

For communications professionals in the southern Asian region

SOUTHERN ASIAN WIRELESS COMMUNICATIONS

Q4 2022

Volume 15 Number 4

- Adding value for Asia's MNOs
- Network digital transformation
- from the inside out
- Cybersecurity at sea: no room
for complacency



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4 NEWS

- Singtel aims for net zero
- SpaceX partners with the Philippines
- India drafts new telecommunications bill
- TCC and Kacific to connect the underserved

12 WIRELESS BUSINESS

- Vodafone Idea reports net loss
- Globe Telecom 'relevant and competitive'
- Malaysia merger to proceed
- Telenor pursues Pakistani ops sale
- Malaysia merger to proceed
- True-DTAC merger hits bumps

18 FEATURE

Adding value in Southern Asia

22 INDUSTRY VIEW

Digital transformation from the inside out

25 WIRELESS USERS

- High speed WiFi for 4,000 stations
- Neutral-host urban NaaS for rail



28 WIRELESS SOLUTIONS

- Grandstream launches two dual-band WiFi routers
- New VSAT service for small maritime vessels
- Realm Enablement Suite accelerates IoT solutions to market
- SeeHawk Monitor automates network management



31 WORLD NEWS

- Sepura and Softil deliver critical comms
- Mobile phone recycling cuts CO2
- Eutelsat and Tizeti partner on broadband
- Verizon trials 5G via eSIM
- Omantel launches 400GbE DCI service



SUBSCRIPTIONS:

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MEASAT to deliver managed bandwidth services to Malaysia

MEASAT Global Berhad has signed a multiyear contract with Reach Ten Communication Sdn Bhd for managed bandwidth services, supported by the high throughput satellite (HTS) payload on MEASAT-3d (M3d)

With this contract, Reach Ten will become the largest enterprise satellite service provider in Malaysia in terms of capacity provisioned, serving both the private and government sectors across Malaysia.

To date, Reach Ten has expanded their customer base exponentially supported by the country's most advanced satellite gateway infrastructure located in Kuching, Sarawak and Cyberjaya, Selangor providing broadband satellite services to more than 1,000 communities and villages

throughout Malaysia. In Samajaya, Kuching the 9m antenna at the teleport enables access to approximately 13Gbps of satellite capacity on M3d.

"At MEASAT, we are pleased to strengthen and expand our partnership with Reach Ten following the successful launch of M3d, our most advanced satellite carrying the largest amount of broadband capacity for Malaysia from a single satellite," said Ganendra Selvaraj, chief commercial officer, MEASAT. "This contract is a testament to MEASAT's mission to deliver cost-effective high-speed broadband to areas in the country without any terrestrial network, with speeds of up to 100Mbps, from our 91.5°E hot slot. This will help meet the nation's aspiration for 100% internet

coverage across Malaysia by 2025 and narrow the digital gap between Malaysians in rural and urban areas through initiatives like the national Jalinan Digital Negara (JENDELA) plan and the Sarawak Government's SALURAN and SMART initiatives."

"Having worked with MEASAT over many years, Reach Ten is happy to be one of MEASAT's anchor customers on the new M3d satellite," said Leo Chin, CEO, Reach Ten. "With this latest collaboration with MEASAT, we have greater capacity to support ongoing projects like SALURAN and SMART in Sarawak, as well as new high bandwidth applications such as community broadband projects, the Internet of Things (IoT), cellular backhaul, telemedicine and online learning applications, particularly within Sarawak."

Singtel wins big at WCA

Singtel has won two awards at the World Communications Awards 2022.

The company won in the Beyond Connectivity category for its ability to enable organisations to move up the 5G value chain with end-to-end offerings in partnership with Ericsson.

Singtel received this award for its advanced 5G offerings, powered by Ericsson, which focus on three key layers: foundational telco connectivity and infrastructure; service enablement; and applications and services.

Singtel is also collaborating with the Industry 4.0 ecosystem to develop and deploy advanced 5G offerings in Singapore, with the aim of introducing new business models. This includes its partnership with Ericsson to work with nine global industry partners throughout various industries on 5G use cases, as well as partnerships with device and chipset manufacturers, solution and app providers, domain partners and system integrations.

In addition, Singtel was recognised as the winner in the IoT Innovation category for its Multi-Domestic Connectivity Solution for automotive manufacturers in partnership with Ericsson and Bridge Alliance.

Working with these two companies, Singtel collaborated on a platform that equips automotive manufacturers with the means to seamlessly deploy connected cars in the Asia Pacific region by minimising costs and operational complexities throughout different markets.

"Singtel is honoured to be recognised by the industry for our innovative 5G and MEC enterprise solutions and services that are transforming businesses, driving innovation and growth in the digital economy," said Bill Chang, CEO, group enterprise, Singtel. "Our understanding of the challenges facing enterprises in today's complex operating environment enables us to provide the technology platforms and solutions to address their needs. We are committed to helping enterprises take full advantage of the potential 5G, and their edge clouds have to offer and to realise their digital transformation ambitions for greater economic success."

SpaceX signs first Southeast Asia deal

SpaceX is expanding into the Philippines, offering satellite broadband service to businesses and government with partner Data Lake, SpaceX's first partner in Southeast Asia.

"The Philippines is an archipelago and connecting our country to the wider world often requires extensive infrastructure," said Data Lake chairman Anthony Almeda.

The Philippines comprises over 7,600 islands, many isolated and

with mountainous terrain, making broadband coverage challenging. Around 20 tropical storms also typically hit the country each year, damaging infrastructure and cutting communication links between islands and provinces. In the Philippines, only seven out of every 100 people have fixed broadband subscriptions, far behind regional peers like Singapore, Malaysia, and Thailand.

The Philippines' information



and communications technology ministry announced that Starlink will enter the market in 2023.

US partners with Philippines on 5G

According to an official statement by the US Embassy, US Vice President Kamala Harris has launched



initiatives to boost their alliance with the Philippines.

Among them is the partnership with Philippine telecom operator NOW Telecom for the deployment of 5G technologies in the Philippines through the United States Trade and Development Agency (USTDA).

The United States Agency for International Development (USAID) is also supporting the launch of the first low Earth orbit (LEO) satellite broadband service in Southeast Asia in partnership with SpaceX Starlink in the Philippines.

Aiming to provide digital opportunities to small businesses, USAID will launch the new

Strengthening Private Enterprises for the Digital Economy (SPEED) award, a five-year project that seeks to expand the participation of Philippine small and medium enterprises in the country's emerging e-commerce ecosystem.

The SPEED launch will include the nationwide launch of the Philippine eCommerce Alliance, which will signal an industry-wide commitment to accelerating the rise of the Philippine digital economy. This program will promote the use of digital technologies to accelerate competitiveness, drive innovation, fuel job opportunities and enhance the market reach of enterprises.

Digicel Pacific bolsters coverage with O3b

Digicel Pacific is bolstering its coverage in Papua New Guinea via the O3b medium Earth orbit (MEO) satellite system from SES.

O3b will help Digicel to provide its customers with seamless connectivity following damage to the international Pipe Pacific Cable (PPC) which typically connects Papua New Guinea to Australia and the rest of the world.

The additional O3b services will help Digicel Pacific maintain connectivity during outages caused by such cable breaks while also expanding coverage across the remote parts of the country;

80% of Papua New Guineans live in rural areas.

SES' support comes at a critical time for Papua New Guinea after a 7.7 magnitude earthquake in September, which damaged multiple cable systems, resulting in large disruption to data services across most of the country. During the disruption, SES assisted Digicel Pacific with emergency bandwidth, providing an increase of 40% in high-performance, low-latency O3b services deployed across 12 sites throughout the country to keep communities connected. SES also stepped in with an incremental 3Gbps

of capacity and additional ground equipment to enable Digicel Pacific to restore its network connectivity and critical communications services for both consumers and telecommunication customers.



Globe deploys 252 5G-ready sites on Mindanao

Globe has announced that it has deployed 252 5G-ready cell sites on the Philippines' southern island of Mindanao. The scaled-up deployment of 5G wireless technology across the country has yielded 933 cell sites in the first half of 2022.

As of June 30, Globe's 5G network had reached 85.8% of key cities in Visayas and Mindanao and 96.6% in the National Capital Region in terms of 5G outdoor coverage.

Data showed a steady hike in 5G usage in Mindanao, particularly in Davao City, which almost tripled in June from January. Similar significant increases were registered in June by Cagayan de Oro and the town of Libona. Nationwide, Globe saw a 73.4% increase in 5G data traffic from January to June this year.

"We continue to invest in the latest mobile technologies like 5G as part of our commitment to bring better mobile experiences that can uplift the lives of our customers no matter where they are in the country," said Darius Delgado, head of Globe's consumer mobile business.

Globe has already spent more than half, or 50.5 billion pesos, of its 89 billion peso budget for capital expenditures this year for the construction of new cell sites, upgrades for existing sites to 4G/LTE, acceleration of the rollout of 5G connectivity and ramping up the fiberization of Filipino homes nationwide, as part of Globe's commitment to the United Nations Sustainable Development Goals.

By the end of the first half of 2022, the number of devices serviced by Globe's 5G network had increased by 52.6%, to 2.7 million, from 1.62 million in January.



Indonesian smartphone shipments in decline

Indonesian smartphone shipments were affected by rising costs in the third quarter of the year according to IDC, which has predicted ongoing pressure

and a decline in full-year numbers.

Low-tier smartphones took the brunt of the hit, with overall shipments down 12.4% to 8.1 million units.

The share of devices priced between US\$100-200 dropped to 75% of the total from 81% in the third quarter, with mid-range models priced between US\$200-400 stable.

Vanessa Aurelia, associate market analyst at IDC Indonesia, pointed to "significant strengthening" in shipments of models priced at more than US\$400 "as demand there stayed relatively inelastic" compared with lower tiers. IDC noted consumer purchasing power and overall demand was impacted by higher inflation and volatile exchange rates.



TCC joins with Kacific to connect the underserved

Tonga Communications Corporation (TCC) has signed an agreement with Kacific to improve connectivity in underserved areas and provide the operator with an enterprise-level back-up service to help mitigate the impact of future outages.

TCC is the only provider of fixed line telephone services in Tonga, and leading provider of broadband internet and mobile phone services, with the widest cellular network coverage in Tonga as well as branches in the outer islands.

Since June 2022, a mobile backhaul solution has been deployed to improve resilience at the two Niua islands. A further two satellite terminal sites, one each in Vavau and Ha'apai, have been commissioned to provide connectivity, as the Tonga Domestic

Cable Extension undergoes extensive repairs, following damage during the volcanic eruption of Hunga Tonga-Hunga Ha'apai in January.

Additionally, a 4.5m terminal, which can facilitate a higher level of bandwidth usage, was recently installed in Tonga. TCC and Kacific are now working to commission the terminal at Atele, TCC's strategical emergency site, in Tongatapu. It will be used as an enterprise-level back-up option in case of future outages or damage to the international fibre cable connecting Nuku'alofa to Suva, Fiji.

A portion of the capacity allocated to the terminals in the outer islands can be reallocated to the 4.5m terminal in Nuku'alofa, in a fibre back up arrangement. This will ensure the capital has access

to high-speed connectivity for critical applications in the event of a fibre outage.

"We are committed to providing satellite services in Tonga to support the nation's connectivity needs and ensure its resilience," said Christian Patouraux, CEO, Kacific. "We have a strong partnership with Tonga Communications Corporation, having worked together to provision emergency capacity in January 2022 following the fibre cut."

"Kacific's satellite connectivity and responsiveness will enable TCC to quickly deploy Internet services to the people of Tonga when critical connectivity is most needed. Kacific understands the context of the Pacific and are clear in addressing our specific needs," said Sione Veikoso, CEO, TCC.

SBA Communications Initiates Operations in the Asian Marketplace

As SBA Communications now operates in the Philippines, Southern Asian Wireless Communications spoke with Nicholas Van Slyck, Senior Director, Africa and Asia to find out about the company's plans heading into 2023 and the challenges these plans will bring.

How would you describe the past 12 months since entering the region?

Well, we have certainly learned a lot. In Asia, SBA currently operates only in the Philippines, and we have spent the past year assembling our team and building sites while we simultaneously learn some of the cultural nuances of doing business in a market twelve time zones away from our headquarters in the United States. The first year was a whirlwind of activity as we sought to establish a foothold in the market and get the operation up and running. Now, things are running smoothly and we are very happy with our progress, but there is still more to do. It helps to have an incredible team on the ground led by industry veterans that are performing at a very high level. One of the things we are most proud of is that with only a short time of operating in the Philippines, our team was among the highest-rated towercos by the MNOs in terms of performance. That is something we can build on as we seek to establish ourselves in the Philippines and beyond.

Is the Asian region an important market now and why? Is there a specific country that is leading the way for you?

With 48 countries and almost 60% of the world's population, Asia is most certainly an important market. Some of the larger economies in Southeast Asia are growing at a rate of around 7%, which is quite amazing when you think about it. Smartphone penetration is relatively high in countries like Malaysia, the Philippines, Singapore and South Korea and with that comes high expectations for a better wireless experience. We see MNOs continuing to invest in network quality in terms of both coverage and densification and this trend should continue well into the future. It goes without saying that towercos should see their role increase as this process unfolds in the coming years.

Which of your infrastructure solutions has seen the greatest demand from the wireless service providers within Asia? Has this influenced your development in the region?

Well, that would undoubtedly be our towers. We are building high-quality, multi-tenant towers in the Philippines. It is only recently that the carriers in this market embraced the shared infrastructure model, but it makes sense, particularly given the need to densify the networks as 5G deployments accelerate in a country with 110 million people. We are

also in the early stages of providing a power-as-a-service solution but see great potential to expand this across our portfolio and to all our customers. The bottom line is that we remain bullish about the growth prospects for both tower and power in the market.

Is there a preference for lease or network ownership within this region? Can you explain why?

In the Philippines and from the carrier's perspective, the preference seems to be to lease the infrastructure rather than own it. The



number of sale-lease-back transactions in the country over the last six months supports this view. MNOs have come to realize that building redundant infrastructure is inefficient and not the best use of their capital. They have decided that it is better to use their resources to invest in network improvements and expansion in order for them to grow subscribers because that is their core business. From their perspective, why tie up precious capital in towers and then have to deal with the headaches of ongoing operations when the whole process can be easily outsourced?

Do you feel demand for green solutions growing and can you give examples of where?

Yes, I do. There have been several technological advancements in solar power over the last decade resulting in greater dependability at reduced costs. We now see solar power as offering a compelling alternative energy solution for our customers. In fact, we have an ongoing solar business in Jamaica where we are using solar power and batteries to provide backup power for one of our customers. Our solar solution has lowered this customer's energy costs by reducing dependency and power consumption from the grid. This model can be exported to our other markets. In the Philippines, we have a few sites that are located in bad grid areas and there are islands with no grid at all. Solar solutions are an attractive option in some of these areas, but not all. With fuel prices going up sharply over the last 12 months coupled with the fact that carriers and infrastructure companies both want to reduce their carbon footprint, it seems to me that there is a strong case here for more solar-powered solutions in this market.

What do you see as the biggest challenges in this region? Are you experiencing regulatory restrictions at present and if so, where?

For us, the biggest challenge is not with regulatory restrictions, at least not now. Our biggest challenge is twofold: 1) identifying new market opportunities, and 2) finding deals with valuations that are rational, especially given this new environment of high-interest rates. Regarding the first one, we are very selective in terms of expanding into markets. We do not want growth just for the sake of growth, rather we look for high-quality growth in stable markets with three or more healthy operators and those are becoming more and more difficult to find. Related to this is the second point about rational asset valuations. This industry has attracted a lot of investment over the last decade and that has resulted in inflated asset valuations in our view. We want to grow, but the world has become a lot smaller in terms of markets that make sense for us and M&A opportunities that are rational.

Do you have plans to extend your activities into other Asian countries and if so, how?

