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IIU: BUILDING A TRUSTED ICT PLATFORM

Dr Chae-Sub Lee, candidate for the position of Deputy Secretary-General of the ITU

Interview with Namal Rajapaksa, state minister of digital technology and enterprise development at Sri Lanka Operators set clear autonomous **network goals,** progress in exploration and practice Satellite innovations to raise digital inclusion in Asia Pacific



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ITU: Building a trusted ICT platform



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Toni Eid,

editor in chief

Telecom Review International

Sustainability: A new pillar for the ICT sector



e are all talking about digital transformation, digital economy, wireless living, smart living, and creating mega datacenters which require a lot of power and energy. Sustainability and green commitments have become an important part of CSR strategies.

Carbon neutrality has become a globally recognized mission, one to which the ICT industry is actively contributing. Leading vendors should take that into consideration throughout their innovation chain.

These days, advancements in ICT are focusing more on using less energy to transmit, process, and store more information, while making energy systems more efficient.

As per experts, the 5G's energy consumption is only 1/10 compared to 4G's and it can provide 30 times the capacity. This example illustrates a significant improvement. Digital technology can also support renewable and clean electricity generation, while also optimizing energy supply and demand models.

According to the Global Enabling Sustainability Initiative (GeSI), ICT has the potential to enable a 20% reduction of global CO2 emissions by 2030.

All ICT stakeholders should make sustainability an objective to protect the environment and lower the OPEX of companies, mainly datacenters which consume power intensively.

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Dr Chae-Sub Lee, candidate for the position of Deputy Secretary-General of the ITU

Dr Chae-Sub Lee has been participating in the work of ITU since 1987, where he has been serving as Director of Telecommunication Standardization Bureau (TSB) since 2014. Ahead of the ITU's Plenipotentiary Conference, Telecom Review Asia interviews Dr Chae-Sub Lee, candidate for the position of Deputy Secretary-General of the ITU to learn about his aspirations and plans for ITU and the global industry.

an you share with us your role in ICT standardization in the past three decades?

My first attendance in the world of ICT

standardization arena was in 1987 at the International Telecommunication Union (ITU), a specialized agency of the United Nations for ICT development. I contributed to various areas of network digitalization and evolution: telephone network digitalization, global information infrastructure (GII), next-generation networks (NGN), fixed-mobile convergences (FMC), IPTV, cloud computing and future networks. Thanks to my career trajectory, my contributions to ICT standardization have always been aligned with network developments and their influence on other ICT domains.

In the course of my career, I undertook almost all of the roles involved in ITU's standard development process as an editor for drafting standards, a rapporteur for working on specific issue areas, working party chairman, focus group chairman, and study group vice-chairman and chairman. The most memorable of my contributions was in setting the frameworks of the Information Society from 1994 to 1997, which laid the foundation for when a broadband-based information society was launched. My proudest achievement was the development of the Next Generation Networks to transform telephone networks to all IP based networks.

In 2014. I was elected as the Director of the Telecommunication Standardization Bureau (TSB) of ITU at the Plenipotentiary Conference. Since then, I have focused on extending ITU-T's reachability to many related communities, such as digital financial inclusion, e-health, smart cities, intelligent transport. I have devoted my efforts to enhancing ICT infrastructures among which, ultra high-speed optical networks, Network-2030 and machine learning in 5G. I am very proud that ITU has become a central, and open platform on artificial intelligence related issues under the theme of "AI for Good."

Candidate for

Deputy Secretary-General ITU

Dr. CHAE-SUB LEE

ITU | International Trusted Unior

Dr. Chae-Sub Lee has graduated from Konkook University with BA and MA degree in Electronic Engineering and got his doctorate in Multimedia Engineering at Hanbat University. He has researched at KT, ETRI, and KAIST.

He has participated in the work of ITU since 1987, and for over 27 years, he contributed continuously to the work of ITU as an editor, rapporteur, WP chair, Focus Group chair, and Study Group's vice-chair and chair of ITU-T. And he has served as the Director of TSB since the 2014 Plenipotentiary Conference.

As a TSB Director, he implemented trust-based positive management for the efficient and effective operation of the TSB. He executed more assertive outreach and collaboration with other international organizations. He also reached out to new communities on emerging convergence issues and has launched "AI for Good" events.

He has enriched his knowledge and expertise of technology, market trends, global policy, ITU's operational framework, and members' various needs throughout his career. His professional experiences will be an excellent asset for Deputy Secretary-General and contribute to innovating and strengthening One ITU.

Video Message from the Candidate CHAESUB 4 ITUDSG

Overall for the past 34 years, I have enriched my knowledge of technology/market developments and extended community networks.

If you were to become the Deputy Secretary-General of the ITU in the coming election, what are the core strategies you aim to implement to bring to fruition ITU's vision?

My vision as a candidate for the Deputy Secretary-General of ITU is "Building a trusted ICT platform." At the upcoming PP-22, the ITU leadership will be elected for the next four years cycle. The leadership team will be instrumental to the lead up to 2030, the target year for the Sustainable Development Goals (SDGs) set by the United Nations. The SDGs are crucial targets for all UN organizations, including ITU. I believe that ICTs make significant contributions to all 17 goals, particularly good health, quality education, gender equality, industry, innovation and infrastructure, sustainable cities and climate actions.

As a candidate, my attention is most focused on Goal 17 – global partnerships. The ITU should cooperate among and between UN organizations, member states, and the private sector to meet the SDGs. One of the most critical challenges for ensuring such global cooperation is tackling "How to build trustworthy relationships?" Therefore, ITU should undertake the role of the "trustworthy ICT platform" in terms of collaboration with partners as well as in the use of ICTs.

My strategies to build "a trustworthy ICT platform" and strengthen ITU's collaboration.



My vision as a candidate for the Deputy Secretary-General of ITU is "Building a trusted ICT platform"

Chaesub Lee



Firstly, I will navigate ITU's contribution to building a resilient global ICT eco-system and act as a bridge for harmonizing ITU members, as well as other international organizations and partners, industries, academia and civil society.

Secondly, I will continuously monitor, upgrade and strengthen the core competencies of ITU's in-house capabilities as a specialized agency for ICTs to ensure better productivity, efficiency, effectiveness, integrity, and accountability.

Last but not least, I will enhance collaboration between the general secretariat of ITU with and among the three bureaux and their respective Directors to maximize and systemize the synergy of various ITU activities to strengthen one ITU.

The pandemic has accelerated digital transformation but also revealed the need to bridge a digital divide and resolve growing ICT risks. What can be done at an international level to address these pressing global issues?

The COVID-19 pandemic is one of the most pressing challenges of our time and has highlighted the critical importance of ICT/ telecommunication infrastructures and services.

Can you imagine how the world would be without communication during and after the pandemic? Can you imagine how we could maintain our everyday daily lives without ICT?

However, ICT infrastructures do not yet have a global reach. Half of the world's population is still not connected. Additionally, some ICT services are too difficult for many people, particularly the aged and those who need specific assistance. Moreover, ICT is also a part of concerns and risks due to fake news, misbehavior online, digital gaps, generation gaps, security, privacy, trust, and safety issues.

The ITU in its capacity as a specialized agency of the UN for ICT developments will address

these and will raise awareness of ICT and the essential role they play in day-to-day life, activate various collaboration partnerships deploying ICT infrastructures, encourage ICT industries and developers to provide solutions to bridge multiple gaps from the beginning, before the gaps form.

Based on the principles of consensus-based and contributiondriven, how can the ITU deliver socioeconomic benefits to countries in today's digital age?

ITU is a member states-based UN specialized agency for ICT and a unique in the UN system having members from the private sector. Today, ITU members represent the "multi-stakeholder model" with 193 member states, over 800 industry members, more than 150 academic members, and many members from civil society.

ITU has a long history of a "contribution-driven and consensusbased" operating principle. ITU members believe this spirit is the fundamental framework for multistakeholder organizations such as ours. I agree and firmly believe that this spirit is essential for building trusted relationships requiring mutual understanding and patience.

Consensus building takes time, there can be concerns about "missed opportunities." However, a decision by consensus is powerful and has enormous influence, especially in the case of implementing international agendas. I believe that one of the key roles of ITU should be to ensure that "everybody, without exception, should gain from the socioeconomic benefits of ICT." ITU should be an open platform to transmit ICT developments globally and a trusted platform to share the benefits of ICTs.

Why is it important for ITU to ensure reliable and trustworthy ICT infrastructure?

ICTs are being developed faster than expected. 5G is already here, and AI with big data/IoTs influences our daily lives ever more profoundly, and is leading to digital transformation, which is becoming the mainstream for innovation in our society. Without a doubt, ICT is an essential part of our lives, and people/organizations rely more and more heavily on them.

We are seeing a rapid

individualization of our society where the value of community is relatively weakened in relation to its importance. But more recently, building a sustainable society and addressing environmental issues have become key topics of our time. Restoring our ability to work together to achieve our common goals is becoming more important and is being emphasized.

I believe, in this regard, the importance and value of "trust" is being recognized as a critical element. More recently, I have seen in the engineering sector that the topic of "trust" has become more than a concept and is being increasingly accepted as a reality. As I highlighted, ICT infrastructures are not yet universal, and ICT services are

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The leadership team will be instrumental to the lead up to 2030, the target year for the Sustainable Development Goals (SDGs) set by the United Nations





still inaccessible to many. Moreover, ICT also has its concerns and risks.

