This control and immediacy are essential for maintaining operational efficiency and responding quickly to disruptions.

Enhancing In-Building Communication

For businesses operating within large buildings or complexes, maintaining internal communication during emergencies can be challenging. Iridium's in-building units address this issue by providing reliable satellite communication within a building. These units allow employees to remain connected even if the building's terrestrial communication infrastructure fails.

Integration with Iridium's broader communication network provides reliable connectivity between indoor and outdoor operations. This is crucial for businesses that need to coordinate between different teams and departments, especially during emergencies. Iridium's commitment to extensive coverage in the Asia Pacific (APAC) region is evident through its global network and presence.

New Offerings and Regional Support

Iridium has introduced several new products and services to support regional partners and customers who have experienced disruptions with other satellite services. Iridium's product range includes land mobile, maritime, aviation, and Internet of Things (IoT) solutions, all anchored by personal communications and industrial IoT. These offerings cater to the diverse needs of businesses and individuals in the APAC region.

Recently, Iridium service provider Arion Communication Co. Ltd. began supporting the Republic of Korea Ministry of Defense's (ROK MOD) Defense Acquisition Program Administration (DAPA) with over 1,000 Iridium® SAT-PRE (Position Reporting Equipment) devices. These Iridium solutions are set to strengthen the ROK Army's data tracking and communication capabilities, improving operational efficiency and tactical awareness. Arion will also manage Iridium satellite airtime directly with the ROK MOD.

The SAT-PRE devices support both Iridium PTT and Short Burst Data® applications, including messaging and positioning. These multi-functional, handheld devices provide truly global communication solutions, designed to withstand the harshest environments.

Strong Growth and Commitment to Innovation

Iridium's relentless dedication to delivering reliable communication solutions is reflected in its financial results and ongoing commitment to innovation. Iridium has shown remarkable growth and resilience amid a competitive landscape, which is largely due to its diversified range of products and services that target the unique needs of firms across different sectors. Furthermore, this unwavering commitment to excellence is evident not only in the company's product range but also in its growth from less than USD 400 million in total revenue in 2013 to nearly USD 800 million in 2023, more than doubling over that period. At the same time, the company grew its billable subscriber base from less than 700,000 to over 2,000,000.

These factors, combined with the company's years of experience, make Iridium the trusted choice for enterprises, governments and NGOs looking for reliable business continuity communication services. TR

With Iridium's PTT, businesses can establish talk groups and manage communication channels efficiently, ensuring that the right information reaches the right people promptly

Mustafa Kapasi, Chief Operating Officer, M1

M1's Journey Towards Digital Innovation and Future-Ready Solutions

In his first interview since being appointed Chief Operating Officer of M1, Mustafa Kapasi exclusively discussed the telco's digital transformation journey, strategic partnerships, and strong focus on customer-centric, hyper-personalised innovations and future-proof solutions with Telecom Review Asia.

Can you elaborate on M1's transformation journey and the key milestones achieved during this transition?

Our transformation journey began in 2020 with a clear vision to evolve into a digital-first Telco. Singapore is one of the world's most competitive telco markets, and we knew this digital transformation would allow us to evolve with the market and stay relevant. To us, M1 now stands for "made to measure for a segment of one'.

Our ambitious programme involved a complete overhaul of our legacy technology stack with a completely new cloud-native platform. We streamlined over 200 databases into a single data lake, which enables real-time data analytics and provides actionable insights to better serve customers from a single source of truth.

One of the key milestones on this journey was the successful migration of our consumer base to this new platform, which was completed in March 2024. M1 now has the ability to hyper-personalise products and services and cater to customers' specific needs. For instance, we can alert frequent travellers to any updates or promotions around roaming plans such as M1 Data Passport.

Digital transformation is a continuous journey, and people transformation is an important piece in the roadmap to becoming a telco of the future. In short, M1 had to become a digital organisation, not unlike digitally-native organisations like Lazada and Amazon. To ensure we are constantly primed to evolve, we changed the way our staff works and how operations are structured. For instance, we introduced "sprints" and now have several product teams working on multiple release cycles at one time, with 'scrum masters' who work to keep each sprint together. This is relatively unheard of in the telco industry, but we believe this way of working is the key to keeping M1 agile and helps to set us apart.

What strategies did M1 implement to transition away from a traditional retail footprint towards a self-service model?

Our primary objective in digital transformation has been to enhance our customer service by offering a more flexible and personalised experience. As we transitioned towards a self-service model, we empowered customers to manage their transactions online, resulting in nearly 90% of transactions becoming digital and 85% of orders being fully automated. This shift has led to significant improvements in our customer service and satisfaction metrics, including a notable increase in our Net Promoter Score (NPS).

Our strategies are anchored in customer centricity, and our goal is to always improve the experience of our customers through digital innovation. To this end, we enabled personalised plans across 6 million product combinations, reducing configuration time from two weeks to mere seconds at the touch of our customers' fingertips. As a result, we've seen online purchases rise fourfold since 2019, as customers can shop and receive deliveries without visiting a M1 store.

Another key shift we made was e-billing. Today, e-bills are the preferred method for 80% of M1's customer base, a remarkable eightfold increase from 2019. The almost instant generation of e-bills helps prevent physical bills from being lost in the mail and shortens delivery time by 3 to 5 days. Customers no longer need to visit the nearest store to pay their phone bills, as they can easily and conveniently do so on the My M1+ app. These have also helped eliminate manual process inefficiencies such as late payment charges due to delayed bank transactions.

However, we recognise that there is still a need for a physical presence that can offer face-to-face assistance. Digital literacy varies, and customers are welcome to head down to the store for assistance. For seniors who may need additional assistance, we have digital ambassadors in-store to help guide them through the My M1+ App or answer their questions about their phone plans.

This is what we mean by customer-centricity – it is imperative that we meet our various customer segments where they are and ensure they can receive the support and assistance they need, in the way that works best for them.

How has M1 partnered with other leading technology providers to improve operational efficiency or customer service experience? Can you give an example?

M1 frequently works alongside world-leading technology companies to unlock new opportunities or create new value for our customers.

Digital transformation has helped improve our operational efficiency. By automating and integrating our internal workflows, M1 employees can save man-hours and use this time to focus on higher-value and more urgent tasks.

Separately, as part of our digital transformation efforts, we created an environment that supported hyper-personalised digital interactions with customers. By implementing reusable APIs, we delivered new services and features more rapidly and reduced our time-to-market by 25%. Further, we wanted a single view of our customers that allowed us to tap into rich data and identify robust insights to improve customer service experience.

For instance, we're currently seeing a trend of customers across demographics moving away from customer service phone calls and towards a live chat with our agents in the My M1+ app. In the short term, we are looking at enhancing the operations of the live chat function with a time-saving feature where a customer can send a message and, rather than waiting on standby for a live response, receive a notification when an agent has replied.

We're also delivering more personalised content to customers visiting our website. For instance, customers see different website interfaces depending on their past interactions with M1.

How is M1 addressing the future needs and expectations of customers, and what innovative advancements can be expected in the near term?

At M1, we are committed to staying ahead of customer needs and expectations through continuous innovation and improvement. Our agile foundation allows us to be responsive and proactive in addressing future demands, needs and expectations.

In the long term, we are looking towards sophisticated AI tools that can enhance our customer service support as we recognise a growing preference for digital interactions. We are looking to augment our chatbot Mindy, which launched in 2019 and serves 100,000 unique customers monthly, with generative AI (GenAI) capabilities that enhance response accuracy and relevance.

Similarly, developments in GenAI have surfaced new use cases in the customer service sector, such as functioning as an assistant agent. By listening to the customer call or watching the conversation, GenAI tools can prompt a human customer service agent with relevant, useful information. For example, if the customer is asking about roaming plans, the GenAI tool can quickly provide the agent with the information, helping agents to assist customers faster and more efficiently.

As we strategically partner with vendors for AI-based solutions, we are also building awareness about AI capabilities among our employees across all departments. For example, our marketing team is using GenAI tools in their content creation work. M1's Digital Office is prioritising training and has planned for more AI-related sessions to build our base of AI knowledge throughout the company, enabling employees to leverage innovative tech solutions that enhance productivity, efficiency, as well as the overall employee experience. TR

Arvinder Khanna, Pre-Sales Applications and Networks Leader for APAC, Nokia

Nokia's AI Leap Forward in Telecom Security

During an insightful discussion with Telecom Review Asia, Arvinder Khanna, Pre-Sales Applications and Networks Leader for APAC at Nokia, offered an in-depth exploration of Nokia's groundbreaking initiatives. With over two decades of expertise in CSP software delivery and architecture, Arvinder explained how Nokia's progress in AI and security is transforming the telecommunications industry.

How is Nokia's focus on AI-enhanced 5G security shaping the future of both mobile and cloud-based network services? What key benefits does this transformation bring to the overall telecom ecosystem?
Nokia's commitment to AI-enhanced 5G security is fundamentally transforming the landscape of both mobile and cloud-based network services. Through our NetGuard Cybersecurity Dome solution, built on an XDR architecture, we harness the power of AI and machine learning to enhance the security posture of 5G networks, ensuring they are not only more secure but also more resilient against the ever-evolving cyber threats we face today.

One of the key advantages of our approach is proactive threat detection. By continuously monitoring network traffic, our AI-driven systems can identify and respond to potential threats in real-time, significantly reducing the risk of breaches. This proactive stance is crucial for maintaining the reliability and security of both mobile and cloud services.

Moreover, the automation capabilities of our solution greatly enhance operational efficiency. By automating many routine security processes, we streamline threat management, allowing our telecom partners to allocate more resources towards innovation and service enhancement rather than just security maintenance.

Our AI-enhanced security also bolsters the overall resilience of 5G networks. As these networks grow and become more complex, the ability to adapt to and neutralize new threats in real-time is vital to ensuring uninterrupted service. This resilience is a cornerstone of our strategy to secure the entire telecom ecosystem.

Furthermore, our solution is designed to protect the ecosystem at every level—from the core network to the edge, including IoT devices and cloud services. This comprehensive protection fosters greater trust and confidence among users and stakeholders, which is essential in today's interconnected world.

Finally, scalability is another critical benefit. As 5G networks expand, our AI-enhanced security solution scales seamlessly to meet increasing demands, ensuring robust protection regardless of the network's size or complexity.

In summary, Nokia's focus on AI-enhanced 5G security is not just about addressing today's challenges—it's about future-proofing the telecom ecosystem, ensuring that as we move forward, our networks remain secure, efficient, and resilient.

What role do Nokia's strategic partnerships play in advancing AI, analytics, and cloud solutions for privacy-preserving telecom security, and how do these collaborations influence the deployment of secure, scalable network services?
Strategic partnerships are central to Nokia's approach in advancing AI, analytics, and cloud solutions for privacy-preserving telecom security. In today's rapidly evolving digital landscape, no single company can address all the complexities of telecom security alone. That's why we've forged strong alliances with industry leaders, technology innovators, and academic institutions to drive forward our vision of secure, scalable network services.

Through these collaborations, we combine our expertise with the specialized knowledge and capabilities of our partners. This synergy accelerates the development of cutting-edge AI and analytics solutions that are at the core of our security offerings. For instance, by working closely with cloud service providers, we can seamlessly integrate our security solutions into cloud infrastructures, ensuring that data privacy is preserved without compromising performance.

Our partnerships also play a crucial role in advancing the deployment of secure network services at scale. By leveraging our partners' strengths, we can rapidly deploy and scale our solutions across diverse network environments, from core to edge. This ensures our customers benefit from robust security measures that are both scalable and adaptable to their specific needs, whether they operate in traditional telecom environments or adopt next-generation cloud-native architectures.

Moreover, these collaborations allow us to stay ahead of emerging threats by fostering innovation and knowledge sharing. Working with leading AI and cybersecurity experts enables us to continuously refine our solutions, incorporating the latest advancements in threat detection, response, and mitigation. This collaborative approach not only enhances the security of our solutions but also ensures they are future-proofed against the evolving threat landscape.

In essence, our strategic partnerships amplify our ability to deliver privacy-preserving telecom security that is both cutting-edge and scalable. These collaborations are integral to our mission of providing secure, reliable network services that meet the demands of today and the challenges of tomorrow.

How is Nokia integrating AI, cloud-based solutions, and Network as Code into its technology portfolio, and what are the anticipated benefits and challenges for network operators, application developers, and end users?
Nokia is fully leveraging AI, cloud-based solutions, SaaS, and Network as Code in all facets of value creation for its customers. We provide flexibility by offering solutions that work seamlessly with the customer's cloud infrastructure of choice while maintaining the same level of performance and reliability. In addition, By offering a SaaS-based delivery option Nokia is able to assist CSPs to accelerate their ability to launch new services faster and see "time to value" quicker. AI-powered solutions enable customers to leverage predictive analytics and closed-loop automation, paving the way toward Autonomous Networks. This not only optimizes the network but also enhances the customer experience.

Last, Nokia's Network as Code platform brings together networks from around the globe, along with systems integrators and software developers, into a unified ecosystem. This platform aims to simplify network complexities by abstracting them and exposing developer-friendly interfaces.

All participants within this dynamic ecosystem stand to gain: CSPs extend developer access to their network attributes, developers craft novel application experiences, and enterprises unveil innovative products and services. This synergy empowers CSPs to fully unleash the potential of their network through strategic collaborations with application developers, ushering in pioneering Industry 4.0 and consumer use cases.

With 5G, ensuring a superior user experience and effective monetization has always been a key concern for operators and service providers. Network as Code offers a digital ecosystem that allows IT and application developers to leverage the vast amount of information available in the network, providing the best possible user experience. Furthermore, with the introduction of new use cases and services, new revenue streams can be realized, offering service providers the opportunity to monetize and build a solid business case for 5G investments.

In terms of challenges, harmonizing the various elements and players within the digital ecosystem to deliver optimal performance and outcomes that exceed customer expectations remains crucial. Individual elements may have different levels of readiness and compatibility, so it is Nokia's challenge to ensure all components are aligned, deployed, and tested to achieve the highest quality possible.