We always have our eyes open for new market opportunities, but they must meet our disciplined investment criteria. Our approach over the years has been to look for high-quality growth in stable markets, so we are extremely selective in terms of the countries and assets we invest in because it matters. Our stock's performance seems to support that view. Having said that, we are a growth company as we have been for the last 33 years; so yes, we do have a vision that includes extending our activities into other countries. How we do it is a more complicated question because it varies from market to market. For example, expansion could come in the form of a sizable build-to-suit opportunity in a stable market with three or more healthy MNOs. This was our approach in many markets in Latin America. Another approach is a sale-leaseback transaction much like what we did earlier this year in Tanzania. There we acquired 1,445 cell sites from Airtel, which made us a significant player in that market overnight. The third option could be a hybrid of the first two. Here we would look to do a sale leaseback with a commitment for a decent volume of BTS over a defined period, say two or three years.

Can you name some of the biggest Asian deals you have signed during the last 12 months?

So far, we are only in the Philippines and there we have a focus on a build-to-suit model. We were successful early on in signing agreements with Globe and Smart, which has resulted in a good pipeline heading into 2023. We see build-to-suit as the cornerstone of our growth with a few strategic acquisitions layered in over time. Given our long-term view of the market, we believe that over time and with our great team on the ground, we can achieve a scale that makes sense for us and we can use the market as a base for regional expansion.

What are you looking to achieve over the next year?

SBA is a growth company so the obvious answer is more growth. We see good potential for sustained high quality growth in the Philippines in terms of new builds and lease-up. Our experienced team is one of the best performing towercos – according to the MNOs who rank them – and that should lead to repeat business as long as we continue to operate at the highest levels. In addition, we are seeing an uptick in lease-up as well as energy-as-a-service, something we are proactively pursuing. Finally, we are always open to discussing M&A deals that are at price points that are rational and make sense for SBA.

What's been the biggest lesson over the past year?

Great question. As you know, the tower industry worldwide has undergone major changes in recent years. Carriers want a better value proposition; they want more for less from towercos without sacrificing the quality of service. At the same time, the industry has attracted a large amount of investment and new entrants, both of which have had profound impacts, both good and bad. The investment strategies do not always appear rational in our view, and the new entrants usually have a significant learning curve in front of them. The industry is changing; it is not the same as it was five years ago. Against this backdrop, the biggest lesson for us is to stay focused and not be concerned with what others are doing because that is only a distraction. It is more of a reminder that we need to stay committed to the fundamentals of the business, something we have worked hard on for over three decades, while we seek to be more responsive to our customer's needs whether that be backup power, green energy solutions or edge data centers. We have an excellent record of accomplishment in delivering high-quality growth, and I do not anticipate that will change if we stay focused on what we do best.

How do you differentiate yourself from your competitors in this region?

Well, there are quite a few companies invested in the tower sector in the Philippines. At last count, we were 26 or 27 companies. Therefore, in such a competitive environment, I see a few things that differentiate SBA from others. For one, when we enter a market, we take a long-term view of things. We are not interested in short-term gains at the expense of the long-term relationship with our customers. The combination of our substantial financial and operational capabilities coupled with a long-term investment outlook gives us a great deal of flexibility and creates unique opportunities for us to work with our customers to explore different business lines and deal structures that simply may not be available to others who have a shorter investment horizon. Not only that, but our decision-making process is quick and smooth and once we decide that something meets our disciplined investment criteria, deployment of capital happens soon after. In addition, we have a local team in the Philippines that has a proven record of accomplishment in managing existing tower portfolios and developing new sites. We like to say that SBA has the resources of a large company, but we are small and nimble enough to be effective in the individual markets where we have businesses.



India drafts new telecommunications bill

India has drafted a new telecommunication bill which calls for OTT messaging and video-calling platforms like WhatsApp, Zoom and Google Duo to obtain a telecom licence to operate in the country.

The Department of Telecommunications (DoT) published the draft bill, stating it forms part of a wider ambition for India to become a fully digital nation.

Under the proposed legislation, the DoT seeks to ensure telecom services

including calling and messaging offered by OTT players falls under its licensing regime and subject to the same policies applied to operators. The proposal results from long-running disputes as operators called for OTT players to be set on an equal footing, particularly about high licence fees.

If approved, the legislation will enable the government to regulate internet-based communication services, including a provision to waive payments for operators with financial



constraints and refund fees should a registered entity surrender its licence. The proposed bill would replace the Telegraph Act of 1885, which the DoT states is outdated.

Intra-Asian internet bandwidth hits 60%

TeleGeography has revealed that intra-Asian internet bandwidth has increased from 36% in 2012 to 60% in 2022. During the same period, the share of bandwidth that connects Asia to the US and Canada decreased from 49% to 20%.

According to TeleGeography's Global Internet Geography research, international internet bandwidth growth remains strong throughout Asia, resulting in an increasingly competitive IP transit market. Between 2019-2022, 100 GigE IP transit port prices across Hong Kong, Singapore, and Tokyo, which play host to most of Asia's traffic exchange and content hosting, decreased by 24% compounded annually.

In the second quarter of 2022, weighted median 100 GigE port prices in Hong Kong and Tokyo were \$0.55 and \$0.58 per Mbps. In Singapore, the 100 GigE price was just \$0.45 per Mbps after dropping 27% over the past three years.

"Despite recent declines, Asia maintains a higher price compared to the US and Europe. In Q2 2022, the weighted median price for a 100 GigE port in Singapore was 3.5 times that of a comparable port in London and 3.0 times that in New York. Similarly, a 100 GigE port in Hong Kong was 4.2 times that of London and 3.7 times that in New York," said Brianna Boudreau, senior research manager, TeleGeography. "Singapore, Hong Kong, and Tokyo remain competitive hubs for Asia, despite the gap compared to U.S. and Europe hubs. It's a reminder that there's more to becoming an internet hub than price disparity narrowing."

Out of the three established hubs, Singapore is the largest player with more than 100Tbps of international internet bandwidth with a CAGR of 42% over the past five years, outpacing Japan, and China, including Hong Kong, in terms of absolute bandwidth and growth rates.

"As the Asian market develops, content providers like Google and Meta aim to improve user experience in the region by reducing latency. To do so, they push their content across the Pacific on their private networks to host it in established Asian hubs. This places content closer to end users, hence reducing latency," said Marvin Tan, research analyst, TeleGeography. "As a result, the demand growth to deploy high-capacity links from Asia to North America have begun to slow in comparison to demand growth from intra-Asia capacity."

The research also reveals that Cloud Service Providers (CSPs) are continuing their rapid expansion in Asia, driven by the significant growth in internet and cloud service demand. There are more than 70 existing cloud regions in Asia with many more in the pipeline and Asia is home to the most in-service cloud zones with a total count of over 200 zones.

Tata Communications launches private 5G CoE

Tata Communications has launched a dedicated private 5G Global Centre of Excellence (CoE) in Pune, India to accelerate Industry 4.0 applications and capabilities for enterprises.

This new CoE is an agile, secure and indoor facility to test and trial industry use cases.

Tata Communications has developed use cases across automotive, metals and mining, airports and seaports, manufacturing, logistics and healthcare sectors. The company will be well positioned to enable and empower global enterprises to seamlessly progress into the hyperconnected world.

With trials underway, Tata Communications will be able to demonstrate private 5G use cases

such as automated quality inspection of equipment using video and image analytics, inventory management and asset tracking, warehouse theft detection, AR/VR-based remote worker collaboration, and video-powered retail purchase, among others. The company is following robust measures, including interoperability tests to assess compatibility of the company's private network with different devices and, rigorous monitoring and testing to ensure stable connectivity throughout the test duration at the CoE.

"5G has the transformative power to be a game changer for all," said Mysore Madhusudhan, executive vice president, collaboration and connected solutions, Tata Communications. "We are encouraged and excited about

leveraging this technology to enable the future of enterprises and economies. Early test results in our Global Centre of Excellence have proved to be very positive providing an evolutionary path towards Industry 4.0 scenarios to varied industries. We believe this Centre is well poised to empower enterprises for a hyperconnected tomorrow."

As outlined in '5G the 5M way', Tata Communications envisions the 5G era to focus on automating the interplay between Man-Machine-Material-Method-Market to enable a holistic ecosystem. This ecosystem will enable enterprises to achieve business goals, unlock new revenue sources, business models and have the ability to address new markets through secure and digital experiences.

Singapore launches anti-fraud measures

Singapore has introduced measures to protect consumers from SMS fraud, with organisations required to sign up to a government-backed central registry and mobile operators to deploy anti-scam filtering systems to block potential threats.

The Infocomm Media Development Authority (IMDA) stated that all organisations using SMS sender IDs must register for the country's vendor registry by the end of January 2023.

The current index was set up in March and is voluntary. IMDA stated the number of SMS scams dropped 64% between quarter four of 2021 and quarter two 2022.

After registration is mandated, only bona fide sender IDs belonging to organisations will be allowed, with all others blocked. As a transition measure, all non-registered SMS sender-IDs after the deadline will be marked likely scam, like a spam filter, and will be in place for around six months. Machine-reading technology makes it possible to identify and filter potential scam messages upstream, with operators able to detect malicious links within text messages sent via their networks.

Singtel aims for net-zero

Singtel has made plans to make its 5G network more energy efficient and advance its sustainability goals by working with Ericsson to deploy its latest radio product.

Singtel expects to reduce energy usage by more than 18% by using Ericsson's AIR 3268 radios. The company's current 5G network already uses 58% less energy than its 4G infrastructure. The new radio weighs 12kg, 40% less than earlier generations of 5G equipment, meaning a site with multiple radios could be 76% lighter than a 4G site.

Singtel has deployed power savings techniques including energy-efficient radio and optimised network algorithms at 99% of its base stations over the past seven years, delivering annual energy savings of about 1,012MWh. The company aims to be net-zero by 2050.

Asia Link Cable proposed

A consortium of Southeast Asian telecoms operators has announced its intention to build the Asia Link Cable (ALC), a new submarine cable system to provide the region with improved connectivity and greater data route diversity.

The consortium includes Singtel, China Telecom Global, Globe Telecom, DITO Telecommunity, Unified National Networks, and China Telecommunications.

The \$300 million ALC system will be approximately 6,000km long, stretching between Hong Kong and Singapore, with branches extending to Hainan in China, Tungku in Brunei,

and two locations in the Philippines: Luna and Bauang. The cable system will comprise eight fibre pairs and deliver a data transmission rate of 18Tbps per pair.

HMN Technologies has been contracted to supply and deploy the infrastructure for the system. The system is expected to be ready for service in the third quarter of 2025.

“ALC is a great accomplishment of Asian carriers which overcame difficulties of Covid impacts, and it is also the only subsea project with zero face-to-face meetings from the MoU to the C&MA (construction and maintenance agreement) signing in



the industry,” explained ALC co-chair Chang Weiguo. “ALC consortium adopts an open and inclusive principle and will attract more investors in the near future to make it more cost-effective, which will reinforce the resilience of interconnectivity in Asia and better serve digital economy in the region.”

Telikom and Kacific partner for PNG network

Telikom has expanded its partnership with Kacific Broadband Satellites Group to boost Papua New Guinea’s (PNG) network reach.

This latest upgrade to the partnership will enable Telikom to provide greater connectivity to some of the island’s more remote areas. It builds on the partnership that was signed in 2021 and will provide greater capacity to connect residential and business customers.

The need for satellite broadband connectivity is critical to Papua New Guinea, which is susceptible to natural disasters such as earthquakes which cause telecoms infrastructure damage.

The growing partnership will also see Telikom utilize the efficiency and flexibility of Ka-band satellite technology to the fibre system in Lae. Telikom currently has 150 mobile sites across the country. As part of this, the installation and commissioning of a 4.5m satellite dish for the fibre backup service have just been completed.

“With the affordable, high-speed satellite service Kacific provides, Telikom Limited can grow its customer base, and in doing so, advance social and economic development,” said Telekom head of sales and marketing Nathaniel Lepani. “This strategic partnership lets us leverage the breadth and depth of Kacific’s satellite services, which are ideally suited to meet current and future connectivity demands of PNG.”

Jio’s acquisition of RITL approved

India’s National Company Law Tribunal (NCLT) has cleared the proposed acquisition of Reliance Infratel (RITL) by Jio’s infrastructure subsidiary Reliance Property and Projects Management Services.

RITL has around 178,000km of fibre assets across India as well as 43,540 mobile towers. To complete the acquisition, Jio must deposit NR37.2 billion into a State Bank of India (SBI) escrow account.

RITL is the infrastructure unit of Reliance Communications (RCOM), which has been mired in bankruptcy proceedings for years, with creditors clashing with local authorities – particularly regarding its spectrum licences. India’s

Department of Telecommunications (DoT) has argued that RCOM does not have the authority to sell its spectrum licences to resolve its bankruptcy process.

Jio was first set to acquire the RITL’s business in 2020, before RITL managed to provide a resolution plan of its own, which was approved by the NCLT a couple of months later in December 2020. However, this bid failed, as classifications of certain accounts were deemed fraudulent after audits were carried out. This resulted in Jio demanding its own inspection of the accounts, before proceeding with any deal, and led to the case being referred to the Indian courts.

Vietnamese smartphone market rebounds

The smartphone market in Vietnam bucked a downward global trend during the third quarter of 2022, rebounding from a low base in the same period of 2021 caused by COVID-19 restrictions, according to IDC data.

Shipments grew 28.5% year-on-year to 3.2 million units, though IDC noted this was significantly lower than before the pandemic in the third quarter of 2019 due to weak consumer demand resulting from high inflation and economic uncertainty.



Telkom Indonesia ponders data centre sale

Telkom Indonesia is considering a sale of a minority stake of its data centre unit. The company has held initial talks with prospective investors and could seek a valuation of more than \$1 billion for the operation.

President director Ririek Adriansyah told Bloomberg that Telkom hasn’t decided whether it will introduce investors to, or hold an IPO for, the data centre operation, adding that the business could be valued at about 25 times EBITDA.

“We will see how our data center consolidation and development progresses,” said Adriansyah. “We will also need to look at the macro conditions before deciding on the right scenario.”

The majority-state-owned telco operates 18 neuCentrIX data center facilities in 13 cities across Indonesia. Last year the company opened a new data centre in Ulin, Banjarmasin, and announced plans for a new \$100 million data centre in Batam in the Nongsa Digital Park.



Philippines passes SIM registration law

President Ferdinand Marcos Jr. of the Philippines has approved a new law aimed at curbing text scams by requiring all SIM cards to be registered and operators to maintain a register of prepaid subscribers.

The SIM registration act requires prepaid users to register and verify their phone numbers with their service provider within 180 days. Subscribers can register by presenting a valid government ID with photo. A 120-day extension can be requested from the Department of Information and Communications Technology.



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Liquid cooling to boom in APAC

Graphical Research has reported that the Asia Pacific data centre liquid cooling market size is set to continue its significant growth in the years to come, with the growing construction of hyper-scale data centres requiring reliable heat management systems a major driver.

The past two years have seen a move towards connected digital economies across APAC. This means more and more data is being generated across platforms such as cloud and social media.

The market size for data centre liquid cooling in Asia Pacific surpassed US\$500 million in 2021 and is predicted to register a 25% CAGR during the forecast period of 2022-2028, reaching US\$2.5 billion.

As process-intensive computing applications continue to grow, data centre operators are evaluating various liquid cooling options. Newer digital tools, such as healthcare apps, OTT platforms, and other social media engagement apps have proven to be vital for increasing customer interaction with businesses and brands.

Increasing digitalisation in the retail and eCommerce sector has also been positively impacting the market growth. As data centres provide advanced IT services and solutions to the retail and eCommerce industry, they are likely to remain a growing industry in the region, promoting liquid cooling solution sales.

Another sector looking at robust liquid cooling solutions for its enormous data is the BFSI sector. Over the past two years since the COVID-19 pandemic, people have increasingly been using online banking and digital transfers for their day-to-day business transactions.

The push for digital solutions has also resulted in the generation of more data. The growing influx of data demands increased data centre storage, which requires direct-to-chip cooling systems to keep energy consumption levels on track and provide peak performance for higher power.

The research also highlights that cloud service providers will capture a large share of the APAC industry by 2028 due to the growing demand for data centres to enhance customer data safety.