I am sure that the use of reliable ICTs and access to trustworthy



ITU should undertake the role of the "trustworthy ICT platform" in terms of collaboration with partners as well as in the use of ICTs



How do platforms like AI for Good help accelerate the United Nations' Sustainable Development Goals and promote collaboration amongst stakeholders?

A recent study in Nature (entitled "The role of AI in achieving the SDGs") shows that AI can directly impact and enable the accomplishment of 134 targets (out of 169) across all 17 goals. For example, AI can help



in: mapping poverty from space; predicting natural disasters; detecting diabetes and skin cancer using a smartphone; provide customized learning programs; increase agricultural productions, reduce by 1.3 million deaths annually on our roads; and detect fraud and fake news.

Every day we see countless new promising use cases emerging through Al for Good, an open platform organized and managed by ITU in collaboration with many UN sister agencies, funds and programmes. Anyone who needs help finding a solution will join and share the problems at hand – a problem shared is a problem halved. Likewise, anyone with solutions or willing to take on the challenge to find them and solve problems can also share their experiences.

Al for Good is an "all year, always online" platform. There are no

geographical barriers; all that is needed is ICT capability and capacity. This allows stakeholders to quickly get together and collaborate to find solutions.



Al for Good is an "all year, always online" platform. There are no geographical barriers



TELECOM Review



Satellite innovations to raise digital inclusion in Asia Pacific

In the digital era, data consumption is poised to grow sharply. Yet, transmitting massive amounts of data is costly especially in locations lacking reliable terrestrial communications infrastructure. Telecom Review Asia speaks with Harsh Verma, Vice President Asia, Global Sales, SES to understand how innovations in satellite connectivity can reliably meet the demands of tomorrow's networks.

hat are the key technology innovations that are enabling SES to provide differentiated multi-orbit services at a

cloud scale?

Globally, the number of connected devices and demand for bandwidthintensive applications will continue to soar. Emerging markets in Asia-Pacific and Latin America are likely to witness the strongest growth for satellite capacity demand. Yet, in a heterogeneous region like the Asia-Pacific, where reliable broadband connectivity is often limited to urban centres, much of the population is still unconnected. This adversely restricts digitalisation efforts, now a national ambition for many countries, to leverage technological innovation and reap the economic benefits of a digital economy.

With digital inclusion high on the agenda for many countries, satellite technology is key to providing connectivity to underserved areas where terrestrial infrastructure is challenging to build and maintain. As a global satellite operator, SES is leveraging its multi-orbit fleet of satellites to provide cost-effective and reliable solutions to extend terrestrial networks.

We understand different applications require different types of satellitebased solutions. Each of our customers has their own unique requirements which means we need to be able to provide a wide range of services. Our geostationary satellites provide global coverage, allowing us to serve customers anywhere on Earth, while our medium Earth orbit constellation caters for bandwidth-intensive applications with its low latency and high throughput services focused on a particular location or region of high demand.

As more content is being migrated to the cloud, SES has changed its managed network services portfolio to deliver private, dedicated connectivity from SES's GEO and MEO gateways to leading cloud service providers. With our SES Cloud Direct service, we enable enterprises and governments worldwide to reach any global end-point, connect to any cloud provider, and scale services as more cloud and edge services are adopted. With the launch of our next-generation MEO constellation. O3b mPOWER. dedicated, secure and reliable cloud services over satellite will be delivered with higher performance than ever. It will be SES's most flexible and powerful satellite ecosystem to date, stretching the reach and capabilities of telcos and MNOs to narrow the digital gap and meet critical industry needs.

Around the world, underserved communities are falling behind while global demand for connectivity soars. Communication is a fundamental social process, and recognised as a basic human right under Article 19 of the UN's Universal Declaration of Human Rights. The way we communicate is increasingly reliant on the internet, and O3b mPOWER will enable the communities that lack any meaningful connectivity solution to leapfrog into the cloud-enabled online world. This in turn enables their success.

As cloud adoption continues to gain traction in the foreseeable future, how does SES expand leadership in cloudoptimised connectivity?

SES partners with the world's leading cloud service providers to provide

one-hop, lowest latency connectivity to the cloud to power future-proof connectivity. For instance, our partnership with Microsoft facilitates seamless cloud connectivity to support access to Azure suite of cloud services and applications. We are the first Microsoft Azure ExpressRoute services partner offering Azure customers opportunities to leverage satelliteenabled managed services to connect rural, remote, or underserved areas. With the launch of O3b mPOWER, Azure will be capable of supporting greater resiliency and higher-performing, lower-latency satellite connectivity solutions to customers globally.

In addition, SES is part of the Amazon Web Services (AWS) Direct Connect Delivery Partner program to deliver seamless global connection between any location and AWS, backed by robust service level agreements covering availability, throughput, and latency.

These initiatives are aligned with the ecosystem's shared vision to extend intelligent cloud network solutions to elevate industries and societies in the digital economy.

We have also partnered with a wide range of terminal providers to ensure that O3b mPOWER is compatible with a plethora of end users in various industries. As we move towards a software-enabled satellite ecosystem, we are trying to become more flexible with the hardware that works with the system so that more customers can seamlessly integrate satellites into their network.

How does O3b mPOWER differ from the upcoming LEO constellations and why did SES choose MEO?

Owing to the satellites' proximity to Earth, upcoming LEO satellite constellations promise negligible latency ideal for real-time applications. However, as these satellites operate near Earth, they cover less region of the earth and require thousands of satellites to provide seamless global coverage. Not only is this costly to install, each satellite, being smaller in size compared to MEO satellites, delivers a lower total throughout. We have also seen that LEO constellations are approximately 3/4th of the time over uninhabitated areas or low demand regions, making the business case very challenging.

Comparatively, MEO satellites that are launched at higher altitudes provide an optimal balance between realising low latency, ultra-high throughout global coverage with just over a dozen satellites. Further flexibility on O3b mPOWER enables us to steer the beams over the hotspots or high demand regions to provide large concentrated satellite capacity focussed over a particular region.

Harnessing the benefits of MEO satellite constellations, SES's O3b MEO constellation offers fibre-like low latency and multiple gigabits of throughput by being closer to the earth. Through the unique O3b MEO constellation, we have been successful at delivering connectivity to urban areas in landlocked Africa and central Asia.

Founded on the success of O3b MEO, O3b mPOWER is designed to support next-generation network services. This breakthrough provides unprecedented performance and scale, complemented by high throughput GEO satellites, enabling us to extend new, bandwidthintensive network services and applications.

A flexible satellite system, the O3b mPOWER promises greater total capacity and satellite roundtrip latency at less than 150ms requirements that support growing demand for bandwidth. As 5G continues to build momentum. O3b mPOWER's backhaul solutions allow MNOs to dynamically scale up network needs as desired. More importantly, O3b mPOWER is capable of covering 95% of the world's population to power seamless connectivity in the rural. remote and suburban and create new socioeconomic values in the 5G era.

Q2-2022

Fourth radio interface technology added to 5G standards



Members of the International Telecommunication Union (ITU) have approved a fourth technology as part of ongoing standards development for 5G mobile services. Known as "DECT 5G-SRIT", the new technology supports a range of uses, from wireless telephony and audio streaming to industrial Internet of Things (IoT) applications, particularly in smart cities.

It was added in the first revision to ITU's key recommendation IMT-2020, which broadly encompasses fifth-generation, or 5G, networks, services, and devices. This ITU Radiocommunication Sector (ITU-R) Recommendation – providing a set of global technical 5G standards – reflects continual consultation and discussion among governments, companies, regulators, and other stakeholders dealing with radiocommunication worldwide.

Along with fostering connectivity across borders, ITU promotes the global rollout of 5G as a key driver to achieve the UN's 17 Sustainable Development Goals.

"New and emerging technologies like 5G will be essential to build an inclusive, sustainable future for all people, communities and countries," said ITU's secretarygeneral, Houlin Zhao. "Under the ongoing International Mobile Telecommunications or IMT programme, our diverse global membership continues its longstanding contribution to advance broadband mobile communications, furthering our mission to leave no one behind in connecting the world."

ITU's radiocommunication director, Mario Maniewicz, said: "The highly collaborative process involves substantial input from and coordination with the ITU Member States, equipment manufacturers, network operators, standards development organizations, and the academic community. ITU provides a unique global framework to discuss the capabilities of new radio technologies."

Andreas Zipp, chairman of the DECT Forum, welcomed the addition of the new technology to IMT-2020. "Inclusion as part of ITU's global 5G standards affirms the significance of this technology moving forward," he said.

Console Connect and Colt Technology Services extend automated network coverage



Console Connect and Colt Technology Services have completed the first stage of a major API-led interoperability between their global on-demand SDN platforms.

The APIs between the Console Connect Software Defined Interconnection® platform and the Colt On Demand platform enable enterprises to benefit from on-demand, agile networking and interconnect directly to clouds, data centres, and business partners across both private networks. The APIs will also enable seamless quoting, ordering and provisioning on-demand services between two high-performance networks in real-time. As part of the initial integration of the two SDN-enabled platforms, Console Connect will be able to extend its automated platform reach into new data centre locations across the UK, with plans to expand to more enterprise locations and metro areas throughout Europe, leveraging the speed and performance of the Colt IQ Network. This enables Console Connect users to instantly provision and pay for dedicated layer 2 services between two networks using a single portal.

