# TELECOMS INDUSTRY MEDIA PLATFORM

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SCIT GROUP CHAIRMAN "Investing in the Future of Global Connectivity"

Mr. Saad bin Solib bin Mutlaq Al-Otaibi Member of the Kingdom of Saudi Arabia's Shura Council, Founder and Chairman of SBS and Ansab Group

Factory of Tomorrow: Private 5G Networks Redefine Manufacturing Five Sure-Fire Ways to Superior Digital Journeys for Customers Explosive Growth in Roaming Clearing Market Fueled by Global 5G Data

## salam

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# TELECOMS INDUSTRY MEDIA PLATFORM



 SCIT Group Chairman "Investing in the Future of Global Connectivity"





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#### Phone Signals Elevated: SpaceX Unleashes Starlink Satellites into Space

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News Provided in cooperation with AFP, the global news agency

Published by

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> Printing Al Nisr Publishing LLC

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Year 19 | Issue 207



# SCIT Group Chairman "Investing in the Future of Global Connectivity"

SCIT, a Saudi-based investment venture fund, focuses on investing in highly disruptive deep technologies. It initially targets the Avionics and inflight connectivity sector but plans to broaden its investment portfolio to encompass global connectivity across various sectors, as well as other domains of deep technology. Mr. Saad bin Solib bin Mutlaq Al-Otaibi is a member of the Kingdom of Saudi Arabia's Shura Council, and the founder of SBS as well as the Ansab Group, whereby he acts as the chairman of the board. In this interview, Mr. Al-Otaibi discussed his insights on investing in the future of global connectivity and outlined the investment directions of the SCIT Group.

he space economy is a catalyst for technological innovation, economic growth, and national development. Nations that invest in space activities can strategically reap the benefits of advancements in technology, improved infrastructure, and enhanced global standing. While we are heading towards a more connected and intelligent world, the evolving role of global connectivity is transformative, influencing various aspects of society, the economy, and technology. Global connectivity is foundational in the realm of digital transformation, enabling seamless communication, data exchange, and access to information across the globe. Connectivity fosters international trade and economic growth by providing businesses with access to global markets. E-commerce, crossborder transactions, and supply chain integration are fueled by robust global connectivity.

In an exclusive interview with Telecom Review, Al-Otaibi expressed his views on SCIT Group's targeted investments and its focus on the domain of global connectivity.

#### In the rapid evolution of technology, how does SCIT Group position itself strategically to take advantage of emerging trends and stay ahead of technological advancements?

Advanced technologies and emerging trends in telecommunications play a pivotal role in shaping global connectivity. These developments have a profound impact on how people, businesses, and nations communicate and collaborate.

Advancements in satellite technology contribute to global connectivity, especially in remote and underserved areas. High-throughput satellites and low Earth orbit (LEO) satellite constellations provide improved broadband internet access, enabling more people to connect globally. As global connectivity increases, the importance of cybersecurity becomes paramount, resulting in the need

## Investing In The Future

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#### Space Communications For Information Technology

for implementing robust security measures, including encryption, threat detection, and secure communication protocols.

SCIT Group aims to invest in building a robust regional high-speed broadband service covering not only the Middle East, Africa, and Turkey but also India. We have commenced our strategic investment in SkyFive in the domain of offering Air-to-Ground (A2G) internet broadband services to the aviation sector, catering to both commercial airlines and business/ private jets. We are actively assessing strategic investments in satellite communication, especially given the remarkable advancement in LEO satellites. Launching constellations of such satellites can complement the regional coverage of our A2G service, enabling us to provide solid high-speed, low-latency broadband internet services not only in aviation sectors but also in other sectors like government, military, and maritime, offering connectivity services to rural areas.

Can you explain more about how SCIT Group is creating an innovation ecosystem within the space economy and how it is driving technology





We are primely investing in inflight connectivity technologies with an ambition to reach a very competitive and innovative commercial global service

#### advancements that have a wider impact beyond its direct investments?

The space economy has been growing rapidly, driven by advancements in technology, increased private sector involvement, and a growing interest in space exploration and utilization. Governments, private companies, and international collaborations contribute to the development of this economic sector, with the potential for new opportunities and challenges in the future. At SCIT Group, we have been very focused on global connectivity as a pivotal application for our investments, focusing on defined markets and focused sectors. Our investment strategy focuses on acquiring significant shares in startups with significant scalability and growth potential with IPRs in the emerging technologies that serve our group investments' purpose. We do aim to serve our shareholders' promised financial returns.

We are primely investing in inflight connectivity technologies with an ambition to reach a very competitive and innovative commercial global service to create a global connectivity ecosystem that can serve not only aviation or advanced air mobility sectors, but gradually expand horizontally in other sectors as well. Considering a wider investment outlook, we would like to take the current frontier investments in different domains related to the space sector. Such as communications satellites constellation (especially LEO satellites), remote sensing domains, and satellite launchers that not only have a high return on investment but also contribute to the transformation of the Kingdom of Saudi Arabia's economy into a dynamic and diversified economy. In general, we do look for deep cutting-edge technology investments and mega high-tech investment projects that can contribute to economic growth and competitiveness on a global scale and can bring high shareholders' financial returns.

Which specific disruptive technologies in the aviation, aerospace, and space communication sectors does SCIT Group consider as key pillars of its investment portfolio? What unique value do these technologies bring to the market? The aviation sector is witnessing disruptive technologies in communications that are transforming how aircrafts communicate internally and externally. These technologies contribute to improved safety, efficiency, and connectivity. The witnessed advancements in satellite communication technologies are improving connectivity and data transmission capabilities for aircrafts that is foreseen to enhance inflight connectivity, support real-time data transfer, and improve communication between the aircraft and ground systems.

Enabling global connectivity is one of our key investment pillars at SCIT Group that focuses on providing High-Bandwidth Connectivity (HBC) for passengers to enable real-time communication and support the growing demand for connectivity during flights. Our investment in SkyFive and Air-to-Ground technology aims to extend the implementation of 4G/5G technologies on the ground to aviation, providing high-speed, lowlatency connectivity for air-to-ground and ground-to-air communication. We also assess other investments and build strategic partnerships with other technologies like low Earth orbit (LEO) satellite constellations to complement our SkyFive solution— especially in the geographies that are hard to cover with A2G technology.

Another investment pillar is our investment in advanced cybersecurity solutions, which are critical for protecting inflight connectivity systems from potential cyber threats. Artificial Intelligence is another pillar that aims to analyze data from aircraft systems to predict and prevent maintenance issues, ensuring that connectivity systems remain operational. This should have an impact on reducing downtime, improving system reliability, and enhancing the overall inflight connectivity experience.

#### Taking the changing landscape of space-based communication technologies into consideration, how does SCIT Group form strategic alliances to ensure global coverage that is robust and scalable?

Spectrum acquisition and regulations play a crucial role in the evolution of space communications and inflight connectivity. The radio frequency spectrum is a finite and valuable resource that needs to be carefully managed to ensure efficient and interference-free operation of communication systems. Efficient spectrum acquisition and management are fundamental for fostering innovation, enabling new space-based services, and ensuring the continued growth of the space economy.

SCIT Group works to build a solid regional alliance, especially in the Middle East and Africa, with local regulators and local strategic partners, to get the right spectrum acquired for operating non-terrestrial network services seamlessly across borders, supporting global space-based services and applications. We focus on building deep, solid, strategic partnerships with all regulatory bodies in the region to assess the growing demand for inflight connectivity and allocate sufficient spectrum to meet the capacity needs of airlines and passengers.

Additionally, we have a strategic cooperation with Thales, which supplies us with the key strategic equipment needed for our solution. AMS Aero works with us to help us attain the certification required for the different aircraft types that we are strategically targeting. Shortly, we will announce other strategic partnerships in the satellite domain.

#### How does SCIT Group's commitment to global connectivity and disruptive technologies contribute towards achieving the milestones outlined in Saudi Vision 2030?

The comprehensive and ambitious Saudi Vision 2030 announced by Saudi Arabia's Crown Prince, Mohammed bin Salman, outlined the roadmap for transforming the country's economy and society, aiming to reduce its dependence on oil, diversify its economic base, and position Saudi Arabia as a dynamic and globally competitive nation by the year 2030.

According to PwC, the global space sector is predicted to exceed USD 1 trillion by 2030, reflecting a growth of 186% from 2020's market size. The growth in the Middle East will be driven by concerted investment between the public sector, global original equipment manufacturers (OEMs), and the local industry. Specifically, the areas of earth observations, space tourism, satellite communication, space mining, space research and development, space exploration, space debris, and manufacturing will be the key drivers of growth in terms of subsectors- with satellites alone projected to constitute 50% of the growth of the global space sector.

In the Middle East, there is ample opportunity to strengthen the foundations of the emerging space sector and build capabilities and infrastructure to thrive in the future. To do so, there is a need to bridge the gap between the ambitions of the government and emerging private sector players on the one hand, and world-class capabilities in manufacturing, science, and aeronautics on the other-all while involving regional talent and supporting localization agendas. The forecasted growth in the global space sector offers a range of opportunities for Middle-Eastern governments to advance across different strategic areas like economic diversification, R&D superiority (where having a footprint in space will increase market participation and reduce future uncertainties) and military interoperability (that is foreseen to increase military effectiveness and operational advantages and increase geospatial capabilities of governments).

Global connectivity is foundational to a futuristic economy characterized by innovation. collaboration. and inclusivity. As technological advancements continue to shape the world, a well-connected global network contributes to economic resilience, competitiveness, and sustainable development. According to the latest research study by Zion Market Research, the global wireless connectivity market size was valued at around USD 71.60 billion in 2022. The market is expected to grow at a CAGR of 15.06% and is anticipated to reach USD 219.86 billion by 2030. On the other side, the global satellite connectivity market was valued at USD 11.12 billion in 2021 and is projected to reach USD 22.12 billion by 2031, growing at a CAGR of 7.3% from 2022 to 2031.