Talking critical

Harald Ludwig,
chair of TCCA's Technical Forum



Reducing complexity and cost in future control room implementations

The ecosystem that first responders rely on to support them pivots around the control room and the operators carrying out their critical operations in front of their working positions (also called dispatchers or consoles). Control rooms provide essential communications, linking users in the field to a centralised command centre. Control rooms play a vital role as the bridge between the general public and the end users who utilise mission critical communications to protect people, property and communities.

For many years, narrowband LMR standards such as TETRA, Tetrapol, DMR, and P25 have successfully served these public safety agencies with voice and limited data communications applications. However, as time moves forward, so too does technology, and broadband cellular 4G LTE, 5G and beyond represent the next level of integration within the control room. While some agencies may already use these cellular connections in the event of a network failure or for special events, Mission Critical Services (Mission Critical Push-To-Talk - MCPTT, Mission Critical Data - MCData and Mission Critical Video - MCVideo, collectively known as MC or MCX services) represent a fundamental paradigm shift in capabilities. These MCX services have all been standardised in 3GPP.

While MCPTT field operation is relatively simple to understand, control room operations represent a more complex environment requiring interconnections to different management and support systems and various communication networks. Depending on the implementation approach, a significant amount of infrastructure may be owned and directly controlled by a commercial carrier. In order to increase understanding for public safety agencies, TCCA, in collaboration with other organisations and vendors, has created a Control Room Implementers' Guide.

However, while the standards have been written, the route to actual

implementation can be confusing. Control rooms are not explicitly mentioned in the 3GPP MCX standards and it may be difficult to find the relevant parts in the standards. The aim of TCCA's Guide is to help control room vendors identify these parts and the best way to connect their systems to a 4G LTE and/or 5G MCX environment. The goal is to promote a common approach that will reduce both the number of variants and the level of proprietary interfaces.

Mission Critical standards development within 3GPP started in 2015 in 3GPP Release-13, following a major initiative from the public safety industry to create global standards with the collaboration of various government organisations, vendors and users from around the world. 3GPP Release-13 was the first to define a standard for MCX, and subsequent releases evolved the features and capabilities, maturing the standards specifications based on industry feedback. 3GPP Release-17 is the latest set of fully ratified specifications, and work is ongoing to enhance these both for 4G LTE and 5G.

3GPP Standards define the reference architecture for MCPTT, MCData and MCVideo separately, while utilising a set of common core services that are applicable to all three. The available interfaces will depend upon the MCX service provider being used, the policies in place, and the required functionality.

3GPP Mission Critical standards include specifications to interwork with legacy LMR networks via an Interworking Gateway Architecture (IWF) to enable the continued working of mission critical systems during the transition period from legacy LMR to 3GPP-based MCX systems. It may take several years for such transitions to fully complete.

Traditionally, cellular operators have operated the entirety of their cellular network. With the flexibility contained within the 3GPP standards, public safety agencies have the opportunity to develop alternative approaches. This allows the agency itself or the designated service provider to operate some parts of the network equipment, which ensures control and security remains with the agency.

TCCA's Control Room Implementers' Guide provides the foundation for creating a cohesive evolution

from LMR to broadband-based control rooms. By following this guide in developing procurement requirements, it is hoped that vendors will not be given enough opportunity to design and build proprietary offerings, but rather will focus on standards-based solutions to reduce both complexity and cost.

Omdia: Control room market overview

Research from Omdia shows that in 2021, the control room market shrugged off the pandemic-induced delays from 2020. Global market growth came in at 9.6% in 2021, well ahead of previous expectations. However, this is a little artificial, with much of it due to revenues being recognised in 2021 that would have been recognised in 2020.

Residual pandemic impacts remain, with fewer new projects coming to market, dampening market growth through 2022. Combined with a worsening macroeconomic environment, with global growth expected to slow through 2022 and 2023, the control room market is expected to return gradually to pre-pandemic growth rates.

Artificial intelligence and machine learning are being applied to enhance control room solution offerings. AI video threat detection is one area that has improved greatly with the proliferation of 'AI' chipsets into the video surveillance market. These chipsets will suggest AI-powered rules and decision making based upon visual classification and meta-data/big data platforms.

The control room market continues to transition towards cloud-based solutions, relying heavily on infrastructure provided by hyperscalers such as Amazon and Microsoft. Omdia expects this element will become increasingly important within the control room market.

12-15% revenue growth for StarHub

StarHub has raised its full-year revenue guidance after double-digit revenue growth in the third quarter of 2022 driven by increases in mobile subscriber numbers and post-paid ARPU. The company expects service revenue to grow 12-15% compared with a previous 10% target.

Mobile service revenue increased 8.8% year-on-year to SGD143 million. A recovery in travel helped boost subscriber growth, with prepaid numbers up 25.2% to 573,000 and post-paid 6% to 1.5 million. Post-paid ARPU rose 10.7% to SGD31 due to higher roaming and VAS revenue, with prepaid

ARPU down 20% to SGD8.

Net profit dropped 32% to SGD27.4 million, attributed to higher opex and capex. Revenue rose 14.2% to SGD590.8 million, with broadband increasing 28.2% to SGD63.6 million and enterprise 16.3% to SGD220.9 million. Due to expected delays, StarHub cut its 2022 capex commitment from 12-15% of revenue to 9-12%.

Additionally, chairman Terry Clontz will step down at the end of the year, with Olivier Lim, currently an independent director, to replace him on 1 January 2023.

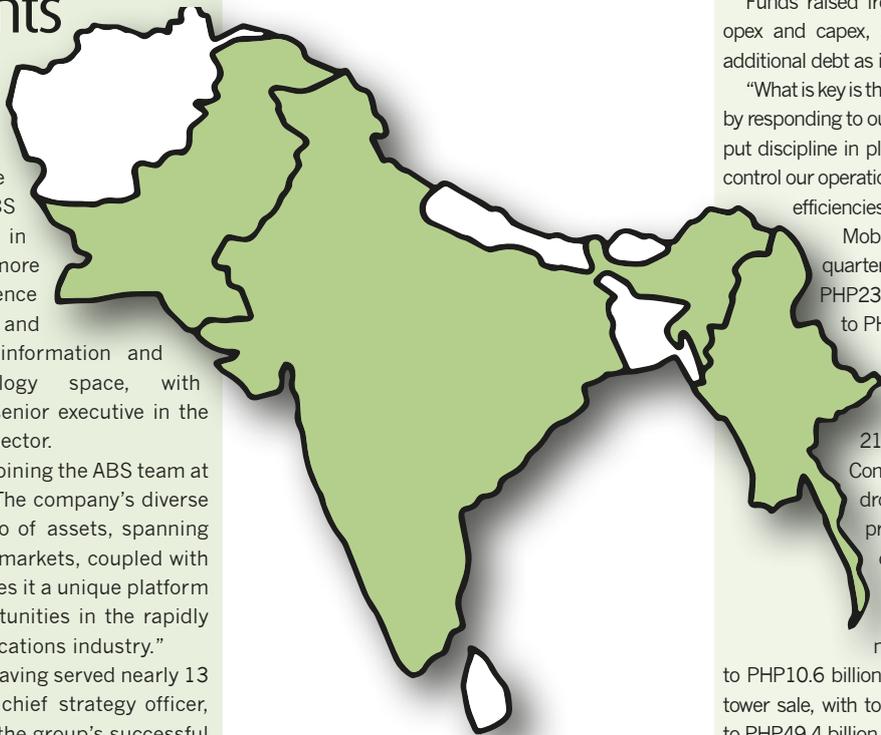
ABS appoints new CEO

Amit Somani has been appointed chief executive officer (CEO) of ABS and assumed duties in October. Amit brings more than 25 years of experience as an operational and strategic leader in the information and communications technology space, with valuable experience as a senior executive in the satellite communications sector.

"I am very excited to be joining the ABS team at this time," said Somani. "The company's diverse and wide-reaching portfolio of assets, spanning multiple technologies and markets, coupled with a highly capable team makes it a unique platform to capitalize on the opportunities in the rapidly evolving satellite communications industry."

Amit will join ABS after having served nearly 13 years at Yahsat where, as chief strategy officer, he played a critical role in the group's successful expansion into multiple new businesses and geographies.

"Amit brings proven industry experience and strategic expertise to help us deliver innovative growth and value creation. The ABS Board warmly welcomes Amit who, with the support of the senior leadership team, is the ideal candidate to lead ABS into this next phase of its development," said Parm Sandhu, chairman of ABS.



PLDT reports profit and revenue growth

PLDT says that it will keep network investments elevated as the economy cools, and plans to review consolidated capex for 2022 which could see the figure exceed the initial guidance of PHP85 billion.

In its third quarter earnings release, PLDT and Smart Communications president and CEO Alfredo Panlilio explained the company is investing its way through economic challenges: "at this time that the consumer wallet is diminished...investments will emerge as a primary recovery tool."

Funds raised from recent tower sales will support opex and capex, enabling PLDT to avoid taking on additional debt as interest rates rise.

"What is key is that while we continue to drive revenues by responding to our customers' needs, we are trying to put discipline in place by focusing on strong efforts to control our operational expenses and improve operating efficiencies," Panlilio explained.

Mobile service revenue in the third quarter of 2022 fell 1.6% year-on-year to PHP23.3 billion, as a 2.5% rise in data sales to PHP18.1 billion was offset by declines in SMS and voice. Enterprise sales rose 8% to PHP12 billion, with its home broadband unit growing 21% to PHP14.6 billion. Smart Communications' post-paid ARPU dropped 15.3% to PHP699 and prepaid was up 2% to PHP106. Its overall mobile user base fell 1.3%, with prepaid down 3.3% to 25.1 million and post-paid up 36% to nearly 2 million. Net profit rose 79.6% to PHP10.6 billion, boosted by pre-tax gains from the tower sale, with total service revenue increasing 5.4% to PHP49.4 billion.

Globe Telecom remains 'relevant and competitive' across all units

Globe Telecom's profit for the first nine months of 2022 was driven by higher non-operating income following the sale of data centre and tower assets, with the top-line benefitting from rising prepaid user numbers.

Net profit grew 48% from a year earlier to PHP26.5 billion due to lower non-operating expenses and one-off assets sales.

President and CEO Ernest Cu said that he believed Globe Telecom's decision to expand growth opportunities through non-telecoms services "paved the way for us to remain relevant and competitive."

Consolidated operating revenue rose 3% to PHP118 billion, driven by growth in mobile,

enterprise and non-telecoms services. Mobile service revenue increased 3% to PHP80.6 billion, with an 8% rise in data to PHP62.5 billion offsetting declines in voice and SMS. Prepaid ARPU fell 4% to PHP97 and post-paid grew 1% to PHP846. It's prepaid user base grew 3.9 million for a total of 85.4 million, with post-paid steady on 2.5 million. Capex increased 14% to PHP74.4 billion.

Corporate data revenue grew 21% to PHP12.5 billion on gains in cloud services and data centre. Home broadband sales fell 9% to PHP20.5 billion. Non-telecoms revenue from a number of subsidiaries grew 101% to PHP2.8 billion.

Globe Telecom upgraded 10,600 sites to LTE and deployed 1,887 5G sites nationwide.

Singtel reports revenue growth across most units

Singtel has reported revenue growth across most of its regional units and gained subscribers in Singapore and Australia in the first half of its fiscal 2023 (ending 30 September), with profit rising on one-off gains.

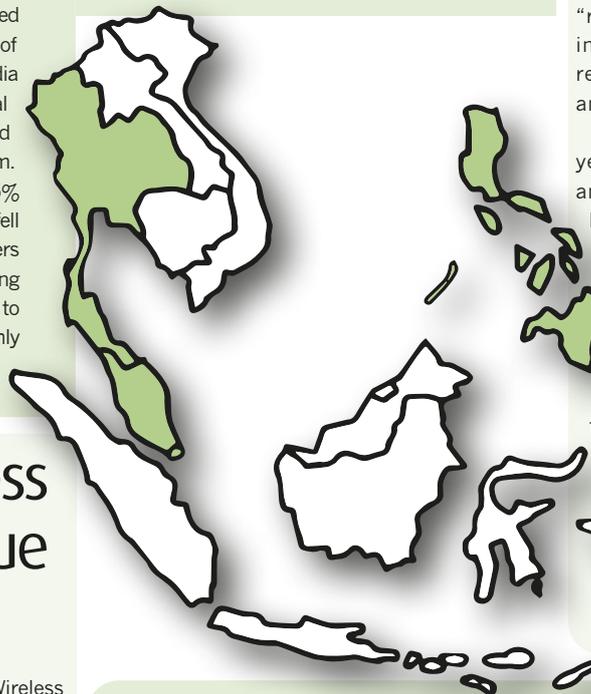
Singtel saw a major rebound in its core business as the resumption in travel lifted roaming revenue across consumer and enterprise groups. Singtel's regional mobile units posted higher revenue on demand for data and a reopening of economies despite intense competitive pressures.

Net profit grew 22.6% year-on-year to SGD1.2 billion due in part to exceptional gains from a partial divestment of its Bharti Airtel stake. Operating revenue declined 5.1% to SGD7.3 billion, attributed to currency fluctuations and the absence of revenue from NBN migration and digital media unit Amobee. Pre-tax profit for its regional association increased 15% to SGD1.2 billion, led by gains at Airtel, Telkomsel and Globe Telecom.

Singapore mobile service revenue rose 10.5% to SGD625 million and equipment sales fell 5.3% to SGD170 million. Post-paid subscribers increased 2.5% to 2.9 million, with ARPU rising 12.6% to SGD33. Prepaid numbers grew 2.7% to 1.4 million and ARPU fell 1.5% to SGD13. Monthly data consumption rose 19.2% to 10GB.

Enterprise operating revenue rose 1.6% to

SGD1.3 billion, with double-digit gains in managed services and cybersecurity offset by weakness in voice, data and internet.



Advanced Wireless Network to pursue acquisitions

The board of AIS subsidiary Advanced Wireless Network has agreed to pursue a planned acquisition of two broadband companies owned by Jasmine International despite certain conditions being rejected.

The acquisition will more than double AIS' home broadband business from 2 million customers to 4.4 million and expand its fibre reach outside of major cities.

An AIS push to waive or amend a provision related to a rental agreement was rejected: this means a renewal after the current deal ends at the beginning of 2032 would "require a material change to the existing terms and conditions to support the future competitiveness of the business," according to AIS.

The operator began a review of the terms of the proposed purchase of stakes in Triple T Broadband and Jasmine Broadband Internet Infrastructure after the conditions weren't approved. AIS said that it will seek approval from Thailand's National Broadcasting and Telecommunications Commission before signing the share purchase agreement. It expects the acquisition to be completed in the first quarter of 2023.

Vodafone Idea reports net loss but ARPU growth

Vodafone Idea reported double-digit ARPU growth in its fiscal second quarter 2022-2023 which ended on 30 September, but profit was hit by rising finance and operating expenses, along with continued subscriber losses.

CEO Akshaya Moondra highlighted a revenue gain in the period was its fifth consecutive quarter of growth, along with an increase in LTE subscribers. Moondra said that the company will continue to "remain engaged with our lenders and investors for further fundraising" to make the required investments for network expansion and 5G rollout.

Net loss in the recent quarter grew 6.5% year-on-year to INR75.9 billion, with interest and finance costs up 18.5% to INR50.3 billion. Opex rose 17.7% to INR65.2 billion. Total revenue grew 12.8% to INR106.1 billion, aided by a 20.2% rise in blended ARPU to INR131.

Vodafone Idea's total mobile subscribers fell nearly 20 million to 234.4 million, though 4G users increased 3.8% to 120.6 million. Average monthly data usage remained at 15.4GB. Capex spending for the first six months of the fiscal year declined 8.5% to INR20.5 billion.

Vodafone Idea closed some 19,000 3G sites during the quarter and added 8,500 4G sites.

True-DTAC merger hits more bumps

The merger of True and DTAC has encountered further hurdles.

True and DTAC confirmed their planned merger back in November 2021, the result of which would reduce the number of MNOs in Thailand to two. While concerns have been expressed by multiple parties, NBTC's board voted in favour of allowing the merger to proceed on the grounds that it had no authority either to block or approve the deal.