The collaboration demonstrates Console Connect and Colt's mutual commitment to end-to-end automation, and recognises the need for increased interoperability and collaboration to orchestrate connectivity among networks.

Marc Halbfinger, CEO of Console Connect, said: "APIs are crucial for the advancement and settlement of automated network services and enable carriers to work together in new and innovative ways. We are honored to work closely with Colt – a partner with whom we share a vision of a fully automated and on-demand future."

Keri Gilder, CEO of Colt Technology Services, said: "Working with Console Connect, we're pioneering the use of APIs within intelligent networking and to provide agile, on-demand, high bandwidth connectivity solutions to more enterprises across the world. APIs continue to be a major focus area in our industry, and our collaboration will help us to continue to transform the way businesses interact with each other and how they provide value to their customers by optimising automation, improving collaboration, simplifying innovation and enhancing security."



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Life Sciences & Digital Health

With the convergence of technologies like 5G, IoT sensors and AI, the Life Sciences and Healthcare sectors are on the verge of another tech revolution, which will transform how you understand people's health, how you deliver treatment, and how you expand access to care and experts.



Agriculture & Biotech

In light of smart sensors, modern biologicals, robotics, and big data, the agriculture and biotech sector is undergoing rapid transformation. Many large incumbents have recognized the need to adopt the 5G wave, meaning next-gen farming and biotech.



A 5G-enabled smart factory offers the potential to connect just about anything. In these futuristic factories, connected devices and smart robots can sense their environments and interoperate with each other, making decentralized decisions.



In the next decade, autonomous vehicles making their own decisions and adjusting to conditions around them, will conquer our streets. At the heart of making this possible will be 5G. The next-gen mobile network will be a key enabler of more reliable communication for vehicles, which will play a critical role in managing the safety challenges that come with vehicle automation and autonomy.

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"Digital transformation means providing smoother and seamless citizen services", says state minister Namal Rajapaksa

Namal Rajapaksa, state minister of digital technology and enterprise development at Sri Lanka, speaks to Telecom Review about how digital transformation is shaping his country and its efforts in digitally enabling the citizens.

ransforming Sri Lanka into a technology-based society is one of the key national policy objectives of the country. Can you share key initiatives being

Can you share key initiatives bein executed in line with this?

Digital transformation is an essential need and also one of the main policies of His Excellency, president Gotabaya Rajapaksa and prime minister Mahinda Rajapaksa. When we look at digital transformation, we are looking at a holistic approach to create an ecosystem where citizen services will be supported by digital transformation. The key for digital transformation is to provide smoother and seamless services to the citizens of Sri Lanka. The unique national digital ID (UID) will be the key milestone for this transformation as a platform for citizens to get services done in a much more smooth and transparent manner. We also believe we need to expedite our coverage process. For that, we have launched the Gamata Sanniwedanaya program that will cover the entire island with 4G. In the meantime, the two main telco companies in Sri Lanka are also putting 5G in trial phase and looking to have a 5G auction in 2022.

Another initiative is our E-Gramasevaka project through which we are aiming to digitize citizen services in rural areas as well as enabling government services on digital platforms. So, from a holistic approach, we believe that launching the UID will provide a better platform for citizen services. Along with this 30-month roadmap, we are looking to expand the digital economy in the country, especially when it comes to digital banking and the adoption of digital currencies. We would also like to expand the DTM industry as we believe we have a very strong and skillful digital labor force. At the moment, it totals to around 150,000 and we aim to reach 300, 000 in the next couple of years. Working with the private sector is key to achieve this goal and we believe that by working hand in hand with publicprivate partnerships, we can digitalize citizen services and expand our digital economy to make it a \$10 billion industry in Sri Lanka.

Sri Lanka is considered an ICT destination, serving many industry verticals with a highly-skilled talent pool. How are digital technologies being utilized in this matter?

We do have about 150,000 digitally skilled people in the digital industry but we're looking at expanding that up to 300,000 in the next couple of years. We believe that the roadmap of digitalizing the entire government scheme and citizen services with the digital ID card will enable people to be more digitally savvy and get used to using digital services to access education as well.

As a step in this direction, we aim to connect 10,000 schools with fiberoptic this year which will offer highspeed internet for all the schools. We are also establishing a few universities that will be adopting digital education. At the same time, I think Sri Lanka has done tremendously well when it comes to development in the software industry and now we're looking at hardware as well. We will initially be looking for assembling and in the long run, we will look at value addition and development as well.

Our country has a couple of institutions for research and development as well, such as SLINTEC for high tech research for the technological industry. We are looking at Sri Lanka as a hub for technology and establishing five technoparks in Galle, Kandy, Nuwara Eliya, and Kurunegala, which will allow more businesses to be established on technoparks or be digital nomads. Digital nomad tourism is a trend businesses are very keen on. We have seen during the pandemic that it has been picking up very fast globally. At this stage. Sri Lanka is one of the key main attractive destinations for digital nomads. The transformation of knowledge will happen through this concept and Sri Lanka will also be a destination for digital nomads who come and enjoy the country while they do business.

Sri Lanka needs to ensure access to high-speed and affordable internet to accelerate digitalization. How is connectivity being improved in the country? What is Sri Lanka's readiness for 5G digital infrastructure?

As previously stated, Sri Lanka is setting up for a 5G auction hopefully this year. We are covering the entire country on broadband for telecommunication coverage. We have launched the Gamata Sanniwedanaya program to establish towers in rural Sri Lanka and provide coverage in all parts of the country.



We believe that by working hand in hand with publicprivate partnerships, we can digitalize citizen services and expand our digital economy to make it a \$10 billion industry in Sri Lanka



At the same time, developing and establishing the infrastructure as well as the legal framework for regulations is important. We will be passing the Data Protection Act by the first week of March. We are also on the verge of announcing the framework for cybersecurity policy as well as the cybersecurity Act to be introduced to the parliament.

So in brief, first we are working on the infrastructure and second, we will move to the legal framework for data protection and the regulatory changes that will enable us to digitally transform.

What do you aspire to as key takeaways during MWC 2022 and how can these be beneficial to the progress of the ICT ecosystem and enterprise development in Sri Lanka?

MWC is where the industry meets government officials as well as the public and private sector. Representing a government, it is very much needed to understand the changes that take place in technology and how better we can use it for citizen services. This will enable us to understand the best practices in the industry in order to implement the necessary changes to the administration systems and citizen services and see how we can enable the digital economy in our country. This is a great opportunity for governments all over the world to meet the industries.

How can collaborating with global ICT companies like Huawei contribute to Sri Lanka's path towards a thriving and effective digital economy?

Huawei has been in Sri Lanka for many years. They have done an amazing work when it comes to digital infrastructure and contributed massively to the local industry. Huawei has experience in global transformation and they have worked with many governments globally as well as with global private sector companies in digital transformation. We believe working with companies such as Huawei gives us more opportunity to understand the best practices needed for a smoother digital transformation. At the same time, the Huawei SPARK program and other acceleration programs and boot camps will provide Sri Lankan youngsters more technological knowledge.



Operators set clear autonomous network goals, progress in exploration and practice

The emergence of 5G – one of key technologies in the fourth industrial revolution – has spawned networks with digital, cloud-based and micro-service features. These networks foster a wide array of new services and spearhead digital transformation that fulfils diverse customer requirements for vertical industries in the new era.



them, ZTE encourages operators to apply the principles of "Three Leads" when they embark on their digital transformation journey.

 The Business and Experience Lead enables experience-driven, close-loop operations whilst operators explore optimal strategies for dynamic and optimal network utilisation and business development.

- The Open Lead drives collaborative transformation of business, network and data. The aim is to create synergy between the design state and the operations state.
- The Value Lead allows operators to focus on high value scenarios which satisfy market demands and their customers' needs.

If the network were to be regarded as a human being, self-autonomy would

lead to energized body parts with more agility and flexibility. However, without the central coordination using closed-loop insight based on experiencing the surrounding environment, the full benefits of automation cannot be unleashed to realize the goal of an autonomous network.

At ZTE, we believe that network intelligence utilizing big data and artificial intelligence (AI) as the "brain" for the network is the way forward for operators to meet the challenges of digital transformation and realize the ultimate goal of an autonomous network.

Today, autonomous networks are used in the whole process of network operations and maintenance (O&M), bringing essential business value and benefits to operators.

Overall, autonomous networks enable operators to enhance network agility in support of business dynamics in the following key areas:



ZTE has launched the uSmartNet cross-domain autonomous networks solution, which has a layered architecture and ubiquitous Al capability



- Operations strategy improvement: This supports operations strategy decision making with "experience insight", "business insight" and "value insight" to increase competitiveness in the market.
- Collaborative product innovation: This provides a unified businessenabling platform yielding high agility and reliability. The platform lays the foundation for operators to work closely with ecological partners so as to differentiate their products and services from competing ones.
- Efficiency improvement, cost reduction and sustainable development: The enabling platform makes it possible to manage 2C (to consumer), 2B (to business) and 2H (to home) operations and maintenance efficiently for sustained development across vertical industries.

After years of industry development and exploration, leading global operators have set the vision and goal of realizing autonomous networks in four key aspects, namely single domain autonomy, cross-domain collaboration, capability openness, and joint construction of the ecological environment.