What upcoming AI, cloud, and network innovations are you most excited about? Do you foresee these developments enhancing both network security and the agility of next-generation connectivity services?
Generative AI (Gen AI) complements and enhances traditional AI capabilities with three main pillars: multimodal enhancements, digital twins for higher-order reasoning (e.g., what-if analysis, scenario planning), and open-source large language models (LLMs) and frameworks. This enhances autonomous decision-making with assistive reasoning, thereby bringing Level 4 (L4) and Level 5 (L5) autonomous networks closer to commercial reality.

While traditional AI excels at handling rules-based, structured data (such as time series and tabular data), GenAI manages unstructured data. GenAI can function as an AI assistant in various functional roles—operations, sales, and customer service—focusing primarily on natural language interaction with multimodal enhancements.

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

At Nokia, we have already integrated Microsoft Copilot into our NetGuard Cybersecurity Dome solution, where natural language prompts allow security analysts to validate perceived network vulnerabilities and security threats in real time and to trigger proactive and reactive security actions.

GenAI assistants can also be utilized with Nokia AVA Data Suite, the most comprehensive data management platform available today for Communication Service Providers (CSPs). It provides a single source of truth for all network, services, and customer-centric data. Any role—whether in operations, customer service, sales, or management—can now use Gen AI to generate real-time dashboards and reports based on any combination of available data sources, enhancing observability, predictive analytics, and driving closed-loop automation across the entire network. TR

Asia-Pacific Tower and Small Cell Market Sees Notable Growth Despite Ongoing Challenges

The tower and small cell market in the Asia Pacific experienced notable growth in 2021, with S&P Global estimating an increase of 5.1% to a total of 5.79 million sites, up from 5.51 million in 2020. This growth, driven by the gradual easing of pandemic restrictions and the rollout of vaccines, marked a significant recovery after a slowdown in 2020. However, the industry now faces a complex landscape of rising costs, regulatory challenges, and shifting market dynamics.

The COVID-19 pandemic had a profound impact on the tower industry, particularly in mainland China, where lockdowns in 2021 and 2022 led to stalled construction and disrupted capital expenditures. Despite these setbacks, the overall market showed resilience. The increase in towers and small cells in 2021 reflects the sector's recovery and the growing demand for network infrastructure driven by the expansion of 5G services.

In the Asia Pacific, traditional macro-cell towers still dominate, reportedly accounting for 61.5% of the total, but the proportion of small cells and Distributed

Antenna Systems (DAS) has risen to 37.8%. This shift highlights the industry's adaptability to new technological demands, particularly in dense urban areas and indoor spaces.

Regional Breakdown and Emerging Trends

Greater China remains the largest market, with 2.1 million towers, followed by South Korea, Japan, India, and Indonesia. Despite the challenges faced by mainland China, including the impact of lockdowns and supply chain disruptions, the region is expected to maintain a steady growth rate. The emphasis is increasingly on small cells and DAS, with a projected compound annual growth rate (CAGR) of 18.9% for these technologies from 2022 to 2032. This shift is crucial as it supports better coverage in urban environments and complements the overall network expansion.

The rest of East Asia saw significant growth in 2021, particularly in Japan, which experienced a 19.7% increase in tower construction due to aggressive 5G deployment. South Korea also contributed to the region's growth, though it faces ongoing challenges related to high operational costs. The growth in this subregion is expected to continue at a 2.2% CAGR, driven by traditional towers and an ongoing focus on expanding network infrastructure.

In Southeast Asia and South Asia, the market is seeing a boom in tower construction. Indonesia and the Philippines, traditionally lagging in tower development, are now experiencing significant investments. The acquisition of PT Solusi Tunas Pratama Tbk by PT Profesional Telekomunikasi Indonesia is a notable example of tower investment in the Indonesian market. Similarly, the Philippines is benefiting from new entrants like DITO Telecommunity Corp. and substantial infrastructure investments.

In line with this regional trend, Japan's leading trading company, Sojitz Corp., has recently expressed a strong interest in investing in cell tower construction and co-location in the Philippines. According to Dita Angara-Mathay, a commercial counselor with the Department of Trade and Industry (DTI), Sojitz's investment aligns with the Philippines' need for enhanced telecommunications infrastructure. This initiative highlights Sojitz's expanding role in various sectors within the Philippines, including infrastructure development.

In South Asia, India's tower market, while already undergoing consolidation through major mergers, still exhibits room for growth, particularly in rural areas and in relation to the upcoming 5G rollout. Southeast Asia is set to experience the fastest growth in the region, with a projected CAGR of 6.1% from 2022 to 2032.

Australia, New Zealand, and the Pacific Islands face unique challenges due to their geography, which makes tower construction more costly. Despite this, the region is expected to see a 4.6% CAGR, driven mainly by small cell deployments for 5G and infrastructure-sharing initiatives.

Balancing Recovery and Growth

Rising inflation and interest rates have increased the cost of financing, leading to potential delays and downsizing of projects. The global chip shortage and disruptions in the semiconductor industry, particularly in Taiwan, have further compounded these issues.

As mobile operators and tower companies grapple with these challenges, there is a noticeable shift towards consolidation. Tower companies are increasingly acquiring passive assets from mobile operators to focus on their core competencies and manage debt. This consolidation trend is evident in several high-profile deals, such as PT XL Axiata Tbk's sale of towers to PT Edotco Infrastruktur Indonesia and Globe Telecom Inc.'s tower sales in the Philippines.

Globe Telecom has completed its tower sale and leaseback deal with Frontier Towers, finalizing the sale of the last batch of towers. This wraps up the transaction involving a total of 6,628 towers. The final batch consisted of 84% ground-based towers and 16% rooftop towers.

In response to rising energy costs and sustainability concerns, there is also a growing focus on energy-efficient solutions and infrastructure sharing. Companies are exploring innovative approaches to reduce operational expenses and enhance network efficiency, which are crucial for managing the financial impact of increased capital and operating costs.

The tower industry in the Asia Pacific is at a pivotal moment, balancing recovery and growth with significant economic and operational challenges. While the sector has rebounded from the pandemic's effects and is poised for continued expansion, particularly with the ongoing rollout of 5G, it must navigate a complex environment of rising costs, supply chain issues, and regulatory hurdles.

The industry's ability to adapt through technological innovation, consolidation, and strategic investment will be crucial in shaping its future trajectory and maintaining growth momentum in the coming years. TR

> In the Asia Pacific, traditional macro-cell towers still dominate, reportedly accounting for 61.5% of the total, but the proportion of small cells and Distributed Antenna Systems (DAS) has risen to 37.8%

Strengthening Cyber Defenses for Critical Infrastructure in the Asia Pacific

The Asia Pacific, encompassing a diverse array of nations from developed economies like Japan and Australia to rapidly developing countries such as Indonesia and Vietnam, stands at a critical juncture in its cyber defense journey. As the digital landscape continues to expand, the region has emerged as a prime target for cybercrime, necessitating robust measures to safeguard critical infrastructure.

The Asia Pacific has become a hotbed for cybercriminal activities, with a significant rise in both the frequency and sophistication of cyberattacks. According to the World Economic Forum, the region has experienced a surge in cyber incidents, making it a new haven for cybercrime.

The number of mega breaches experienced by Asia-Pacific organizations in the past three years has risen considerably. In 2023, 35% of organizations reportedly experienced data breaches costing anywhere from USD 1 million to USD 20 million over the last three years, according to PwC.

The proliferation of internet-connected devices and the rapid adoption of digital technologies have made critical infrastructure such as energy grids, financial systems, and healthcare networks increasingly vulnerable to cyber threats.

Enhancing Cyber Resilience: A Multi-faceted Approach

Critical infrastructure in the Asia Pacific faces a myriad of vulnerabilities that cyber adversary's exploit. These include outdated technology, lack of cybersecurity awareness, and insufficient regulatory frameworks.

According to a report, many organizations in the region still rely on legacy systems that are no longer supported by vendors, making them prime targets for attacks. Additionally, the rapid digitalization in many developing countries has outpaced the implementation of robust cybersecurity measures, leaving gaps that cybercriminals are quick to exploit.

To address these vulnerabilities, a multi-faceted approach to enhancing cyber resilience is essential. This includes technological upgrades, regulatory reforms, capacity building, and regional cooperation.

Investing in modern cybersecurity technologies is crucial for protecting critical infrastructure. Advanced threat detection systems, artificial intelligence (AI), and machine learning (ML) can help identify and mitigate threats in real-time. For instance, the use of AI-driven cybersecurity solutions can enhance the ability to detect anomalies and respond to incidents more swiftly and effectively. Furthermore,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implementing best practices such as regular software updates, robust encryption protocols, and multi-factor authentication can significantly reduce the risk of cyber intrusions.

Strong regulatory frameworks are fundamental to building cyber resilience. Governments in the Asia Pacific are increasingly recognizing the importance of cybersecurity and are enacting laws and regulations to safeguard critical infrastructure. For example, the ASEAN Cybersecurity Cooperation Strategy aims to harmonize cybersecurity policies across Southeast Asian nations, promoting information sharing and joint response mechanisms. Additionally, comprehensive national cybersecurity strategies that outline clear roles and responsibilities for stakeholders are essential for a coordinated defense against cyber threats.

A well-trained cybersecurity workforce is vital for defending against sophisticated cyber threats. However, the Asia Pacific faces a significant shortage of skilled cybersecurity professionals. Initiatives aimed at capacity building, such as specialized training programs and certifications, are crucial.

Cyber threats do not respect national borders, making regional cooperation imperative. Collaborative efforts such as joint cybersecurity exercises, intelligence sharing, and coordinated incident response can significantly bolster the region's cyber defenses. Organizations like the Asia-Pacific Computer Emergency Response Team (APCERT) play a role in facilitating such cooperation by providing a platform for member countries to share threat intelligence and best practices.

Comprehensive Measures Protecting Critical Infrastructure

Several countries in the Asia Pacific have made notable strides in strengthening their cyber defenses. For instance, Singapore has emerged as a leader in cybersecurity, implementing comprehensive measures to protect its critical infrastructure. The country's Cyber Security Agency (CSA) has developed a robust cybersecurity strategy that includes public-private partnerships, regular cybersecurity drills, and stringent regulatory requirements for critical sectors.

Similarly, Australia's cybersecurity strategy emphasizes international cooperation, investing in cutting-edge technologies, and enhancing the capabilities of its cybersecurity workforce.

On the other hand, countries like Indonesia and the Philippines are still in the nascent stages of developing their cybersecurity frameworks. These nations can benefit from the experiences of more advanced economies by adopting best practices and leveraging regional cooperation to enhance their cyber resilience.

Public-private partnerships (PPPs) are critical for bolstering cybersecurity in the Asia Pacific. Governments alone cannot bear the burden of defending critical infrastructure; collaboration with the private sector is essential. Private companies possess valuable resources, expertise, and technology that can enhance national cybersecurity efforts. For example, cybersecurity firms can provide advanced threat intelligence and incident response capabilities that complement government initiatives.

PPPs can also facilitate the sharing of best practices and the development of industry standards. By working together, public and private entities can create a more resilient cybersecurity ecosystem that benefits all stakeholders. Initiatives such as industry roundtables, joint research projects, and information sharing platforms are instrumental in fostering such collaboration.

Building a Resilient Cyber Ecosystem

The rapid advancement of 5G technology and the digital transformation across the Asia Pacific is driving companies to strengthen their cyber defenses, particularly for critical infrastructure. As nations in this region embrace the potential of 5G, they are also facing the growing need to safeguard these networks from increasingly sophisticated cyber threats.

In Malaysia, Digital Nasional Berhad (DNB) and CyberSecurity Malaysia have joined forces to protect 5G networks. This collaboration aims to ensure the security and resilience of Malaysia's critical infrastructure as the country rolls out its 5G services.

Similarly, in Indonesia, Telkom Indonesia has partnered with F5 to enhance its cybersecurity services. This partnership is crucial for safeguarding the nation's digital infrastructure as it continues to expand its 5G network.

Additionally, Indosat Ooredoo Hutchison has teamed up with Cisco to bolster cybersecurity in Indonesia by implementing advanced security edge services.

In the Philippines, NOW Corp. and Fortinet are collaborating to enhance cybersecurity and 5G services. Their focus is on identifying potential vulnerabilities and addressing them with targeted solutions, which will be essential for building a secure 5G ecosystem in the country.

Meanwhile, One New Zealand has achieved significant success in its fight against cyber threats through the deployment of the Malware Free Networks (MFN) service. Within the first six weeks of its launch, MFN successfully blocked 313,000 phishing scams and harmful threats. Notably, One New Zealand is the only telecom company in Aotearoa implementing cybersecurity features at the network level, in partnership with DEFEND and the GCSB's National Cyber Security Centre. This initiative is a critical step in protecting subscribers against malware and malicious URLs, highlighting the proactive stance taken by companies in the region to secure their networks.

As cyber threats continue to evolve, the Asia Pacific must remain vigilant and proactive in strengthening its cyber defenses. To build a resilient cyber ecosystem, governments and organizations must prioritize ongoing investment in cybersecurity technologies, infrastructure, and workforce development. TR

How the Convergence of AI and 5G is Transforming Network Efficiency, Smart Cities, and Infrastructure

One of the most significant impacts of the convergence of generative AI (GenAI) and 5G is the enhancement of network efficiency and performance.

5G networks are designed to handle vast amounts of data with minimal delays, but managing this data requires intelligent systems that can optimize network resources dynamically.

Generative AI plays a role in this context by analyzing network traffic patterns, predicting potential bottlenecks, and suggesting optimal configurations to maintain seamless connectivity.

AI and 5G Spectrum Allocation

A critical challenge in the deployment of 5G networks is the efficient allocation of radio spectrum. Traditionally, radio spectrum has been divided into frequency bands allocated to various commercial and government agencies, often leading to underutilization. AI presents a solution to this problem by optimizing spectrum allocation and management.

By leveraging AI algorithms, communication equipment can dynamically discover and utilize available frequencies, rather than being confined to a fixed spectrum. This transition from a static, manually-controlled system to an AI-driven approach allows for more efficient use of the spectrum, reducing the risk of overcrowded airwaves.

Additionally, AI plays a significant role in spectrum allocation by managing usage and avoiding interference, even in challenging environments. It adapts system capacity between 4G and 5G based on actual traffic demands, ensuring optimal network performance. Additionally, AI's efficient deployment capabilities help accelerate the rollout of 5G applications, enabling faster returns on investment.