AIS is now petitioning Thailand's Central Administrative Court to revoke the regulatory approval granted for the deal in October. AIS subsidiary Advanced Wireless Network (AWN) filed the petition on 11 November, requesting that the court place an injunction on the proposed merger if it rules in favour of AIS. The petition is bolstered by the support of the Thailand Consumer Council, which filed a similar petition with the court on 10 November. The council argues that the merged entity would become

dominant in the market, restricting competition.

In other news, Telenor and CP Group had announced their intention to support the merger. As part of the merger, companies jointly owned by Telenor and CP Group had planned to carry out a voluntary tender offer (VTO) for the shares in DTAC and True under the tender offer regulation of the Securities and Exchange Commission of Thailand. The announced VTO was made subject to conditions precedent, however, which have not been satisfied by the 22 November 2022 deadline. In line with the tender offer regulations, the parties have now declined to carry out the VTO.

Telenor continues to actively support the amalgamation of DTAC and True. Telenor and CP Group continue to target an equal ownership share of around 30% of the merged company. The parties aim to complete the transaction within the first quarter of 2023.

Revenue growth rebound in Asia Pacific, says Moody's

According to Moody's Investor Service, predicted revenue growth for operators across Asia Pacific will recover to match GDP gains in the region, supported by increased data and broadband consumption along with consolidation which reduces competition.

Moody's forecasts revenue to increase by 4-4.5% over the next 12-18 months, the highest since 2016 excluding a spike in 2021 caused by the COVID-19 pandemic.

Over the last few years, Moody's noted operators' growth has lagged GDP rises. The gains will be led by emerging markets, with average revenue to grow 5.2% annually, while growth in developed markets is pegged at around 3.6%.

Moody's noted that operators in the region are diversifying into adjacent businesses such as digital advertising, banks and cybersecurity to find new growth drivers.

It expects average capital spending as a percentage of revenue to be higher for emerging markets at 30-32% as companies step up 5G investment while continuing to build LTE networks. The percentage for developed markets will be 17-18%, as most operators can fund capex with cash from operations, containing a rise in debt.



Ooredoo Myanmar: new acting CEO

Ooredoo Myanmar has named Htar Thant Zin as acting CEO, taking over from Rajeev Sethi.

Zin joined Ooredoo Myanmar in 2014 as senior manager for business intelligence and marketing planning, before later being promoted to a director role, leading multiple projects across branding and 4G networks. For the past five years, Zin served as chief of sales and distribution. She took up the new role on 1 November.



Telenor pursues Pakistani ops sale

Telenor is pursuing the sale of its Pakistani operations, with invitations for the first round of bids expected to be issued in November. According to Bloomberg, Telenor is working with Citigroup on the sale, which is valued at as much as US\$1 billion.

In July, Telenor posted a US\$244 million loss on

the unit, and confirmed that it would carry out a strategic review. In October, Telenor reported that its earnings in Pakistan were down 22% for the third quarter, attributing this in part to increasing energy costs in the market. However, it noted that the government's decision to revoke a SIM tax provided a gain that offset this loss.

True Corp hit by rising costs

True Corp has been hit by rising costs in the third quarter of the year, widening its loss for a third consecutive quarter, with its mobile business the only driver of growth on the back of post-paid subscriber gains.

Mobile service revenue rose 1.3% year-on-year to THB20 billion, attributed to growth in 5G and post-paid subscribers offsetting a decline in ARPU. Total mobile subscribers rose 5% to 33.6 million, with 5G users at 4.5 million. True launched 5G service at the end of 2021.

In a statement, True highlighted the increase came

despite growing pressure on ARPU due to attractive unlimited data offerings and rising inflation.

Its net loss grew more than fourfold to THB2.8 billion on higher depreciation and amortisation expenses associated with its 5G network rollout, and a forex loss of THB365.6 million compared with a gain of THB218.3 million in the same period in 2021.

Revenue declined 1.1% to THB32.6 billion, as a drop in network rental income offset a 61.5% increase in product sales to THB5.1 billion. Broadband revenue fell 2.7% to THB7.3 billion. Paid-TV sales dropped 15.8% to THB2 billion.

Dialog Axiata reports strong growth across all units

Dialog Axiata booked growth across all business units in the third quarter of 2022, with increases in ARPU and post-paid users helping to drive double-digit gains in mobile.

The operator highlighted a strong performance despite a challenging operating environment and rising costs due to inflation.

Mobile revenue grew 13% year-on-year to LKR25.8 billion, as blended ARPU rose 4% to LKR389. Post-paid subscribers increased 3.5% to 1.6 million with prepaid steady at 15.6 million. Net profit fell 40% to LKR3.2 billion, attributed to higher network investments and opex, as well as a rise in debt due to increasing interest rates. Revenue increased 24% to LKR45.6 billion, with sales from its broadband unit rising 48% and its pay-TV business increasing 12%.

Capex for the first nine months of 2022 increased 62% to LKR40.1 billion, as Dialog Axiata upgraded LTE service to address network quality issues. The figure stood at 32% of total revenue compared with 24%.

Malaysia merger to proceed

The boards of Axiata Group and Digi have granted approval to a proposed merger of their mobile units in Malaysia, clearing the final hurdle to the delayed deal.

Both companies issued statements noted at extraordinary general meetings their boards approved the merger of Celcom Axiata and Digi, creating the largest operator in Malaysia with about 20.5 million mobile connections. Rival Maxis closed September with 11.9 million mobile connections.

After the deal closes, Axiata and Telenor will each own a 33.1% stake in the new entity, which is proposed to be named Celcom Digi. The deal previously received approval from the Securities Commission, Malaysian Communications and Multimedia Commission and local stock market.



Airtel subsidiary invests heavily in DC

Nxtra Data has broken ground on a new data centre in Kolkata, India. The Bharti Airtel subsidiary plans to invest Rs 600 Crore in developing a 25MW facility in West Bengal, due to go live in 2024.

The 150,000 square foot facility will be located in Kolkata's Bengal Silicon Valley tech park in the east of the city and offer capacity for around 1,500 racks. The groundbreaking ceremony was attended by numerous government ministers and company executives.

"Nxtra and Airtel are delighted to partner with West Bengal in its digital-first economy agenda and would like to thank the state government for its unflinching support," said Rajesh Tapadia, executive director & COO, Nxtra. "The new facility will be one of the largest data centres in East India and will be the gateway to serving customers in and around the eastern region and the SAARC (South Asian Association for Regional Cooperation) countries. We are investing extensively on Green Energy and our state-of-the-art, carrier-neutral, hyper-scale Kolkata data centre will run on renewable sources of energy."

Nxtra operates 11 large-scale data centres and more than a hundred Edge locations across the country. In October 2021 Airtel said it planned to triple Nxtra's data centre capacity to over 400MW by 2025 and invest Rs 5,000 crores in expanding its footprint across the country.



Talking satellite

Martin Jarrold, vice president international programme development, GVF



GVF at the India Space Congress

Since 1997 GVF has been committed to facilitating various initiatives in support of satellite and space, two of which - the globally benchmarked GVF Training & Certification programme and the GVF Humanitarian Assistance & Disaster Response (HADR) collaboration initiative - were a feature of high level dialogue during the recent India Space Congress in New Delhi. GVF's Pune-based lead on international programmes for capacity building, HADR & network validation, Riaz Lamak, speaking for GVF, commented: "in the case of a natural disaster, robust and swift communication is a vital necessity. GVF's initiative is to facilitate and coordinate collaborations between all engaged stakeholders, including governments, NGOs and the satellite communications industry to enable every possible assistance in saving human lives."

During a panel discussion - featuring representatives of the European Space Agency and GSOA as well as Riaz Lamak - GVF presented two programmes as case studies. The first took the example of 'Pacific Endeavor,' the second, the example of the UN 'Crisis Connectivity Charter.' The following moderator-led panel discussion provided Riaz Lamak with the opportunity to illustrate how such case studies pertain to India's benefit and to explain what contribution the Indian administration can make in the form of emergency licensing procedures, etc.

'Pacific Endeavor,' with which GVF has been engaged since 2012, is an initiative coordinated by the United States Indo-Pacific Command (US Pacific Command prior to 2018) through the 'Multinational Communications Interoperability Program.' It is a highly successful joint military exercise involving 25+ Indo-Asia-Pacific nations (including India as a signatory to the Program) which provides multinational capacity building support for preparedness for emergency communications for disaster management response, relief and recovery. Riaz Lamak presented a collection of de-classified video clips from US Indo-Pacific Command together with a detailed overview of 'Pacific Endeavor.'

The 'Crisis Connectivity Charter' - in terms of the mechanics of its planning, activation and operation - was then detailed from the point of view of "Preparedness and rapid deployment of

immediately available resources being the vital elements in saving human lives," as noted by Riaz Lamak, and from the point of view of GVF having been one of the prime actors in its conceptualisation, in collaboration and coordination with ESOA (now GSOA) and the United Nations World Food Programme (WFP).

The practicalities of the implementation of the Charter's provisions are managed by the WFP Emergency Telecommunications Cluster (ETC) which oversees the emergency communications requirements of other UN agencies as well as those of the WFP. GVF is a global partner with ETC (along with many humanitarian, private sector, and government organisations concerned with HADR together with stakeholders in making a difference in ICT emergency response.

GVF has since May 2020 presented a series of almost 50 webinars which, from 'live' views and streamed recordings have attracted a global aggregate audience of 25,000. Those which have most directly addressed issues related to satellite and HADR, and which are available from the GVF webinar archive are:

- Preparing for, and Responding to, the Inevitable Disaster: Satellite
- Humanitarian Assistance & Disaster Response: The Evolving Role of Satellites in Disaster Response

These webinars have featured prominent panellists representing GVF members from Arabsat, Eutelsat, Hughes, and Inmarsat. Most noted of these was the late and much missed Simon Gray of Eutelsat. Amongst innumerable other achievements, Gray was the satellite industry's champion and driver of the 'Crisis Connectivity Charter.'

A further panel at the India Space Congress focussed on inspiring and skilling tomorrow's workforce and explored deliverables and actionable areas for capacity building in space and satcoms in India, nationally and regionally, based on initiating a discussion between academia, industry and government to promote space and satcom related R&D for commercial space innovation.

The benchmarked GVF Training & Certification programme was explained, highlighting three tracks - (a) GVF Satcom Training: comprising online modules, and followed by hands-on practicals mentored by Riaz Lamak and his team at Mahdi Bagh Computers (MBC); (b) GVF

Advanced Satellite System Engineering training: classroom-based high-end technical content customised to audience requirements and delivered by veteran subject matter experts at MBC; (c) The new 'Space Business Qualified' (SBQ) training certification: aimed at the emerging and rapidly changing space and satcoms ecosystems for non-satcom personnel and touching primarily on non-technical themes in space business.

SBQ is the result of a collaboration between GVF, SatProf Inc (i.e., GVF Training), and SSPI. Online and self-paced, SBQ enables students to master the fundamentals of the business of space, filling a critical gap in online training for people in the space and satellite industry; many of whom are new to the industry or looking to deepen their knowledge to increase their productivity and advance their career. Students successfully completing all five SBQ Fundamentals courses and a comprehensive exam will receive an SBQ Fundamentals Certification, valid for three years and renewable. The tuition fee for the complete Fundamentals course and exam series is just US\$900, a significant saving on purchasing individual courses. The SBQ Fundamentals course series - providing a broad introduction to all business aspects of key space industry sectors, including launch, spacecraft, communications, broadcast, Earth observation, navigation, and exploration - comprises:

- Fundamentals of Orbits & Getting into Space (SBQ401)
- Spacecraft Fundamentals (SBQ402)
- Space Communications Fundamentals (SBQ403)
- Space Business - Markets (SBQ404)
- Space Business - Finance, Legal & Regulatory (SBQ405)

Several follow-up specialist series, in satellite communications and broadcast, spacecraft and launch, and earth observation, navigation, and science, are planned for release early next year.

Riaz Lamak was pleased to report that the India Space Congress was a great success, receiving encouraging feedback from the government and industry ecosystem, and from other stakeholders. The event had 650 delegates, and featured 180 speakers of 30 nationalities across 35 sessions.

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Greater cyber protection required for maritime operators



Mark Oakton, CEO/CISO, Infosec Partners

The increasing reliance on wireless communications technology, and particularly the internet, across the maritime industry has had a dramatic effect on the volume of cyber-attacks that ship owners and operators are now having to face. Vessel owners incorporate connectivity at sea via very small aperture terminal (VSAT), delivering ship-board services through WiFi and ethernet, which are not necessarily secure. In the past three years alone, the number of reported attacks has increased by 900% and is set to continue on an upward trajectory for the foreseeable future. With the average cost of an attack measured in millions of dollars, cybersecurity has now become the top-ranked serious business risk globally according to the Allianz Risk Barometer.

However, while most other major industries have invested heavily in their fixed and wireless network security systems, the maritime sector has been slow to take cyber-protection seriously, leaving them vulnerable and easy targets for organised hacking groups. This position is amplified in many SE Asia countries by the fact that there has been a traditional reluctance by businesses in the region to invest in cyber protection systems, preferring to take the view that cybersecurity preventative measures are too expensive and not always necessary. However, with recent attacks on five of the world's major container ship operators including Maersk, COSCO and South Korea's Flagship carrier HMM in 2021, operators cannot continue to assume that an attack

won't happen to them.

As a vast maritime area, the shipping industry plays a hugely important role in the economic health of all the countries located in the SE Asian region. Naturally, all actors in the maritime chain - massive convoys of container ships, fishing fleets, offshore oil and gas activity operators, and owners of vessels and port infrastructure - require reliable, secure wireless communications to enable navigation, weather forecasting, collision avoidance, ship to shore communications, etc. And now, all face an existential threat to their annual revenues and national economies due to bad actors.

While the financial impact of a data breach or ransomware attack can be substantial, modern-day vessels are becoming increasingly reliant on a sophisticated network of automated systems to ensure the smooth operation of the ship including navigation, communication systems, power, fuel management and cargo control. This means that if not fully protected, hackers can easily take full control and threaten the safety of the ship; the crew and its cargo and are particularly vulnerable to the growing threat of a geopolitically motivated attack.

Given this level of risk, owners and operators cannot afford to be complacent and need to start to up their game to do all they can to protect not just their operational technology (OT) systems but their onboard IT and ship to shore communications as well. To assist in the process a good starting point is to check out the International

Maritime Organisation's (IMO) Guidelines to Cybersecurity onboard ships. The IMO has a mandate to make trade and travel by sea as safe and secure as possible and develop suitable regulations and guidance to help operators to manage and mitigate threats that could potentially compromise their vessels at sea.

The guidelines have been in force since 1 January 2021 and maritime organisations, including vessel owners and operators across SE Asian region, must now be able to demonstrate that they can execute an effective cybersecurity plan that addresses the risks in a way that improves the security of their operations. For owners of both newbuilds and in-service vessels, this represents an opportunity to gain a full understanding of their connected systems, and thoroughly protect their ships.

The impact of the IMO resolution means that to keep sailing, all ship's owners globally must integrate cybersecurity into their safety management systems including methodically developing, implementing, and maintaining a cybersecurity management program including mapping IT and OT systems, identifying areas vulnerable to external and internal cybersecurity threats and undertaking a risk assessment of all IT and OT networks.

While regulations may vary from country to country, worldwide flag authorities are now closely scrutinising vessels for compliance with the basic requirements to enable continued access to their ports and onshore facilities. One

scheme that can help owners to demonstrate compliance with IMO's regulations as well as the International Safety Management (ISM) Code, the International Ship and Port Facility Security (ISPS) Code and flag requirements is the Maritime Cyber Baseline Certification program.

Supported by the Royal Institute of Naval Architects (RINA), the Maritime Cyber Baseline Certification scheme provides an affordable and practical way for vessel owners and operators to achieve compliance with the IMO guidelines and help to continually improve their cybersecurity to counter emerging threats and remain cyber resilient.

To achieve certification for a vessel is relatively straight forward. Applicants follow a practical pathway starting with answering a series of easy-to-understand questions and complete an online verified self-assessment. This is followed by an assessor review and verification of all systems and processes. Vessel owners are then provided with any necessary recommendations and advice on what they need to improve to achieve certification. Once verified certification is awarded for three years with annual self-assessments needed to demonstrate continued compliance.