ZTE actively participates in the systematic construction of autonomous networks and carries out comprehensive pilot projects and commercial trials of autonomous networks with global operators. Aligning with operators' aspirations, ZTE has launched the uSmartNet cross-domain autonomous networks solution, which has a layered architecture and ubiquitous AI capability.

The envisioned architecture for autonomous networks encompasses native intelligence at the network elements (NE) layer, single-domain autonomy at the network layer, and cross-domain collaboration at the service layer.

In terms of the NE and network layers, ZTE focuses on the native intelligence of NE embedded with AI capabilities within the closed loop of single-domain resources. This achieves the objective of a network being "perceivable, operable, highly reliable and self-optimising". It also establishes intelligent foundation blocks for the unified management of cross-generation, cross-domain and cross-vendor operations on a singledomain operations maintenance centre (OMC) professional workbench.

In the cross-domain service layer, the uSmartNet solution contains the VMAX digital intelligent platform that utilizes big data and AI technologies.

The solution focuses on cross-domain operations and provides end-toend (E2E) analysis of voice and data services. It delivers a "unified view with global awareness as well as automation of intelligent closed-loop operations".

uSmartNet also provides open data and AI via OpenAPI to support partners' eco-systems. Such openness frees operators to develop an ecological network with a high degree of autonomy.

At present, the uSmartNet autonomous networks solution has been deployed in a few operators' networks with applications in a number of areas.

Some of the deployments focus on customer experience management and service quality management. Some of the deployments focus on network resource management such as network alarm management, network performance optimisation through automated analysis, intelligent root cause mining as well as close loop automation. Still others focus on network optimization automation.

One of the noteworthy use cases relates to the energy-saving feature of the uSmartNet solution for 5G. The capability makes it possible to dynamically switch on and off power based on localized and dynamic traffic demand while maintaining a high quality of customer experience.

Embedding ZTE uSmartNet into network operations also helps to raise the intelligence and automation level across domains. We believe that through collaboration efforts over the coming years, we can work with global operators to achieve the ultimate goal of autonomous networking via a phased approach.

The ever-growing intelligence capabilities of uSmartNet will also enable collaboration across vertical industries. This will enable operators to explore untapped business opportunities and expand into new vertical and digital markets.

Bearing the vision of the ultimate autonomous digital network, ZTE believes that a network embedded with native intelligence lays the core foundation while the service-driven, cross-domain intelligent "brain" holds the key for the future.

Networks of tomorrow will feature intelligent planes to support intentbased networking and enable operations utilizing the latest technologies such as digital twins, federated learning and intelligent computing convergence. This will in turn lead to game-changing applications that make the universal benefits of intelligent autonomous networks a practical reality across industries.

> The envisioned architecture for autonomous networks encompasses native intelligence at the network elements (NE) layer, singledomain autonomy at the network layer, and crossdomain collaboration at the service layer





Key trends in the security industry in 2022

Entering 2022, the world continues to endure the pandemic. But the security industry has, no doubt, continued to shift, adapt, and develop in spite of things. Several trends have even accelerated.

eyond traditional "physical security," a host of frontiers like artificial intelligence (AI), cloud computing, IoT, and cybersecurity are being rapidly pioneered by entities big and small in our industry.

By all appearances, the security industry is in a stage of redefining itself. It is moving from mere security and safety protections to encompass a wider scope of activity that will expand safety while also bringing new levels of intelligence and sustainability to communities, companies and societies.

Here, Hikvision would like to share some of our ideas and expectations about key trends that will likely affect the security industry in 2022 and perhaps even further into the future.

1- AI will be everywhere

Nowadays, AI is quite common in the security industry. More customers in the industry have recognized the value of AI, and have found new uses for AI applications in various scenarios. Along with ANPR, automated event alerts, and false alarm reduction, AI technologies are being used for wider applications, like personal protective equipment (PPE) detection, fall detection for the elderly, mine surface detection, and much more. Meanwhile, we also have seen more collaboration across the industry, with security manufacturers opening their hardware products to third-party AI applications, and launching open platforms for customers to create and train their own AI algorithms to meet customized needs.

Al has been one of the fundamental technologies to reshape the security industry. Benefiting from the optimization of algorithms, as well as improved computing performance and decreased cost of chips due to the advancement of semiconductor technology in recent years, Al applications are gradually forming the basic functions and capabilities accepted by all sectors in the industry, and we predict an even stronger tendency to assert that "Al will be everywhere."

2- AIoT will digitize and pervade industry verticals

With more security cameras and other security devices being connected to the network, the security industry is becoming an important part of an IoT world, enriching its visual capabilities. It's apparent that the boundaries of the security industry are blurring, going well beyond the physical security arena. Meanwhile the popularization of AI technology enables the connected devices to become intelligent "things" in the IoT world. The combination of AI and IoT, or as we call it, AIoT, is taking the security industry to a higher plain, automating the workflows and procedures of enterprises and aiding in the digital transformation of various industry verticals such as energy, logistics, manufacturing, retail, education, healthcare, etc.

From our perspective, AIoT brings more possibilities to the industry with rapidly expanding applications for security devices and systems. Meanwhile, more perception capabilities like radar, lidar, temperature measuring, humidity sensing, and gas leak detection are being added to security devices and systems to make them more powerful. These new devices shoulder a multiplicity of tasks that just a few years ago required several different devices, covering both security functions and other intelligent functions for an ever-advancing world.

3- Converged systems will break down data silos

Workers throughout private enterprises and public service sectors alike would jump at the chance to get rid of obstructive "data silos." Data and information scattered and isolated in disparate systems or groups creates barriers to information sharing and collaboration, preventing managers from getting a holistic view of their operations. Here, the convergence of various information systems has been proven to be an effective approach - hopefully enough to break down those silos.

It's clear - the trend in the security industry has been to make efforts to converge systems wherever possible, including video, access control, alarms, fire prevention, and emergency management, to name a few. Further, more non-security systems, like human resources, finance, inventory, and logistics systems are also converging onto unified management platforms to increase collaboration and to support management in better decision-making based on more comprehensive data and analytics.

4-Cloud-based solutions and services will be essential

Like AI, the cloud is not a new trend in our industry, but it is an expanding one. From small business markets to enterprise levels, we can see the momentum push more and more businesses to leverage cloud-based security solutions and services. And as we are witnessing even now, the pandemic has accelerated the movement to cloud-based operations for people and businesses around the world.

All businesses want platforms or services that offer simplicity, with as few assets to manage as possible, and a setup that's as simple as possible. This is precisely where the cloud delivers. With a cloud-hosting infrastructure, there is no need for a local server or software. Users can conveniently check the status of their assets and businesses in real time, receive security events and alarms guickly, and accomplish emergency responses simply using a mobile app. For security business operators, the cloud enables them to remotely help their clients configure devices, fix bugs, maintain and upgrade security systems, and provide better value-added services.

5- Crystal clear security imaging will be standard in any weather, under any conditions, any time of day or night It is always vital for video security cameras to maintain image clarity

and capture details 24 hours a day, in any weather and under any condition. Cameras with low light imaging technology that renders high-definition and full-color images at night and in nearly completely dark environments have been very welcome in the market. We are seeing the impressive technology applied to more camera models, including 4K. varifocal and PTZ cameras. Moreover. for clearer video security imaging in poor visibility - especially in severe weather high-performance imaging sensors, ISP technology, and AI algorithms are being employed, enabling cameras to maintain clarity and details of view.

Speaking of imaging technology, the trend toward incorporating multiple lenses in new cameras cannot be ignored. Singlelens cameras are limited in their ability to get more details at greater distances and get the whole picture in large-scale places. They do only one or the other. But by employing two or more imaging lenses in one camera, multi-lens cameras can simultaneously deliver both panoramas and detailed, zoomed-in views of the same large site. Applications including airports, harbors, transit stations, parking lots, stadiums and squares will see these multi-lens cameras as a boon on every level.

6- Biometric access control will bring higher security and efficiency

In the past decades, authorized access control has moved a long way away from keys, pin codes and ID cards. We now find ourselves stepping into the era of biometrics. The access control market is rapidly becoming occupied by biometric authentications, from fingerprint and palmprint recognition to facial and iris recognition.

Biometric access controls bring inherent advantages, like higher security and efficiency with reduced counterfeiting. They verify within seconds - or fractions of seconds - and prevent unnecessary physical contact. Iris, palmprint, and facial recognition offer touchless access control, a hygienic practice more and more favored as a result of the pandemic.

7- Zero Trust approach will take the cybersecurity spotlight

With more security devices connecting over the Internet than anyone ever

imagined, cybersecurity has become an immense challenge in the industry. Stricter data security and privacy protection regulations have recently been introduced in the world's key markets, like the EU's GDPR and the Data Security Law in China, placing higher demands on cybersecurity. And in 2021, several landmark ransomware attacks on a variety of enterprises convinced us in no uncertain terms that companies in every industry must reinforce their network security architecture and strengthen their online protections. So how do we address growing cybersecurity concerns?

Though the concept actually developed in 2010, the term "Zero Trust" has become a hot word just in recent years. A strategic initiative that developed to prevent data breaches by eliminating the concept of trust from an organization's network architecture, Zero Trust is rooted in a philosophy of "never trust, always verify." The concept has been roundly accepted within the IT industry and it is now also slowly but steadily moving into the physical security realm, as it gradually becomes an important part of the IoT world.