The combination of AI and 5G also enhances data analytics by enabling the correlation of varied data sets across multiple dimensions such as space, time, context, and state. This multidimensional analysis allows AI to uncover hidden patterns, dependencies, and causal relationships within the data, leading to more focused and prioritized actions.

Empowering Smart Cities and IoT

The development of smart cities and the Internet of Things (IoT) is heavily dependent on the seamless integration of AI and 5G technologies. Smart cities rely on a network of connected devices and sensors to collect and analyze data, enabling the efficient management of urban infrastructure and services. Generative AI can process this data to optimize city operations, such as traffic management, energy consumption, and public safety.

For instance, generative AI can analyze traffic patterns to predict congestion and suggest alternative routes for drivers. With 5G's low latency, this information can be communicated to autonomous vehicles in real time, enabling them to make informed decisions on the road. This not only improves traffic flow but also reduces the risk of accidents, contributing to safer and more efficient urban environments.

For example, Didi Chuxing, the world's largest mobile transportation platform, partnered with Chinese traffic management authorities to launch the "Smart Transportation Brain," an integrated solution for smart city traffic management. This system leverages the speed and low latency of 5G to analyze traffic data in real-time, optimizing traffic flow and reducing congestion.

Similarly, ZTE assisted with the first 5G local traffic offloading pilot in China's mining industry. By utilizing 5G's capabilities, traffic data from various sensors and vehicles was processed on-site, enabling faster decision-making and improving overall traffic management efficiency within the mining sector.

In the context of IoT, generative AI can be used to create intelligent systems

that adapt to changing conditions and user needs. For example, smart homes equipped with AI-powered devices can learn the preferences and habits of their occupants, adjusting lighting, temperature, and security settings accordingly. Utilizing 5G, these devices can communicate with each other instantly, ensuring a seamless and responsive living environment. This level of connectivity and intelligence has the potential to revolutionize the way we interact with our surroundings, making everyday life more convenient and efficient.

Huawei's past collaboration with I-City to develop intelligent homes is a prime example. This partnership leveraged 5G's high-speed connectivity and low latency to create homes that were not only connected but also capable of learning and adapting to residents' needs in real-time.

In another groundbreaking development, in 2023, Huawei and du unveiled the world's first 5.5G Villa, showcasing the next evolution in smart home technology. This villa utilizes the enhanced capabilities of 5.5G to provide even faster connectivity and more advanced smart home features, from AI-powered home automation to ultra-reliable security systems.

The Pioneer of 5G and AI Integration

Singapore has emerged as a global leader in integrating 5G technology with AI-driven applications. The city-state's commitment to leveraging advanced technologies is evident in its innovative use of 5G-enabled drones, which have transitioned from theoretical concepts to practical applications.

For example, M1's deployment of drones to deliver medical supplies from shore to ships showcases how 5G's high-speed and low-latency capabilities are crucial in managing complex logistics operations. These drones dynamically adjust their flight paths based on real-time environmental data, traffic updates, and immediate logistical needs, ensuring timely and secure deliveries. Additionally, in surveillance operations, these drones utilize AI to autonomously monitor and analyze high-definition video feeds, identifying unauthorized entries or suspicious activities and alerting security personnel without human intervention.

Singtel's successful trial of the first 5G RedCap for IoT devices marks a significant milestone in Singapore's journey toward a more connected future. This advancement allows for more efficient and widespread use of IoT devices, enabling smarter infrastructure and more responsive urban systems. Combined with the low latency and high-speed capabilities of 5G, this development promises to enhance everything from industrial automation to smart city solutions.

In addition, Singapore's National Multimodal LLM (large language model) Program for AI innovation highlights the country's commitment to leading in AI technology.

M1's provision of 5G Standalone (SA) connectivity and edge computing for the Singapore National Heritage Board's museums is another example of how 5G is being harnessed to create more interactive and immersive cultural experiences.

Huawei's decade-long "Seeds for the Future" initiative also plays a crucial role in cultivating tech talent in Singapore, ensuring that the next generation of innovators is well-equipped to lead in the integration of AI and 5G technologies.

This integration of AI with 5G not only enhances operational efficiency but also sets a precedent for other cities in the region.

Harnessing AI and 5G for Infrastructure Development

ASEAN's rapidly evolving AI and 5G infrastructure is being significantly bolstered by strategic investments and collaborations, positioning the region as a leader in digital transformation.

India is at the forefront of leveraging AI and 5G to address critical infrastructure challenges, particularly in traffic management and road safety. The National Highways Authority of India (NHAI) has introduced a new policy aimed at improving road safety and reducing response times to incidents on the country's highways and expressways.

This policy utilizes cutting-edge AI technology and emphasizes the digital enforcement of traffic laws through systems like the Video Incident Detection and Enforcement System (VIDES). While the initial communication infrastructure relies on optical fiber cables (OFC), the policy anticipates the future integration of 5G-based communication tools as 5G coverage expands across the nation.

China's debut of the first 6G test network, built on existing 4G infrastructure, highlights the potential for ASEAN countries to leverage current networks while preparing for next-generation technology.

SK Telecom's USD 200 million investment in SMART Global to enhance AI and data centers underscores the importance of robust infrastructure to support AI-driven applications.

In Malaysia, Microsoft's investment in cloud and AI transformation is accelerating the country's digital economy by providing advanced tools and platforms for businesses and governments alike.

In the Philippines, PhilTower and MIDC's joint venture to expand 4G/5G wireless infrastructure is crucial for improving connectivity across the archipelago. This project will facilitate the deployment of AI and IoT applications, boosting productivity and innovation in various sectors.

Thailand's AIS investment in the 700 MHz frequency band to expand digital infrastructure further supports the region's 5G ambitions.

Finally, the strategic partnership between Telkom Indonesia and Indosat Ooredoo Hutchison to enhance internet infrastructure is key to supporting the region's growing digital economy. By improving connectivity and bandwidth, this partnership enables the broader adoption of AI and 5G technologies, driving innovation and economic development across ASEAN. TR


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Indosat and Huawei Boost Indonesia's Connectivity with Network Consolidation

Indosat Ooredoo Hutchison—the top digital telco in Indonesia—has completed a major core network consolidation project in Jakarta in partnership with global ICT solution provider, Huawei. This project marks a significant milestone in their collaboration and aims to advance and innovate mobile communication technologies. With over 100 million users and 26 core locations across Indonesia, completing the consolidation and transitioning to the cloud core in just 14 months is a remarkable achievement.

The project has greatly enhanced the network experience for Indosat users nationwide, particularly those in rural and remote areas. Residents of Kalimantan will now experience a 15% increase in average download speed and an 11% decrease in round trip time (RTT) when using Facebook. Additionally, customers in Central Java are also enjoying improved performance when using the internet for gaming and live videos.

Setting New Standards

Desmond Cheung, Director and Chief Technology Officer of Indosat Ooredoo Hutchison, stated, "We are proud to set a new standard in the telecommunications industry. This core network consolidation project demonstrates our dedication to providing a world-class digital experience to our customers. By completing this initiative, we aim to consistently deliver an exceptional experience to our customers while working towards our goal of connecting and empowering every Indonesian."

George Gao, President of Huawei Cloud Core Network Product Line, added, "Through our close collaboration, we are thrilled to see the successful completion of this large-scale and complex network consolidation project in a short timeframe. Huawei will continue to support Indosat in enhancing network connectivity, accelerating service innovation, and creating industry value in digital transformation to achieve greater business success."

The project showcases the technological expertise, hard work, determination, and teamwork of both Indosat and Huawei in overcoming numerous challenges. As the core network is a critical component of a mobile network, both teams worked tirelessly to analyze and review solutions for network consolidation, ensuring they adhere to the "first-time-right" philosophy.

Supporting 5G Core Networks

By utilizing cutting-edge telco cloud-native technology, Indosat and Huawei have introduced both bare metal container and innovative dual-engine container solutions, supporting the large-scale commercial use of 5G core networks. The dual-engine container solution integrates virtual machines (VMs) and containers in a unified infrastructure platform, enabling Indosat to introduce containers seamlessly through capacity expansion, reducing the time required for service rollout and time-to-market (TTM).

U Mobile and China Mobile International Sign MoU to Advance 5G Innovations

U Mobile and China Mobile International (CMI) have signed a Memorandum of Understanding (MoU) to form a strategic partnership focused on 5G development.

The collaboration will involve sharing expertise on 5G deployment and innovation, particularly for B2B applications. Additionally, the partners will work on creating cross-border 5G commercial models and improving roaming infrastructure to facilitate seamless 5G connectivity for international travelers.

Spurring Digital Economies

"U Mobile is delighted to partner with China Mobile International as this strategic collaboration aligns with our commitment to accelerate 5G deployment and adoption across sectors and also markets. We aim to leverage on CMI's knowledge, resources and global network, towards the common goal of expediting 5G innovation and adoption, spurring digital economies through applications of 5G for digital and enterprise solutions," said Wong Heang Tuck, Chief Executive Officer of U Mobile.

Wong Heang Tuck, CEO of U Mobile, and Wang Hua, Chairman and CEO of China Mobile International, signed the MoU at the 2024 China Mobile SEA Cooperation Conference held in Bangkok, Thailand.

U Mobile has also recently signed a MoU with Huawei Technologies (Malaysia) Sdn Bhd (Huawei Malaysia) to advance its 5G strategic roadmap. This agreement will allow U Mobile to utilize Huawei Malaysia's global expertise to enhance its 5G network and explore future technologies.

The collaboration aims to boost research and development (R&D) efforts to improve 5G customer satisfaction and drive adoption across both consumer and enterprise markets.

Chunghwa Telecom, NTT Launch World's First International IOWN APN Linking Taiwan and Japan

Chunghwa Telecom (CHT) and NTT Corporation (NTT) have officially launched the world's first International IOWN APN connecting Taiwan and Japan.

The development follows the basic agreement signed on October 25, 2023. The newly activated network links Chunghwa Telecom's headquarters in Taipei with NTT's Musashino R&D Center in Japan, providing a stable and low-latency connection with an approximate delay of 17 milliseconds over a 3,000 km distance.

Connection via All-Photonics Network Technology

Leveraging their expertise in optical and wireless transmission technologies, as well as their successful track record in deploying these technologies, Chunghwa Telecom and NTT have utilized All-Photonics Network technology to establish this high-performance international connection.

To inaugurate the International IOWN APN, Chunghwa Telecom (CHT) established a link between its headquarters and a landing station in Taiwan, while connecting to Japan through a separate landing station. Concurrently, NTT linked its Musashino R&D Center with a Japanese landing station. The two companies then connected their networks, verifying the establishment of a stable communication channel.

This new International IOWN APN features a 100 Gbps optical path bandwidth, with a round-trip time (RTT) of 33.84 milliseconds. The network's architecture and equipment adheres to the Open All-Photonic Network Functional Architecture standards set by the IOWN Global Forum, ensuring seamless interconnectivity between various devices.

Accelerating Japan-Taiwan Industrial Collaborations

Through their bilateral cooperation, Chunghwa Telecom will use the new international APN to showcase low-latency interactive immersive entertainment at the NTT R&D Forum 2024. Meanwhile, NTT will offer data backup and replication services for disaster preparedness, supporting the development of smart factories. These services will be utilized primarily in the semiconductor and manufacturing sectors in both Taiwan and Japan, including for large language models (LLMs) such as tsuzumi.

BoomGrow, CelcomDigi Partner to Transform Malaysian Agriculture with 5G, AI and XR

BoomGrow Productions Sdn Bhd (BoomGrow) and CelcomDigi Berhad (CelcomDigi) have announced a strategic partnership to revolutionize Malaysia's agricultural industry by combining 5G connectivity, artificial intelligence (AI), and extended reality (XR) with precision farming technology.

This collaboration is a significant step towards using advanced technologies to improve sustainable farming practices and food production in Malaysia. CelcomDigi will utilize its 5G connectivity, supported by ZTE, to enhance the capabilities and efficiency of BoomGrow Machine Farms.

The integration of 5G technology with AI and XR allows for real-time monitoring, precise control of farming environments, and predictive analytics, leading to higher crop yields and better resource efficiency. Data from all BoomGrow Machine Farms nationwide will be consolidated into a central dashboard for seamless oversight and management, made possible by CelcomDigi's reliable and extensive network coverage in Malaysia.

Three-Tiered Agritech Innovation

The partnership is focusing on three main areas of innovation in agritech. Firstly, 5G-Enhanced Precision Farming is being implemented in BoomGrow Machine Farms utilizing CelcomDigi's 5G connectivity to integrate sensors and monitoring systems. This setup facilitates real-time data feedback, enabling the precise control of indoor farming environments to ensure optimal conditions for crop growth.

Secondly, Machine Farm AI and data analytics will be utilized. This involves leveraging complex datasets and plant visualizations from multiple Machine Farms. Advanced analytics powered by AI allow for in-depth analysis, helping the team identify and address issues promptly if alerts are raised, thereby enhancing decision-making and productivity.

Finally, Agronomist Training via XR technology, supported by XR Associate, will be used to provide immersive remote training programs for future agronomists. This technology offers hands-on experience in managing modern farming systems at various BoomGrow Machine Farm locations and aids in training new agronomists as the company expands and introduces more farms.

KT and LG Partner to Lead 6G and Full-Duplex Tech Development

South Korean operator, KT, and LG Electronics are working together to develop 6G transmission and full-duplex communication technologies. They will also collaborate on setting global standards for the next generation of cellular systems.

Full-duplex will be included in the 5G-Advanced standard Release 18, which is expected to improve spectrum efficiency by allowing uplink and downlink data to be transmitted and received simultaneously on the same frequency band.

Driving 6G Standardization

KT and LG believe this capability can double frequency efficiency. The two companies will create wideband full-duplex equipment that operates in frequencies being considered for 6G. They will also develop and produce 6G transmission and reception devices, as well as conduct performance tests.

Lee Jong-sik, Executive Director of the KT Network Research Institute, stated that through this collaboration with LG Electronics, KT aims to lead the development of 6G mobile communication technology and enhance its global standardization leadership.