Our key investment pillar in SCIT Group is to build our frontier connectivity technology to enable the transformation toward an intelligent, connected world. We aim to transform air travel by providing passengers with internet access, communication services, and entertainment options while in the air at continuously improved speeds and bandwidth through our SkyFive Air-to-Ground technology. We assess strategic investments before launching a constellation of LEO satellites for communication purposes under R&D consortium from regional and global lead institutions to support in expediting critical R&D capabilities in the Middle East and Africa region.





As technological advancements continue to shape the world, a well-connected global network contributes to economic resilience, competitiveness, and sustainable development

#### How do you perceive the current evolution of AI? What do you anticipate regarding its impact on the potency of technology?

Artificial intelligence (AI) can transform the productivity and GDP potential of the global economy. Recent developments in robotics, artificial intelligence, and machine learning (ML) have put us on the cusp of a new automation age that will bring substantial benefits to businesses and economies worldwide. We are transforming towards a more intelligent real-time world where the generative ability to exchange data and make informed decisions through advanced deep learning techniques is pervasive across everything, everywhere, at any time. In our new intelligent world, the aim is to dissolve our current daily routines of waiting, delays, queues, and paperwork- and rather have an instantaneous provision of goods and services available where and when we need them most.

The roles of AI in the space economy and inflight connectivity are dynamic, and ongoing advancements in technology will likely lead to further innovations and applications in these sectors. AI is being utilized to enhance the autonomy of satellites. Autonomous operations include tasks such as orbit adjustments, collision avoidance, and adaptive reconfigurations, allowing satellites to respond to changing conditions without constant human intervention. AI is applied to process and analyze vast amounts of Earth observation data collected by satellites. Machine learning algorithms help in identifying patterns, anomalies, and trends in data related to weather, climate, agriculture, and environmental changes.

Also, AI is used to optimize satellite communication systems. Machine learning algorithms can predict and mitigate signal interference, enhance data transmission efficiency, and dynamically allocate resources for better overall performance. AI is used for predictive maintenance in the aviation industry. Machine learning algorithms analyze data from aircraft sensors to predict equipment failures and recommend maintenance actions. This helps airlines optimize maintenance schedules and reduce downtime. Al algorithms optimize flight routes and planning based on real-time weather data, air traffic conditions, and fuel efficiency considerations. This helps reduce fuel consumption, improve ontime performance, and enhance overall operational efficiency. AI contributes to cockpit automation, providing decision support for pilots. Enhanced autopilot systems, intelligent navigation aids, and predictive analytics assist in navigation, weather avoidance, and fuel optimization. Inflight communication systems benefit from AI, leading to improved voice recognition, natural language processing, and automated responses. This enhances the interaction between crew members and the aircraft's communication systems. AI is utilized to analyze passenger behavior, preferences, and trends. This information can be used by airlines to optimize services, improve customer experience, and tailor offerings based on individual or group patterns.

## What milestones from 2023 do you believe had a pivotal impact on SCIT Group's trajectory?

We have managed to successfully to establish our SkyFive Arabia brand

in the Middle East following intense engagements about our high broadband inflight connectivity solution across commercial and business aviation sectors. Worth mentioning is our strategic partnership with stc Group, the digital leader in the region, and Saudi Arabia, that has won the 2100 MHz spectrum auction for non-terrestrial networks, which allows the provision of communications services on aircraft and the provision of mobile satellite services (MSS).

The Group's acquisition of these frequencies is an additional investment that aims to provide innovative mobile communications services that will contribute to the provision of mobile communications services between airspace and Earth-including internet on board aircrafts via A2G technology as well as the provision of mobile satellite services (MSS). We have also celebrated the sign-off of several strategic agreements (aside from the Dubai Airshow 2023), including partnering with a leading FBO in the luxury business jets sector- we will equip its business jet fleet with our innovative solution. We have also signed another agreement with a regional commercial airline where we are preparing to equip its first aircraft. In order to fast-track the rollout of our solution in the region, we have established a strategic agreement with AMS AERO.

## What are the primary goals and focus areas for SCIT Group in 2024?

The landscape of inflight connectivity and Advanced Air Mobility (AAM) is dynamic, with numerous companies, startups, and industry players actively exploring opportunities and making strategic investments. The success of these investments often depends on technological innovation, regulatory developments, and market demand for these transformative aviation solutions. Airline Inflight Entertainment and Connectivity services are expected to become more widely accessible over the next decade due to increasing demand.

While there is an interesting question that often arises about the provision of onboard broadband access— one



that usually centers around cost or, more specifically, the potential for airlines to move towards offering the service as a free-of-charge benefit for all passengers— SCIT Group shares the industry's general belief that the market will develop in such a way in time.

In 2024, we will continue our investment commitment to SkyFive and we will continue accelerating the roll out of our aviation ground network covering the Middle East and Turkey (expanding shortly in the coming years to Northern Africa and the rest of Africa). We are also preparing to strategically invest in the satellite communications sector, specifically focusing on LEO satellites (we believe that LEO satellite technology is a very complementary solution to our SkyFive A2G technology)- with the goal to enrich our regional and global service coverage. We are preparing to establish another business unit for eVTOL communications as well as launch our focused R&D ecosystem, in partnership with leading regional and global research institutions, to act as our extended technology labs and advisory unit. 🎟

Airline Inflight Entertainment and Connectivity services are expected to become more widely accessible over the

next decade due to increasing demand



**TELECOM Review** 

## e& enterprise



Alberto Delgado, CEO of e& enterprise IoT & AI

## **e& enterprise:** Integrating IoT and AI to Thrive in the Modern Digital Landscape

In an exclusive interview with Telecom Review, Alberto Delgado, CEO of e& enterprise IoT & AI, shared insights centered around the impact of AI on the region's businesses and the overall economy.



ow has the IoT and AI business created value in the past year for the overall business? IoT and AI are one

of the main components of our digital solutions, empowering organizations to extract valuable insights from their data, automate processes, and make informed, data-driven decisions. We harness the power of IoT and AI to analyse and identify patterns, predict outcomes, and optimize operations. This seamless integration of IoT and AI enables smarter urban development, safer cities, enhanced healthcare delivery, modernized government services, and more.

For example, our IoT technologies in smart cities monitor energy consumption, water usage, and traffic patterns, providing city authorities with actionable insights to make informed decisions regarding resource allocation, infrastructure improvements, and traffic management. Similarly, in the healthcare sector, our Al-driven solutions can predict disease outbreaks by analysing health data and historical trends, facilitating early interventions and the efficient allocation of healthcare resources.

We also leverage AI to develop advanced conversational AI solutions that enhance customer support and automate routine tasks, improving customer interactions, reducing response times, and achieving higher customer satisfaction.

IoT and AI synergize to empower our clients to extract maximum value from their data, make informed decisions, streamline operations, and achieve their goals more efficiently. This seamless integration of cutting-edge technologies is the key to unlocking the full potential of digital transformation and enabling organizations to thrive in the modern digital landscape.

## What were your key achievements this past year? How have they contributed to the vision of the company?

In the past year, technologies like Al have left a profound impact and are also transforming industries, which will only grow in the coming years. Thanks to the UAE's leadership's vision, this has also supported us in charting out our ambitious plans for AI. In the last year, the country has rolled out multiple digital strategies to establish itself as a global AI powerhouse by 2031 that align seamlessly with the UAE Centennial 2071 vision of fostering a robust knowledgedriven economy.

The impact of AI on the region's economic augmentation is monumental. Projections show that by 2030, AI will infuse a staggering USD 320 billion into the Middle East and North Africa region, predominantly through industrial automation savings. On a global scale, AI's economic contribution is anticipated to hit a massive USD 15.7 trillion.

At a group level, the partnership with Microsoft allowed the exploration and integration of the technology into our services, becoming a powerful tool for improving customer experience and helping businesses provide more personalized customer support. The Engage Converse-Al is another groundbreaking ChatGPT-powered solution that is reshaping customer support and chat interactions.

5G has also supported the growth of technologies like AI and IoT that are expected to have a major impact on the global economy in the coming years. According to a report by McKinsey, IoT could generate up to USD 11.1 trillion in economic value each year by 2025. The Middle East is also expected to see significant growth in the IoT market in the coming years. According to recent reports and studies, the IoT market in the Middle East is expected to grow to USD 42.8 billion by 2028.

The emphasis on IoT by e& enterprise aids governments and businesses in intensifying their endeavours, propelling them toward becoming data-driven and highly automated organizations. By investing in IoT technologies, businesses can improve their efficiency, productivity and profitability. Governments can use IoT to improve the quality of life for their citizens by developing smart cities and smart infrastructure.

A great example is the recent collaboration with Emirates Health

Services (EHS) and the Abu Dhabi Department of Economic Development (ADDED) to develop and advance technologies and initiatives to improve the overall customer experience in healthcare and manufacturing. EHS will work with e& enterprise to explore cloud-based enterprise systems and platforms for community health programs, specifically focused on healthcare seekers in the Northern Emirates. Together with e& enterprise, they developed the 'Digital Clinic'; the aim was to improve access and quality of care through the integration of digital technologies into clinical workflows, evidence-based care and shared decision-making in a sustainable and scalable way.

With ADDED, they will look at Industry 4.0 and sustainable manufacturing as part of efforts to achieve the Abu Dhabi Industrial Strategy's (ADIS) objectives by adopting technologies like cloud computing, cybersecurity, the Internet of Things (IoT) and Artificial Intelligence (AI) to empower manufacturing enterprises in Abu Dhabi.