8- Green manufacturing and low-carbon initiatives will take big strides

The consensus is in: low-carbon initiatives are valued by societies around the world. In the security market, we have seen products featuring low-powerconsumption become the preferred options for customers, and demands for solar-powered cameras are increasing.

Meanwhile, local laws, regulations and policies that restrict carbon emission standards for manufacturing enterprises are pushing industries toward adopting more environmentally-conscious practices in their daily operations and production, which includes using more environment-friendly materials and adopting multiple energy-efficient designs in product manufacturing processes. We are delighted to see that more security industry manufacturers are exploring "green" manufacturing, and are committed to lowering their carbon output. Though it will take time, the movement has begun. We expect to see significant strides in this area in 2022.

By Hikvision Digital Technology



Seize 5G enterprise monetizing opportunities

Communication service providers (CSPs) are predominantly oriented towards the B2C market, with more than half of all global CSPs obtaining 90% of the revenue from the consumers market. However, increased competition by OTTs has strained CSPs' revenue. Meanwhile, the urgent need for enterprises to digitalize creates increased demands for CSPs. Coupled with the rise of next-generation technologies including 5G, IoT, cloud and AI, CSPs recognize the importance of innovating and reinventing to unlock new monetization opportunities.

o ensure sustainability, CSPs are challenged to expand on their core competency in connectivity and leverage connectivity to capitalize on new technologies to

cope with the rising capex of 5G roll out.

5G-driven industry opportunities

By 2025, GSMA estimates that 5G networks will cover one-third of the world's population. By 2035, 5G has been forecasted by Qualcomm to trigger a global economic output amounting to US\$13.2 trillion. It has also been forecasted that the B2B market would grow at a faster rate

than the B2C market, as revenue from traditional services appears to be waning.

While B2C will continue to make up the lion's share of CSPs total revenue in the foreseeable future, the industry recognizes the tremendous potential of the B2B sector.



CSPs are well-positioned to expand on their offerings in connectivity, through an ecosystem of partners to build digital capabilities and create value for enterprises. With more than 90% of businesses in Asia being SMEs, coupled with the pandemic accelerating digitalization efforts, CSPs can become an enabler for SMEs to adopt innovation faster and more effectively.

While catering to the heterogeneous needs of SMEs across industries comes with its complexities, CSPs need to raise their operational readiness to close existing gaps and monetize on SMEs and startups – the growth engine of fast-growing Asia. Given the growing number of startups in the region attaining unicorn status, CSPs have to act fast to enjoy first-mover advantage and enable future unicorns in the region. To do so, CSPs would need a healthy ecosystem of partners to spotlight certain verticals

Offer converged services to meet enterprise demands

According to research published by BearingPoint and Omdia last year, the number of enterprise 5G projects have doubled. However, CSPs served as lead partners in just 16% of these projects, declining by 21% from the preceding year. On the other hand, private network providers are playing a lead role in 27% of enterprise 5G projects.

Beyond 5G connectivity, CSPs are challenged to offer converged services that include cloud, edge, storage, AI and security to become preferred partners and move up the value chain. They have to break away from legacy BSS to evolve and introduce flexibility, scalability and automation to their infrastructure. On a single digital platform, CSPs have to deliver faster time-to-market solutions for B2C, B2B and B2B2X.

For instance, network slicing is critical to monetizing 5G investments. It allows CSPs to partition their networks into portions, where network slices can be tailor-made to defined specifications for myriad applications to support individual use cases across industries.

An important 5G use case is augmented reality (AR) for remote inspection and troubleshooting in smart factories.

In the smart manufacturing industry alone, the market size is poised to reach US\$250 billion by 2024, increasing from US\$165 billion in 2019. CSPs can work with partners who possess expertise in AR and precision robotics. CSPs need to tweak their business models to serve as a single platform that addresses the multiple needs of different industries. Other verticals include autonomous vehicles, industrial IoT, healthcare and smart cities.

Enhanced mobile broadband (eMBB) is also important to help CSPs handle increased data rates, traffic and user density.

Essentially, monetizing 5G will be a multi-year journey that CSPs need to embark on. Through diverse forged partnerships, CSPs can be better prepared to deliver clear use cases and embrace vast opportunities in an intelligent and digital future.



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TELECOM Review



Asia Pacific outlook: Surge in data centers

According to Cushman & Wakefield, the Asia Pacific data center market is poised to become the world's largest data center region over the next decade. In a 2022 report, Singapore takes the top data center spot in the Asia Pacific, and the second place globally – tying with Silicon Valley after Virginia. In the region, Hong Kong claims the second spot, Sydney comes in third place, while Shanghai maintains fourth place.

he surge in data center activities is led by colocation providers including AWS, Microsoft, Tencent and Alibaba. Research

firm Report Linker revealed that investments into the region's data center market amounted to US\$63.15 billion last year, with investments predicted to reach US\$94 billion by 2027.

Data center markets at a glance

The largest data center market in the region, Singapore lifted a moratorium on new data center construction in January 2022. The moratorium was first implemented in 2019 to allow new server facilities that meet energy efficiency criteria to be constructed. As of last year, Singapore had more than 70 data centers operating with a total power capacity of 1,000 megawatts.

For telecom operators, where data centers are becoming a strategic asset, many are deliberating data center partnerships or sell-offs to cash in. Last November, Globe Telecom was in advanced talks with ST Telemedia Global Data Centres (STT GDC) to establish a data center business in the Philippines.

To optimize and grow the value of its large and unique portfolio of quality



infrastructure assets, Singtel outlined plans to create a regional data center business last year. Through a partnership with Thailand's Gulf Energy and AIS, Singtel's regional data center strategy aims to offer customers a differentiated value proposition.

The global pandemic sparked workfrom-home arrangements and a spike in digital infrastructure and cloud demand. Hyperscalers are amongst those pressured to increase data centers. Compounded by the acceleration of 5G deployments and resulting technologies, strategic investments into data centers have been on the rise. New sources of funding from private equity funds also contribute to the growing data center market to capitalize on future growth opportunities.

Datacenterpricing, a data centre research specialist, estimated over 1.5 million square meters of space under development for data centres in the Asia Pacific.

A recent high-profile investment is the Asian Infrastructure Investment

Bank (AIIB)'s US\$150 million into data centers serving emerging countries in the Asia Pacific. Of which US\$100 million would be channeled through Keppel's Keppel Data Centre Fund II (KDC Fund II), which closed with US\$1.1 billion in funding commitments.

After the US, China has the secondlargest hyperscaler data center capacity, accounting for 15% of the world's total. According to Datacenterpricing, China will expand its data center market by 239,000 square meters to represent a 14% growth. Without overloading its power grids, China's National Development and Reform Commission (NDRC) announced the set-up of four mega data center clusters outside the main population epicenters.

South Korea is also a hotspot for data centers. In January, Equinix and Singapore's sovereign wealth fund, GIC will jointly develop and operate two xScale data centers in Seoul, South Korea. Digital Realty will also be launching its first carrier-neutral data center in the capital to scale large enterprise applications.

Emerging data center markets

With many countries in the region still underserved, Asia Pacific will continue to witness unprecedented growth in the data centers, fuelled by increased digitalization and e-commerce.

Indonesia, for instance, offers immense opportunities with a digital economy projected to be worth US\$124 billion by 2025. The country houses more than 200 million internet users and an e-commerce market expected to reach US\$100 billion by 2025. Last May, Singaporeheadquartered STT GDC entered into a partnership with Indonesian Triputra Group to develop a new data center operating platform in Jakarta. Tencent Cloud built two data center facilities in the country.

Alibaba Cloud also built its third data center in Indonesia last year. In the Philippines, Alibaba Cloud built its first data center last year to support businesses' digitalization. This year, Alibaba has plans to debut centers in Thailand to expand its foothold in the region – a key profit driver which accounts for about 8% of the company's total revenue, and amid greater competition by Tencent in China.

In one of the latest, SpaceDC partners with JLL to build the largest data center in the Philippines. India, being the second most populous country in the world, is another country with very high population, but with a very low data center capacity. The current data traffic boom in India makes it another high-growth market for data centers. According to reports, Bharti Airtel plans to triple its data center capacity to 400 megawatt by 2025.

Conclusion

Data centers demand is here to stay. As some telecom operators rethink their strategy for non-core operations, others view the data center business as a worthwhile investment. With the emergence of 5G and accompanying technology, telecom operators are well-positioned to seize opportunities working with, rather than against hyperscale providers to extend their capabilities to the network edge.



With many countries in the region still underserved, Asia Pacific will continue to witness unprecedented growth in the data centers, fuelled by increased digitalization and e-commerce



TELECOM Review

Singtel launches industry's first all-in-one platform for enterprise 5G edge computing and cloud services



Singtel expands its offering for the enterprise market with the launch of Paragon, a revolutionary platform that aggregates networks, edge compute, public cloud and applications ecosystems to accelerate enterprises' digital transformation.

Offering an all-in-one solution for digital transformation, Paragon seamlessly aggregates and manages low-latency networks and edge cloud resources, allowing enterprises to tap on Singtel's 5G network to securely deploy applications across the edge at Singtel MEC and a public cloud of choice. This significantly reduces the complexity and time needed to adopt 5G MEC and low-latency applications and services, giving enterprises the agility, flexibility and scalability needed to transform operations and adapt to new business models in a digital economy.