He emphasized the company's commitment to securing innovative network technology for providing unique services. In June, KT announced a research partnership with Nokia to work on advanced Open RAN technology and ultra-wideband wireless access technology for 6G mobile communications.

LG Electronics, according to Lee Je Young-ho, Executive Director of the company's C&M Standard Research Institute, has been studying 6G since 2019 to identify core technologies for the upcoming standard. He expressed confidence that their collaboration with KT will not only drive 6G standardization but also uncover essential services.

India's DoT Rejects Telcos' Request for Telecom Regulations on OTT Services

India's Department of Telecommunications (DoT) has reportedly dismissed telcos' requests to impose telecom regulations on OTT services such as WhatsApp and Telegram. However, these platforms might still face regulation under other legal frameworks.

This decision follows a July 2023 consultation paper published by the Telecom Regulatory Authority of India (TRAI), which was requested by the DoT to reevaluate the regulation of OTT services. The TRAI had previously determined in 2020 that such regulation was unnecessary.

The Cellular Operators Association of India (COAI) has consistently argued that OTT players, such as WhatsApp and Telegram, unfairly compete with telcos by consuming bandwidth without contributing to infrastructure costs. The COAI has called for these services to either share revenues or pay for telecom infrastructure.

In its latest submission to the TRAI, the COAI asserted that OTT communication services fall under the new Telecommunications Bill 2023 as an access service. Therefore, they should be regulated according to the "same-service, same-rules" principle, the COAI argued.

However, according to other media reports, DoT officials have stated that they disagree with the COAI's interpretation of the new telecom law. They clarified that, despite a broader definition of "telecommunications," the law remains focused on licensed telecom operators who manage the networks for voice and data traffic and does not extend to OTT communications.

"Interpretation of the definition is not as simple and that is why different stakeholders are understanding in their own way. Things will be clarified after some time when all the rules under the Act are notified," the official said.

OTT services are not exempt from regulation; the issue lies in determining which law should apply. OTT providers argue that they are already governed by the Information Technology Act.

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The Economic Power of 5G: APAC's USD 259 Billion Investment

Mobile connectivity has proven to be pivotal in driving digital innovation across the Asia Pacific, fostering advancements in various sectors and significantly impacting economic growth. This connectivity underpins transformative technologies that benefit individuals, enterprises, and governments alike, from enhancing healthcare and enabling Industry 4.0 to aiding communities affected by climate-related and geophysical disasters.

The rapid rollout and adoption of 5G technology is set to accelerate these innovations. The Asia Pacific features leading 5G markets such as Australia, Japan, Singapore, and South Korea. Additionally, emerging markets like India are experiencing swift 5G expansion, with tens of millions of new connections expected in 2023.

5G is anticipated to revolutionize sectors across the Asia-Pacific economy, particularly the services and manufacturing sectors. The technology's extensive deployment will support the development of new mobile-based services and enhance existing applications, further driving economic growth and societal benefits.

As telecom operators across the Asia Pacific (APAC) region prepare to invest a staggering USD 259 billion in network infrastructure from 2023 to 2030, a significant chunk of this funding is earmarked for fifth-generation (5G) technology, according to the GSMA's Mobile Economy Asia Pacific 2023 report. This investment is set to reshape the digital landscape of the region, with 5G expected to be a pivotal driver of economic growth and technological advancement.

The report highlights the tremendous impact 5G is poised to have on the APAC economy. By 2030, 5G technology is projected to generate a remarkable USD 133 billion in economic benefits, constituting over 13% of the overall economic impact of mobile technology in the region. This growth will be fueled by the explosive rise in data traffic, driven by an increasing number of broadband users and a surging demand for data-intensive digital content.

Malaysia Leads Southeast Asia

A key player in this transformative wave is Malaysia, which has emerged as a leader in 5G connectivity across Southeast Asia. The country's strategic investments and upgrades have significantly enhanced its 5G network performance. According to Opensignal, Malaysia has made notable strides in 5G deployment, with the nation currently ranking 4th globally in average 5G download speeds at 322.7 Mbps, and 3rd in average 5G upload speeds at 41.5 Mbps. Additionally, Malaysia boasts the second-highest improvement ratio from 4G to 5G download speeds, with a remarkable 14.4-fold increase.

Malaysia's aggressive 5G rollout is not only addresses the improvement of broadband speeds but also addresses bridging the digital divide. The government is focusing on extending high-speed connectivity to underserved rural areas, aiming to provide equal access to digital opportunities across the nation. This effort is expected to not only enhance digital inclusion but also stimulate economic activities and innovation in less accessible regions.

By 2030, the APAC region is projected to have around 1.4 billion 5G connections, accounting for about 41% of total mobile connections. Malaysia's achievements are indicative of the broader regional trend, where 5G is set to revolutionize connectivity and drive significant economic benefits.

Monetizing 5G

Last year, Thai state-owned National Telecom (NT) announced a partnership with telecom operator, AIS, to advance its 5G strategy. Under the partnership, NT will lease RAN equipment and utilize AIS' 700 MHz spectrum, with regulatory approval granted. The deal involves AIS constructing 13,500 base stations over two years and providing NT with free domestic roaming during the construction period. After the network is completed, a roaming fee will be applied.

South Korea, a pioneer in 5G technology, also remains at the forefront of recent advancements. South Korean telecoms have heavily invested in 5G applications, particularly in augmented and virtual reality (AR/VR). For example, SK Telecom's 'Jump AR' lets users virtually explore e-sports arenas and other venues. The country has also developed smart cities by integrating IoT with 5G; as evident in Bucheon, where the technology helps manage traffic, conserve energy, and enhance public safety. These innovations enable telecom companies to generate new revenue streams beyond traditional data plans.

As 5G technology becomes more widespread, the race to monetize its capabilities intensifies. To attract new customers and boost revenue from existing ones, operators need to offer compelling experiences. Extended reality (XR) emerges as a key solution, promising immersive consumer experiences that leverage 5G's high speed, low latency, and increased capacity.

Additionally, 5G fixed wireless access (FWA) offers a valuable revenue stream, especially in regions with limited fixed broadband infrastructure or where outdated technologies like xDSL dominate. While consumer services are a major revenue source, the enterprise sector is seen as the primary growth driver. Operators are focusing on enabling digital transformation through 5G standalone (SA) and private 5G networks, which are crucial for capitalizing on enterprise opportunities and driving overall monetization strategies. TR

Malaysia boasts the second-highest improvement ratio from 4G to 5G download speeds, with a remarkable 14.4-fold increase

India's Widespread AI Adoption and 2027 Market Projections

Artificial intelligence (AI) has emerged as a transformative force worldwide, and India is no exception. Projections suggest that the global AI market could reach between USD 320 billion and USD 380 billion by 2027, growing at an impressive compound annual growth rate (CAGR) of 25% to 35%. This puts a spotlight on India's rapidly expanding AI sector. According to a report titled "AI Powered Tech Services: A Roadmap for Future Ready Firms; AI & GenAI's Role in Turbocharging the Industry," launched at the Nasscom Technology & Leadership Forum 2024, the growth and potential of AI in India are significant and promising.

In India, AI adoption spans diverse sectors, driven by initiatives such as the National AI Strategy and the National AI Portal, which was launched by the Government of India. Sectors like healthcare, finance, retail, manufacturing, and agriculture are witnessing a rapid integration of AI technologies. For instance, AI-driven analytics are revolutionizing data-driven decision-making in industries grappling with massive data influxes.

The financial sector leads in AI adoption, leveraging AI for fraud detection, risk assessment, and customer service automation. Following closely is the media and entertainment sector, employing AI for content personalization and audience engagement strategies.

Government Initiatives and Research Advancements

Government initiatives like Digital India and Make in India are pivotal in propelling AI adoption across sectors. The establishment of the National AI Portal and the National AI Strategy underscores India's commitment to fostering AI research, development, and deployment. Academic institutions such as the Indian Institutes of Technology (IITs), Indian Statistical Institute (ISI), and Indian Institute of Science (IISc) also significantly contribute to advancing AI research and innovation.

Moreover, AI startups are attracting significant investments and contributing to a dynamic ecosystem of innovation. These startups are instrumental in developing AI solutions tailored to Indian market needs, from precision agriculture to AI-powered healthcare diagnostics.

The Union Cabinet has approved a substantial investment for the national India Artificial Intelligence mission, aiming to propel India to the forefront of AI advancements. This initiative supports the vision of 'Making AI in India' and 'Making AI Work for India' by developing a comprehensive ecosystem.

Under this vision, India will drive AI innovation through strategic programs and partnerships across both public and private sectors.

Opportunities Across Key Sectors

In agriculture, AI-driven solutions for precision farming and crop monitoring are enhancing productivity and sustainability, with collaborations between U.S. agritech firms and Indian startups crucial for advancing AI in rural India.

Initiatives like JioKrishi, deployed over thousands of acres, have demonstrated tangible benefits such as increased crop yields and reduced operational costs. By providing real-time data on soil moisture, weather conditions, nutrient levels, and pest detection, these technologies empower farmers to make informed decisions, leading to improved productivity and sustainability.

Indian startups are also taking part in advancing the use of technology in the agricultural sector in the country. For example, Cropin—an agritech business based in Bengaluru—specializes in analyzing satellite data. The company collects extensive data from earth-observation satellites, employs advanced algorithms to analyze it, and provides practical insights to farmers, including ideal sowing periods, meteorological forecasts, irrigation timetables, and suggestions for pesticide application.

In healthcare, AI is revolutionizing predictive diagnostics, personalized medicine, and drug discovery, significantly improving patient care and operational efficiency in Indian hospitals. For instance, Saathealth, an app focused on providing health and nutritional education, aims to enhance the overall wellbeing of young children in India's poorer communities.

Retail is also benefiting from AI through recommendation engines, chatbots, and personalized shopping experiences, prompting partnerships between U.S. retail giants and Indian e-commerce platforms.

In manufacturing, AI is optimizing predictive maintenance, quality control, and supply chain management, creating opportunities for U.S. manufacturers to collaborate with Indian counterparts to enhance operational efficiencies.

Investments such as STT Global Data Centers' USD 229 million expansion in India highlights the growing infrastructure supporting technological advancements.

In the telecommunications sector, AI is driving innovations in network management, predictive maintenance, and customer service, with potential for cross-border partnerships to advance network capabilities and improve user experiences.

Additionally, collaborations like the MoU signed between BSNL and MTNL to synchronize telecom operations demonstrates the increasing integration of AI and technology across different industries.

Challenges and Considerations

Bengaluru, often dubbed the Silicon Valley of India, leads the pack with its thriving ecosystem of multinationals, startups, and academic institutions focused on AI innovation. Chennai, Hyderabad, Mumbai, Pune, and the National Capital Region (NCR) also serve as significant hubs for AI research and development, fostering collaboration and innovation.

However, despite the promising growth trajectory, several challenges persist in India's dynamic AI landscape. Data privacy and security concerns loom large, requiring strict adherence to regulatory frameworks and ethical AI practices. Ensuring the protection of intellectual property (IP) is particularly critical, given recent cyber attacks targeting strategic information and sensitive financial plans. The theft of IP, especially trade secrets from critical infrastructure, could have severe implications for both the global economy and national security, underscoring the urgent need for comprehensive data security policies and regulations.

The Indian government has introduced a new regulation mandating that technology firms must seek government authorization prior to publicly releasing artificial intelligence (AI) tools that are still under development or considered 'unreliable.' This measure is part of India's strategy to oversee the deployment of AI technologies, aimed at enhancing the accuracy and dependability of tools accessible to its citizens, especially in anticipation of upcoming elections.

Under guidelines issued by the Ministry of Information Technology, all AI applications, particularly those utilizing generative AI, must receive explicit approval from the government before entering the Indian market. Additionally, these AI tools must carry warnings specifying their potential to produce inaccurate responses to user queries, underscoring the government's emphasis on transparency regarding the capabilities of AI.

Infrastructure limitations also present another hurdle to widespread AI adoption, especially in rural areas where access to high-speed internet remains inadequate. Addressing these infrastructure constraints is essential to ensure equitable AI deployment across the country.

Furthermore, the shortage of skilled AI professionals poses a significant challenge, with demand far outstripping the current supply of talent. Initiatives aimed at upskilling and reskilling the workforce are crucial to bridge this gap and meet the growing demand for AI expertise in India's tech sector.

In navigating these challenges, India's AI market continues to offer substantial opportunities for innovation and collaboration across various sectors. By addressing these considerations effectively, stakeholders can harness the full potential of AI technologies to drive economic growth, enhance operational efficiency, and foster inclusive development nationwide. TR

Asia-Pacific Cloud Infrastructure Market Soars Towards USD 593.7 Billion by 2032

The Asia-Pacific cloud infrastructure market is currently undergoing a transformative boom, poised to achieve a staggering market valuation of USD 593.7 billion by 2032.

According to Astute Analytica, this exponential growth, fueled by a robust compound annual growth rate (CAGR) of 25.93% forecasted during the period of 2024 to 2032, underscores the region's pivotal role in the global technological future.

APAC's Regional Cloud Infrastructure Markets

China has emerged as a frontrunner in the cloud infrastructure market, bolstered by a burgeoning data center sector, which is anticipated to reach USD 35 billion in 2024. The country's ascent is propelled by substantial investments in cloud services and technological innovations, elevating China to a prominent ninth position globally in technology prowess. Major corporations like Apple are significantly contributing to this expansion, intensifying their investments in data centers to bolster their cloud infrastructure capabilities.

Meanwhile, India stands as another cornerstone of the Asia-Pacific cloud infrastructure landscape, driven by economic growth projected to hit 6.3% in 2024. This economic surge is closely intertwined with the rapid adoption of cloud-based contact center solutions, meeting the demand for scalable and flexible customer service solutions. India's fast expansion in the data center market presents its steadfast commitment to digitalization and cloud adoption, cementing its status as a key player in the regional market. Jio, in partnership with NVIDIA, is developing advanced AI cloud infrastructure, positioning India favorably in the global AI and cloud technology landscape.