We are also taking the lead in Industry 4.0, helping manufacturers thrive in the digital age. Our partnership with Maxbyte combines our IoT, AI, and data management expertise with Maxbyte's Industry 4.0 solutions to craft intelligent manufacturing processes that optimize efficiency, reduce waste, and minimize environmental impact.

This collaborative effort aligns with the UAE's Fourth Industrial Revolution Programme, accelerating the manufacturing sector's adoption of Industry 4.0 technologies. We provide our clients with a comprehensive suite of Industry 4.0 solutions that enhance operational efficiency, drive innovation, and shape a smarter, more sustainable future for manufacturing.

Our approach to Industry 4.0 involves developing autonomous solutions that can be readily deployed in manufacturing environments. These solutions encompass IoT sensors, AI-driven analytics, and automation. By collaborating with Maxbyte, we are making Industry 4.0 accessible and practical for manufacturers, allowing them to enhance operational efficiency, reduce costs, and stay competitive in a rapidly evolving landscape.

We empower manufacturers with IoT solutions that connect machines, devices, and systems, enabling realtime data collection and analysis. This data-driven approach enhances visibility into production processes, reduces downtime, and allows for predictive maintenance.

Our contributions to Industry 4.0 encompass IoT and AI solutions that enable data-driven decision-making, automation, predictive maintenance, and sustainability, all of which are vital components of the transformative wave in manufacturing and digitalization.

All these technologies are transforming our lives and making a major impact regionally and globally in the coming years. At e&, we are in a unique position we can contribute to the future of the region by investing in these technologies and developing new products and services (that leverage them), while creating a more sustainable and greener future.



IoT and AI synergize to empower our clients to extract maximum value from their data, make informed decisions, streamline operations, and achieve their goals more efficiently



#### **TELECOM** Review



## **Bridging the Digital Divide:** Nokia's Commitment to Neutral Hosting in the Middle East and Africa

In an era where digital connectivity is synonymous with progress, bridging the digital divide has become a crucial focus for telecommunications companies worldwide. In the Middle East, Nokia is playing a pivotal role in this endeavor through its strategic approach to neutral hosting. Neutral hosting will play a significant role in narrowing the digital gap and falls in line with Nokia's mobile network strategy— connecting the unconnected.

eutral hosting is not a novel concept, with multi-tenant solutions and network sharing being prevalent for some time globally and in Africa. The unique opportunity today lies in fostering collaboration between infrastructure companies such as towercos, communication service providers (CSPs), data center providers, and other stakeholders. By pooling resources and allowing the shared usage of assets, these entities can significantly impact coverage in both rural and urban areas, addressing the digital divide.

Nokia has long been a leader in 4G and 5G technologies, focusing on providing coverage in urban centers. However, we recognize the need to extend our solution to address the digital divide globally, especially in Africa. The adoption of a neutral hosting as an enabler allows us to enhance 5G densification, collaborate with enterprises for industryspecific coverage, and provide connectivity to underserved rural communities. This shift in approach aligns with the evolving landscape of telecommunications, emphasizing the importance of new business models to ensure broader and more diverse connectivity.

To create value and impact from these solutions, industry collaboration is paramount as we drive new business models. We are working closely with regulators and partners across the region and our aim is to unite the ecosystem, foster dialogue and create a shared vision. Through focused initiatives, we encourage different stakeholders to openly discuss regulatory frameworks, avoid infrastructure duplication or wastage, and adapt network sharing policies where possible.

The neutral host model has firmly established its presence worldwide and we are at the start of a transformational change. The attractiveness of this model lies in its ability to recover network build costs by hosting multiple tenants. Whether enterprises or CSPs, the appeal is evident— it frees up resources that can be redirected towards core business activities, enabling them to deliver superior services to their customers.

Several key factors contribute to the growing allure of the neutral host model. Capital scarcity has become a prevalent concern, especially in our region, making the shared-infrastructure concept more economically viable. The surging demand for data, coupled with the necessity to upgrade legacy networks, further propels adoption of this model.

Among stakeholders in the telecommunications ecosystem. communication service providers (CSPs) stand to gain the most from the flourishing neutral host market. This model presents an opportunity for CSPs to offset the high costs associated with building dedicated networks. For instance, neutral hosts can facilitate indoor connectivity for specific buildings and venues, such as those hosting high-profile events like concerts. This shared infrastructure ensures that all CSPs can utilize a single foundation, streamlining operations and enhancing efficiency. Similarly, challenges associated with outdoor connectivity, particularly in rural areas, can be effectively addressed through the collaborative approach of the neutral host model.

While global internet connectivity has experienced exponential growth, certain regions have lagged. At Nokia, we recognize that closing the digital gap is not just a technological challenge but a social and economic imperative; and are therefore committed to providing sustainable and energy-efficient solutions, considering environmental, social, and governance (ESG) impacts. Our focus on bridging the digital divide in Africa, Middle East and beyond stems from the belief that connectivity is central to economic sustainability and social cohesion, and the time to act is now. This commitment is further demonstrated in our proactive stance on neutral hosting.

As the global telecommunications landscape continues to evolve, the neutral host model emerges as a pivotal player, fostering collaboration and efficiency. For communication service providers and other stakeholders, the neutral host model represents an opportunity to navigate the challenges of high deployment costs and environmental impact. As this model gains momentum, it is poised to play a crucial role in shaping the future of telecommunications by providing a cost-effective, environmentally sustainable, and technologically advanced solution for connectivity.

By Danial Mausoof, Market Head, Technology and Solutions for Mobile Networks, Middle East and Africa at Nokia



Neutral hosting will play a significant role in narrowing the digital gap and falls in line with Nokia's mobile network strategy— connecting the unconnected



**TELECOM Review** 



## **Digital Defence:** Salam's Cutting-edge Cybersecurity and Al Solutions

### During the 17<sup>th</sup> edition of the Telecom Review Leaders' Summit, Mohammed K Alharithy, Sr. Director of Cybersecurity at Salam, discussed Salam's cybersecurity strategies, the use of artificial intelligence in cybersecurity defense systems, and much more in an exclusive interview with Telecom Review.

implemented cybersecurity strategy aimed at securing its operations and defending against potential cyber threats, Alharithy emphasized the significance by stating, "As a service provider, our primary goal is to empower businesses by adhering to the rigorous concept of cybersecurity, such as zero trust, which entails—never trust, always verify."

hen probing into Salam's

This approach differs from the conventional practice of making assumptions about the necessity of securing an environment. Alharithy negates the common assumption that access to an air gapped environment cannot be exploited without physical access to it: "We address insider threats by implementing the zero-trust model, which has proven to be instrumental in ensuring compliance with various local regulations. These regulations often encompasses Multi-Factor Authentication MFA authentication and restricted access, forming integral components of our comprehensive zero-trust strategy," he stated.

#### **Anticipating Cyber Risks**

On the other hand, Alharithy highlighted how Salam anticipates cyber risks, he said: "By comprehending Salam's business intricacies and having cybersecurity leaders with a profound understanding of Salam's business and operations, they can assess risks stemming from various cyber factors. This includes conducting regular audits, penetration testing, and periodic risk assessments, ensuring a thorough evaluation of potential risks."

Adding to that, Alharithy emphasized Salam's focus on fundamental aspects such as education, training and patch management. He explained: "This enables us to understand the risks and ensures that Salam's cybersecurity risks are covered by our security controls and evaluations."

#### The Deployment of Artificial Intelligence in Cybersecurity Defense Systems

Within this domain, Salam engages with emerging AI technology; embracing and evaluating new domains of artificial intelligence, including machine learning. Alharithy explained: "We are incorporating tools that automate a wide range of routine and repetitive tasks, thereby minimizing manual work and reducing the likelihood of human errors in our daily operations."

In conclusion, Mohammed K Alharithy, Sr. Director of Cybersecurity at Salam, provided valuable insights during the Telecom Review Leaders' Summit. Emphasizing the significance of Salam's cybersecurity strategy, he underscored the adoption of a zero-trust model, challenging the conventional approach and ensuring compliance with local regulations.

Alharithy highlighted Salam's proactive stance in anticipating cyber risks, emphasizing the importance of understanding the business and conducting periodic audits, penetration testing and risk assessments. Education, training and robust patch management were identified as fundamental elements in fortifying Salam's cyber risk coverage.

Moreover, Alharithy shed light on Salam's approach to leveraging artificial intelligence in cybersecurity defense systems. By incorporating emerging AI technologies, particularly machine learning, Salam aims to automate routine tasks, reduce manual errors, and enhance overall operational efficiency. This forwardlooking strategy demonstrates Salam's commitment to staying at the forefront of cybersecurity advancements and ensuring the resilience of its cyber defense mechanisms.

> As a service provider, Salam's primary goal is to empower businesses by adhering to the rigorous concept of cybersecurity, such as zero trust, which

> > always verify

entails-never trust.



**TELECOM Review** 

## **TEDMOB Reigns Supreme** in the Digital Era

TEDMOB, with its wealth of experience in services, communications, and digital solutions, is advancing ahead of local and Gulf region competitors. In an interview with Telecom Review, Mario Hachem, TEDMOB's co-founder and CEO, discussed the company's strategy to ensure a superior corporate and individual experience amid challenges and opportunities in the sector.

n the era of digital platforms. how does TEDMOB maintain its continuity and what strategy does it follow to keep up with the fast-paced era? Navigating the digital platform age, TEDMOB maintains its continuity through a multi-faceted strategy designed to thrive in this dynamic and fast-paced world. The company pays great attention to aligning with emerging developments, technological advancements, and rapidly-changing consumer behaviors. By staving connected with the evolving needs of its target audience, TEDMOB actively refines its offerings and services. This adaptation is complemented by a commitment to embracing the latest technologies and best programming practices, ensuring that the company remains at the forefront of development. Through a blend of strategic vision, flexibility, and dedication to innovation, TEDMOB is positioned not only to keep up with the rapid changes of the digital world but also to lead and shape the digital transformation landscape.