"Many enterprises are undergoing rapid digitalisation while exploring and developing tailored 5G solutions for deployment in their industries. We understand the challenges and complexities that they face in managing the various networks, edge cloud applications and services with the required cyber security, resiliency and demanding service assurances required, cost-effectively. Paragon was conceived, developed and delivered to help enterprises meet these needs through a single platform," said Bill Chang, chief executive officer, group enterprise, Singtel.

Developed in-house, Paragon empowers enterprises to adopt Singtel's 5G network to deploy their edge computing applications and services independently, securely and within minutes. These capabilities are bundled on the platform to provide enterprises a unified experience, delivering always-on connectivity and low latency with high bandwidth throughout to support industry 5G use cases including advanced logistics and manufacturing, smart transportation, and real-time fleet management and monitoring.

Telstra and TPG Telecom seals landmark network sharing agreement



Telstra and TPG Telecom announced a ground-breaking ten-year regional multi-operator core network (MOCN) commercial agreement, which will provide significant value to Telstra's wholesale mobile revenues, while providing TPG Telecom group's subscribers with 4G and 5G services within a defined coverage zone across regional and urban fringe areas.

Under the innovative deal, TPG Telecom will gain access to around 3,700 of Telstra's mobile network assets, increasing TPG Telecom's current 4G coverage from around 96% to 98.8% of the population. Telstra will gain access to TPG Telecom's spectrum across 4G and 5G, which will allow it to grow its network, increase capacity and continue to provide the country's largest and fastest network.

Under the MOCN arrangement, Telstra will share its radio access network (RAN) for 4G and subsequently 5G services in the defined coverage zone, however both carriers will continue to operate their own core network where key differentiating functionality resides.

Telstra CEO Andrew Penn said the deal provided significant value to shareholders and customers and

was a continuation of Telstra's strategy to maximise the utilisation and monetisation of its assets. "This additional spectrum will mean that all Telstra customers will continue to experience Australia's best and fastest network across the country, in combined 4G and 5G speeds. In particular, the spectrum agreement will ensure that regional and rural customers will now experience faster speeds in more locations on their mobiles."

TPG Telecom CEO Iñaki Berroeta said the landmark network sharing agreement would significantly expand TPG Telecom's mobile network footprint in regional Australia and enable growth of its customer base in regional and metropolitan areas.

Maxis 10G PON trial achieves download speed close to 10Gbps



Maxis has successfully trialed 10G PON (gigabit passive optical network) technology, reaching download speeds of close to 10Gbps over its live next generation fibre-to-home (FTTH) network. Conducted at Menara Maxis, the trial demonstrated download results of a 1GB video in less than a second, as compared to the current approximately 23 seconds on the normal 300Mbps GPON download speed.

"Network infrastructure is constantly evolving. With the rise of new services such as cloud computing, VR, AR and even full-fibre campuses, upgrades to higher capacity networks are critical to support future bandwidth requirements. We are proud of this achievement which reflects our commitment to the best technology innovation in a highly connected world, as well as our broad aspirations of the Rangkaian Kita Rangkaian Malaysia campaign," said Rob Sewell, Maxis' chief technology strategy officer.

At present, most fibre deployments are based on GPON technology which

supports up to 2.5Gbps downstream speed on a shared basis. 10G PON technology is currently the fastest passive optical network technology to provide fibre connectivity, offering faster Gbps compared to the normal GPON technology readily available in Malaysia.

10G PON for home fibre in the future will provide gigabit ultra-broadband for fixed access users. The network solution allows multiple users to share the capacity over a passive fibre-optic infrastructure, where fibre to individual users branch out from a single fibre running to a network node. With increased bandwidth, users can expect faster download speeds and lower latency, resulting in much more enhanced user experience.

SK Telecom enters global market with "next big tech"



SK Telecom (SKT) held a press conference at MWC Barcelona 2022 to announce that the company will enter the global market with "Next Big Tech", which refers to its three key future leading technologies namely metaverse, AI semiconductor and quantum cryptography.

SKT's CEO Ryu Young-sang, who hosted the event said, "2022 will mark the first year in which 'Next Big Tech', developed with our extensive know-how accumulated over the three years after commercializing the 5G network, makes inroads into the overseas markets."

SKT will aggressively expand its global presence by launching its metaverse service Ifland in 80 different countries this year. In Korea, Ifland is rapidly migrating people's real lives into the virtual world. It has become a popular venue for social gatherings as well as a platform for businesses seeking new ways to communicate with their customers. SKT will further enhance user convenience through service upgrades including opening up of its platform to enable users to provide diverse content, and creating a marketplace applied with crypto technologies (NFT/blockchain).

SKT also unveiled its plans to become a global top-tier AI semiconductor company by releasing a follow-up model of its AI semiconductor Sapeon X220 late this year or early 2023. This year, SKT will work closely with Sapeon Inc. to apply its semiconductor chip to many different industries including manufacturing, security, media and automotive. Through these efforts, SKT expects Sapeon Inc. to become a company with a cumulative revenue of KRW 2 trillion and an enterprise value of KRW 10 trillion by 2027.

SKT also announced plans to strengthen its competitiveness in the field of quantum cryptography, which is being applied to wider areas due to the increased importance of security brought by the diversification of smart devices.



Smishing scams: What can organizations and telcos do?

Phishing is a mode of cyberattack whereby a malicious actor impersonates a reputable identity and uses fraudulent communications forms to trick users into clicking a malicious link embedded in a text message or email. The attacker then steals sensitive user data such as credit card numbers, bank account numbers, login information or installs a malware on their devices.

hile email phishing scams are most common, SMS phishing, or smishing, are on the constant rise globally, with such occurrences being more pronounced during the holiday period.

In December 2021, for instance, close to 500 customers of a major bank in Singapore fell prey to such SMS phishing scams, resulting in S\$8.5 million being siphoned away. This incident, which has caused many to lose their entire life savings in a short period of time, has since put in the spotlight the vulnerabilities of text messaging security.

This incident serves as a red flag for other organizations, as SMS messaging is a popular form, yet insecure form of marketing and communication tool.



Using SMS aggregators, or third-party service providers that handle SMS messaging for businesses, malicious actors can easily send SMS messages under the name of an trusted organization to commit fraud.

In the above-mentioned case, fake SMS messages appeared in the same thread with legitimate bank messages offering two-factor authentication (2FA) and transaction alerts, leading customers to think that the text messages were from a trusted source. Links were shortened to disguise the actual URLs, making it difficult for customers to verify its authenticity. Many of the customers did not receive a one-time password (OTP) for verification as they were likely intercepted by malware installed on their phones, or diverted to an overseas telco that had been hacked.

What made these fake messages even more convincing were links that led customers to fake sites that looked genuine. Customers ended up keying in login information, which were eventually misused by attackers to siphon away money.

Vigilance and education

Campaigns to draw awareness to phishing attacks and educating users on the methods that attackers use are very important. Despite reminders by banks for customers to refrain from clicking on unknown links in SMS messages, many customers still do so. Instead of relying on SMS notifications, banks can turn to app notifications to send information to customers. While this cannot completely eradicate scams, it can significantly thwart fraudulent attempts.

Mandating the registration of SMS senders is also an important measure to counter such malicious attacks. Many countries have already adopted this approach to prevent attackers from spoofing organizations' SMS sender IDs. In Singapore, the Infocomm Media Development Authority (IMDA) launched a pilot scheme for this registry in August 2021. The IMDA has since urged more organisations to sign up with an anti-SMS spoofing registry. It would also be mandatory for all banks, SMS aggregators and telcos to sign up with the national registry.

Specifically targeted at the banking sector, the Monetary Authority of Singapore (MAS) and Banks in Singapore (ABS) have introduced new measures for banks to enhance digital banking security.

In the UK, where smishing has increased by sevenfold in the first half of 2021 compared to the second half of 2020, the National Cyber Security Center (NCSC) has issued guidelines for organizations to avoid using web links in SMS messages. If necessary, organizations should not use URL shortening services that obscure the website domain.

Needless to say, telcos also play a crucial role as secure gate-keepers. In November 2021, the Philippines' National Privacy Commission (NPC) launched an investigation into smishing, requiring telcos to submit documents and information involving data aggregators, owing in a rise in SMS text scams. As the first line of defence, Globe Telecom had reportedly blocked more than 1 billion scam messages last year.

In Australia, a new regulation that came into effect in November 2021 allows telcos to identify and block malicious SMS messages at the network level.

With the responsibility to safeguard user's interests, telcos need to be proactive in bolstering network-level protection. Telcos can optimize SMS firewalls with artificial intelligence and machine learning, identifying white route traffic and blocking grey route traffic to address smishing even before they reach their targets.

In Singapore, where telcos configure a prefix to overseas calls to alert users of a potential scam call, overseas SMS messages can also be configured with a prefix.

Evidently, the growing threat of phishing is too great to ignore. Jointly, authorities, organizations, telcos and consumer groups must strengthen resilience towards similar scams to prevent undesired losses and damages.



Mandating the registration of SMS senders is also an important measure to counter such malicious attacks. Many countries have already adopted this approach to prevent attackers from spoofing organizations' SMS sender IDs



TELECOM Review



Philippines: Growing tech presence in Southeast Asia

Digitalization is reshaping the Philippines' economy. Research firm AlphaBeta reported that digital transformation in the Philippines can unlock an economic value of about US\$100 billion by 2030. The market outlook appears promising, with research firm Forrester forecasting that the Philippines will lead Asia in terms of purchases of tech goods and services, growing by 9.1% in 2022. This is followed by Vietnam and India, growing by 9.0% and 8.7%, respectively.

ith a population of 109 million, the Philippines possess a high

potential to become a tech powerhouse in Southeast Asia in the foreseeable future.