Given the simplicity of the process and the potential risk to their business of non-compliance any owners and operators across the globe that have yet to comply with the IMO regulations would be well advised to get certified as quickly as possible. ■



Adding value in Southern Asia

Value added services have changed the world, offering a wealth of game-changing services for enterprises and consumers alike. Uptake skyrocketed during the pandemic; however, challenges remain in adoption and monetisation across Southern Asia, says Amy Saunders

Profitability in core mobile voice services is falling globally, with prices approaching commodity levels.

“Increasingly, revenues and margins from voice services have flatlined for carriers in APAC,” said Arun Mathew, VP business development, Cookies Digital.

“MNOs worldwide keep investing in faster speed, lower latency, and greater capacity of their networks. Southern Asia is not an exception to that.

Revenues are no longer driven by voice services, but by data consumption,” said Leon Dijkman, director of PR & communications, Sam Media.

Value added services (VAS) have emerged as a significant tool for MNOs to cross sell additional services to customers, enhancing revenues, growing average revenue per user (ARPU), and increasing customer retention. Moreover, the use of VAS drives mobile phone usage in turn, providing a boost to core mobile voice and data

consumption, again helping boost revenues.

“Consumers can’t wait to use the full potential of web 3.0,” states Dijkman.

“Carriers have positioned themselves to benefit from the explosion of data being available for users, cheaper and faster across the APAC region,” said Matthew. “One of the biggest use cases to benefit from this would be content services and content related products that will drive data consumption and ultimately create a

subscription economy for the carriers. VAS are in prime position to deliver this value to the users and the margins to the carriers.”

VAS are booming the world over. According to Report Linker, the global mobile VAS (MVAS) market is expected to expand at a compound annual growth rate (CAGR) of 14.4% over 2022-2028 to US\$1652.9 billion. The COVID-19 pandemic had a predictable positive impact on MVAS adoption, with social distancing and stay-at-home instructions encouraging the uptake of digital services such as online shopping, mobile money, and over the top (OTT) media services, including video and gaming. The latter – OTT services – is proving particularly helpful in driving demand for MVAS across the globe as content consumption booms. Report Linker found that the Asia Pacific market was the leading region for MVAS in 2021, with many mobile phone users accessing services like mobile banking, infotainment, and news.

Despite global rising interest rates and inflationary pressures and geopolitical tensions – or perhaps as a means of escapism from – there exist huge opportunities for MNOs in the VAS space in Southern Asia.

However, to truly capitalise upon the increased demand for VAS, mobile internet adoption must be expanded. The GSMA states that mobile penetration in the Asia Pacific was just under 45% at the end of 2021, even though mobile broadband networks cover 96% of the region’s population. Thus, more than half the population has access but does not yet subscribe to mobile internet services, primarily due to a lack of digital skills, lack of affordability, and online safety concerns. Said concerns are not unfounded; in Thailand, 56% of cyber threats in 2021 occurred via vulnerabilities in mobile devices, rendering security a key concern for MNOs.

With 5G rolling out across Southern Asia, monetisation of that investment is a top priority. GSMA Intelligence’s consumer survey found that users are increasingly interested in adding content and services like video streaming, music, gaming, live sports, cloud storage etc., to their 5G plans. Operators are duly making efforts to promote such services to remain competitive and cut customer churn. For instance, Bharti Airtel has implemented immersive video technologies over its 5G test network to recreate famous historical cricket matches in India, while in the Philippines, Smart Communications has teamed up with Oppo to explore and develop 5G use cases like immersive media.

Mind the gap

Despite strong regional growth, the adoption of MVAS is unequal throughout Southern Asian countries.

The gender gap between mobile internet adoption has been closing gradually throughout the region, however, progress has stalled in some countries, reports the GSMA. In South Asia, the mobile internet gender gap fell from 67% in

2017 to 36% in 2020 but grew to 41% in 2022. The GSMA attributes this to continued adoption among men without corresponding adoption growth from women. Notably in India, mobile internet use grew from 45% to 51% for men but remained flat at 31% for women.

Pakistan has made strong efforts to close the gender gap, with initiatives like the ‘Connected Pakistan: Accelerating Gender Inclusion in ICTs’ event and the signing of a Memorandum of Understanding (MoU) with the GSMA to collaborate on reducing the digital gender gap. Moreover, the Pakistan Telecoms Authority (PTA) has established a Gender Committee and is collaborating with MNOs and relevant social enterprises to fast-track the efforts to reduce the gender gap.

One particularly significant MVAS which is delivering huge positive socioeconomic results, as well as significantly augmenting MNO revenues, especially in low- and middle-income countries (LMICs), but which is also home to a significant gender gap, is mobile money. Digital financial services like mobile money are widely considered to have kept these economies afloat during the difficult COVID-19 pandemic years, and online payments for the region are expected to exceed US\$1 trillion by 2025.

Data from Euromonitor, the World Bank, Bain & Co, and Temasek states that more than 70% of Southeast Asia’s population is unbanked or underbanked: 79% in Vietnam, 78% in the Philippines, 77% in Indonesia, 63% in Thailand, 55% in Malaysia, and 40% in Singapore. This situation is creating the perfect environment for mobile money to flourish, supporting informal businesses, and in theory enabling financial inclusion to any adult with a mobile phone and internet access.

“While Southeast Asia’s economy has come a long way in the last decade, over six in ten southeast Asians remain underbanked or unbanked today,” said Dijkstra. “The good news is the digitalization of financial services has provided new tools to solve persistent barriers to financial inclusion, and Southeast Asia is well-placed to benefit. With carrier billing MNOs can

play an important role in solving this.”

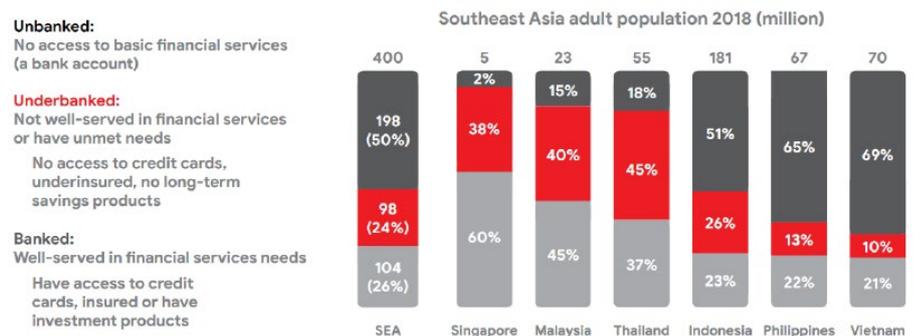
However, mobile money uptake has been limited in some countries where a strong preference for cash or else heightened security concerns remains, such as in Indonesia and India. Mobile money fraud is a huge and growing challenge, with increasingly sophisticated attacks taking place globally; MNOs, service providers, policy makers and government must all join forces to enhance security in a holistic manner to continue to drive adoption rates and increase trust in services. However, additional security measures must be balanced against convenience, with analytics company FICO reporting that 37% of Malaysians abandoned attempts to open a savings account due to time-consuming ID checks and a further 26% reduced their account activity due to annoyance with frequent security checks, according to survey respondents. A careful weighing of what is necessary to protect enterprises and consumers from bad actors compared with inconvenience must be made.

Mobile money uptake is also seeing a significant gender gap in Southern Asia, comparable to that on the African continent. In Bangladesh, a relatively mature mobile money market, 84% of men own mobile phones, while just 65% of women own a mobile phone, resulting in a 23% gap in mobile money account ownership. Meanwhile, in Pakistan, the mobile money account ownership gender gap is a whopping 71%. Greater efforts are required to ensure that women in Southern Asian nations are afforded the same opportunities for financial inclusion as men. For instance, in Pakistan, Ufone has introduced several initiatives to increase female access to connectivity, including a smart code that allows women to receive mobile top-ups without having to share their phone numbers with retailers.

It’s all fun and games

Gaming is emerging as a leading MVAS throughout the world, delivering immersive, entertaining content for consumers. Globally we’re seeing a shift from consoles to mobile devices among

More than 70% of Southeast Asia’s population is either underbanked or unbanked



Note: Population of individuals above age 18
Sources: Euromonitor; World Bank; Bain and Temasek

Credit: World Economic Forum

the gaming community, which offers huge new monetisation opportunities for MNOs and service providers. Naturally, the rollout of 5G is playing a huge role in this evolution thanks to the high speeds and low latency, a requirement for most online games.

“VAS providers have always been innovative,” said Matthew. “From bringing content to early adopters to providing mass entertainment through VOD and OTT offerings, VAS has and should remain the central repository for consumers to try new content and low ticket entry prices. VAS providers focusing on video and gaming will continue to remain popular across the board.”

As per Statista, Indonesia led the pack in Southeast Asia on mobile gaming in 2021 with 59.8 million subscribers, with expansion to 76.9 million expected by 2027. The entire region had some 78 million mobile gaming subscribers in 2021 – this is expected to almost double to nearly 140 million by 2027.

Throughout Southeast Asia, the affluent gaming demographic is growing exponentially. The youthful population and the increased adoption of smartphones – shipment levels in Indonesia, Thailand, the Philippines, Malaysia, and Vietnam are now back to 2019 levels as per Counterpoint Research – are helping boost interest and subscriptions across the region. These consumers, with money to burn, could prove especially valuable to MNOs should they be targeted appropriately. During the fourth quarter of 2021, mobile gaming grew by 270% year on year and today there are more than 102 million active mobile gamers in Indonesia, Thailand, the Philippines, Malaysia, and Vietnam.

Growth in mobile gaming has been attributed to increased 5G rollout, investments in internet penetration, rising rates of smartphone adoption, wider choice among game content, and increased levels of free time from multiple COVID-19 lockdowns. Indeed, the pandemic may have been the single largest contributing factor to the growth of mobile gaming, and other MVAS, in recent history. Inmobi reports that a staggering 46% of Indonesians started playing mobile games during COVID-19.

Interestingly, mobile gaming patterns seem to mirror traditional console gaming in being dominated by committed rather than casual gamers; in Indonesia, some 83% of mobile gamers play once or more a day, compared with just 10% playing at least once per week, and 7% once per month or less. This level of commitment brings with it huge monetisation opportunities for MNOs, both in terms of increased data use, in-game advertising, and in-game purchases.

Adapting to the rise in mobile gaming, Singapore’s MNO M1 formed an exclusive partnership with Blacknut earlier this year to offer an ‘all-you-can-play’ 5G-streamed cloud gaming service with 450 games that can be accessed seamlessly across any device. Meanwhile, in India, Jio has trialled high-definition VR-enabled multiplayer cloud gaming ahead of the commercial launch of its 5G network. For MNOs to benefit from the rise of

mobile gaming across Southern Asia, the rapid implementation of exclusive partnerships and original content is a must.

Driving increased adoption

Expanding the MVAS user base is an essential step forward for MNOs and service providers across the world to maintain a strong business case in a highly competitive market. However, there are a wide variety of challenges to consider, which might best be addressed with increased cooperation between value chain participants.

“Service providers and MNOs have already been building a successful template in providing content and VAS to subscribers in Southern Asia,” said Matthew. “In order to bring better and new world content and VAS to the users, MNOs and service providers will have to work closely to bring about additional channels for content discovery, hard and soft bundling, BNPL and other mechanisms to ensure content and VAS remain an affordable option for the users, and also remains a key component of the subscription economy.”

Dijksman agrees: “while MNOs are investing in data capacity (e.g., 5G), service providers are working on personalized content to serve consumers better. Service providers can offer data consuming products that are engaging, bringing business to both MNOs and service providers. MNOs can work together on marketing, content placement and many more aspects.”

“VAS have always been at the forefront of bringing diverse and discoverable content for consumers in Southern Asia. Backed by carriers, VAS operators have been driving a value based model, offering users access to content and services in exchange of simple and effective subscription based pricing, a form of buy now pay later in its formative stages,” said Matthew. “But with the advent of high value content, video streaming and esports related content which come with a high price tag, some of the cost will have to be transferred to the users. Minimizing the cost transfer and remaining effective in bringing world class content at cheaper prices will be amongst the biggest challenges in delivering VAS in Southern Asia.”

Connectivity is the bedrock of MVAS; in regions like Asia Pacific where 96% of the population is covered by 3G, 4G or even 5G mobile networks, uptake should be through the roof. Alas, this isn’t the case. The GSMA reports that just 45% of Asia Pacific’s population is connected to mobile internet, rendering a usage gap of 51%. Addressing this gap will take concerted efforts by MNOs, service providers, device manufacturers and content creators, and it won’t be fast; the GSMA expects just 52% of Asia Pacific’s population to be connected to mobile internet by 2025.

While internet connectivity itself is obviously an essential, some MVAS require the faster speeds delivered by 5G for optimal functionality. For instance, Netflix recommends 15Mbps download speeds to watch 4K/UHD video content, which is beyond the average 8-10Mbps for 4G mobile

connectivity. Mobile gaming, too, requires 5G in many instances to run smoothly with low latency, or risk consumer frustration. Although MNOs have been eager to rollout 5G across the world, progress has been faster in some regions than others.

Indeed, commercial 5G services have been launched in Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, Vietnam, India, Bhutan, the Maldives, and Sri Lanka, but are by no means available nationwide. Brunei’s commercial 5G network is, at the time of writing, entering its trial phase. Papua New Guinea’s populace has 5G via satellite through a partnership between SES and Vodafone PNG. Cambodia, Myanmar, Timor-Leste, Bangladesh, Nepal, and Pakistan are yet to host 5G services, although many have plans in the making, some of which have been delayed by geopolitical unrest.

The GSMA states that by 2025, there will be more than 400 million 5G connections in Asia Pacific, just over 14% of total mobile connections. The figure will be higher (67% on average) in developed Asia Pacific nations like Australia, Japan, Singapore, and South Korea. Progress, therefore, will be considerable, but not a landslide.

Playing a vital role

It’s clear that MVAS have a vital role to play in the digital economy, in South Asia and indeed across the globe. Services like mobile money, OTT, messaging, music, and gaming are already changing lives for the better the world over, for both infotainment and essential life tasks such as banking.

Enabling digital and financial inclusion, helping bridge the gender gap that still exists in so many parts of the world, and delivering essential (and non-essential) services to those who were previously unconnected are just some of the achievements that can be made with MVAS.

Duly, MVAS is expected to thrive in southeast Asia and the world at large for the foreseeable future. “We expect substantial growth as we can reach more and more people with personalized content driven by AI,” said Dijksman.

As well as benefiting consumers and helping enterprises gain new customers and enhance experiences for existing clientele, MNOs stand to gain by augmenting their business case with new revenue sources. This is particularly valuable as basic connectivity prices drop everywhere, with both cellular and satellite capacity nearing commodity-level pricing, helping MNO business plans remain viable for the foreseeable.

“VAS providers and MNOs are well positioned to become the marketplace of choice for consumers to discover, try and enjoy content,” said Matthew. “Especially for users who are new to the world of esports, cloud gaming, VOD, they will continue to demand and expect high quality content at affordable subscription pricing. Catering to this demographic and to continue innovating will be a key component of this partnership and I truly believe this will be the cornerstone on which VAS providers and MNOs will succeed.” ■



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Realising full network digital transformation starts from the inside out

Digital transformation is soaring in southern Asia, with MNOs racing to keep up with the latest developments. Mark Brewer, VP of service industries, IFS, outlines how telcos can realise true network transformation in a time of immense change



South Asia's telecommunications industry is a complex and diverse one. Singapore boasts one of the most mature and competitive telecommunications markets in the world. Yet the market is different in India where the long-awaited rollout of 5G in the coming months is expected to fuel huge growth in the number of mobile subscribers. Despite the complex picture across the region, mobile and fixed line communications providers are looking confidently towards the future. The slowdown in mobile growth, largely caused by the pandemic, is now history and the race to establish 5G networks as well as faster and more efficient broadband systems is underway. The pace of innovation is being driven by ever more savvy consumers demanding services such as video streaming and payment and banking apps

that require reliable robust networks to function effectively. Add to this the growing availability of budget mobile devices and mobile penetration, as well as data usage, is expected to soar.