Indonesia is following suit with an expanding cloud infrastructure market, buoyed by increasing internet penetration and widespread digital transformation initiatives. Similarly, Japan, with an anticipated economic growth of 2% in 2023, has maintained its leadership in technological innovations, driving robust growth in its

cloud infrastructure market. Notably, in 2023, MUFG, Japan's largest financial services provider, selected AWS as its preferred cloud provider in order to accelerate its cloud-first strategy.

South Korea, renowned for its technological prowess, is swiftly embracing cloud-based solutions to enhance its digital infrastructure capabilities. The country's expanding data center market displays the growing appetite for cloud services and digital transformation initiatives. In 2021, ST Telemedia Global Data Centers (STT GDC) announced a strategic partnership with Hyosung Heavy Industries to jointly develop and operate South Korea's first carrier-neutral data center campus.

Vietnam, amidst rapid digitalization, has witnessed a surge in demand for data center infrastructure, supported by substantial investments aimed at bolstering the digital economy. STT GDC and VNG have partnered to drive data center development in the country, while Viettel unveiled a cutting-edge data center in Hanoi in April this year.

Singapore, the technological hub of Southeast Asia, is also playing an important role in driving the Asia-Pacific cloud infrastructure market forward. Console Connect and Princeton Digital Group have teamed up to bolster cloud businesses in the region. Additionally, Singtel is leveraging NVIDIA-powered AI cloud technology to enhance its next-generation Nxera data centers. With a technological advancement score of 40, Singapore's data center market is experiencing massive investment.

Moreover, during the 10th AWS ASEAN Summit in Singapore, Amazon Web Services (AWS) announced intentions to increase its investment in cloud infrastructure in Singapore, pledging an additional SGD 12 billion from 2024 to 2028.

Meanwhile, Converge ICT Solutions Inc. has teamed up with South Korea's NAVER Cloud Corp. to tap into the cloud market in the Philippines. The partnership involves a Memorandum of Understanding (MoU) between the two companies, aiming to leverage NAVER Cloud's advanced solutions. Their collaboration seeks to develop tailored cloud services that meet the specific requirements of Filipino consumers and businesses through ongoing discussions and engagements.

The adoption of private cloud infrastructure is a key driver within the Asia-Pacific cloud infrastructure market, fueled by significant annual investments in cloud IT infrastructure. Moreover, tech giants, such as Google, have notably injected over USD 2 billion into the region's network infrastructure since 2010.

Commenting on the role highly capable core networks play in the expansion of Cambodia's cloud infrastructure market, Andrey Kuzin, CTO, Smart Axiata, highlighted that Smart Axiata has "dedicated a significant amount of time and resources to elevate our [its] core network, radio and transport networks. Over the past three years, we've invested approximately 60 to 70 million USD annually in capital expenditures. This ongoing commitment has allowed us to build a future-proof, highly capable network. Our network operates within an on-premise cloud infrastructure, which provides us [Smart Axiata] with remarkable scalability and control over our [its] network's capabilities.

Leveraging Hyperscale Data Centers for Ecosystem Expansion

The Asia-Pacific data center market is expected to attract investments reaching USD 100 billion over the next five years. This year, the market size is projected to reach 14.27 thousand MW, with anticipated growth to 23.2 thousand MW by 2029 at a CAGR of 10.21%.

Concurrently, colocation revenue is forecasted to rise from USD 27,921.7 million in 2024 to USD 50,310.9 million by 2029. These developments reflect the region's global data center ecosystem, due to the escalating demand for cloud infrastructure.

The surge in data center investments is intricately linked to the expansion of the cloud infrastructure market across the Asia Pacific. Businesses increasingly rely on cloud services to underpin their digital transformation endeavors, leveraging the scalability and flexibility offered by cloud platforms. A hybrid or multi-cloud approach is gaining prominence, with a significant portion of mission-critical workloads expected to run on traditional data center infrastructure and private cloud setups.

Hyperscale data centers are emerging as key enablers of this growth, with a projected CAGR of 36.5% from 2024 to 2032 in the Asia-Pacific cloud infrastructure market. Major players such as AWS, Microsoft Azure, and Google Cloud are heavily investing in hyperscale facilities to cater to soaring demand. These investments are critical for enhancing data management efficiency and facilitating seamless data mobility across diverse deployment environments, essential for achieving robust digital business strategies.

Furthermore, Bridge Data Centers is expanding its hyperscale campus in Kuala Lumpur, enhancing Malaysia's capacity to support growing digital demands. In March 2024, ePLDT's VITRO Inc. launched the largest hyperscale data center in the Philippines, marking a significant milestone in the country's digital infrastructure development.

Telekom Malaysia is also making strides, with plans to construct a new hyperscale data center to complement its existing facilities in the Klang Valley and Iskandar Puteri. Further demonstrating its commitment to innovation, Telekom Malaysia, in collaboration with Nxera, launched a hyperscale AI-ready campus in Johor.

The expansion of cloud infrastructure not only supports business operations but also drives innovation across various industries, fostering economic growth throughout the region. As the Asia Pacific solidifies its position as a global hub for data centers and cloud services, continued investments and advancements in infrastructure will play an essential part in shaping the digital future of the entire region. TR

Telecom's Contribution to Public Service Efficiency in the Asia Pacific

The Asia Pacific region is experiencing a transformative wave of digitalization, significantly impacting the efficiency of public services. Telecom technologies are at the forefront of this evolution, enabling governments to improve service delivery, enhance citizen engagement, and drive socio-economic development.

The digitalization of public services is a pivotal aspect of modern governance, aiming to make services more accessible, efficient, and transparent. According to a report, digitalization in the public sector has led to significant improvements in service delivery across various countries in the region. The integration of telecom infrastructure has been instrumental in this transformation, providing the necessary connectivity and platforms for digital public services.

In countries like Singapore, South Korea, and Japan, advanced telecom networks support e-government services, enabling citizens to access a wide range of services online, from tax filing to healthcare consultations. Smart Nation Singapore's "LifeSG" platform, Japan's e-Gov platform, Malaysia's "MyEG" platform and more reduce the time and resources required for service delivery, making public administration more efficient and responsive to citizen needs.

Enhancing Public Service Efficiency through Telecom Solutions

Telecom technologies offer a multitude of solutions that enhance

public service efficiency. These solutions include mobile applications, 5G-Advanced integrations, cloud computing, and Internet of Things (IoT) devices, all of which facilitate real-time communication, data collection, and service delivery.

One notable example is the use of mobile applications to improve public health services. In India, mobile health (mHealth) initiatives have revolutionized healthcare delivery, particularly in rural areas where access to medical facilities is limited. These mHealth platforms leverage telecom networks to provide remote consultations, health monitoring, and information dissemination, thereby improving healthcare accessibility and outcomes.

Cloud computing is another critical telecom solution that enhances public service efficiency. By migrating public sector data and applications to the cloud, governments can achieve greater flexibility, scalability, and cost-efficiency. For instance, the Philippines has adopted cloud-based solutions to streamline its tax administration system, resulting in faster processing times and reduced administrative costs.

IoT devices are also transforming public services by enabling the real-time monitoring and management of public infrastructure. Smart city initiatives across the Asia Pacific, such as those in China and Malaysia, utilize IoT sensors to monitor traffic flow, air quality, and energy consumption. These smart systems help city authorities make data-driven decisions, improving urban management and enhancing the quality of life for residents.

Mobile Connectivity and Economic Impact

Mobile connectivity is a cornerstone of telecom's contribution to public service efficiency. A GSMA report highlighted the significant economic impact of mobile connectivity in the Asia Pacific, noting that mobile technologies contribute substantially to the nation's GDP and job creation. By extending mobile networks to underserved areas, telecom operators are bridging the digital divide and enabling inclusive access to public services.

In Indonesia, the expansion of mobile networks has facilitated the delivery of educational services to remote communities. Mobile learning platforms offer educational content and resources, allowing students to continue their studies despite geographical barriers. This not only enhances educational outcomes but also promotes digital literacy and skill development among the youth.

Moreover, mobile money services have transformed financial inclusion in the region. Countries like Bangladesh and Cambodia have seen a surge in mobile money adoption, enabling unbanked populations to access financial services such as payments, savings, and loans.

Navigating Public Services Challenges and Solutions

Infrastructure gaps, particularly in rural and remote areas, remain a major barrier. Many regions still lack reliable telecom infrastructure, hindering the delivery of digital public services.

In the Asia Pacific region, various policies and initiatives have been implemented to address infrastructure gaps. India's Digital India Program and Smart Cities Mission aims to enhance digital connectivity and develop urban infrastructure across the country. Similarly, the ASEAN Smart Cities Network fosters collaborative smart city projects to improve urban infrastructure and connectivity. Australia's National Broadband Network focuses on expanding high-speed internet access, particularly in underserved areas, while Singapore's Smart Nation Initiative integrates advanced technologies to enhance urban living. Japan's Super City Initiative also leverages technology to improve urban infrastructure and disaster resilience, reflecting a broad regional commitment to closing infrastructure gaps through innovative solutions.

To tackle cybersecurity challenges, the Asia Pacific region has introduced several key policies and measures. Singapore's Cybersecurity Act and Personal Data Protection Act (PDPA) has established comprehensive frameworks for protecting critical infrastructure and personal data. China's Cybersecurity Law mandates strict security practices for companies, while Japan's Cybersecurity Basic Act emphasizes the protection of critical infrastructure and international cooperation. Malaysia's National Cyber Security Policy outlines strategies to safeguard cyberspace and enhance national cybersecurity capabilities, collectively reflecting a robust regional effort to address cybersecurity threats and enhance digital security.

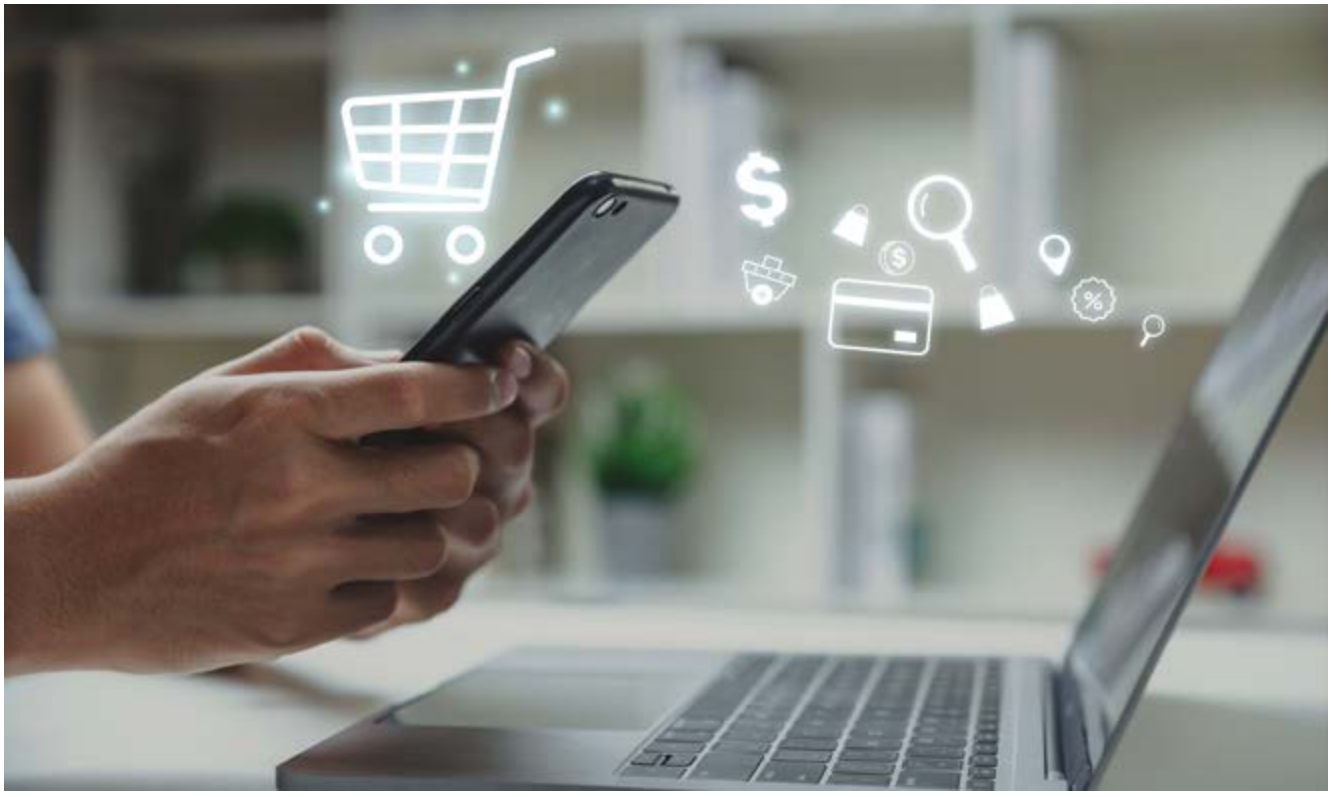
Telcos Enhancing Public Service Efficiency

Telecommunication companies in the Asia Pacific region are playing a pivotal role in enhancing public service efficiency through various innovative initiatives and partnerships. These efforts range from improving emergency communications and digital healthcare to providing free public Wi-Fi and launching IoT data services for public transportation. Here's a closer look at how some key players are making a difference.

Globe Telecom is transforming service assurance with MYCOM OSI, enhancing public service efficiency in the Asia Pacific region. This transformation ensures that public sector networks are robust, reliable, and capable of meeting the growing demands for digital public services, leading to improved service quality and responsiveness.

Telekom Malaysia is revolutionizing digital healthcare services, significantly contributing to public service efficiency. By leveraging their telecommunications infrastructure, they enable seamless telemedicine, remote consultations, and efficient healthcare management, improving access to quality healthcare services for the public.

The future of telecom in public service efficiency looks promising, with emerging technologies poised to drive further innovations. 5G networks, artificial intelligence (AI), and blockchain are some of the technologies that hold great potential for enhancing public services. TR



Vietnam's E-Commerce Revolution: Telecom Infrastructure Paves the Way

Vietnam's e-commerce market is experiencing unprecedented growth, driven by a combination of digital transformation, strong telecom infrastructure, and a dynamic consumer base. This growth is transforming Vietnam into a leading e-commerce hub in Southeast Asia, presenting vast opportunities for businesses and consumers alike.