#### How does TEDMOB distinguish itself from other local market competitors, considering its substantial expertise in the field of communications and services?

TEDMOB distinguishes itself prominently in the local and Gulf market due to its extensive experience and distinctive qualities in the field of communications, services, and programming. Leveraging its wealth of experience, the company has positioned itself as a leader, demonstrating a commitment to excellence that surpasses industry standards. One factor that sets TEDMOB apart is its keen understanding and accurate anticipation of ongoing developments in the field of communications and programming, allowing it to proactively adjust its services and stay ahead; in line with market trends and technological advancements.

Furthermore, TEDMOB places strong emphasis on client-focused solutions. offering a personalized and responsive approach that sets it apart from its competitors. Its vast expertise in digital transformation fosters a deep understanding of customer needs, enabling TEDMOB to deliver not only advanced technological solutions but also a level of service that exceeds expectations, particularly in areas such as UI/UX, security, fintech, e-commerce, mobile apps, and web applications. Whether it be through innovative strategies, advanced technologies, or a dedication to achieving unparalleled customer satisfaction. TEDMOB continues to redefine the standards of success in the local market, solidifying its position as a leader in the fields of communications, services, and digital transformation.

#### How have client requirements evolved since the establishment of TEDMOB in 2015? What is the region seeking in 2023?

Since its establishment in 2015, TEDMOB— a leading agency in digital



region— has witnessed a significant evolution in client needs. In the dynamic context of web and application services, TEDMOB has continuously adapted to meet the changing needs of its clients. Initially focusing on basic digital solutions, the company has evolved to encompass advanced technologies, personalized experiences, and an increased focus on user-centric designs, especially custom development.

In 2023, the region required comprehensive and innovative digital solutions that addressed current challenges and anticipated future trends, particularly in the realms of data analytics and artificial intelligence. TEDMOB stood at the forefront to meet these needs, leveraging its expertise to provide forward-thinking strategies, advanced technologies, and unparalleled customer service.

In an era where digital transformation is essential, TEDMOB remains committed to shaping the digital future of the region by delivering custom solutions and custom service development that exceeds expectations and contributes to the overall progress of companies in various industries.

What is the yearly financial investment required by TEDMOB to improve OTT services and provide support to telecommunications companies? As a leading agency in digital

transformation and the development of customized delivery solutions, TEDMOB recognizes the vital role that financial investments play in enhancing its offerings, particularly in the development of OTT services and providing essential support to telecommunications companies. The annual investment required by TEDMOB is carefully calculated to align with the ever-changing requirements of the digital landscape. This financial commitment is directed towards leveraging the latest technologies, enhancing the capabilities of OTT services, and strengthening the communication infrastructure.

Part of the investment includes enhancing the workforce, which has grown to 40+ engineers. A section of these investments is directed towards developing and enhancing the team's capabilities, contributing to building a strong foundation of skills and expertise to efficiently and innovatively achieve TEDMOB's goals.

TEDMOB's strategic approach includes continuous innovation and adaptation to industry trends, ensuring that these financial investments contribute to the development of seamless and effective, customized, delivery services that effectively meet the evolving needs of its customers in the rapidly changing digital environment.

### How does TEDMOB develop mobile phone and value-added services?

TEDMOB highlights the development of mobile telephone services and the addition of significant value through its commitment to developing customized solutions using state-of-the-art advanced technologies.

Using state-of-the-art advanced techniques, TEDMOB goes beyond the traditional approach of designing solutions that accurately meet the requirements of the mobile ecosystem.

By exploiting the power of innovative technology and native mobile app development, the company ensures that its mobile phone services remain at the forefront of the industry, providing users with smooth experiments with valueadded elements. The TEDMOB strategic approach includes ongoing research and the adoption of emerging technologies, allowing the development of mobile phone solutions that accurately meet not only industry trends but also anticipate and exceed the evolving expectations of users. This ensures TEDMOB's dedication to development by utilizing state-ofthe-art techniques, especially in the field of security. TEDMOB mobile services continue to offer superior jobs, attracting users and adding a general value to its clients.

In an additional context, it is noted that all new telecommunications companies require the development of mobile applications to enhance interaction with their clients and provide new services. The development of mobile phone applications is very vital for companies in this sector, as all telecommunications operators seek innovative digital solutions that enable them to build stronger relationships with their audiences and provide services that commensurate with the growing expectations of clients.

This growing demand for mobile phone solutions shows industry awareness of the importance of digital integration and improved user experience in B2C as well as B2B industries, and these innovations point to the willingness and challenges of telecommunications companies to meet the demands of the mobile age.

## What are the challenges facing your company right now, and what are the sustainable solutions?

TEDMOB has been a successful emerging agency year after year, where we have succeeded in achieving sustainable growth. Despite our achievements, we recognize that overcoming challenges is needed in the rapidly evolving environment of technology and digital services.

One continual challenge is attracting and maintaining the best development competencies. To deal with this, we are taking a proactive approach, constantly seeking to acquire the best programmers in this field and to promote an environment that promotes innovation and professional growth. In addition, maintaining the latest technological developments is vital. TEDMOB is committed to implementing and integrating state-of-the-art technologies into our solutions, thus ensuring advanced services that meet and go beyond the requirements of the ever-changing digital environment. This commitment to talent acquisition and technological innovation underpins our strategy towards overcoming the challenges of the situation and ensuring sustainable success in a dynamic business environment.

#### How does TEDMOB prepare for the next phase to enable its position in the world of digital applications and platforms?

In preparing TEDMOB for the next phase to enhance its position in the world of advanced digital applications and platforms, the company pays particular attention to its commitment to continuous learning and adaptation. We have established TEDMOB ACADEMY as a platform for in-house education and the training of individuals, and we are fully aware of the continual development of technology. TEDMOB ensures that its team is skilled in the latest programming languages, relying on innovation as a core value.

By remaining at the forefront of technological advances, the company continues to meet the expectations of the digital age, while also going beyond them. Furthermore, TEDMOB strategically integrates AI services into its future projects, recognizing the crucial role played by artificial intelligence in promoting user experiences and providing advanced solutions. This forward-looking approach highlights the constant dedication of TEDMOB to remaining ahead in the rapidly changing world of digital applications and platforms.

Embark on a transformative journey with us at TEDMOB. Our unwavering commitment to innovation and client satisfaction sets us apart. Join the ranks of our satisfied clients who have witnessed firsthand the power of bespoke solutions, cutting-edge technology, and a collaborative approach.

Elevate your digital experience with TEDMOB where every collaboration is a journey toward digital brilliance and lasting partnerships.

Visit our website: www.tedmob.com



## Building Tomorrow's Data Centers: A Focus on Sustainability in the Middle East

The expansion of cloud computing and the rapid integration of Generative AI across various domains, from email and search to food delivery apps, are driving an increase in the number of data centers. In the near future, the construction of hundreds of data centers annually is anticipated to meet the growing demand of customers. This poses a challenge for companies committed to achieving carbon negativity and water positivity. Despite ongoing technological advancements in efficiency, data centers still consume substantial amounts of energy and water, particularly in evaporative cooling systems designed to prevent equipment overheating. On a global scale, the industry is estimated to use around 200 terawatt-hours of electricity each year.

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n the Middle East, large data centers, characterized by high-density computing power, may not seem like the most likely venues for pioneering sustainability approaches. However, there is a recent emphasis on addressing environmental concerns within the industry, with a focus on improving efficiency, offsetting emissions, and transitioning to renewable energy sources. Many of these data centers are adopting green building principles, establishing environmentally conscious infrastructures that prioritize energy efficiency and minimize their overall environmental impact.

## Energy Efficiency and Sustainable Buildings

In the region, experts believe that a promising path forward involves a reliance on clean energy and a novel approach to constructing energyefficient data centers. The emphasis is on the comprehensive process of designing, building, and operating data centers that prioritize energy efficiency and sustainability throughout the region.

This endeavor requires collaborative efforts— as individual endeavors are insufficient. Instead, it necessitates partnerships among stakeholders to bring about developments such as the establishment of a solar photovoltaic plant to supply renewable power.

An illustrative case can be observed in the UAE, where the country is diversifying its economic landscape and nurturing a digital economy. Many companies are gearing up to develop facilities that can meet the escalating demand for advanced digital infrastructure. These initiatives not only support businesses in enhancing their digital resilience and transformation but also contribute significantly to the overall growth of the UAE's digital economy.

#### Collaborating Towards a Sustainable Tomorrow

In recent times, companies have been actively implementing strategies aimed at attaining net-zero waste standards and certifications. A prevailing 'durable-first' approach, embraced by many, prioritizes minimizing waste generation. This involves a concentrated effort to reduce water consumption and introduce measures such as water reuse and recycling.

A noteworthy innovation in the new data centers of the UAE involves the adoption of adiabatic-free cooling chilled water technology. This design ensures efficient cooling, even in challenging environmental conditions (and during temperature peaks). The adiabatic-free cooling chillers not only provide increased capacity but also result in substantial energy savings while operating with minimal noise.

#### Forging a Sustainable Digital Frontier

The progression of data centers is intricately linked to the infusion of sustainable practices into their operations. The future envisions a dedication to green building principles, emphasizing the utilization of ecofriendly construction materials, efficient insulation techniques, and the optimization of natural lighting sources.