E-commerce activities doubling

The Philippines has the highest e-commerce growth in the world at 25%, based on research from eMarketer. Accelerated by the pandemic and lockdowns, rising consumer preference in online purchases has resulted in a surge in the country's e-commerce sector – a key growth engine to drive economic recovery and growth. During the pandemic, from 2020 to 2021, a total of 35 e-commerce startups were founded. The Philippines' Department of Trade and Industry (DTI) revealed that e-commerce reached US\$12 billion in 2020, accounting for 4.3% of the country's GDP. The number of online businesses jumped manifold from just 1,848 in January 2020 to more than 88,000 by the end of the same year.



The agency aims to double e-commerce activities to reach about US\$24 billion, or 5.5% of the GDP, in 2022, in accordance to the Philippines E-Commerce Roadmap 2022 rolled out last year. This plan is aligned with the broader nation's Digital Pilipinas campaign to deliver a positive impact through technological innovations.

Full foreign ownership for the telecommunications sector

In February, the Philippines government approved a bill that allows full foreign ownership for its telecommunications and railway. This is a departure from the country's 1987 constitution which limits foreign ownership to 40% for critical infrastructure.

This reform can be viewed as a conduit for greater foreign capital inflow to offset high 5G capex in the sector. With this bill, China Telecom, which possesses 40% ownership of DITO, can now explore revising their stake in the business. Likewise, foreign investors who have turned away from the market owing to a foreign ownership limit can now pursue new investments in the telecommunications sector.

Emerging hyperscaler epicenter

The Philippines ranks second in Southeast Asia in terms of data center growth. Research and Market predicts that the Philippines data center market size will attract investments amounting to US\$535 million 2026, representing a CAGR of 11.4% from 2021 to 2026. Enterprise spending on cloud services is estimated to jump from US\$1.8 billion in 2020 to US\$2.6 billion in 2024. Increased cloud usage is expected as remote working takes root and the number of media social media and video streaming users grows.

In a separate research, GlobalData estimates the country's enterprise spending on cloud services to surge from US\$1.8 billion in 2020 to US\$2.6 billion in 2024.

This sector is poised for growth under strong governmental support, with incentives in place for hyperscalers. One of the key outcomes of the "Make It Happen in the Philippines" campaign, for instance, is attracting global hyperscalers to support cloud and network infrastructure in the country.

Big hyperscalers recognize the potential of this fast-growing market, with AWS, Microsoft Azure and Google Cloud actively expanding partnerships to include colocation edge services.

Recently, SpaceDC announced plans to build the largest hyperscaler data center in the country. PLDT has also been ramping up data center capacity build to anticipate growing needs in the country. In line with the government's initiatives, PLDT will be building the country's first carrier neutral hyperscaler data center.

Tech startups

Startups are becoming another key driver of the Philippines' digital economy. While the Philippines is still behind other startup ecosystems in Asia, a report jointly released by Gobi Partners and Core Capital showed that startups in the Philippines received more capital last year, compared to the previous 3 years combined. Up to US\$2 billion could be raised over the next 3 years, signaling optimism in the market.

With 99.5% of businesses in the Philippines being micro, small and medium-sized enterprises (MSME), a tech business-to-business platform recently raised US\$45 million to support MSMEs with software and financial services. Last November, Philippines' fintech Mynt raised more than US\$300 million in its largest round of funding, bringing the company's valuation to over US\$2 billion.

Conclusion

With digital transformation prioritized as an ongoing national effort, the Philippines is undergoing quick shifts to advance its economy and become a rising tech force.



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TELECOM Review



Investing and shaping tomorrow's smart cities

The global smart cities market was valued at US\$334.2 billion in 2018 and is estimated to reach a value of US\$1,359.8 billion by 2027, according to research firm Coherent Market Insights. This represents a CAGR of 16.3% between 2017 and 2027 and a sizeable market that holds vast potential.

y 2025, UBS forecasts that fast-growing Asia would reach US\$800 billion by 2025, accounting for 40% of global smart city spending. Of which, China would lead in spending, estimated to reach US\$320 billion.

While the pandemic has revealed vulnerabilities and tested countries' digital readiness, it has also served as the impetus for transformation on every level – personal, enterprise and societal. Home to over half of the world's megacities, Asia is making great strides to transform. There is now a consensus to build resilient and sustainable future cities that amplify technology and innovation to benefit its citizens.

According to Juniper Research, Shanghai is ranked the world's leading smart city for 2022, out of 50 cities worldwide, after taking into consideration aspects including energy and lighting, city management, technology and urban connectivity, and transportation and infrastructure. Shanghai is followed by Seoul, Barcelona, Beijing and New York.

One of the reasons Shanghai outpaced other cities is its Citizen Cloud, a centralized platform that connects residents to more than a thousand services including education, tourism, culture and assistance for elderly citizens.

In Seoul, the city's Hopeful Seoul Monitoring System prevents traffic congestion by monitoring vehicle and pedestrian traffic. It also comprises a free public bicycle program and public transport services. This is just one of many smart systems in the city. The government will be investing another US\$291.4 million to digitalize the city. Of which, about one-third would be allotted into smart city projects to improve civic services.

Investing in smart cities

With the fourth industrial revolution on the horizon, we are witnessing the rise of digital economies powered by 5G and IoT, leveraging intelligent data and decision modeling to craft new urban landscapes. Key tenets of a smart city include smart governance, smart connectivity, smart mobility and smart health. IoT in smart cities can help power data management, remote monitoring, network bandwidth management and security, location analytics and more.

Combining IoT and 5G, Australia recently announced the launch of interconnected network garbage trucks that use high-resolution cameras and GPS sensors to quickly detect road and road assets that require maintenance. Given the huge economic value and revenue potential for smart cities in Asia, investors are raking in on opportunities to lead in this transformation.

Microsoft for instance, has invested millions to spearhead smart cities initiatives. This includes improving governments' ability to collaborate and share information across agencies and addressing challenges faced by the elderly, or those who are visually or physically impaired. Bill Gates even made headlines when he purchased 24,800 acres of land in Arizona to build a smart city from scratch.

In Asia, countries including Singapore, Malaysia, Thailand and Indonesia have embarked on smart city roadmaps as part of their national objectives to drive the economy.

A key smart nation in the region, Singapore has made significant leaps since its smart nation plan was first launched in 2014. This year, government agency JTC and South Korean automaker Hyundai recently partnered to deliver smart mobility solutions such as electric and autonomous vehicles to the country's industrial and business parks.

Operators evolving role in smart cities

Telecom operators are key enablers of global smart cities. By building on new infrastructure, operators can reposition themselves to become strategic partners to deliver new solutions and services in this transition.

They can take advantage of their existing branding and presence to provide a platform for the wider community. In this new landscape, operators can explore becoming a central hub that manages and monitor assets, such as public safety, healthcare, transportation and utilities, in real-time. This way, operators tap on their inherent capability to provide connectivity to serve as managed service providers for smart cities. In China for instance, digital service providers play a pivotal role in rolling out digital government solutions and e-government infrastructure.

Operators can also learn to make use of its data to provide private entities with customizable business insights as they navigate a changing and digitalizing urban environment. Essentially, operators play an important front-line role to push ahead smart city initiatives to profoundly improve living standards.



Telecom operators are key enablers of global smart cities. By building on new infrastructure, operators can reposition themselves to become strategic partners to deliver new solutions and services in this transition





Blockchain and NFTs: The future of gaming

The rise of blockchain and nonfungible tokens (NFTs) has undoubtedly found their way into the gaming arena. According to the Blockchain Game Alliance, NFTs games generated a revenue of US\$2.32 billion in the third quarter of last year, accounting for about 22% of all NFT trading. The number of wallets linked to gaming also skyrocketed from 29,563 in the first week of 2021 to 754,000 in the third quarter, representing a 2,453% growth.

ostly used in cryptocurrency networks, blockchain being the publicly shared ledger of

transactions used to create unique digital assets is the technology behind nonfungible tokens, otherwise known as NFTs.

While NFT gaming is still in its infancy, it has erupted in popularity in the past year and is expected to create a new revolution in gaming.

In essence, NFTs in gaming are based on the concept of "play-to-earn",

where players pay an up-front cost through cryptocurrency to play and collect unique items in the game. In the world of gaming, NFTs can make up characters, weapons and other items. Over time, these items can increase in value and be sold off at a profit to give players the ability to earn from gaming. Using NFTs, players can also own and control their digital assets, even moving them across multiple games.

Ride on a rising gaming trend

Due to nationwide lockdowns and a slew of social distancing measures across countries, video gaming has witnessed a notable surge. According to Research and Markets, the global gaming market reached US\$173.7 billion in 2020 and is expected to register a compound annual growth rate of 9.64% to reach US\$314.40 billion by 2026. Of which, the Asia Pacific region contributes to more than half of the gaming market. Home to about 1.5 billion gamers, leading gaming markets in Asia include China, Japan, South Korea and India, followed closely by countries such as Indonesia, Vietnam and the Philippines.

While cryptocurrencies ar entering a more volatile period, NFTs in gaming shows no signs of abating. In a study by Statista, Philippines is one of the top five countries in terms of embracing crypto, with more



than 3.5 million having played an NFT game. Even celebrities are beginning to endorse these games.