The digital transformation of businesses in Vietnam has played a role in the e-commerce boom. Companies across various sectors are increasingly adopting digital technologies to streamline operations, enhance customer experiences, and expand their market reach.

The Vietnamese government has been proactive in promoting digital transformation through policies and initiatives aimed at fostering a digital economy. This supportive environment has encouraged businesses to invest in e-commerce platforms, digital marketing, and online sales channels, driving significant growth in the sector.

Vietnam's E-Commerce Trends and Consumer Behavior

According to Statista, revenue in Vietnam's e-commerce market is projected to reach USD 13.90 billion in 2024, with an annual growth rate (CAGR 2024-2029) of 11.21%, resulting in a projected market volume of USD 23.65 billion by 2029.

In 2021, Vietnam's e-commerce market recorded an estimated value of USD 13.7 billion, accounting for approximately 6.5% of total retail revenue. This marked a 16% increase from 2020.

Notably, the Government of Vietnam approved a National Master Plan for E-commerce Development in May 2020, aiming to promote e-commerce adoption, enhance digital

transformation, and increase cashless payments to over 50% by 2025.

Vietnam's internet economy is booming, driven by increasing internet and smartphone penetration. Information released at the Vietnam - Asia Digital Transformation Summit (Vietnam - Asia DX Summit) 2022 revealed that Vietnam's internet economy reached USD 21 billion in 2021, accounting for 5% of the country's GDP and is projected to reach USD 43 billion by 2025.

According to Internet World Stats, by mid-2022, there were approximately 85 million internet users, with an 86% penetration rate, and around 69 million smartphone users, with a 71% penetration rate. These numbers are expected to rise to 82 million smartphone users by 2025. This digital infrastructure, interest and continued penetration supports the rapid growth of e-commerce.

In 2023, Vietnam was recognized among the top 10 countries globally for e-commerce growth, leading Southeast Asia in online shopping expansion. The B2C e-commerce market revenue grew by 25% in 2023, surpassing the 19.6% growth observed in 2022.

Vietnam's e-commerce market is dominated by five major platforms: Shopee, Lazada, Tiki, TikTok Shop, and Sendo. These platforms collectively delivered 2.2 billion products and generated VND 232.13 trillion (USD 9.52 billion) in revenue in 2023, marking a 53.4% increase from 2022.

The market share of these platforms rose from 31.4% in 2021 to 46.5% in 2023 and the upward trajectory is expected to continue, with revenue projections set to exceed VND 310 trillion (USD 12.72 billion) in 2024, representing a 35% growth from 2023.

Vietnamese Telcos Contribute to E-Commerce Sector

Vietnam's cross-border e-commerce sector is growing rapidly, driven by increasing consumer demand for international products and the country's strategic location in Southeast Asia. Vietnamese consumers are increasingly shopping on international e-commerce platforms, and Vietnamese businesses are expanding their reach to global markets.

One of the key drivers of e-commerce growth in Vietnam is the presence of robust telecom infrastructure. The country has made significant investments in expanding and upgrading its telecom networks, resulting in widespread internet access and improved connectivity. High-speed internet and affordable mobile data plans have made it easier for consumers to shop online and for businesses to reach a larger audience. Additionally, advancements in mobile payment solutions and fintech services are enhancing the convenience and security of online transactions, further boosting e-commerce adoption.

The VNPT eKYC platform, developed by the Vietnam Posts and Telecommunications Group (VNPT), has become a cornerstone in modernizing and streamlining identity verification processes. With over one billion user requests, it is the first platform of its kind in Vietnam. The VNPT eKYC platform facilitates electronic identification and verification, which is crucial for sectors such as banking, finance, telecommunications, and e-commerce.

The Viettel Group, a leading telecommunications company in Vietnam, has been instrumental in accelerating the deployment of 4G networks across the country. Enhanced 4G connectivity ensures that more people have reliable access to high-speed internet, which is essential for participating in e-commerce activities.

In 2024, the Ministry of Information and Communications (MIC) is encouraging Vietnamese telecom companies to focus on developing digital applications. This strategic move aims to foster innovation and provide more digital tools and services that can support various industries, including e-commerce.

Regulatory and Strategic Governance for Expansion

Vietnam's government has implemented robust regulatory functions and policies to ensure the sustainable growth and regulation of its e-commerce industry.

E-commerce activities in Vietnam are governed by Decree 52/2013/ND-CP, issued in 2013, with the Ministry of Industry and Trade (MOIT) acting as the regulator. In September 2020, the MOIT issued the second draft of a decree to amend Decree 52, which includes significant proposed changes. According to LNT & Partners, these changes aim to better regulate cross-border e-commerce activities. Offshore entities that establish websites with Vietnamese domains or have transactions, visitors, or orders from Vietnam must ensure the following:

- **Register and Notify:** Register their e-commerce activities in accordance with Vietnamese law.
- **Consumer Protection Compliance:** Ensure compliance with regulations on consumer protection and take responsibility for the quality of products or goods distributed via their websites through representative offices or authorized representatives.
- **Periodic Reporting:** File periodic reports on their activities and fulfill other obligations to prevent transactions violating Vietnam's laws.

Under Decree 52/2013/ND-CP, established on July 1, 2013, entitles are prohibited to use e-commerce to trade counterfeit goods, infringe upon intellectual property rights, or trade goods and services on the banned list. The decree also provides protection for domain names.

The enforcement of these regulations is supported by the Inspectorate of the Ministry of Industry and Trade, the market management office, inspectorates of provincial-level Industry and Trade Departments, and other state agencies. These bodies are empowered to sanction administrative violations in e-commerce according to the Law on Handling of Administrative Violations and relevant documents. TR

Singtel Debuts Southeast Asia's First Quantum-Safe Network with Enterprise Trials

Singtel has launched Southeast Asia's first National Quantum-Safe Network Plus (NQSN+), featuring advanced quantum security solutions to protect businesses from quantum threats, along with a customized program for enterprises to test the technology before full adoption.

Singtel's Quantum-Safe Network (QSN) accommodates various network and security devices, facilitating smooth integration and improved connectivity for businesses aiming to secure their communications throughout the region. This cutting-edge network also brings quantum-safe security to emerging applications, including identity, mobility, and authentication services.

Enhancing Southeast Asia's National Security

Ng Tian Chong, Chief Executive Officer of Singtel Singapore, emphasized that Singtel has consistently played a pivotal role in Southeast Asia's national security. He noted that while quantum computing is still in its early stages, it is rapidly advancing in key sectors such as banking, healthcare, and government services. He further emphasized the company's commitment to preparing Singapore for this emerging technology.

"That's why we specially-curated this program to equip enterprises with the relevant skills and knowledge so they can take the necessary steps to future-proof their critical networks against potential quantum threats. We encourage all enterprises who are keen to bolster their digital resilience to reach out to us so they can be prepared for the quantum age," he continued.

Singtel is introducing a three-phase pilot program featuring exploration workshops to raise awareness and identify use cases; integration testbeds to test interoperability; and live trials to analyze network performance, evaluate operational aspects, and experience full end-to-end managed services. This methodical approach aims to assist enterprises at every stage, ensuring a risk-free and smooth integration of new quantum-safe technologies. Additionally, Singtel will collaborate with businesses to create customized quantum-safe use cases for their specific sectors.

Singtel was selected by the Infocomm Media Development Authority to create Singapore's inaugural NQSN+, which aims to strengthen the nation's defenses against quantum threats over the next decade.

Singtel's QSN is a component of its domestic network solutions and was designed to protect critical business data, offer advanced security for data networks, and deliver flexibility as a managed service.

No Bids for Unsold Satellite Slots, NBTC May Reevaluate Auction Plans

No companies have submitted a bid document for the auction of licenses to use the two unsold orbital slot packages at 50.5° East and 142° East.

An anonymous source at the National Broadcasting and Telecommunications Commission (NBTC) suggested that the NBTC may need to reconsider its next steps.

The deadline for bid submissions was July 23.

Under the original auction conditions, if only one company had submitted a bid envelope, the regulator would have extended the timeline by a month to allow more companies to purchase bid envelopes, moving the auction date from August 24 to September 21.

If no company submitted a bid envelope, the regulator would've extended the auction timeline further to provide additional time for companies to acquire the envelopes.

According to the initial timeline, companies could buy bid envelopes from June 4 to June 25, with bid submissions due by July 23. The regulator plans to reveal potential bidders on August 13, and a mock auction is scheduled for August 21, or three days before the main auction.

So far, only two companies, TC Space, a Thaicom subsidiary, and Prompt Technology, have collected bid envelopes.

The two slot packages remain unsold from the previous 2023 auction for satellite orbit licenses.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SK Telecom, Lambda Partner to Expand AI Cloud Services in South Korea

SK Telecom (SKT) has revealed a new partnership with Lambda to advance its AI cloud business efforts.

The two companies have committed to creating a substantial NVIDIA GPU cluster to advance AI cloud business prospects in South Korea. SK Telecom and Lambda will install these NVIDIA GPU clusters at SK Broadband's Gasan data center in Korea by year-end. The cluster will leverage Lambda's cloud computing platform, enhanced by NVIDIA technology.

SK Telecom's new strategic alliance with Lambda highlights its dedication to offering unparalleled access to scalable AI infrastructure in South Korea. Through this partnership, SKT will introduce AI cloud services, such as GPU-as-a-Service (GPUaaS), allowing businesses to tap into GPU cloud resources on demand for AI development and applications.

The partnership between the two companies is anticipated to accelerate the global expansion of SK Telecom's AI cloud services.

Kim Kyeong-deog, Vice President and Head of the Enterprise Business Division at SKT, stated that the tactical partnership with Lambda would enhance the company's competitiveness in AI cloud services and present greater business opportunities in Korea.

"SKT shares in our vision to make GPU compute as ubiquitous as electricity," said Lambda CEO and Co-Founder, Stephen Balaban. "Given the rapid pace of innovation in AI happening in South Korea, we're excited to partner with SKT and support their effort to grow and develop their AI cloud expertise in the region."

Telkom Indonesia and Reka AI Join Forces for Multimodal AI Development

Telkom Indonesia has announced a new strategic partnership with Reka AI, a Silicon Valley-based startup specializing in multimodal AI. This collaboration aims to fast-track the development of AI capable of understanding the over 700 languages spoken across Indonesia.

Reka AI is known for its advanced AI products that handle diverse data types, including text, images, sound, and video. Telkom Indonesia plans to leverage Reka's large language model (LLM)-based multimodal AI technology to enhance its external services and streamline its internal business operations.

Enhanced Comprehension

Telkom Indonesia stated that integrating multimodal AI technology will bolster its internal operations, boosting efficiency and productivity, and presenting new business opportunities.

Additionally, the LLM-based multimodal AI is expected to enhance the performance of Telkom's chatbots, allowing them to process language more intelligently and tailor services to the customer's specific language needs.

This is a crucial feature, given Indonesia's status as one of the most linguistically diverse countries in the world. Although Bahasa Indonesia is the official language, the nation is home to approximately 700 regional languages. A Translators Without Borders report indicates that while 94% of Indonesians speak Bahasa, it serves as the primary language for only 20% of the population.

AI for "Positive Change"

Telkom's EVP of Digital Business and Technology, Komang Budi Aryasa, expressed enthusiastic support for the collaboration. "We are very enthusiastic to collaborate with various parties in exploring the potential use of cutting-edge AI technology, such as our collaboration with Reka—a pioneer in AI research and development. Through this collaboration, we hope that the quality of Telkom's digital products and services will be increasingly optimal, so that they can provide great benefits to society, the business world and the country," said Aryasa.

"We are very excited to collaborate with Telkom Indonesia, a company that shares our vision of using AI to drive positive change, and we look forward to collaborating on initiatives that will not only benefit Telkom's business but also contribute to the advancement of AI in Indonesia," said Reka CEO, Dani Yogatama.

This collaboration will further bolster Telkom's market position and enhance the quality of its current digital services. With the integration of LLM-based multimodal AI, Telkom anticipates that its AI technologies, including chatbots, will gain the ability to process language more intelligently, leading to quicker and more accurate responses to user inquiries. Additionally, improved language capabilities are expected to deliver a more personalized experience for users, boosting customer satisfaction and loyalty.

Viettel Tests Vietnam's First Standalone 5G Network

State-owned telecom leader, Viettel, has announced the successful testing of Vietnam's first standalone 5G network, setting the stage for future commercial rollout.

The company revealed that the tests were completed just three months following the receipt of 5G frequency licenses from the Ministry of Information and Communications.

"This can be considered a major step toward the launch of 5G commercial services," Viettel said in a statement, though it did not specify a launch date.

As of the end of Q1 2024, 58 countries had successfully tested standalone 5G networks out of the 175 countries engaged in 5G testing or commercialization.

A Substitute for Fiber Optic Networks

A standalone 5G network relies on equipment designed exclusively for 5G services, unlike a non-standalone network that integrates with existing 4G infrastructure. Standalone 5G systems provide enhanced services, greater flexibility, and increased scalability compared to 4G, although they entail higher costs.

Utilizing standalone equipment, Viettel confirmed it will be able to provide advanced services for both individual and business users, including features like calls with integrated translation and high-speed data transfer. The company also noted that standalone 5G technology could potentially serve as a substitute for fiber optic networks.

In 2019, Viettel also became the first company in Vietnam to conduct a call using a non-standalone 5G network.

Viettel is currently collaborating with leading smartphone manufacturers in Vietnam to update their firmware, ensuring compatibility with the new standalone 5G network.

Vietnam is set to introduce commercial 5G services later this year. The three companies that have successfully secured 5G frequency licenses are Viettel, VNPT, and MobiFone.

Reliance to Build AI-Ready Data Centers in Jamnagar

Reliance Industries Limited, the parent company of Reliance Jio, is planning to construct AI-ready data centers in Jamnagar as part of its strategy to make AI infrastructure more accessible.

According to a report, Reliance Chairman, Mukesh Ambani, stated that the company will build large-scale data centers in Jamnagar, Gujarat, to provide cost-effective access to AI models and services.

Reliance also aims to collaborate with global tech companies to establish AI inference facilities across various locations in India, which will be expanded as demand increases.