In the pursuit of heightened energy efficiency and enhanced air quality, upcoming data centers may integrate innovative features, such as green spaces or vertical gardens within their structures. These sustainable strategies aim not only to optimize resource utilization, but also to mitigate the environmental impact associated with meeting the escalating demands of computing.

Embracing a green ethos, the data centers of the future will prioritize modular and energy-efficient principles. They will employ cuttingedge methods, including the adoption of green power, water reclamation, zero water cooling, recycling initiatives, and upgraded power sources. Through the implementation of these forwardthinking practices, data centers can achieve the dual objectives of optimal energy efficiency and sustainability.

Additionally, the introduction of Edge computing plays a pivotal role in

reducing energy consumption and lessening the environmental footprint. By processing data closer to its source, smaller, localized data centers can be established, contributing significantly to the development of a more sustainable digital infrastructure.

Through the collective adoption of these strategies, the future landscape of data centers is poised to lead a transition towards a harmonious fusion of sustainability and efficiency. This signifies a transformative journey towards a greener and more environmentally-conscious digital infrastructure for future generations.



In the region, experts believe that a promising path forward involves a reliance on clean energy and a novel approach to constructing energyefficient data centers



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### UAE Appoints New Council for Artificial Intelligence Advancement



His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the UAE, has issued a law establishing the Artificial Intelligence and Advanced Technology Council (AIATC).

The council will be responsible for developing and implementing policies and strategies related to research, infrastructure and investments in artificial intelligence and advanced technology in Abu Dhabi.

His Highness also issued a resolution appointing members of

the new council. The following new appointments were made; H.H. Sheikh Tahnoun bin Zayed Al Nahyan, the Deputy Ruler of Abu Dhabi, as Chairman of the AIATC; and H.H. Sheikh Khaled bin Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Chairman of the Abu Dhabi Executive Council, as Vice Chairman.

The resolution also appointed Khaldoon Khalifa Al Mubarak, Jassem Mohamed Bu Ataba Al Zaabi, Faisal Abdulaziz Al Bannai, and Peng Xiao as members of the AIATC.

#### Pioneering Technological Leadership

The establishment of the AIATC reflects a strong belief in the importance of technological leadership in building the economy of the future. It complements Abu Dhabi's strategy to position the Emirate as a world-leading hub for investments, partnerships, and talent in the sector.

Separately, in a recently concluded global economic convention, Omar bin Sultan Al Olama, the UAE's Minister of State for Artificial Intelligence, Digital Economy, and Remote Work Applications, recognized the proliferation and importance of generative artificial intelligence (GenAI) as the driving force of the future digital economy.

Al Olama also stressed that as generative artificial intelligence continues to evolve, cultivating the appropriate digital skills will be crucial to ensure the agility of talents to adapt to new technologies and keep pace with global changes.

### Innovation and Connectivity Soar. Exploring GCC's ICT Sector in 2023



GCC countries revealed strong digital transformation efforts in 2022 and this continued in 2023, ranking high on the latest annual GCC E-Performance Index.

The ICT sector within the GCC landscape was globally acknowledged and is poised for significant expansion and progress in the forthcoming years. A positive outlook was observed for the region's ICT sector, consisting of various factors including digital transformation, smart city initiatives, cybersecurity measures, innovation, cloud computing, e-commerce, artificial intelligence (AI), and robotics.

Governments in the region are dedicating their efforts to diversifying their economies, and this commitment, coupled with the growing techsavviness of the population, establishes a favourable environment for sustained growth. The harmony between governmental commitment and cuttingedge technologies lays the foundation for a dynamic and flourishing ICT landscape across the GCC countries.

#### ICT Landscape in the GCC

Based on the 2023 GCC E-Performance Index, there are three dominant trends that have been observed across the countries: digitalization and smart cities; cybersecurity; and 5G technology adoption.

GCC governments are investing significantly in smart infrastructure, leveraging technologies like IoT, AI, and big data analytics. This emphasis on smart cities aims to transform industries such as healthcare, transportation, and energy, fostering a more connected and technologically advanced environment.

As digital interconnectivity in the region has increased, so too has the risk

of cyber threats. Governments and businesses are acknowledging this and investing in robust cybersecurity measures, including advanced technologies, skilled professionals, and comprehensive strategies. This emphasis on cybersecurity is crucial for maintaining trust in digital transactions, protecting national security, and sustaining the growth of the digital economy in the region.

The momentum for 5G deployment is increasing in the GCC, with both governments and the telecom sector making substantial investments in 5G infrastructure. The expectation is for its transformative impact to span across various sectors. With a focus on faster and more reliable connectivity, 5G is anticipated to drive innovations like augmented reality, virtual reality, and IoT as it advances into the 5G Advanced era. 5G's increased bandwidth and low latency are crucial for supporting smart applications, autonomous vehicles, and emerging technologies.

## Image: Constraint of the second system4 - 7 March 2024Riyadh Exhibition and Convention<br/>Center, Malham, Saudi Arabia

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## UAE Marks Momentous Advancement in International Space Collaboration



Embarking on a new space venture in 2024, the UAE revealed a collaboration with NASA on the Lunar Gateway Station project— the first-ever space station to orbit the Moon. Securing a permanent seat, the UAE will actively contribute to the extensive lunar and space exploration initiative. As one of the pioneering nations sending an astronaut to the Moon, the UAE gained priority access to valuable scientific and engineering data collected by the station, enriching its pursuit of knowledge.

His Highness Sheikh Mohammed bin Rashid Al Maktoum said, "We have a longstanding journey in the space sector. Our team comprises highly skilled professionals capable of leading the most challenging scientific missions. Our unwavering ambition knows no limits when it comes to our future Emirati projects."

Hamad Obaid AlMansoori, Chairman of the Mohammed Bin Rashid Space Centre (MBRSC), said, "Our participation in this project marks a new chapter in the UAE's journey of space exploration. Guided by the ambition of our leadership, we are entering a fresh era in space exploration. Their wise vision has been a driving force behind our involvement in the development of Nasa's lunar Gateway station— a global milestone showcasing the UAE's commitment and expanding capabilities."

The UAE is joining forces with the US, Japan, Canada, and the European Union for this international space project. Notably, 2023 marks a pivotal year for the UAE in space exploration, achieving historic milestones such as becoming the first Arab nation to land a rover on the Moon and sending an Emirati astronaut on a six-month mission to the International Space Station.

#### **NASA's Lunar Gateway Station**

The lunar space station is designed to facilitate extended exploration of the Moon as part of NASA's Artemis project. This initiative aims to bring humans back to the lunar surface and establish sustainable long-term missions.

"By combining our resources, scientific capacity, and technical skill, the U.S. and UAE will further our collective vision for space and ensure it presents extraordinary opportunities for everyone here on Earth," said, US Vice President, Kamala Harris.

## **Qatar Sets 2030 Targets to Achieve Government Excellence**



Qatar's recently-unveiled third National Development Strategy (NDS3) outlines the plan for the next phase of Qatar's development journey towards actualizing the Qatar National Vision 2030 (QNV 2030). As part of NDS3's strategic national outcomes, Qatar aims to achieve government excellence.

This transformation will lead to the attainment of a global reputation as a premier provider of government services for citizens, residents, businesses, and institutions. The aim is to establish the nation as a leader in effective, efficient, and transparent governance.

#### Government Excellence

Included in its Government Excellence-2030 Targets are goals such as digitizing 90% of services provided to citizens, attaining a customer satisfaction score surpassing 85% across all services, and ensuring that more than 90% of government employees possess essential digital skills.

Marking a significant step towards enhancing the country's digital infrastructure, Qatar aspires to attain global leadership in government services and digital government while also strengthening decision-making capabilities and accountability within government institutions.

A critical component of this strategy is the establishment of a specialized Center of Excellence (CoE) for data and emerging technologies, including Artificial Intelligence (AI). This center is expected to spearhead several vital initiatives such as the development of a comprehensive national data governance and management framework.

Strengthening central capabilities in innovation and digitization also involves revamping the service catalogue; establishing Service Level Agreement (SLA) frameworks; launching a onestop-shop portal, delivering integrated services; enhancing customer experience at service complexes; and creating innovation labs alongside the CoEs for service design.

Compliance with SLAs within and among governmental entities is anticipated to surpass 80%.

The NDS3 notes the significance of the government's institutional transformation which is deemed essential to facilitate the realization of envisioned progress across Qatar's economic and social spheres.

## Saudi On Track to Become a Global Hub for Electronics and Advanced Industries



Saudi Arabia is set to establish itself as a global hub for electronics and advanced industries, as announced by Crown Prince Mohammed bin Salman Al Saud, who serves as the Prime Minister and Chairman of the Board of Directors of the Public Investment Fund (PIF). The newly launched company, Alat, aims to play a pivotal role in this endeavor by creating 39,000 direct jobs and contributing a direct non-oil GDP of USD 9.3 billion to Saudi Arabia by 2030.

#### Producing Goods for Advanced Industries

Alat, under the leadership of the Crown Prince, will function as a national

champion, focusing on making Saudi Arabia a global hub for sustainable technology manufacturing with a specific emphasis on advanced technologies and electronics. The company will concentrate on producing goods for both local and international markets across seven strategic business units, including advanced industries and semiconductors, smart appliances, smart health, smart devices, smart buildings, and next-generation infrastructure.

#### **Facilitating Private Sector Growth**

In addition to its manufacturing goals, Alat will facilitate private sector growth through strategic partnerships with leading international players in manufacturing and technology. Supporting private sector growth involves significant investments in research and development (R&D) infrastructure. This includes establishing state-of-the-art R&D centers, innovation hubs, and technology parks equipped with advanced laboratories and testing facilities. The promotion of private sector growth involves embracing digital transformation and Industry 4.0 principles across manufacturing and industrial processes. This includes the deployment of smart manufacturing technologies, Internet of Things (IoT) solutions, and data analytics platforms to optimize production efficiency, enhance product quality, and enable predictive maintenance.