The rewards for the telecommunications companies and indeed consumers could be sizable too. The growing availability of 5G networks has meant that telcos have been able to expand their markets and offer ever more competitive packages. In Malaysia, for example, data prices have fallen by as much as half in the last five years.

Revitalising networks

Yet in order to satiate public demand, telecommunications operators have entered the heavy investments phase both in fixed and mobile segments. Capex spending across the region remains high and is likely to increase.

In addition to the rollout of private and public 5G, the region is expanding its IoT efforts to facilitate industry 4.0 as well as its edge computing initiatives.

Telcos are under ever more pressure to deliver fast, ubiquitous 5G wireless connectivity along with an endless list of services. For example, as we continue to transition towards emissions-free transport, automotive manufacturers now rely on 5G streaming telemetry to launch viable autonomous and electric cars and light commercial vehicles. Autonomous capabilities require exceptional bandwidth and resilience, enabling connected in-vehicle services. Commercial vehicles (especially last mile delivery and field service fleets) will need seamless 5G connectivity for smart routing and scheduling to dynamically optimize vehicle range and recharging breaks.

With so much opportunity on the table, there is sometimes a rush from telcos across the globe to deploy new technologies to create new customer experiences that meet market demand, facilitate revenue growth, and drive shareholder value.

The challenge of innovation

While success is often measured on the rate of 5G or edge computing deployment, resilient business growth and customer satisfaction ultimately depends on network digitalisation on both the outside and in. Ironically, the internal legacy systems (OSS/BSS/NSS) in place at many telcos makes it challenging to meet the outcome-based performance metrics they've established for themselves and their customers.

In addition, maintaining a high-quality customer experience that delivers new personalised services and applications in real-time is no easy goal with a backdrop of global challenges also in the mix.

Macro-economic issues such as rising costs, talent gaps and supply chain disruption, some

of which can be attributed to the ongoing war between Russia and the Ukraine, make internal service management infrastructure even more vital for projects such as multi-year 5G rollouts to perform without any barriers or obstacles.

With real-time customer service being a key performance indicator for delivering the latest service improvements in 5G, IoT and edge computing, management of internal infrastructure becomes a key business differentiator.

Yet with legacy systems, telcos suffer from silos and the inability to bring it all together.

In South Asia some companies have bigger issues with legacy systems than others. In Malaysia, for example, mobile operators must contend with the current de-facto exclusivity arrangements for some state-backed companies controlling infrastructure rollout and permits at the state level.

Countries across the region are also contending with the mothballing of 2 and 3G systems, which can be a time-consuming and involved process.

Legacy tech hampers growth in many industries at present but is more pronounced among businesses that are intrinsically linked to digital progress, telecommunications being a prime example. Hindering improvements has a knock-on effect on the ability to leverage innovations, which will inevitably impact the end customer experience. It all begins within the confines of the company's own space; among its own workforce; affecting change projects.

Digitalisation from the inside out

Smarter management of assets, parts, equipment, and field workers, combined with

a customer-centric approach is the foundation of success, and that can only be achieved via a strategy based on breaking down the silos.

Among the biggest challenges that have faced telcos for years is planning, building, and maintaining their network infrastructure. Telcos often lack complete visibility and control over the type, quantity, and location of assets in their network and are not always sure if these assets are covered under a service contract. In the race to deploy new technologies, telcos often procure and deploy assets without commissioning or registering them or determining if they already own them. As a result, telcos may also suffer from under-stocking, creating inventory excess and obsolescence.

Another reason telcos lack visibility and control over assets is because their asset base has grown over time through mergers and acquisitions. This is a situation especially pertinent to the South Asian marketers which has seen a degree of rationalisation in recent years as well as the entrance of several new players. Thus, knowledge of these assets, and the associated documentation is not easily accessible and may be scattered throughout the organisation, contained in different databases, systems, spreadsheets and documents. In turn, the telco may be required to perform manual interventions to maintain legacy assets. Also, communication may suffer between operations, maintenance, and engineering teams when they are not using the same naming conventions or where they are leveraging multiple asset management systems.

Without access to a high-quality asset registry, telcos can't evolve toward predictive maintenance or provide proactive or prescriptive service management. Unexpected failures can be costly



to operations, damage customer satisfaction, and negatively impact future revenue streams. More importantly, telcos need this data to ensure they dispatch the optimum field technician to the asset's site to drive a high first-time fix rate and reduce or avoid repeat failures.

Telcos must look across their planning horizons to ensure they have the skilled technicians available at the right time and place. They must do this efficiently to keep up with customer demand and prevent loss of market share. Possessing the flexibility to forecast, plan and optimise resources over a multi-year period is critical. Without proper planning tools, telcos cannot forecast workloads, staff work crews, or consider the impact that various factors like skill sets, employee levels, and seasonality have on rollout performance. This limitation makes it difficult for telcos to anticipate needs, meet customer demands, or drive improvements in productivity and efficiency. Field workforce resource planning tools help to provide a smoother, future-proofing environment.

Focusing on business outcomes

By breaking down the silos across asset, workforce and service management and adopting an integrated approach, internal operations can support the development of new business models. By doing so, they pave the way for new telco deployments and innovations to reach their full potential. As a result, digital transformation across the region will be able to truly take off and enable telcos to deliver the type of services that will prove transformative for consumers, businesses, and the region's digital economy.

Delivering the wireless infrastructure and services needed for 5G and smart devices, and meeting ever-rising consumer expectations, will be challenging – but help is at hand.

In a sector constrained by legacy service management systems, modern enterprise software specifically designed for telco can rapidly provision industry-proven operational and service capability for 5G networks now – just when it matters most. ■



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Delivering high speed WiFi to 4,000 railway stations

Bridging the digital divide

As part of Indian Railways' RailWire initiative to bridge the digital divide between rural and urban parts of the country, RailTel in partnership with Tata Trusts and Tejas Networks implemented a high-speed wireless broadband solution at 4,000+ railway stations across India.

The main challenge was to provide reliable connectivity to thousands of remote stations to backhaul WiFi and other traffic. The solution needed be simple, cost-effective yet robust and scalable so that it can be easily replicated across all railway stations. The flexibility to add new services, technologies and scaling to higher capacities was also required.

Tejas Networks solution

Tata Trusts partnered with Tejas Networks to provide one of the world's largest GPON based railway WiFi deployment across 4,791 stations.

Currently the network is used to provide WiFi services at railway stations, but it can also support applications like telemedicine, e-education, online banking, e-commerce, surveillance, enterprise connectivity, 4G/5G backhaul and e-governance services, helping realize the vision of Digital India.

The Tejas' GPON and Carrier Ethernet product family was selected as the best fit. Tejas Networks role was to supply, install, commission, and maintain its state-of-the-art TJ1400-1 GPON OLTs (optical line terminals) and carrier ethernet switching equipment along with industrial-grade TJ2100N GPON ONTs (optical node terminal) for

delivering high-speed Internet services.

Key features of the Tejas solution include:

Multilevel protection: Tejas GPON solution supports multi-level protection for fibre cuts, splitter damage, ONT and OLT port failures in milliseconds. It uses an open ring ERPS solution for OLT protection and enables 50ms switching on access (OLT) domain. It provides effective isolation between access (OLT) and MPLS domains and has no interoperability issues. It provides a resilient network architecture with no dependency on ONT capabilities.

Flexible, scalable backhaul: The solution uses programmable software defined hardware to work across legacy, current, and emerging technologies and interfaces. The hardware can be seamlessly upgraded to high-speed xPON standards like XGS-PON and NG-PON2 through software updates.

Comprehensive OAMP functions: Tejas GPON product supports advanced fault, alarm and performance management complemented by a powerful visual interface for alarm notifications, fault localization and SLA reporting developed using modern web technologies.

Power savings: TJ2100N can be solar powered and is available for installation in railway stations with erratic power supply in easily portable, ruggedized enclosures with batteries, solar panels and charging units. TJ2100N ONT supports Reverse PoE (RPoE) for corridor/basement installations where power points could be scarce. Using RPoE, ONTs can be powered from subscriber power supply.

Future ready products: TJ1400-1 OLT can be upgraded to advanced, emerging, high-capacity NG-PON technologies through a simple software

upgrade. This will enable TJ1400-1 OLT to be used for emerging applications beyond home broadband including high-speed business connectivity (> 10 Gbps) and 4G/5G mobile backhaul.

Environmental impact: TJ1400-1OLT has designed in many power saving features to lower the carbon footprint of the product. TJ1400 is designed using new generation FPGAs for reducing static power, and clock enable/gating logic to reduce dynamic power in FPGAs.

The high-speed WiFi network has enabled a large section of the rural and suburban population to experience the benefits of high-speed, reliable, and affordable wireless internet for the first time. As well as providing connectivity at stations, Indian Railways can monetize the high-performance, resilient, carrier-grade infrastructure to deliver several profitable services to homes, retailers, institutions, and enterprises in the vicinity of railway stations through incremental investments. Ultimately, more than 4,000 railway stations were covered in a record time - 150 days - and today, that network is accessed by 15 million users, consuming over 10PB of data each month.

"Tejas implemented a state-of-the-art 10Gbps Carrier Ethernet network across all the stations that is resilient to fibre cuts," said Kumar Sivarajan, CTO, Tejas Networks. "Tejas deployed its converged optical access/edge products that seamlessly integrate Carrier Ethernet backhaul with optical broadband access (GPON OLT) to achieve a cost-effective rollout. Our industrial grade ONTs provide a robust outdoor solution integrating PoE technology to seamlessly support numerous peripheral devices such as WiFi access points and video surveillance cameras." ■

Demonstrating neutral-host urban NaaS solutions for the Mumbai Suburban Railway

The challenge of densification

More than 700 million people living in cities across India depend on their smartphones to connect to the internet for work, leisure, education, medical support and more.

In recent years, mobile data usage has exploded in India's urban centres: in 2021, demand for 4G data increased by 31%. Currently the average consumption is 17Gb per user per month and growing. With the move to 5G, demand for data will increase at an even faster pace.

MNOs in cities usually pursue network densification efforts to support growing demand, minimize network congestion and maintain customer quality of service (QoS). However, adding new infrastructure is challenging in crowded public spaces where network capacity shortages are also increasingly common.

Construction and management of networks in these environments comes with layers of complexity. Space and right of way negotiations on private and publicly owned property can stall efforts. Once commissioned, building sites can be tough to access, while construction scheduling is often regulated to low-use periods. Additionally, MNOs must train operational staff to work in these demanding locations. These challenges are exacerbated when multiple operators target the same locations.

Simplifying urban networking

Urban network-as-a-service (NaaS) improves the economics of urban densification and offers a less disruptive, shared solution for MNOs to expand

and improve coverage, particularly in difficult-to-deploy, crowded areas. A single, shared network can support growing demand and ultimately reduce customer churn, with a much smaller footprint than side-by-side private networks.

Under the model, a third-party neutral host, or NaaSco, deploys a shared radio access network and transport network that can be leased to multiple operators while acting as a single intermediary between location owners. The NaaSco plays a vital role as a specialist in planning, building, and operating the network. As a result, there are fewer financial, logistical, and technical burdens for MNOs leasing the network.

Urban NaaS also drives ancillary benefits including energy efficiency gains due to the lower volume of equipment drawing power from the grid. Additionally, it minimizes public disruption in crowded areas by limiting the amount of construction and improves the performance of MNOs' neighbouring sites by offloading the toughest traffic.

A neutral-host urban NaaS solution

The large stations along the Mumbai Suburban Railway system provide an ideal proving ground for urban NaaS. These locations are notoriously difficult to access for construction and maintenance, have limited space and placement options for new equipment, and experience heavy demand for mobile data throughout the day.

In 2019, CloudExtel secured exclusive rights with RailTel, the telecom subsidiary of Indian Railways, to launch a neutral-host NaaS pilot project at nine

stations along the western suburban transit system in Mumbai, with Mumbai Central as the pilot station for launch beginning in early 2022. At peak times, more than one train per minute travels through the station, amounting to more than 230,000 passengers daily. While the station offers free public WiFi, slow network speeds and swapping between cellular and WiFi networks proved to be a less than ideal connectivity solution for travellers.

CloudExtel needed to prove the technical and commercial viability of its approach as the first demonstration of urban NaaS in India. Working with the Telcom Infra Project (TIP) to define the business model and Nokia for technology and equipment, CloudExtel worked to demonstrate how the solution could meet aggressive service level agreement (SLA) targets for partner MNOs Vodafone Idea Limited and Bharti Airtel Limited by operating and optimizing the network.

The technology needed to be implemented and managed with a minimal footprint due to the limited space and power at the site. Six remote radio units were placed strategically across the station's waiting area, five platforms and three pedestrian bridges, utilizing a single backhaul unit. The power drawn from the equipment was minimal, and the small number of units minimized the impact of installation and day-to-day operations.

The neutral-host NaaS solution evidenced that it could meet and exceed partner SLA targets while adhering to RailTel's space and operational requirements in the four-month trial. The station experienced a tenfold service quality improvement, from 4Mbps to 40Mbps peak throughput, and an uplift of more than 20% organic traffic in the local area. Currently the solution is carrying 990Gb of payload across two MNOs every day.

The CloudExtel solution offers a lower total cost of ownership in comparison to the existing self-deployed operator solution, resulting in delivering a lower cost per Gb. Other benefits include improved QoS, increased speed, and enhanced payload and experience for network subscribers; reduced risk of customer dissatisfaction and churn; flexible, cost-effective solution designed to scale and support multiple MNOs sharing the same active infrastructure.

Down the tracks

Following the Mumbai Central Station pilot, CloudExtel is expanding the shared NaaS network model to eight additional stations across Mumbai, serving up to 2 million travellers daily. This neutral-host urban NaaS solution will improve connectivity where individual MNO solutions are not economically or logistically viable. This demonstration of the benefits of urban NaaS will help drive acceptance of shared urban networks across India and other parts of the globe. ■



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Ericsson solves network challenges with AI app suite

Ericsson has launched its **Service Continuity AI app suite**, the latest addition to its network support services portfolio, in order to simplify technology challenges for service providers. The suite utilises AI and machine learning (ML) to identify issues and provide predictive and pre-emptive support before they impact network performance.

The app suite is divided into five categories: insights; performance; assurance; self-healing; and energy efficiency. Each AI app is an intelligent algorithm created jointly with communications service

providers to spot and address potential network issues quickly. The algorithms work within specific parameters to elevate performance in line with the goals of the service provider. An AI app is operational 24/7, ensuring complete oversight of the network, otherwise challenging without automation.

One of the apps is CPRI/SFP failure prevention, which identifies risks of service outage due to CPRI link failure that could adversely affect user experience. Usually, an outage would require an emergency site visit, but with the app, the

service provider is able to monitor all relevant links path loss trends, and a site visit is only required once certain thresholds are passed. This can cut costs per site visit by around 30%, while the reduced downtime will enhance user experience and overall network performance and stability.

Other apps measure and analyse energy efficiency per site to deliver detailed insights into the root cause of any inefficiency. Ericsson has measured daily power savings as high as 15% with a European service provider by utilising the automated energy-savings function of an AI app

that enables intelligent activation of the radio's deep sleep feature.

"Ericsson Service Continuity with its human-guided AI/ML network intelligence will empower our customers to think in data to constantly improve performance while adapting to changing market conditions," said Nello Califano, head of strategy & portfolio management, business area networks at Ericsson. "Our suite of AI apps will continue to grow as we create new ones together with our customers. We focus on the outcome, creating simplicity for scale."

Realm Enablement Suite accelerates new IoT solutions to market

Globalstar's Real Enablement Suite is an innovative portfolio of satellite asset tracking hardware and software solutions, featuring a powerful application enablement platform for processing smart data at the edge.

With Realm, users can accelerate new solutions to market with AI-enabled applications that generate an advanced level of telematics data. Moreover, by defining smart data at the edge, clients only send the data they need over Globalstar's LEO satellite network, thus significantly reducing transmission costs.