Teeming with opportunities as the gaming industry continues to grow in the foreseeable future, companies are rushing in to capitalize on what seems to be a high-growth market. Recently, a Hong Kong-headquartered game developer that uses blockchain technology raised over US\$300 million in funding. This mirrors a global trend where blockchain game developers are raising large rounds of funding. Others in the region are also following suit. In Vietnam, for instance, game publishers begin to venture into this new domain to provide enhanced gaming experiences, as well as opportunities for players to earn while gaming.

Navigating new grounds

While the prospects of NFTs in gaming appear promising, there are those who do not see eye to eye. To this group, the decentralized and unregulated nature of blockchain and NFTs is unsettling. The fifth largest gaming market with about 30 million gamers, South Korea is home to popular play-to-earn games. However, some games in the South Korean market does not feature play-to-earn elements owing to a ban on NFT games by the country's Game Rating and Administration Committee. The committee has since refuted misconceptions that it is against blockchain and NFTs, citing instead the need to impose restrictions against gambling or speculation in gaming. This means that blockchain games without elements of cash or tradable NFTs are welcome.

Conclusion

Innovations are sometimes met with resistance, at least in the early stages. While some see this as a fad, others are convinced that it would alter the world of gaming and finance. It might take some time for players to come around with new technologies in gaming. But for now, many game publishers are still keen to jump onto the NFT bandwagon. 66

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Huawei unveils digital solutions to empower APAC green development at MWC2022

At the MWC2022 in Barcelona, Huawei releases their GUIDE business blueprint and innovative solutions focusing on digitalization and carbon neutrality for the future of ICT. The global leading provider of ICT infrastructure and smart devices vows at the online media roundtable to empower the green and sustainable future of digital economy in the Asia Pacific region.

Huawei's rotating chairman Guo Ping explained that as Shannon's theorem and the von Neumann architecture continue hitting severe bottlenecks, the industry must explore new theories and architectures to reshape the technological paradigm to achieve digital sustainability.

By creating synergies between IT and CT, cloud and edge, and cloud and networks, Huawei hopes to help operators go digital and intelligent and achieve new revenue growth. In Asia Pacific, for example, Huawei's OneStorage solution has helped one operator cut TCO by 30%.

Huawei currently adheres to a "More Bits, Less Watts" strategy in this area. In addition to improving its fundamental digital capabilities, Huawei has committed to making its products 2.7 times more energy efficient by making breakthroughs in areas like theories, materials, and algorithms. Huawei's third-generation massive MIMO products fully utilize the multi-antenna technology to improve energy efficiency by 30% compared with peer products.

As part of its efforts to create a greener and more sustainable digital world, Huawei will increase investment in sustainable green solutions, leveraging clean power generation, electric transportation, and smart energy storage, to support the Asia Pacific region's goals of cutting carbon emissions, promoting renewable energy, and contributing to a circular economy, according to Jay Chen, vice president of Huawei Asia Pacific. Through advances like these, the ICT industry is able to help other industries reduce their own carbon footprints.

"In Asia Pacific, for Asia Pacific' is our commitment. At Huawei, we are working closely with carriers and partners from around the world to explore solutions that help make life better, businesses smarter, and society more inclusive. We also love to share how our ICT technology is helping make the world a greener, more sustainable place. Together, we can light up the future," said Jay Chen.

To support the digital ecosystem in Asia Pacific, Huawei in 2021 has announced that it will invest US\$50 million to develop 500,000 digital talents for Asia Pacific in the next five years, and invest US\$100 million over three years to cultivate the startup ecosystem in the region.

ZTE Next-Gen Cloud AI Home Security Camera Pro awarded Best Connected Consumer Device at GLOMO Awards 2022



ZTE Corporation announced that its Next-gen Cloud Al Home Security Camera Pro has landed the Best Connected Consumer Device award at the Global Mobile (GLOMO) Awards during the Mobile World Congress (MWC) 2022 in Barcelona, Spain.

ZTE's Next-gen Cloud AI Home Security Camera Pro innovatively employs device-cloud collaboration technology whereby massive AI applications are deployed in the cloud and users can download them on demand to implement multiple use cases with just one camera. With this technology, the camera can deliver more functions and better experiences for users.

In addition, the camera and cloud can jointly perform scenario analysis to boost analysis efficiency and save computing resources. The Next-gen Cloud AI Home Security Camera Pro also features interface openness and capability exposure, which is part of ZTE's commitment to helping build a smart care ecosystem.

To date, the product has been deployed at scale in China, helping users guard homes, look after the elderly and children, protect against thefts and intrusions, etc. anytime, anywhere.

The GLOMO Awards are the industry's most prestigious accolade, judged by the sector's most prominent subject matter experts. The Best Connected Consumer Device award that ZTE has won is for an everyday consumer electronic device or gadget that brings new and smart applications, efficiencies and functionality to the user, at home or on the move.

Mid-band 5G could deliver \$610B GDP growth by 2030

GSMA research finds that 5G mobile network services in the mid-band spectrum range could add more than \$610 billion to global GDP by 2030. This analysis shows the extent to which government policies that prioritise midband 5G spectrum can aid economic development strategies for the years ahead.

The new economic forecast predicts that by 2030, 5G spectrum in the 1-7 GHz midband range will drive nearly 65% of the overall \$960 billion socio-economic value created by 5G.

"Delivering on the 5G promise will require global, regional, and local action from governments and industry to make enough mid-band spectrum available. An average of 2 GHz of mid-band spectrum is needed, and there is work to get there. As the world seeks to deliver a new phase of economic development, government planning for 5G expansion is crucial," said the GSMA's head of spectrum, Luciana Camargos.

The study also warns of the potential negative economic impact of insufficient spectrum availability, showing that up to \$360 billion of GDP growth could be lost. If spectrum is constrained to current levels as demand for services grows, increased network congestion and deployment costs will stifle 5G. Network quality and speed will suffer, limiting 5G adoption and its economic impact.

The research shows that 75% of the benefits of mid-band 5G will be through the core 5G use cases of enhanced mobile

broadband (eMBB) and fixed wireless access (FWA) with fibre-like speeds.

Around the world, the analysis finds that the impact of mid-band 5G on regional economic growth will be closely aligned. For example, CIS and Latin America will lead with over 0.5% of GDP generated by mid-band 5G in 2030. Meanwhile, Sub-Saharan Africa and Europe will see 0.38% in GDP growth, and North America with 0.36% in GDP growth.

Early adopter 5G markets in Asia Pacific, the Americas, and Europe will account for the most significant share of total global contribution to GDP. The biggest economies and populations will have the largest impact, with East Asia and the Pacific forecast to contribute \$218 billion to global GDP.

India to support ITU presence in South Asia



The Government of India will fund a new Area Office for the International Telecommunication Union (ITU) to foster digital technology uptake in line with sustainable development across South Asia.

The new ITU Area Office and Innovation Centre, set to open in New Delhi by the middle of this year, aims to strengthen technology cooperation and boost regional telecommunications development.

"Today's agreement is an important step in the enduring partnership between ITU and the Republic of India, and between ITU and the South Asia sub-region," said ITU secretary-general Houlin Zhao. "I'm confident that the establishment of an ITU Area Office for South Asia in New Delhi will help to push the boundaries of innovation and accelerate digital transformation for all people and communities across India, the region and beyond."

Through a closer presence, ITU hopes to advance shared regional priorities, such as reducing disparities between developing and developed countries in terms of Internet access, digital skills, and other socio-economic indicators after the COVID-19 pandemic. India's minister of communications, Ashwini Vaishnaw, welcomed the opportunity for closer regional and international engagement through the signing of a host-country agreement for the office, saying: "India is proud to partner with ITU on this progressive initiative for the region, which will advance shared regional priorities, help reduce disparities with developed countries, and strengthen South Asia's post-COVID recovery. India is determined to bridge the digital divide and help address the ensuing inequalities in digital access affecting the entire region."

"This new office will allow ITU to broaden partnerships, building upon current work and facilitating digital innovation," she said. "ITU will work, together with the government of India, to ensure that the new office strengthens ITU's regional presence, by bringing ITU closer to member countries, and further enhances ITU's capability to help them recover from the COVID pandemic, accelerate the achievement of sustainable development, and at the same time advance digital transformation."

Asia Tech x Singapore

Singapore being the gateway and a global-Asia node to the world's fastest growing digital economies, Asia's flagship tech event, Asia Tech x Singapore (ATxSG), is the place for technology to intersect with society and the digital economy. ATxSG drives conversations only possible in Singapore across business, tech and government leaders that will shape our shared digital future as it also enables participants to network and keep their finger on the pulse of latest tech trends, challenges and opportunities.



Place: Singapore EXPO

Byond Mobile

BYOND MOBILE will bring together business leaders from various industry verticals with strategy experts from the internet, mobile communications and IT sectors. The dedicated 5G exhibition will feature leading blue-chip companies as well as promising start-ups drawn from the whole technology stack, with international experts serving the 11-country nation group. Join us in June to learn everything about the wireless network of the future!

Place: Bangkok, Samyan Mitrtown Hall

Telecom Review Leaders' Summit 2022

The 16th edition of the leading ICT gathering will be held in a hybrid mode where the latest industry trends will be tackled.

Place: InterContinental Dubai Festival City, UAE

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