These collaborations are expected to enhance the economic ecosystem at both local and regional levels. Furthermore, the company will actively contribute to global industrial transformation by providing sustainable solutions based on clean energy sources, aligning with Saudi Arabia's commitment to achieving carbon neutrality by 2060.

## Jordan Assumes Presidency of Digital Cooperation Organization



In a landmark decision, the Digital Cooperation Organization (DCO) has elected Jordan as the leading force in fostering global digital collaboration. The announcement was made during the organization's third annual General Assembly meeting held in Bahrain on Wednesday.

Ahmad Al Hanandeh, the esteemed Minister of Digital Economy and Entrepreneurship from Jordan, has been appointed as the new Chairman of the DCO Council for Digital Collaboration. This signals a significant step towards advancing inclusive and sustainable growth in the worldwide digital economy. The meeting, attended by heads of delegations, ministers, and representatives from the 16 DCO member countries, marked a crucial moment in the organization's mission to accelerate digital prosperity for all. The diverse gathering underscored a commitment to collaborative efforts in navigating the challenges and opportunities presented by the digital era.

#### Shaping the Global Digital Landscape

The Kingdom of Jordan is set to host the next DCO General Assembly in February 2025, further solidifying its pivotal role in shaping the global digital landscape. As the newly elected president, Jordan is poised to lead the way in promoting digital innovation, cooperation, and prosperity on the international stage.

The DCO General Assembly plays a crucial role in shaping the global digital

landscape by serving as a platform for international collaboration, dialogue, and decision-making on key digital issues. As the highest decision-making body of the DCO, the General Assembly convenes representatives from member countries, international organizations, businesses, civil society, and other stakeholders to discuss and address pressing challenges and opportunities in the digital realm.

Through the DCO General Assembly, member countries and stakeholders can collaborate on developing strategies, policies, and frameworks that promote digital inclusion, innovation, and sustainability worldwide. By facilitating dialogue and cooperation among diverse actors, the General Assembly contributes to the formulation of shared norms, standards, and best practices that guide digital governance and ensure the responsible and ethical use of digital technologies.



# **Till Tests Do Us Part:** Analyzing the Telco-Vendor Partnership

As 5G deployments continue to grow, the next-generation networks must handle the substantial data traffic generated by hundreds of new applications and services utilized by millions of users. According to GSMA, 5G networks are likely to cover one-third of the world's population by 2025. Hence, the technology's impact on the mobile industry and its customers will be immense. Consequently, this development warrants the close workings between vendors and telecom operators to incorporate trust, cooperation, shared risk and investment and mutually beneficial SLAs to run their respective operations.

> ver the years, a lot has changed in the telco/vendor relationship. From procurement processes to price negotiations to

standardization and service delivery, both industry players must recognize the best resolutions that complement each other's operational and business objectives.

**Performing Strategic Assessment** Looking at the technology stack, the emphasis on hardware-centric solutions to provide physical network equipment—switches, routers, and other infrastructure components is giving way to software-defined networking (SDN) and network function virtualization (NFV) solutions. This is a logical development as digital technology is deeply incorporated with overall business strategy in the telecom sector; encompassing network management, customer interaction, CRM, database management, and customer value management and so on. SDN and NFV functionalities make technologies like network slicing possible. This means that instead of using a uniform approach for all customers, it allows the customization of functionality and network operation for a specific customer. This is a departure from the one-size-fits-all approach seen in previous mobile generations.

In the traditional service delivery model, projects were typically long-term and expensive, involving extensive customization using traditional waterfall development or lineardigital services.

sequential life cycle models. However, the focus has shifted towards flexibility and adaptability due to quickly changing market conditions. This is achieved through agile and iterative development models, especially as businesses move away from a physical presence and promote reliance on

When it comes to business models, upfront capital expenditures (CapEx) have given way to operational expenditure (OpEx) and subscriptionbased models. Revenue models based on product sales and support are transitioning to pay-per-use pricing structures.

Currently, the network architecture, characterized by a hierarchical and centralized structure with limited scalability and flexibility, is transitioning towards more distributed and decentralized architectures. There is more focus on scalability, flexibility, and adaptability to handle dynamic workloads.

Previously, longer development cycles and the time-to-market of services (due to slower adoption of new technologies) hindered the scope of innovation. Currently, the emphasis is on rapid innovation and guicker time-to-market, due to the faster adoption of emerging technologies. For example, network operators struggle to generate revenue from under-utilized links across their networks. To address this challenge, PCCW Global recently collaborated with Syntropy, a Web3 network software company, to build the Open Bandwidth Exchange (OBX) that allows web3 application developers, network infrastructure engineers and technical application owners to purchase network services on demand through an API. Utilizing a transparent, usage-based pricing model, OBX could leverage bandwidth potential to meet the internet requirements of VR, AR, and the metaverse.

#### **Broader Participation**

If a closed ecosystem with limited collaboration beyond vendor-supplier relationships was the norm, there would be increased collaboration with a broader ecosystem: including startups and other industry players. Recent observations in the 5G evolution show that along with vendors and CSPs other industry players such as the 5G Automotive Association (5GAA) and satellite providers are also increasingly a part of the 3GPP discussion on 5G.

Customer experience has become the focal point of every business, and telecommunications is no exception. Given today's connectivity demands, along with network performance and reliability, experience and customercentric solutions have become vitally important. There is greater emphasis on customer experience and personalized services with the use of analytics and AI to enhance customer engagement.

#### Security, Sustainability and Cloud

Given the increased digitalization of services, security measures focusing on network integrity are not enough. A focus on cybersecurity, privacy and compliance with evolving regulations related to data protection, privacy, and emerging technologies must be the norm now. According to the UAE Cybersecurity Council, the UAE prevented more than 71 million cyberattacks in the first three quarters of 2023. Experiencing a data breach can be financially burdensome, particularly in the Middle East, where the average total cost of such incidents stands as the second-highest globally, reaching USD 8.07 million. Additionally, the marked increase in the recent adoption of cloud-native solutions and services has characterized the modern telco-vendor relationship with both opportunities and challenges.

Cloud-based digital transformation across sectors warrants softwaredriven solutions, collaboration, and customer-centric expectations. Moreover, a recent Epson survey revealed that respondents in the UAE sought a more sustainable lifestyle supported by innovative technologies – 57% were keen on owning electric vehicles (compared to 58% in KSA) and 51% plan on using renewable energy (compared to 49% in KSA). Nearly half of the surveyed individuals in the UAE, specifically 48%, expressed intentions to avoid unsustainable brands. This highlights a discernible level of consumer awareness and underscores its potential influence on purchasing behaviors. The telecommunications sector plays a crucial role in facilitating the advancement of sustainable practices among small businesses and startups, aligning with their growth trajectories. Telcos and vendors must align their strategies to support this determining component in the digital economy.

Furthermore, standardization bodies such as ITU and 3GPP are already setting the path for the development of the sixth generation of mobile systems (6G), ushering in a new era of sustainability and technological innovation. The ITU's IMT-2030 Framework Recommendation identifies 15 capabilities for 6G technology. Nine of those capabilities are derived from existing 5G systems. The ongoing advancements in the Information and Communication Technology (ICT) industry present both challenges and opportunities for vendors, telecommunication companies, system integrators, and regulatory bodies. It calls for collaborative efforts to navigate toward a profitable and sustainable future for the telecom sector. Hence, the operating words for success in this journey are 'collaboration' and 'interoperability'.

The expanding landscape of 5G/6G deployments and the anticipated global coverage by 2025 underscore the pivotal role of collaboration between telecom operators and vendors. As the industry undergoes significant transformations: fostering trust, cooperation, shared risk, and investment through mutually beneficial Service Level Agreements (SLAs) becomes imperative. The evolving dynamics necessitate a strategic alignment of operational and business objectives. Amidst the challenges and opportunities in the ICT realm, success hinges on the principles of collaboration and interoperability. All stakeholders must adhere to these auiding principles to effectively address the escalating demands of future connectivity.



## Factory of Tomorrow: Private 5G Networks Redefine Manufacturing

Diving into the future of connectivity, private 5G has emerged as the silent force propelling a billion-dollar revolution, transforming industries with its wireless flexibility and paving the way for unparalleled advancements in IoT, automation, and data analytics.

he global private 5G market is poised for substantial growth, with an anticipated valuation of USD 2 billion in 2023, expected to soar to an impressive USD 11.8 billion by 2028, marking a compelling CAGR of 42.3% over the five-year period.

The pervasive integration of IoT devices across diverse industries underscores the critical need for a connectivity solution that meets the demands of reliable, low-latency, and high-bandwidth communication. Recognizing this imperative, the manufacturing sector has emerged as an early adopter of private 5G networks. By 2021, more than half of the private networks in this sector were already harnessing the capabilities of 5G, a figure anticipated to surge to nearly 90% by 2027.

Analysts revealed that companies, particularly those in manufacturing, view 5G deployment as a strategic move to enhance automation outcomes through long-term investments in innovative applications.

In this technological landscape, the indispensability of 5G cellular technology will become crucial, providing the wireless flexibility required for transformative solutions. Private 5G, also known as a non-public network (NPN), is positioned as a key player in delivering the wireless connectivity essential for the next phase of industrial evolution.

#### Why Private 5G?

Private 5G networks serve as the foundational infrastructure supporting the widespread integration of IoT devices, allowing businesses to fully leverage IoT, resulting in enhanced operational efficiency, data-driven insights, and innovation.