Ambani mentioned that through partnerships and utilizing Jio's expertise in infrastructure, networking, operations, software, and data, Reliance will be able to offer the lowest AI inference cost in the world. This will make AI applications more affordable in India than anywhere else.

Notable Ventures

In September 2023, Reliance partnered with GPU chipmaker, NVIDIA, to develop AI infrastructure using its GH200 Grace Hopper Superchip and DGX Cloud AI supercomputing service.

Reliance also plans to create India's own large language model (LLM) trained on diverse languages for generative AI (GenAI) applications.

Additionally, Reliance has formed a joint venture with Digital Realty and Brookfield Infrastructure to build scalable data centers in India.

Moreover, Ambani announced the upcoming launch of a new AI cloud service called "Jio AI-Cloud Welcome", which is set to offer affordable cloud data storage and data-powered AI services.

Boosting Malaysia's Regional Presence Through ICT Expansion

Malaysia, a country celebrated for its abundant cultural legacy and varied economic landscape, is currently actively pursuing technological advancement.

The country has set a goal to become a high-technology nation by 2030 under the New Industrial Master Plan 2030 (NIMP 2030). Its objective is to establish itself as a dynamic center for information and communication technology (ICT) in Southeast Asia.

Malaysia's ICT Sector

According to the International Trade Administration, the ICT sector plays an essential role in driving Malaysia's economic expansion, accounting for 23.2% of the nation's gross domestic product (GDP) in 2021. Having maintained an exceptional average annual growth rate of 9% over the past seven years, the industry is expected to contribute 25.5% of the country's GDP by 2025 as a result of Malaysia's dedication to digital transformation and innovation.

The ICT sector in Malaysia has demonstrated resilience and adaptation, successfully managing the fluctuations of global economic trends. Reports by the International Data Corporation (IDC) show that the Malaysian IT services market was valued at USD 2.64 billion in 2023, demonstrating a year-over-year (YoY) growth of 4.1%. Although there has been a decrease in growth compared to the 5.5% in 2022, the market is still expected to show significant progress, with compound annual growth rate (CAGR) predictions estimated to fluctuate around 5.9% between 2023 and 2028. By 2028, the IT services market is expected to reach USD 3.51 billion.

The IT services industry in Malaysia covers a wide range of operations, including software development, IT consulting, cloud services, and cybersecurity. The country's diverse range of industries, such as finance, healthcare, manufacturing, and retail, have allowed it to effectively serve many sectors.

One notable example of the ICT sector's success is Fusionex, a Malaysian-based firm that focuses on providing IT services in big data analytics and AI. The company has been globally recognized for its collaborations with industry leaders, such as Alibaba Cloud. This highlights Malaysia's ability to generate top-tier IT service providers and equip them with the capacity to compete internationally.

Malaysia's sophisticated IT infrastructure and services make it an appealing choice for regional enterprises seeking to grow their operations. Due to its capacity to provide superior IT solutions at relatively more affordable prices,

the country has become a favored outsourcing location for corporations throughout ASEAN. Many Singaporean companies opt to delegate their IT requirements to Malaysian service providers, capitalizing on the geographical proximity and cultural affinities shared by the two countries.

In addition, Malaysia's IT services sector plays a significant role in global supply chains, particularly within the manufacturing and electronics sectors. Malaysia's IT capabilities facilitate the functioning of international firms such as Intel and Samsung, both of which have manufacturing facilities in the country. The integration of IT services into manufacturing processes improves productivity, quality control, and supply chain management, strengthening Malaysia's position in the global economy.

According to the IDC, the IT services market in Malaysia is divided into three main segments: Project-Oriented Services, Managed Services, and Support Services. Project-oriented services experienced the highest growth rate in 2023, with a 4.5% increase. Managed services followed closely behind with a growth rate of 4.4%, while support services displayed a growth rate of 2.9%. This varied expansion highlights the complex and diverse IT requirements in the country, encompassing both massive infrastructure initiatives and routine operating assistance.

Building Locally, Growing Regionally

Malaysia is leveraging ICT to expand its regional presence in multiple ways. Huawei's announcement of OpenLab in Malaysia aims to drive digital transformation in the Asia Pacific (APAC). This initiative enhances Malaysia's regional influence by fostering innovation and collaboration among local and regional businesses, thus positioning Malaysia as a critical hub for digital advancements in the APAC region.

Submarine cables have promoted regional collaboration and accelerated economic progress within the Association of Southeast Asian Nations (ASEAN) and globally. The Asia-Africa-Europe-1 (AAE-1) undersea cable, which connects Southeast Asian nations like Singapore, Hong Kong, Malaysia, Thailand, Cambodia, and Vietnam to the Middle East and Europe, is a prime example. This connectivity has presented new opportunities for businesses, enabling them to engage in global trade and commerce seamlessly, thereby boosting Malaysia's regional trade connectivity and economic growth.

The collaboration between Malaysia's major telecom provider, Celcom, and Allo, a wholly owned subsidiary of Tenaga Nasional Berhad (TNB), aims to enhance connectivity solutions and accelerate the development of smart cities through digital connectivity. This partnership underscores Malaysia's commitment to improving regional infrastructure and smart city initiatives, further solidifying its regional leadership in digital transformation.

Telekom Malaysia has inked a deal for a new NG999 emergency system, reflecting the country's efforts to upgrade its emergency response capabilities with advanced ICT solutions. Similarly, the launch of Malaysia's first SRv6 network by Time dotCom and Huawei represents a significant step in enhancing the country's network infrastructure, ensuring robust and efficient connectivity that supports regional expansion and collaboration.

In April 2024, Malaysia's Communications Minister announced significant progress in the National Digital Network (JENDELA) program, which aims to upgrade the country's broadband infrastructure. This initiative enhances Malaysia's digital capabilities, enabling it to serve as a regional digital hub. Additionally, the collaboration between AWS and CelcomDigi to develop GenAI solutions in Malaysia highlights the country's focus on advancing artificial intelligence technologies to drive regional innovation and economic growth.

ZTE and CelcomDigi's efforts to revolutionize Malaysia's manufacturing industry with cutting-edge ICT solutions underscores the nation's commitment to integrating advanced technologies into traditional industries, thereby enhancing regional competitiveness. Huawei and Maxis' 5G-Advanced trial in Malaysia showcases the country's leadership in next-generation connectivity, positioning it as a pioneer in the regional communications technology landscape.

Future Plans for Development

Malaysia is actively developing smart cities, where it is integrating Internet of Things (IoT) technologies to improve efficiency and sustainability. The nation's Smart City Framework focuses on critical policy domains including 5G, cybersecurity, and renewable energy. Smart cities also play a vital role in Malaysia's digital transformation. The industry was valued at USD 480 million in 2022 and is expected to reach USD 1 billion by 2028.

Malaysia participates in the ASEAN Smart Cities Network (ASCN) to engage in cooperative efforts with other ASEAN member states when it comes to intelligent and environmentally friendly urban development. Metropolises such as Kuala Lumpur, Kota Kinabalu, Kuching, and Johor Bahru are leading in development, providing abundant prospects for enterprises specializing in smart city solutions.

Additionally, Telekom Malaysia's plans to establish a 40 MW hyperscale data center, reflecting the country's ambition to become a major data center hub in the region. This development not only supports local digital infrastructure but also attracts regional and global businesses, further reinforcing Malaysia's regional ICT leadership and economic expansion.

Malaysia's ongoing digitalization and innovation presents a lot of potential for the country's future. Its dedication to transforming into a high-technology country by 2030 demonstrates its proactive stance towards growth and development. Malaysia is set to serve as a pivotal hub in Southeast Asia's digital future. TR

Telecom's Efforts to Maintain Connectivity in APAC Conflicts

In the Asia Pacific (APAC) region, the telecom industry plays an indispensable role in maintaining connectivity during times of conflict, especially in cross-border disputes. These conflicts often strain telecom infrastructure, but the sector's efforts to ensure reliable communication are crucial for maintaining social stability, economic activity, and emergency responses.

Connectivity is fundamental to modern society, supporting communication, commerce, and governance. In conflict zones, robust telecom infrastructure is even more critical, providing essential communication channels for civilians, enabling humanitarian aid, and supporting governmental operations. In the APAC region, characterized by diverse geography and socio-political landscapes, maintaining connectivity during conflicts is particularly challenging and necessitates innovative and resilient solutions.

India and Pakistan: Navigating a Long-Standing Rivalry

The conflict between India and Pakistan is one of the longest-running and most complex in the APAC region. The telecom sector in both countries faces significant challenges in maintaining connectivity, especially in the disputed regions of Jammu and Kashmir.

Both Indian and Pakistani authorities have frequently imposed internet shutdowns and restrictions in conflict zones to control the spread of information and maintain security. These shutdowns have severe implications for the local population, disrupting daily life, economic activities, and access to essential services. The telecom sector's resilience and ability to quickly restore services after such shutdowns are critical for mitigating these impacts.

Despite the political tensions, there have been instances of cross-border cooperation aimed at maintaining connectivity. For example, during natural disasters, such as the 2005 earthquake, telecom operators from both countries collaborated to restore communication networks. However, these instances are rare, and the overall relationship remains strained, with telecom infrastructure often becoming a casualty in the ongoing conflict.

South Korea and North Korea: The Digital Divide

The Korean Peninsula presents another stark example of how cross-border conflicts impact telecom connectivity. South Korea boasts one of the world's most advanced telecom infrastructures, while North Korea remains isolated with limited access to commercialized ergonomic communication technologies.

South Korea's telecom sector is characterized by widespread high-speed internet access, advanced mobile networks, and significant investment in emerging technologies like 5G. This robust infrastructure supports not only domestic communication but also international connectivity, playing a key role in regional stability and economic integration.

In contrast, North Korea's telecom infrastructure tightly controlled by the government. The regime's focus on censorship and surveillance limits access to information and isolates the population from the global digital community. Efforts to bridge this digital divide, such as initiatives by international organizations and defector-led projects, face significant challenges due to the political situation.

Myanmar and Bangladesh: The Rohingya Crisis

The Rohingya crisis highlights the telecom sector's role in managing

humanitarian emergencies and cross-border conflicts. The mass displacement of Rohingya refugees from Myanmar to Bangladesh has created significant challenges for maintaining connectivity in refugee camps and conflict zones.

In Bangladesh, telecom companies and humanitarian organizations have worked to provide connectivity in refugee camps, facilitating communication for displaced populations and supporting aid efforts. Mobile networks and internet services are crucial for coordinating relief operations, providing education and healthcare services, and enabling refugees to stay in touch with family members.

In Myanmar, the government has imposed internet shutdowns in conflict zones, including areas affected by the Rohingya crisis. These shutdowns hinder humanitarian efforts and isolate affected communities. International pressure and advocacy have called for the restoration of connectivity, emphasizing the importance of communication in crisis management and human rights.

China and India: Border Disputes in the Himalayas

The border disputes between China and India in the Himalayan region pose significant challenges for telecom connectivity. The rugged terrain and harsh weather conditions make infrastructure development difficult, while political tensions add further complications.

Despite these challenges, both countries have invested in expanding telecom infrastructure in border areas. China has focused on deploying fiber optic cables and satellite communication systems to enhance connectivity in remote regions. Similarly, India has prioritized the development of digital infrastructure in border states, recognizing its strategic importance for both civilian and military purposes. The telecom infrastructure in these border areas serves dual purposes, supporting both civilian communication and military operations.

Telcos Bolstering Connectivity During Conflict

Telcos in the APAC region are actively addressing connectivity challenges during conflicts and emergencies by implementing innovative solutions and expanding their technological capabilities.

PLDT Global is enhancing its connectivity and digital innovations, ensuring robust and reliable communication services even in challenging situations. This initiative aims to support uninterrupted connectivity for users across various regions.

The Department of Telecommunications (DoT) is exploring the deployment of balloons and drones to ensure 5G connectivity during emergencies. These airborne solutions are designed to provide immediate and reliable communication networks, especially in areas affected by conflicts or natural disasters.

AALTO is set to revolutionize global connectivity with its Zephyr High Altitude Platform Station (HAPS), offering a novel approach to maintaining communication links in remote or conflict-affected areas.

Rakuten Mobile has unveiled a satellite connectivity initiative aimed at enhancing connectivity across Japan. The goal is to provide direct satellite-to-cellular services that extend beyond text messaging to include broadband communication like voice, ensuring continuous communication during conflicts.

Globe has recently launched the Cellsite at Less Footprint (CALF) solution, which enhances emergency response capabilities and meets the needs of high-demand situations. This innovation is designed to provide rapid and reliable connectivity during crises.

DOCOMO is collaborating with Amazon's Project Kuiper to advance satellite connectivity, further strengthening its network resilience during emergencies and conflicts. This partnership aims to provide robust and widespread communication services through advanced satellite technology.

SES and Digicel have partnered to provide disaster network resiliency in Tonga via the O3b satellite system. This collaboration ensures that communication networks remain operational during disasters, offering critical support to affected communities.

Kacific Broadband Satellites Group has launched CommsBox, an innovative emergency connectivity solution designed to provide broadband service rapidly in emergency conflict zones. This portable and efficient solution is crucial for maintaining connectivity during crises.

Asia-Pacific Information Superhighway (AP-IS)

The challenges faced by individual countries in maintaining connectivity during cross-border conflicts highlight the need for regional cooperation and strategic planning. Initiatives like the Asia-Pacific Information Superhighway (AP-IS) aim to enhance regional connectivity and ensure resilient telecom infrastructure across borders.

The AP-IS initiative, led by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), seeks to create a seamless and integrated regional network. By improving cross-border connectivity and sharing best practices, the initiative aims to enhance digital infrastructure, reduce costs, and increase the availability of high-speed internet across the region. This collaborative approach is vital for addressing the diverse challenges faced by APAC countries in maintaining connectivity.

Innovation and investment in new technologies are crucial for the future of telecom connectivity in conflict and crisis situations. The adoption of 5G technology, satellite communication systems, and Internet of Things (IoT) devices can significantly enhance connectivity and resilience. Public-private partnerships and international funding are essential to support these advancements and ensure their widespread implementation. TR

Asia Pacific's Path to USD 26 Billion in Generative AI Expenditure by 2027

The Asia Pacific is currently witnessing an unprecedented surge in generative AI (GenAI) adoption, which is poised to propel its technological landscape into a new branch of innovation and efficiency.