"This newest innovation from Globalstar represents a continued commitment to IoT as a core business pillar. With Realm Enablement Suite, customers have the flexibility and agility they need to optimise data from their tracking devices and edge sensors," said Dave Kagan, Globalstar CEO. "Generating smart data at the edge for delivery to the customer endpoint makes all the difference in transmission efficiency and operational performance."

The Realm Enablement Suite comprises:

- Integrity 150 satellite solar-powered, long life asset tracking device. This delivers long-lasting, no-maintenance ownership for a variety of markets, including government agencies, transportation, energy, construction, agriculture and forestry. Integrated into the device is a GPS receiver, accelerometer, Arm CPU on

Nordic Semiconductor's nRF5xxx SoC, standard and customizable messaging capability, tamper detection and BLE5 Bluetooth connectivity for a wide variety of sensors. Its flash memory offers 8Mb of storage for application data and firmware updates.

- ST150M satellite modem module. This helps partners create new products in a fraction of normal development time and cost. The module includes a GPS receiver, accelerometer, Arm CPU on Nordic's nRF5xxx SoC, 8MB external flash memory, integrated voltage regulator and BLE transceiver. Its low-power design enables integrators to minimise battery requirements. The ST150 Dev Kit provides an ST150M module with Arduino Uno Rev3 Form Factor and satellite and GPS patch antennas, the fastest way to develop and test technology designs before committing them to hardware.
- Realm enablement application platform. This is the key to unlocking the capabilities of field devices, slashing hundreds of hours of development time for new products and AI-enabled applications at the edge. The low code edge platform provides a lower barrier of entry for partners developing custom applications and solutions. Modular software features a Unified API for fast applications development and easy management



of all hardware, platform-specific, and value-added edge features. This includes the Globalstar BLE library and ela Innovation BLE (Bluetooth Low Energy) sensors libraries. The platform provides an ongoing applications development ecosystem as innovative solutions are added by Globalstar and shared by developers.

"The end-to-end design of the new Globalstar Realm Enablement Suite ecosystem removes the technology barriers to profitable innovation in the tracking and industrial IoT space," said David Haight, Globalstar's VP of IoT. "Realm delivers greater speed and lower cost in both development and deployment by providing the flexibility to innovate with the power to host applications and process data on edge devices for faster action and enhanced performance. The Realm Enablement Suite is what our partners around the world have asked us for."

SeeHawk Monitor automates network management

PCTEL recently launched its SeeHawk Monitor, an automated spectrum monitoring system for P25 public safety radio and other critical communications networks. The monitor also enables automatic testing of the uplink signal to determine whether in-building coverage complies with fire code standards.

The fully scalable monitor enables continuous monitoring of spectrum across multiple radio sites; rapid detection and characterisation service impacting noise and interference; investigation of issues with spectrum analysis in real-time or event replay modes; and automatic testing of the uplink signal during in-building coverage testing.

Composed of multiple Remote Test Units (RTUs), SeeHawk monitors spectrum and radio signals at each site, while the SeeHawk Monitor Platform Manager monitors and configures all RTUs. The monitor's uplink testing feature simplifies ensuring high-quality indoor coverage that complies with National Fire Protection Agency (NFPA) and International Fire Code (IFC) standards. The SeeHawk Monitor Platform Manager remotely manages automated uplink data collection on RTUs throughout the network.

Grandstream launches two dual-band WiFi routers, one with WiFi 6

Grandstream has announced the joint release of two new dual-band WiFi routers: GWN7062 and GWN7052. The routers provide 2x2:2 MU-MIMO to support mesh networking, wired AP connections, VPN, advanced QoS, and powerful security features.

The GWN7062 is powered by WiFi 6 technology and provides WiFi speeds up to 1.77Gbps for up to 256 concurrent users, while the GWN7052 is powered by 802.11ac WiFi technology to provide speeds up to 1.27Gbps for up to 100 concurrent users. By providing accelerated WiFi speeds with strong security protection and advanced features, the GWN7062 and GWN7052 are ideal for SMEs.

The GWN7062 and GWN7052 both provide enterprise-grade security features to ensure secure WiFi and VPN access, including unique security certificates and random default passwords. These routers support VPN to allow remote employees to securely connect to the corporate network from home or branch offices. To ensure easy installation and management, they include a built-in controller embedded within the product's web user interface. The GWN7062 and GWN7052 will



also be supported by GWN.Cloud, Grandstream's upcoming free cloud Wi-Fi management platform. For home use, the routers can support bandwidth-demanding applications, including smart office and home automation, video conferences, web meetings, 4k Ultra HD video streaming, online gaming and more.

The GWN7062 dual-band WiFi 6 router specifications include: dual-band 2x2 MU-MIMO with DL/UL OFDMA technology; 64-bit 1.2GHz quad-core processor; WiFi speeds up to 1.77Gbps to support up to 256 wireless devices; up to 32 total SSIDs, 16 per radio; 1x Gigabit Ethernet WAN port, 1x Gigabit Ethernet port (WAN/LAN configurable), and 3x Gigabit Ethernet LAN ports; 1x USB 3.0 port, 1x reset button, 1x sync button;

embedded controller can manage itself and up to 50 Grandstream GWN Series Aps; supports mesh networks with Grandstream APs to provide network expansion; and built-in VPN support.

Meanwhile, the GWN7052 dual-band Wi-Fi router specifications include: dual-band 2x2 MU-MIMO; dual core 880MHz processor; WiFi speeds up to 1.27Gbps to support up to 100 wireless devices; up to 16 total SSIDs, 8 per radio; 1x Gigabit Ethernet WAN port and 4x Gigabit Ethernet LAN ports; 1x USB 2.0 port, 1x reset pinhole; embedded controller can manage itself and up to 30 Grandstream GWN Series Aps; supports mesh networks with Grandstream APs to provide network expansion; and built-in VPN support.

New VSAT service offered for small maritime vessels

Marlink has unveiled its new Ku-band VSAT service designed to meet the needs of smaller offshore, merchant and fishing vessels.

Sealink 60 is designed to provide flexible, regional connectivity to vessels seeking to upgrade from L-band services. The service offers clients the choice of two lightweight 60cm antennas with easy installation, available with a choice of service plans, with or without bandwidth guarantees. Sealink 60 can serve vessels in several regional coverage areas, as well as during transit between those areas.

"The introduction of Sealink 60 marks a further evolution of Marlink's VSAT services, since it will exclusively cater for vessels requiring reduced antenna size and maximum flexibility in terms of coverage and throughput,"

said Tore Morten Olsen, president, maritime, Marlink. "We understand that these smaller ships may regularly switch areas of operation or spend planned time in lay-up and we have designed our plans to deliver maximum value to our customers in these markets."

Users can enjoy unlimited usage with data speeds up to 5Mbps, and a choice of Maximum Information Rate (MIR)-only or combined MIR/Committed Information Rate (CIR) plans. The service can be upgraded from regional to global coverage, with short term bandwidth upgrades and up to six months of lay-up per year also available, to deliver full customer flexibility. Sealink 60 is hybrid-ready, combining the VSAT service with low latency, high-bandwidth terrestrial

technologies like 4G to create a resilient hybrid network solution.

Marlink's onboard digital Xchange server oversees network management for crew and corporate connectivity, with prepaid 'crew calling' options for voice, email and web browsing on their own devices. This variety of options allows shipping companies to choose the right package to meet business and crew communication needs on board their vessels.



Look out for...

Streetlights deliver wireless connectivity via LiFi

Signify has recently completed a game-changing project delivering wireless connectivity via LiFi to a city in Finland. LiFi utilises light - visible, UV and IR - to transmit data between devices, with the transmission enabled by the modulation of light intensity; in contrast, WiFi uses radio frequency to induce a voltage in an antenna to transmit data.

Signify has installed its BrightSites solution delivering fast, reliable connectivity to every street corner in Tampere utilising the city's network of streetlights. The solution removes the need to dig and lay fibre connections, while needing only a fraction of the time and cost of traditional methods to get up and running. LiFi is expected to accelerate the deployment of current and future broadband IoT applications such as 5G, WiFi and smart city services.

"Tampere's ambition is to create the most sustainable society using the power of digitalization and technology," said Teppo Rantanen, executive director, Tampere. "It's a society that lives on real-time, data-driven actionable insights. We have partnered with two industry leading companies, Signify and Edzcom, to create the foundation of such a society. With their technology and services, Tampere aims to take a leap forward in creating the society we strive for."

Through Signify's BrightSites solution, lighting infrastructure becomes a platform for real-time sensors, cameras, and other digital technologies. In the future, this could include technologies that provide situational awareness data for autonomous vehicles and data streams for drones, both of which will require city-wide high speed data connectivity.

The LiFi market is booming, with solutions being rolled out in schools, hospitals, government, enterprise and military applications. The 'Light Fidelity (LiFi) & Visible Light Communication Market Research' report estimates the current market value at US\$12,330 million in 2022 and expects a compound annual growth rate (CAGR) of 23.1% for 2022-2028 to reach US\$42,910 million.

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Tizeti and Eutelsat target Nigerian broadband

Eutelsat Communications has inked a deal with Tizeti to jointly improve broadband penetration in Nigeria, especially in underserved locations. The two companies will deploy Eutelsat's Ka-band satellite connectivity, Konnect, to reach remote communities throughout Nigeria and provide fast, and affordable internet services.

Despite 44.5% broadband penetration, covered largely by MNOs, reliable internet connectivity is still limited to a few

states. The partnership between Tizeti and Eutelsat will provide a complementary solution that leverages satellite broadband infrastructure and Tizeti's community WiFi management platform to deliver a fast and affordable public WiFi hotspot service, especially in remote areas that are difficult to reach by terrestrial broadband infrastructure.

"Eutelsat's ambition is to connect one million unserved people across sub-Saharan Africa to high-speed

internet over the next five years and this partnership with Tizeti will help bridge Nigeria's digital divide and unlock the wealth of social and economic opportunities that the internet brings," said Philippe Baudrier, general manager – connectivity for Africa, Eutelsat.

"Our partnership with Eutelsat extends our mission of bringing affordable and reliable internet to more Nigerians and provides us with the opportunity to accelerate the expansion of broadband internet via

satellite, to bridge the digital gap and improve digital transformation for more Nigerians," said Kendall Ananyi, CEO, Tizeti.



Ericsson and e& to collaborate on sustainability with intelligent RAN

Ericsson and e& have signed a memorandum of understanding to collaborate on sustainable strategies for future telecoms networks, placing decarbonisation and energy efficiency at the heart of their mission.

The companies reached a three-year agreement during the United Nations COP27 climate change conference in Egypt. Ericsson and e& plan to develop a range of initiatives related to network sustainability built around the vendor's energy efficiency moves involving 5G networks and recycling schemes.

Ekow Nelson, VP and head of Ericsson Middle East and Africa's



global customer unit stated it is "confident e& will be able to reduce its environmental footprint" by tapping

the vendor's various initiatives including "intelligent RAN energy-saving software features."

Mobile phone recycling could cut 21.4 million tonnes of CO2 emissions

The GSMA claims that changes to mobile phone recycling rates could cut up to 21.4 million tonnes of CO2 emissions annually by 2030.

The GSMA detailed visions on achieving a circular economy across the mobile sector by outlining a business model which places recycling at the heart of the industry's supply chain.

"An increased circularity for devices has a huge potential to reduce negative environmental impact," said Erik Wottrich, head of sustainability at Tele2 Group. Wottrich headed GSMA research into potential device recycling strategies. It pegged annual mobile device sales at 2 billion but noted that 85% of used units were not formally reprocessed.

In addition to the environmental implications, the GSMA noted a failure to recycle devices could hinder digital inclusion by preventing access to lower-cost products.

The GSMA has called for the industry to prioritise maximising the longevity of handsets and continue to target zero waste strategies, arguing collaboration between operators, suppliers, manufacturers and consumers among others was key. It also noted the mobile industry made significant progress in highlighting sustainability in its operations, with research showing 11% of mobile devices sold globally today are refurbished.

MTN Cameroon to gain solar solution

Telia Cameroon will rely on Canadian Clear Blue Technologies International's Nano-Grid smart off-grid power solution to provide its solutions to MTN Cameroon. The solution will be based on solar energy.

The partnership between Telia Cameroon and Clear Blue includes the deployment of a pilot system which is expected to be delivered in the fourth quarter of 2022. If successful, this will be followed by an initial deployment

of 50 off-grid power systems from beginning of 2023. The sites have an estimated contractual value of CAD\$1 million over five years for Clear Blue.

"Clear Blue Technologies' systems have incredible value for telecommunications. To support applications in Cameroon, we need systems that are cost effective and provide reliable solar power without the need for diesel generators," said Jean Baptiste Manga II, CEO of Telia Cameroon.

Increasing numbers of telecom service providers are turning to renewable energy to power their network systems with soaring oil prices and insufficient electrical power, particularly in rural areas. Clear Blue has already signed similar partnership agreements with companies like Viasat, Avanti, iSat, YahClick, 9mobile.



Hispasat and Sencinet to extend Mexican broadband connectivity

Hispasat and Sencinet have announced plans to extend satellite broadband access in Mexico for corporate and governmental connectivity services until the end of 2024.

Hispasat provides managed capacity in the Ka-band from its Amazonas 5 satellite (located in the 61° West orbital position) to Sencinet through its broadband platform in

Ixtlahuaca, a municipality in Mexico State. Sencinet then integrates this capacity to offer the final product to its clients.

Since June 2021 the two companies have provided critical communications to large Mexican federal government companies and public buildings in rural parts of the country. This new agreement also expands the contracted

satellite capacity and builds on the managed service offerings of Hispasat Wave. Launched in March 2022, Hispasat Wave is described as a new generation of managed wholesale services for service providers, telecommunications operators, governments, and audio-visual companies.

“It is essential to ensure good connectivity for our corporate and

governmental customers,” Sencinet’s country manager for Mexico, Central America and the Caribbean, Eduardo Fuentes. “The collaboration agreement that started last year with Hispasat gave us a flexible, robust service that is tailored to our needs, which led us to expand and extend this business relationship to respond to the country’s new connectivity requirements.”

Omantel launches 400GbE DCI service

Oman Telecommunications Company (Omantel), has launched a 400GbE DCI service utilizing Ciena’s Data Center Interconnect solution. The service is designed to meet the rapidly rising connectivity demands of Omantel’s wholesale, cloud and content provider customers while delivering a superior customer experience through optimized performance.

Omantel’s 400GbE DCI service runs on Ciena’s 6500 Packet-Optical Platform powered by WaveLogic 5 Extreme coherent optics and is managed by the Manage, Control and Plan (MCP) domain controller. The solution gives Omantel the ability to deploy 100G and, for the first time, 400GbE DCI connectivity over wavelengths up to 800Gbps

to accommodate increasing network traffic.

“Our vision is for Oman to be the leading gateway to the region and beyond. We are bringing this mission to life, and a recent example is our new 400GbE data center interconnect service that we developed with Ciena. At Omantel, considering the numerous benefits on technical, commercial and social levels, we acted upon a clear strategy for data centers by partnering with Equinix, the world’s digital infrastructure company, to launch MC1, the premier carrier-neutral data center in MENA. We are now taking the next step by introducing an innovative new DCI service, the first of its kind in the region,” said Sohail Qadir, vice

president of wholesale at Omantel. “Crucially, we were able to launch the service sustainably — without deploying additional platforms — doubling wavelength transmission capacity from 400G to 800G and improving overall fiber capacity leveraging our existing footprint. What this means for our customers is faster delivery of on-demand cloud applications and content with the highest quality.”

“With a flexible, scalable network foundation from Ciena, Omantel is able to get ahead of the growing demands on today’s networks and provide its customers with unrivaled connectivity by way of its DCI service,” said Virginie Hollebecque, vice president and leader of EMEA, Ciena.

Samsung demonstrates record-breaking data rates for mmWave 5G

Samsung Electronics claims to have demonstrated the ability for mmWave 5G to address connectivity gaps after achieving record data rates over 10km in trials with NBN Co.

The tests on NBN Co’s fixed wireless access (FWA) network used eight component carriers to aggregate 800MHz of mmWave spectrum along with beamforming technology. Samsung stated that the companies achieved average data rates of 1.75Gb/s in the downlink and 61.5Mb/s up. Peak downlink data rate clocked in at 2.7Gb/s.