These networks empower users to utilize dedicated equipment and configurations autonomously, distinct from public networks. They find deployment within a client's premises or specific geographical areas, establishing a dedicated and isolated 5G ecosystem.

A noteworthy benefit is the dedicated capacity, eliminating competition for space from other network users. With

data speeds up to 10 times faster than previous connectivity, private 5G ensures rapid downloads, seamless uploads, and large-scale data transfers. Beyond speed, private 5G networks offer tailorable features— wireless, secure, reliable, low-latency, and time-sensitive— for devices, services, or applications within their domain. Additionally, they guarantee connectivity to non-Industry 4.0 technologies like drone deployments, automated guided vehicles (AGVs), or Extended Reality (XR) applications.

In the contemporary landscape, a 5G-powered private network facilitates on-site data analytics, enabling devices dispersed across infrastructure locations to determine operational adjustments autonomously.

More importantly, private 5G addresses challenges associated with industrial settings far from urban centers and mitigates issues related to spotty or weak indoor coverage. This technology liberates businesses from traditional constraints, offering a dynamic solution to modern connectivity needs.

#### Private 5G in Manufacturing

Private 5G is playing a crucial role in the ongoing transformation of the manufacturing sector as it embraces the principles of Industry 4.0, emphasizing automation, data exchange, and IoT integration. Manufacturers leverage private 5G networks to optimize operations, improve product quality, and stay competitive in the evolving digital and interconnected manufacturing landscape.

Globally, manufacturing companies integrating 5G private networks into their operations are witnessing tangible benefits, particularly in driving automation, IoT, and artificial intelligence (AI) applications on the factory floor.

Addressing conventional challenges encountered in manufacturing, such as machine downtime, maintenance issues, supply chain delays, quality concerns, and inefficient material handling, 5G private networks prove instrumental in significantly reducing these issues by optimizing processes. Proactive manufacturers tackling these challenges head-on stand to gain advantages, including reduced production cycle times, heightened productivity, and enhanced overall efficiency on their factory floors.

In the realm of 'smart factories,' where automation, augmented reality, and IoT play pivotal roles, 5G private networks become the backbone for powering devices and sensors across the manufacturing facility, seamlessly integrating AI into operational processes. This integration enables innovative solutions, such as automated guided vehicles for material transport, remotecontrolled operations, digital quality inspection for defect detection, rework facilitation, and root-cause analysis of issues.

The expanding adoption of 5G private networks further ensures reliable communication for industrial robotics with reduced latency. Tethered and untethered robots can be controlled, monitored, and reconfigured remotely through the 5G private network, signalling a significant advancement in industrial automation capabilities.

#### **Private 5G Network Providers**

Private network providers exhibit diverse profiles in terms of size and industry backgrounds, spanning from established telco equipment vendors to emerging start-ups and cloud service providers.

#### 1. Mobile Network Operators (MNOs):

 MNOs operate globally, providing licensed 5G spectrum. Many in this category offer, or have plans to offer, private network solutions, encompassing Standalone Private Networks (SNPN) and/or Private Network Infrastructure for Network Sharing (PNI-NPN), tailored for enterprise customers.

#### 2. Private Vendors:

• This category includes private vendors offering comprehensive products and services, often under the umbrella term '5G-as-a-Service' (5GaaS).

#### 3. Equipment Vendors:

• Renowned equipment vendors have a global footprint and specialize in 5G SNPN products. They secure licensed spectrum access through collaborations with MNOs.

#### 4. Cloud Providers (Hyperscalers):

• Hyperscale cloud providers extend their offerings to include 5G private networks (SNPN) seamlessly integrated with their edge computing solutions.

#### 5. Chipset and Module Companies:

 Companies specializing in chipsets and modules collaborate with equipment vendors and communication service providers/ MNOs to meet the specific requirements for 5G in the context of Industry 4.0.

#### 6. Start-ups and Small Tech Companies:

 Various start-ups and smaller tech enterprises carve their niche in the 5G landscape by offering private networks. Their focus typically revolves around specific industries, leveraging their expertise in networking, infrastructure, and system integration to tailor solutions for specialized needs.

#### **Evolution Towards Connected Efficiency**

In the context of AI and IoT advancements, continued investment in 5G remains pivotal for emerging technologies and the future of manufacturing.

Private 5G networks (P5G) are undergoing trials, testing, and deployment in various industries, driven by their practical advantages. Projections from analyst firms indicate the smart manufacturing market could exceed USD 500 billion by 2030.

As trials transition to live deployments, positive results will boost manufacturers' confidence, potentially surpassing current forecasts. This underscores the evolving landscape of private 5G networks and IoT integration in manufacturing, fuelled by the need for reliable, low-latency communication and enhanced connectivity in industrial settings.

Concluding the discussion, the synergy of Private 5G and IoT in manufacturing signals a pragmatic evolution towards connected efficiency.



## **The Future of Connectivity with IoT:** Leadership Thoughts in Latest Telecom Review Webinar

Telecom Review organized the first webinar in the 2024 series, under the theme 'The Future of Connectivity: Enabling the Internet of Things'. The topic was discussed in depth by Mohammad AlObaid, Product VP, Salam; Georges Jaber, VP Wholesales and BD, Salam; and Dr. Saad Alhuwaimel, Technology and Regulation Sr. Manager, ATSS. The session was moderated by Firas Mhedhebi, Managing Director Middle East, Private Equity, PMP Strategy.

#### oT Solutions as Catalysts for Achieving Key Vision 2030

Goals Recognizing IoT's potential in meeting the objectives outlined in Saudi Vision 2030, Mohammad AlObaid opined that the technology held "great promise" in areas such as sustainability, smart cities, and economic diversification through efficient data management, analytics and monitoring capabilities.

For sustainability, he highlighted IoT's contribution in energy and

cost saving through Smart Energy Management, Water Management and Environmental Monitoring. In terms of smart cities, he cited applications such as Intelligent Transportation Systems (ITS), Smart Infrastructure, Public Safety and Security. With regards to Economic Diversification, he noted IoT's transformative application in Industrial Automation, Agriculture Technology (AgriTech) and Digital Transformation and Innovation.

#### Prioritization of IoT Projects in Alignment with Vision 2030

Dr. Saad Alhuwaimel outlined important

criteria for decision-makers to prioritize IoT projects effectively, ensuring they align with Vision 2030 and contribute significantly to Saudi Arabia's socioeconomic development.

He stressed the importance of assessing how closely the IoT project aligns with the specific goals and objectives outlined in Vision 2030. Furthermore, he highlighted key considerations such as the economic and social impact of the IoT projects, Technological Readiness, Stakeholder Engagement, Regulatory and Policy Environment, Scalability and Replicability, Risk Assessment and Evaluation on Potential Return on Investment (ROI) and Timeliness and Urgency of the of the IoT projects.

## Encouraging the Development and Adoption of Homegrown IoT Solutions

Georges Jaber emphasized the significance of backing research and development through investments in initiatives specifically targeting IoT technologies within Saudi Arabia. He laid out other key considerations such as fostering collaboration and partnerships, enabling knowledge exchanges, creating regulatory frameworks, providing funding and incentives, developing local talent, encouraging success stories, addressing cultural and social factors. supporting testbeds and pilots and promoting government-led Initiatives to encourage the development and adoption of homegrown IoT solutions in Saudi.

#### Role of 5G in Enabling IoT Innovation

Dr. Saad clarified that while increased bandwidth is one of the key benefits of 5G for IoT, there are several other critical capabilities that 5G brings to the table, enabling specific applications and use cases.

Some of these capabilities include increased capacity, ultra-low latency, faster data transfer, massive device connectivity speed, network slicing, improved reliability, enhanced computing, edge computing, mobility support, and edge computing.

"As ITU allows for higher frequency for 5G, the capacity of 5G increases, which can occupy many IoT sensors and networks around," explained Dr. Saad. "Scalability is based on the ability of handling data, and the deployment of more 5G will handle that." 5G is designed to handle a massive number of connected devices, which increases the possibility of more massive-scale IoT deployments.

Moreover, 5G networks offer significantly reduced latency compared to previous generations, enabling real-time applications and/or ecosystems like virtual reality, remote surgery, industrial automation, and augmented reality.

5G's enhanced reliability is also crucial for critical IoT applications, such as smart grids, healthcare monitoring, and industrial control systems, where any disruption or delay can have severe consequences.

In terms of speed, 5G enables faster data transfer from IoT devices to the cloud, and vice versa.

Another important feature for IoT scalability is network slicing, which allows the physical 5G infrastructure to be divided into multiple virtual networks. This helps to expand the coverage of IoT systems. "This enables efficient resource allocation and tailored connectivity for diverse IoT applications," pointed out Dr. Saad.

5G also incorporates improved security features and empowers the use of edge computing nodes, enabling swift decision-making for urgent scenarios. Furthermore, 5G networks offer seamless mobility support, enabling uninterrupted connectivity for IoT devices like connected vehicles, drones, asset tracking, and logistics.

Lastly, 5G networks are designed with energy efficiency in mind, especially in the network, optimizing power consumption for both the infrastructure and IoT devices.

"The combination of these capabilities makes 5G a transformative technology for the IoT landscape," concluded Dr. Saad.

#### Saudi Arabia's Infrastructure Readiness Jaber proudly stated that Saudi Arabia

has made significant progress in

preparing its infrastructure to leverage the potential of 5G for IoT innovation. The Kingdom has taken several steps to build a robust 5G ecosystem and ensure that the necessary infrastructure is in place.