According to the IDC's latest Worldwide AI and Generative AI Spending Guide, spending on GenAI, encompassing software, services, and hardware for AI-centric systems, is projected to skyrocket to USD 26 billion by 2027, with an impressive compound annual growth rate (CAGR) of 95.4% from 2022 to 2027. This surge underscores the region's role in driving the next wave of AI advancement and technological metamorphosis.

GenAI is known to empower computers to generate new content based on existing data—be it text, audio, video, images, or code—in response to prompts. The IDC predicts that GenAI will serve as a catalyst for transitioning into a new phase of automation, enhancing productivity across generic tasks, business-specific functions, and industry-specific applications.

Innovation and Growth Across Sectors

Central to the Asia Pacific's

transformative journey is strong digital infrastructure and substantial investments in technology, positioning the region as a global leader in AI innovation. Strategic investments in GenAI-related hardware, software, and services are crucial drivers fueling this progress. From software development to customer service, GenAI is advancing industries, ushering in unprecedented levels of innovation across various sectors.

In the financial services sector, GenAI adoption is projected to reach USD 4.3 billion by 2027, boasting a remarkable CAGR of 96.7%. Financial institutions harness GenAI internally to optimize operations, automate tasks like fraud detection, and streamline complex document creation. GenAI-powered solutions offer personalized financial services, enhancing customer engagement and adapting dynamically to different client needs, while boosting profitability through cost reduction and revenue generation.

The software and information services industry stands as the second-largest adopter of GenAI, leveraging its versatility across marketing, data analytics, and software development. In marketing, GenAI streamlines content creation for digital platforms, optimizing strategies and enhancing audience engagement. In data analytics, it enriches datasets and improves model performance, while in software development, it accelerates coding tasks and prototype generation, enhancing productivity and efficiency.

Governments across the Asia Pacific are the third-largest adopters of GenAI, and have highlighted the technology's significant potential to enhance operational efficiency, transparency, and citizen engagement. These governments are pioneering education and training initiatives in GenAI, fostering new job opportunities and nurturing innovation hubs for future AI professionals.

GenAI in Telecommunications

In telecommunications, the integration of GenAI alongside machine learning (ML) is poised to deliver important advancements and changes. This technological synergy promises to revolutionize how mobile networks are orchestrated and managed, marking a significant departure from traditional approaches by introducing automation into intricate decision-making processes.

At the core of this transformation lies GenAI's ability to optimize resource allocation within telecom networks. By leveraging advanced algorithms and predictive analytics, telecom operators can now preemptively anticipate network demands, allocate resources efficiently, and ensure seamless service delivery. This proactive approach not only enhances network performance but also enhances user experiences to different levels of reliability and speed.

The impact of GenAI extends beyond operational efficiencies. It encompasses a broad spectrum of applications, including enhancing customer interactions through AI-driven personalized services. Furthermore, GenAI bolsters network security by continuously monitoring and adapting to emerging cyber threats, safeguarding data integrity and user privacy.

Asia-Pacific telcos are actively implementing GenAI solutions to enhance various aspects of their operations and services.

SoftBank Corp. is transforming its customer support system with GenAI, aiming to improve customer interactions and service efficiency.

HCLTech is making significant strides with GenAI by upgrading its digital experience solutions and introducing HCLTech AI Force, a state-of-the-art GenAI platform designed to accelerate time-to-value and improve the efficiency of software development and engineering operations. Additionally, HCLTech is collaborating with SAP to drive GenAI adoption and develop innovative solutions.

In Malaysia, AWS and CelcomDigi are jointly developing GenAI solutions to advance the region's technological capabilities. Moreover, Netcracker is broadening its partnership with Microsoft to integrate GenAI technology, further enhancing its service offerings.

Additionally, Indosat and Google Cloud are collaborating to deliver AI-driven digital experiences in Indonesia.

The Infocomm Media Development Authority (IMDA) of Singapore is also embracing GenAI. As highlighted by Leong Der Yao, Assistant Chief Executive of the Sectoral Transformation Group, local Singaporean retail garden center (Far East Flora) has progressively deployed a comprehensive suite of integrated GenAI solutions. These include a point-of-sale (POS) system, a self-checkout kiosk, a mobile app, a scan-and-go app, an e-commerce platform, a CRM membership loyalty and reward system, and an inventory and fulfillment management system that integrates with its existing ERP Oracle NetSuite system.

Furthermore, Bharti Airtel has partnered with Google Cloud to deliver AI solutions to businesses, aiming to leverage GenAI for enhancing business processes and customer experiences.

Conclusion

As telecom operators embrace GenAI, they are not merely adopting a new technology but forging a path towards innovation and adaptability. This allows operators to stay ahead in a fiercely competitive path by anticipating market trends and customer needs with agility and precision.

The convergence of GenAI and ML in telecom represents more than just a technical change; it marks a strategic shift towards sustainable growth and enhanced service delivery. As we navigate this transformative journey, the boundaries of what is achievable in telecommunications are being redefined, promising a future where connectivity is smarter, faster, and more responsive than ever before.

As such, GenAI in telecom not only encompasses improving networks; it also includes reshaping the very fabric of how we connect and communicate in the digital age. TR

How 5G and APIs are Generating Revenue Growth in Asia

The introduction of 5G technology has transformed interpersonal and enterprise communications. It has presented opportunities and ideas that have improved the way stakeholders live and interact with one another.

This next-generation connectivity has brought about better internet speeds and a wide variety of new opportunities for businesses expansion.

The availability of 5G networks has brought about transformative change, enabling developers to design applications that are more intelligent, reliable, and secure. This transformation promises a future in which digital experiences will be redefined by better communication capabilities and seamless integration, which will consequently drive extraordinary improvements in technology.

In a digitally-advancing society, it is essential that various software applications work together seamlessly. Application programming interfaces (API) make it possible for software and applications to become interoperable.

Understanding APIs

Amazon Web Services (AWS) defines APIs as a system that enables two software components to communicate with each other through the use of preprogrammed rules and protocols. An example would be the software system that the weather bureau uses to store the enormous amount of daily weather data. Whenever users check the weather on their smartphone, the weather app seemingly communicates with the bureau's system using an API, which then retrieves the required information and displays it on their screen. The fact that APIs can facilitate such a seamless interface is what makes them vital in the building of modern applications.

Both the client and the server are essential components of API architecture. The client, often an application requesting information, sends a request to the server. The

server then provides the necessary data or functionality in response to the client's request.

Modern API Transformation

The International Data Corporation (IDC) has forecasted that revenues for telecom and network APIs will reach USD 6.7 billion by 2028, a significant increase from the USD 700 million that was recorded in 2023. This growth, set to increase at a compound annual growth rate (CAGR) of 57.1% during the 2023-2028 period, indicates a huge shift in the manner in which communication service providers (CSPs) will function and perform in the future.

Historically, CSPs have been exceptionally successful in providing mobile connectivity on a vast scale. The increasing demand for connectivity was the driving force behind this strategy, which resulted in a steady year-over-year revenue increase.

However, the environment began to change with the entry of third-party entities. These entities, including providers of Communication Platform as a Service (CPaaS), cloud services, and other digital platforms, successfully understood digital opportunities, establishing extensive developer ecosystems. This shift relegated many traditional telecom companies to the role of mere infrastructure providers. Consequently, service providers have struggled to monetize the growing number of devices utilizing their networks.

That being said, the introduction of 5G networks and the strategic exposure of APIs has presented an opportunity that has the potential to completely transform the industry. Telcos now hold the opportunity to establish themselves as significant players in the digital world by integrating 5G capabilities with APIs. This integration makes it possible to develop connectivity solutions that are programmable and adjustable, and which can be tailored to meet the ever-changing requirements of both consumers and enterprises.

APIs in Action

The advent of 5G and APIs is generating significant revenue growth in Asia by enabling new business models and monetization strategies.

In India, the establishment of a robust API platform to support its 5G network has allowed companies such as Reliance Jio to create a various apps, ranging from those for gaming and entertainment to those for healthcare and education. One example is the development of a telemedicine application that leverages high-speed connectivity and APIs offered by 5G to facilitate remote consultations with medical professionals. This has proven to be beneficial to rural communities who have limited access to healthcare.

Meanwhile, AIS has improved its entertainment offerings in Thailand by utilizing 5G and APIs. An API-based streaming service that integrates with a variety of content sources was introduced by the company. The service provides streaming in high definition with minimum buffering, resulting in an experience that offers unmatched overall viewing quality. Through the use of APIs, AIS has also built interactive elements such as live polls and quizzes. Not only do these features keep viewers interested, but they also aid in monetization expansion.

In Singapore, Singtel's launch of SingVerify, an API-driven solution for on-demand and secure telco capabilities, highlights another revenue-generating opportunity. By enabling real-time digital identity authentication, Singtel not only enhances security but also opens up new monetization avenues. Chief Executive Officer, Ng Tian Chong, emphasized that SingVerify's deployment could mitigate fraud, safeguard customer data, and prevent financial losses, thereby increasing its value proposition to customers and driving revenue growth.

In Japan, NTT DOCOMO, Miyashita Lab, and H2L have launched the world's first taste-sharing technology for the metaverse. By leveraging 5G and APIs, this innovative solution enables new types of digital experiences, attracting more users and developers to the platform, which in turn generates new revenue opportunities through subscriptions and service fees.

Nokia's platform provides operators like BT with tools such as Software Development Kits (SDKs) and open APIs, enabling them to monetize their 5G network assets. By providing these development tools, operators can attract a broader range of application developers who can create value-added services, thereby increasing the operators' revenue potential through their 5G networks.

Blue Planet's new componentization strategy allows service providers using ONAP to integrate microservices-based components via standard APIs. This flexibility enables service providers to combine open-source and commercial solutions, accelerating their automation initiatives and reducing operational costs. The ability to offer enhanced services more efficiently helps these providers monetize their 5G investments more effectively.

Huawei Indonesia's partnership with Accenture, Cloudera, Anabatic, IDPRO, Infosys, and Telkomsigma to launch Huawei FusionSphere 6.0 demonstrates another pathway to revenue growth. FusionSphere 6.0, an enterprise-class cloud operating system, supports virtual servers, private clouds, public clouds, hybrid clouds, cloud desktops, and virtualized network infrastructure. By utilizing open-source software and supporting OpenStack APIs, Huawei offers customers more choices, attracting a wider user base and generating additional revenue through its versatile cloud solutions.

Final Thoughts

Following the emergence of 5G and API's, the future of telecommunications in Asia is expected to be more positive. The ongoing development of these technologies may also lead to the emergence of an even greater number of cutting-edge applications and services. The growing adoption of the technology by telecom operators and the establishment of a thriving ecosystem through collaborative efforts with developers, businesses, and government agencies will be essential to the technology's success. TR

Bangladesh's Mobile Market and 5G Ambitions Thrive Despite Economic Challenges

The mobile phone market in Bangladesh has reportedly shown resilient growth in the first quarter of 2024. Despite challenges posed by heavy taxation and economic pressures, the market saw a modest 1.7% year-over-year (YoY) growth, shipping 4 million units.

According to the International Data Corporation's Worldwide Quarterly Mobile Phone Tracker, Bangladesh shipped 1.8 million units in Q1 2024, marking a notable 11.6% increase from the previous year.

This growth follows a period of decline driven by economic hardships and stringent taxation on mobile devices and components. Notably, the entry-level segment, priced under USD 100, saw a decline of 6% year-over-year (YoY), reflecting shifting consumer preferences and economic constraints.

Market Leaders and Competitive Environment

Xiaomi emerged as a key player in the mass budget segment (USD 100 < USD 200), alongside Transsion and realme, capturing a significant 58% market share. The mid-premium segment (USD 400 < USD 600) witnessed vivo leading with a commanding 95% share, underscoring a niche market catering to higher-end consumers.

Transsion maintained its dominance in the market, bolstered by strong performances from its Tecno brand, which accounted for 44% of its total shipments. Meanwhile, Xiaomi experienced triple-digit, year-over-year growth following the reopening of its manufacturing plant in 2023, driven by popular models such as the Redmi series.

In the feature phone segment, Nokia (HMD) made a significant entry in Q1 2024, achieving triple-digit growth with its new models catering to diverse consumer needs.

Bangladesh Advancements and Digital Transformation Goals

Despite efforts to bolster 5G infrastructure, 5G-enabled smartphones comprised only 3.4% of total shipments due to current infrastructure limitations.

The Bangladeshi government has taken decisive steps to expedite the deployment of 5G networks. Central to these efforts is the issuance of a consolidated 5G license, streamlining regulatory processes to facilitate swift network deployment across the nation. Furthermore, the recent enactment of the Agency to Innovate (a2i) Bill underscores Bangladesh's commitment to fostering ICT and IoT advancements essential for future technological integration.

Recently, the Bangladeshi government's issuance of unified licenses to telecom giants like Grameenphone, Banglalink, Robi Axiata, and Teletalk marks another significant milestone. These licenses consolidate permissions for 2G, 3G, and 4G technologies, streamlining operations and preparing the ground for the seamless integration of future technologies such as 5G and beyond.

The unified licenses not only facilitate the sharing of infrastructure resources among operators but also introduce clearer regulatory frameworks for data retention and auditing processes. They streamline license renewal procedures into a single step, promoting competition, innovation, and ultimately improving service quality for consumers.

Bangladesh has also been progressing towards achieving its Smart Bangladesh goal. The vision, launched in 2009 under the Digital Bangladesh initiative, aims to harness technology and innovation to address socio-economic challenges and drive sustainable development. Significant strides have been made across education, healthcare, governance, and infrastructure sectors, laying the groundwork for a digitally empowered nation.

Education stands as a cornerstone of Bangladesh's Smart Bangladesh agenda, bolstered by initiatives like the Access to Information (a2i) program. These efforts have integrated technology into classrooms nationwide, providing students with digital resources and interactive learning tools. Such initiatives have significantly improved educational outcomes, with primary education enrollment reaching an impressive 98% by 2023, up from 87% in 2010. TR

— 2024 —

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

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17 - 18 SEPTEMBER

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Place: Sands Expo and Convention Centre, Singapore

GovWare

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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

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