Samsung used its 28MHz customer premise equipment in the trials, which combines a baseband, radio and antenna, and is compatible with all mmWave frequencies.

As the longest FWA connection recorded by Samsung using the 28GHz band, the company said the trials showcase the potential of using the spectrum for wider rural coverage. NBN Co CTO Ray Owen explained in a release that the results are “a significant milestone and demonstrate how we are pushing the boundaries of innovation in support of the digital capabilities in Australia.” He added that the operator will be among the first in the world to deploy mmWave “at this scale.”

Raxio commences Côte d’Ivoire data centre

Raxio Group has commenced construction of its fifth – and Côte d’Ivoire’s first – Tier III carrier neutral colocation data centre, at the Village of Innovation and Technology (VITIB) in Abidjan, Côte d’Ivoire. The data centre is expected to be complete in the second half of 2023.

The facility marks Raxio’s entry into West Africa. Raxio Côte d’Ivoire is strategically located to serve the economic block, with regulation allowing storage and movement of data by banks and other financial institutions within the territory.

“We’re thrilled to break ground on this facility and firmly establish ourselves in West Africa – a key growth vector for our continued expansion. Abidjan is the ideal position for organizations and businesses from across the WAEMU

to collocate their mission critical infrastructure in a professionally managed, highly reliable facility – and Raxio is proud to be building the first of its scale and caliber in the region,” said Robert Mullins, CEO of Raxio Group. “Reliability and guaranteed uptime are key components of Raxio’s offering and we are proud to contribute a fundamental cornerstone to facilitate Côte d’Ivoire’s continued digital growth. Thanks to its location, our facility here at VITIB is planned to incorporate renewable energy feeds allowing us to provide our services in the least impactful way to the environment, our drive to build sustainable projects is strong and we’re pleased that Raxio Côte d’Ivoire will provide another example.”

The data centre will scale as customer needs grow, with capacity to accommodate approximately 800 racks and deliver 3MW of IT power. Its size will meet local needs whilst retaining the ability to scale further to capture future demand; offering customers an optimized environment for their IT equipment in a state-of-the-art facility, built to accommodate the entire spectrum of customers - from SMEs to hyperscale CDNs. It will be fully furnished with industry leading technology solutions that not only ensure full redundancy and maximized uptime, but also optimize power consumption and energy efficiency.

Master Power Technologies, who last year entered a long-term partnership with Raxio, will lead on mechanical and engineering works.

Sepura expands global partner network

Sepura has signed agreements with several new partners to distribute its critical communications solutions across Europe, Africa and Latin America following its purchase by UK-based private equity group Epiris.

The agreements give Sepura the opportunity to expand sales operations into growing critical communications markets for public safety, mining, utilities, transportation, and airports in these regions.

Sepura's expanded partner network in Europe will now cover Bulgaria, Hungary, Lithuania, Moldova, and Romania, with a brief to target some of the major public safety and critical national infrastructure projects in region.

In Africa, Sepura's new partners have already won key tenders for refinery and mining

contracts, proving continuing demand amongst critical infrastructure organisations for Sepura's solutions. With massive expansion planned across Africa for the utilities, mining and power industries, the prospects for future growth here are also positive.

"The new partnerships support Sepura's ambition to continue its sustained growth," said Steve Barber, CEO. "Following our return to UK ownership, we are well positioned to take our proven solutions into new markets. We see significant opportunities for TETRA, including the option of VHF TETRA, as well as our emerging mission critical LTE portfolio and are excited about our future growth."

While European critical communications organisations have traditionally been TETRA users, there is increasing interest

in hybrid TETRA and LTE solutions. To answer this demand Sepura has introduced the SCU3 Dual Mode solution, providing user organisations with both mission critical voice and mission critical data in one trusted device.

In the Americas, new partnership agreements with distributors cover Argentina, Brazil, Chile, Mexico, Panama, Uruguay, and the USA. Customers throughout South America are already familiar with Sepura products as they are used by Brazilian Police forces and provided the communications solution for both the 2014 FIFA World Cup and 2016 Summer Olympic Games, both held in Rio de Janeiro. Sepura SC20 TETRA radios have also been used by Mexico City Police and the operational and maintenance teams at Mexico City International Airport.



"Our partners are key to our future growth," said Terence Ledger, worldwide sales director at Sepura. "They deliver the local knowledge and technical expertise to support user organisations and we are as excited as they are about our new products. We look forward to supporting them in delivering world class critical communications solutions to our customers."

Omdia: mobile and fixed broadband revenues to grow, but ARPU to decline

Total global telecoms revenues from mobile and fixed broadband services will grow 14% over 2022-2027 to reach €1.2 trillion according to the latest research from Omdia. However, monthly ARPU (average revenue per user) combined across both mobile and fixed broadband will fall by 4.2% from €7.48 in 2022 to €7.16 in 2027.

5G is no longer expected to be sufficient to offset ARPU decline in mobile markets because customers are unwilling to pay more for it. Unlimited data and video streaming services bundled exclusively on 5G contracts have had some success, but this only gives the industry the illusion of a 5G ARPU uplift.

In fixed broadband markets, the transition to fibre has had a net positive impact in most cases as the technology offers a much-needed step-change in home broadband quality of service on the back of the pandemic. However, markets with high fibre penetration are seeing a significant drop in ARPU such as France, Italy and China as competition intensifies and there isn't a clear monetisation path for fibre customers once they transitioned.

"People don't buy technology; they buy fun exciting new experiences. There is a misconception that operators should be reselling the technology they buy directly to customers, and it doesn't work," said Omdia research director Ronan de Renesse. "The network is the bedrock on which innovation and creativity can flourish like 4G and mobile apps. It is not just up to operators to solve the ARPU growth challenge but rather the rest of the

digital services ecosystem. We will be discussing this issue as a matter of priority at the upcoming Network X event in Amsterdam."

Omdia forecasts that 5G will account for 5.9 billion subscriptions in 2027, equivalent to a population penetration of 70.9%. Consumer residential fixed broadband subscriptions delivered via fibre to the home will exceed 1 billion subscriptions by 2027, equivalent to a household penetration of 41.9%.

Telecoms services revenue forecast by service type (€bn)



Source: Omdia

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Verizon trials 5G via eSIM

Verizon has attempted to reverse a trend of mobile subscriber losses with a 30-day free trial on its 5G ultra-wideband network using eSIM, but with several caveats.



Consumers must have unlocked, eSIM-enabled smartphones, with the offer not available to current Verizon customers or those on its Visible or Tracfone sub-brands. The trial is also limited to one instance per year. Those meeting the criteria are being offered a temporary phone number linked to their existing digits, offering up to 100GB of 4G or 5G data, along with unlimited voice and SMS.

US operators have been slow to adopt eSIM, though are now picking up the pace, apparently spurred by Apple dropping the traditional modules in its latest iPhone.

TikTok joins 'industry partners' GSMA

TikTok has joined the GSMA as an industry member and says it intends to 'work with our industry partners to advocate the development of new mobile communication technologies and form lasting business relationships in our global community.'

The app will reportedly share its

knowledge, provide industry insights, and support innovative initiatives 'that will benefit everyone in the telecommunications ecosystem.'

"With its powerful influence on culture and massive monthly user base of over one billion, TikTok has captured the world's attention over

the past few years," said Lara Dewar, chief marketing officer, GSMA. "We're excited to welcome TikTok as an industry member to work together on initiatives that benefit the entire mobile ecosystem."

"TikTok's mission is to inspire creativity and bring joy. "In partnership with hundreds of telcos around the world, we've made it easier, cheaper and faster for our users and partners to create, share and engage with our amazing video platform," said David Saitden, Director of Distribution Partnerships at TikTok. "As part of the GSMA community, we're excited to expand on these successes, amplifying innovation in the 5G space, streamlining delivery through CDN and Edge infrastructure, and pioneering new modes of connectivity in evolving markets."



Sepura and Softil partner for critical communications

Softil's Mission Critical Push-to-Talk, Data and Video (MCX) Software Development Kit (SDK) has been adopted by Sepura to support its Android OS-based broadband vehicle and handheld communication devices and applications.

Leveraging both narrowband and broadband technologies, Sepura's broadband vehicle and handheld solutions combine the robust mission critical communications provided by TETRA, with the rich communications offered by MCX technology. First responders in blue light organisations and users in commercial and business-critical environments, such as mining and transportation, will be the first to benefit.

Sepura's broadband devices support Mission Critical Voice (MCPTT) and data (MCData) features. Built on the Android operating system, the devices provide compatibility with a wide range of applications which have been designed to run on existing Android smartphones and tablets.

Ensuring interoperability of varying MCX systems avoids silos and enables first responders to better communicate amongst themselves during routine daily tasks and during major disasters.

Telecom Namibia invests in smart city fibre

Telecom Namibia has signed a partnership agreement with OMD's Town Transform Agency to deploy 67.6km of optical fibre in Oranjemund at a total cost of N\$12 million, as part of a project to transform the town into a smart city.

"A smart city requires connectivity between citizens, service providers and government," said Amanda Hauuanga, deputy chair of the board of Telecom Namibia. "Telecom Namibia understands the central role connectivity plays in a smart

city ecosystem and therefore we believe we are the most appropriate partner to help OMD's transform Oranjemund into a smart city with all things digital."

This project is part of Telecom Namibia's investment plan announced earlier this year. The company plans to invest N\$2.3 billion in the modernization of its fixed and mobile network infrastructure over the next five years.

Ultimately, this project should reinforce Telecom Namibia's existing

10,676km fibre optic backbone for a national coverage of 65%; accelerate digital transformation and connect thousands of additional households.

"The partnership between OMD's and Telecom Namibia will have a positive impact on sectors such as tourism, industrial development, healthcare, agriculture, small and medium enterprise (SME) development, education and development of real estate," said Stanley Shanapinda, managing director of Telecom Namibia.

Anglo-Eastern Ship Management picks Fleet Xpress

Anglo-Eastern Ship Management has chosen Inmarsat's Fleet Xpress services to connect its crew at sea.

"One of our main objectives as a ship management company is to improve the quality of life at sea – and since onboard connectivity is an essential part of that, we aim to provide the crew with a quality of internet similar to what they would have on land," said Captain Pradeep Chawla, managing director QHSE and training, Anglo-Eastern Ship Management.

"Offering crew a high-quality internet connection is a prudent business decision for shipping companies," said Gert-Jan Panken, vice president direct sales, Inmarsat Maritime. "Through the user-friendly Inmarsat Fleet Hotspot portal, seafarers can monitor their usage and top up their balance

using their own devices. Furthermore, recent enhancements to the portal have made the solution easier to use than ever, crew can access their accounts from home and purchase data even before boarding the vessel."

Access to high-quality internet has traditionally been hard to come by at sea. However, the shipping industry has made significant progress in this area in recent times. In Inmarsat's 2022 'Seafarers in the Digital Age' report, 78% of the shipowners surveyed said they had installed crew internet in the last five years. Meanwhile, another Inmarsat study published this year highlighted a 149% growth in data consumption for crew welfare and connectivity purposes from June 2021 to June 2022.

"The maritime industry has been

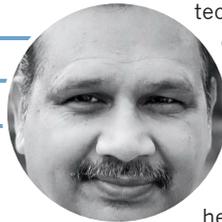
facing a serious talent crunch for some time, and the situation has only intensified by the pandemic and the resulting crew-change crisis and geopolitical uncertainty," said Chawla. "Owners and managers are now working with a smaller pool of

talent, so the competition for the best candidates is fierce. To stand out from the crowd, companies need to place as much emphasis on crew internet access as they do on business-critical connectivity – and Fleet Hotspot makes this easy."



Q&A

Dr Junaid Syed
senior vice president, engineering
and operations, Curvalux



What was your big career break?

My first career break came thanks to a so-called 'failure.'

I was training to become a pilot as part of my first degree in aero sciences, when I had a realisation; the world of academia was my strong suit, the cockpit, well, a little less so. Flying was not the right profession for me. I recognised this 'failure' as constructive feedback and changed my path.

This was a significant turning point. I returned to university to continue my studies, taking an electronics engineering degree with majors in microwave and aircraft electronics, graduating with a gold medal.

I spent several years working in academia and industry as a R&D designer producing patents for wireless communications and actively contributing to regulatory bodies. This led to my second eureka career moment; I decided to add commercial experience to my R&D background. That allowed me to talk to customers and have a better grasp of the problems in the real world. Suddenly I was faced with hurdles like climbing towers, network optimisation, budgets, and an array of constraints that operators must deal with daily.

Nowadays, I can wear an R&D or a business hat depending on the situation and can act as an interpreter that brings these two worlds closer together.

Who was your hero when you were growing up?

I am fascinated by the world of technical innovation. Scientists leading R&D have always had my admiration. As a young student, I learnt about James Maxwell, responsible for the classical theory of electromagnetic radiation. At that time, I did not really appreciate his works, however, later when I was

working in industry and able to see the application of his theory, all clicked into place, and he became my hero.

If you had to work in a different industry, which one would you choose?

I find artificial intelligence (AI) fascinating. AI is not a field on its own, in fact, intelligence is being applied and developed in every industry, including telecommunications, where it is enabling exciting developments. In the case of the antennas, it helps create software defined antennas that can dynamically adapt to changes in the environment.

Where would you live if money was no object?

Scotland has been my home for the last 20+ years, and I love it here. It is beautiful and peaceful, out of my window, all I can see are rolling fields and sheep. In the past, I thoroughly enjoyed living and working in many countries in Asia, the Middle East, America and Europe. It is enriching to meet people from different cultures, and I feel fortunate to now work alongside an international team spread across the world.

Which law would you most like to change?

Almost half of the world's population has no or poor connectivity. The pandemic has demonstrated ever-growing demand, that having internet access is no longer a luxury, but has become a necessary requirement for economic growth, education and entertainment. To be able to serve the community without hindering other services, we need to look at the regulations to facilitate the use of new

technologies providing connectivity to the unconnected. I'd like regulatory bodies to change the regulation for spectrum allocation and management to help companies expedite the development of innovative technology, to make more efficient use of the spectrum and be brought to market as soon as possible.

What's the strangest question you've ever been asked?

When I was a member of the ETSI TM4 committee, I highlighted the need for more innovative work in antenna development, including updating regulations from an antenna design perspective. As

"Ideas alone are not enough to drive innovation; turning concepts into solutions, financing the development, satisfying demand are some of the many factors required for ideas to take shape and materialise."

I was representing an antenna manufacturer, I was asked; "Why don't we see much change in the design of antennas?" I took that back to the manufacturer with the understanding that the ETSI would work to support antenna innovation through developing new standards. The response from my employer was extremely positive and triggered the beginning of a series of novel design works to design antennas more efficiently.

What would you do to increase the speed of innovation?

Ideas alone are not enough to drive innovation; turning concepts into solutions, financing the development, satisfying demand are some of the many factors required for ideas to take shape and materialise. We can accelerate innovation through a structured approach by using the TRIZ Matrix to formalise the process of innovations. It works by analysing how generic problems are resolved and then

you can customise that method to your specific problem increasing the speed of the resolution. I am also a firm believer that close collaboration between academia, industry and government is key to drive development of ideas and innovation.

What's the greatest technological advancement in your lifetime?

I may be biased but I think the biggest breakthrough in my lifetime is in telecommunications. The advancement in mobile & satellite communication technologies, devices, optical fibre, IoT is unprecedented and have reduced the world to a global village. The development of both terrestrial and satellite communications has changed

our lifestyle, the way we do operate. It has opened a world of possibilities and empower people whose visibility may have been hidden or voice unheard.

What's the one possession you can't live without?

I have always believed that there is not one single physical thing I cannot live without at this stage in my life. I would miss open spaces of natural beauty though if I did not have access to them.

What would you do with US\$1 million?

I'd happily get involved in scientific research to design and produce innovative solutions to solve the world's problems like connectivity for all. I'd love to become hands-on in research facilities but also channel some of those funds towards charity organisations working to support clean drinking water and the education of gifted underprivileged students. ■

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