Major telecom operators, such as stc, Mobily, and Zain, have been actively rolling out 5G infrastructure in key cities. "As of 2021, 5G coverage is available in several cities and is expanding to cover more areas," noted Jaber. Along with this, substantial investments have been assigned to build the necessary infrastructure to support 5G deployment such as deploying new base stations, upgrading existing infrastructure, and expanding fiber-optic networks.

Another important step has been implemented by the Communications and Space Technology Commission (CST) of Saudi Arabia in allocating suitable spectrum bands for 5G deployment. "The 3.5 GHz band and higher frequency bands, such as the 26 GHz and 28 GHz bands, have been assigned to 5G services. This spectrum allocation enables the deployment of high-capacity and high-speed 5G networks to support IoT applications."

The Saudi Arabian government has also provided regulatory support to facilitate 5G deployment, which includes streamlining the licensing process, ensuring efficient spectrum management, and establishing guidelines and frameworks for 5G network deployment and operations (private 5G). "At Salam, we have deployed the 5G fixed wireless access (FWA) network across the Kingdom," cited Jaber.

The government promotes 5G innovation through telecom collaboration, fostering partnerships for knowledge sharing and investment while smart city projects like NEOM, Qiddiya, and Riyadh Smart City utilize 5G and IoT for advanced urban environments. Innovation centers like KACST also drive local talent development and support IoT ecosystem growth.

"While Saudi Arabia has made significant progress, there are still areas that require further development and improvement," commented Jaber. "For example, ensuring seamless coverage in remote and rural areas, addressing challenges related to network interoperability and standardization, and fostering a vibrant startup ecosystem for IoT innovation."

#### **Inclusive IoT Adoption**

"Ensuring affordable and equitable access to 5G connectivity, especially in remote areas, is crucial for driving inclusive IoT adoption," affirmed AlObaid.

This can be done by promoting infrastructure investment and encouraging telecom operators to expand 5G via a public-private partnership model. This will result in a customized, cost-effective 5G solution to industry-targeted customers (remote areas).

"Technology vendors need to be flexible to customize the solution based on the market demand," remarked AlObaid.

Allocating suitable spectrum bands for 5G in a manner that ensures coverage in remote areas is also important. This may entail exploring satellite-based connectivity solutions, such as LEO satellites, to address the connectivity challenges in remote areas where deploying terrestrial infrastructure is difficult.

Satellite networks can provide wide-area coverage, enabling 5G connectivity in underserved regions and supporting IoT applications in industries like agriculture, environmental monitoring, and disaster management.

More importantly, governments play a vital role by implementing policies and initiatives that prioritize connectivity in remote areas. This can include targeted funding programs, regulatory interventions, and collaborations with stakeholders to ensure affordable and equitable access to 5G connectivity and drive inclusive IoT adoption.

#### **Government Policies and Initiatives**

As for the current policies and regulations centered around data privacy, security, and interoperability that either support or hinder IoT development, Jaber commented: "The policies and regulations surrounding data privacy, security, and interoperability have a significant impact on the development of the Internet of Things (IoT). For instance, the General Data Protection Regulation (GDPR) implemented by the European Union (EU) establishes stringent rules for data collection, use, and storage, including data generated by IoT devices. While GDPR enhances data privacy, it also imposes compliance burdens and potential restrictions on data utilization for IoT applications."

Furthermore, Dr. Saad provided insight on the specific government initiatives that are most effective in stimulating investment and collaboration in the Saudi IoT ecosystem. He highlighted that the specific government initiatives that have proven to be effective in stimulating investment and collaboration in the Saudi IoT system are numerous and impactful.

The National IoT Strategy is a pivotal initiative, outlining objectives for IoT technology development. It emphasizes infrastructure, regulatory frameworks, talent development, and industry collaboration. Government-supported innovation hubs and incubators, with some private sector involvement, have been instrumental in nurturing IoT startups and entrepreneurs.

#### **Challenges and Opportunities**

The moderator kickstarted the discussion on challenges and opportunities by asking about proactively addressing the evolving cybersecurity threats associated with large-scale IoT deployment. Jaber promptly responded with a set of highlevel steps for proactive cybersecurity in large-scale IoT deployment, which included conducting a comprehensive risk assessment to identify potential vulnerabilities and threats, designing a secure architecture for the IoT ecosystem, and deploying continuous monitoring tools and techniques to detect anomalies, suspicious activities, and potential cyber threats.

The second question focused on responsible data governance and individual privacy in the IoT. AlObaid proposed a comprehensive approach involving key principles: data minimization, purpose limitation, and privacy by design. These principles advocate for collecting only essential data for its intended purpose, minimizing personally identifiable information (PII), and incorporating privacy safeguards into the early stages of IoT system development.

The moderator then tackled the challenge of scalability and integration by posing the question, "How can we overcome technical challenges like fragmentation and lack of interoperability to achieve seamless and scalable IoT ecosystems?" Dr. Alhuwaimel presented a comprehensive set of strategies to address these technical challenges. The suggested measures encompassed promoting standardization to encourage the growth and acceptance of open industry standards for IoT devices, protocols, and data formats. This involves establishing testing programs and certification processes for interoperability to ensure adherence to these standards. Additionally, implementing middleware solutions and integration platforms was recommended to serve as intermediaries between various IoT devices, networks, and applications.

#### **Best Practices**

When it comes to securing communication protocols and data encryption in IoT deployments, Jaber recommended the following 10 best practices:

1. Employ Transport Layer Security (TLS) or Datagram Transport Layer Security (DTLS) to establish secure channels.

2. Ensure that both the IoT devices and the backend systems authenticate each other before establishing a connection.

3. Apply end-to-end encryption to protect data as it travels.

4. Encrypt sensitive data when it is stored on IoT devices, gateways, or backend servers.

 Enforce strict access controls to limit who can interact with IoT devices and access the data they generate.
Keep the firmware and software of IoT devices updated. 7. Implement secure protocols for device management.

8. Conduct regular security audits.
9. Establish robust key management practices.

10. Deploy intrusion detection systems (IDS) and security monitoring solutions to detect and respond to security incidents in real-time.

AlObaid stressed the importance of real-time security incident response, highlighting the role of open standards and platforms in fostering IoT interoperability and collaboration. He emphasized their pivotal role in facilitating seamless communication among diverse devices, systems, and applications, regardless of manufacturers or implementations. Key focus areas include compatibility. plug-and-play capabilities, ecosystem expansion, market competition, data sharing, scalability, community collaboration, and regulatory compliance, all contributing to IoT innovation.

Regarding the steps that can be taken to build public trust and encourage the acceptance of IoT technology in Saudi Arabia, Dr. Saad Alhuwaimel stated that ensuring trust is crucial in effectively implementing IoT systems, particularly within society. This process begins with raising public awareness and educating individuals about the benefits of these technologies, while addressing concerns regarding privacy and data collection from unknown sources.

It is also important to consider ethical considerations and prioritize data protection, including breach notifications, and collaborate with governmental and social stakeholders to establish a multi-task framework that aims to build trust among the involved parties.

Showcasing success stories and demonstrations to educate people about the security of IoT systems and data, alongside implementing best practices, will promote a culture of trust, transparency, and responsible technology use, leading to wider acceptance and adoption of IoT among the public.



## Safeguarding the Final Frontier. Exploring the Union of Space Technology and Cybersecurity

The expanse that is outer space remains a collective arena, accessible to multiple nations, each leveraging satellites and space technology to power essential facets of modern life. These orbiting devices — representing more than 90 countries — support daily functionalities, from communication infrastructure (such as phones and GPS) to Earth observation tools. With so many players in the mix, however, any interference or compromise of these space assets could disrupt crucial systems, affecting financial stability, transportation and essential resources worldwide. A closer look at such risk and its mitigation may be in order.

ecognizing the Importance of Space Security The vulnerability of space assets to cyber threats demands a

profound shift in our approach. Considering their indispensable role in our interconnected world. space assets should be recognized as critical infrastructure, akin to the roads, power grids and telecommunications networks on Earth. Just as we fortify these terrestrial systems against cyber threats, the protection of space assets is imperative. Any compromise in space infrastructure not only threatens the stability of vital services like communication, navigation and global observation systems but also poses a risk to economic, national security and societal functions.

The need for this elevated view of space assets stems from their pervasive influence on daily life. These assets facilitate a range of activities, from enabling global communication networks to supporting crucial information for weather forecasting, disaster management and even financial transactions. Their compromise could lead to cascading effects, disrupting not only everyday conveniences but also critical services that underpin modern society. Therefore, acknowledging space assets as critical infrastructure is not merely a conceptual shift but a practical necessity for ensuring the robustness of our increasingly technology-dependent world against potential cyber disruptions. This shift in perspective demands proactive measures and the allocation of resources dedicated to fortifying space infrastructure against everevolving cyber threats.

#### Uniting Expertise for a Fortified Defense

The collective knowledge of both space technologists and cybersecurity experts stands as a pivotal axis in fortifying the security of our space assets. This collaborative synergy is instrumental in developing and deploying specialized protocols that cater to the unique vulnerabilities present in space technology. The meticulous calibration of these protocols goes beyond conventional cybersecurity measures, delving into the complexities and idiosyncrasies of space operations.

Vigilant real-time monitoring, a requirement for this effective collaboration, establishes an extensive surveillance network capable of swiftly detecting potential cyber threats. This proactive surveillance system enables the identification and mitigation of risks before they escalate, forming a robust initial line of defense against cyber intrusions into our space networks.

#### Space Technology as Cyber Sentry

In addition to their primary functions, space devices undertake a vital role as guardians in the ever-evolving domain of cybersecurity. Beyond their intended purposes, these instruments possess remarkable capabilities to act as vigilant sentinels against cyber threats. Leveraging their monitoring abilities, they extend their watch by detecting potential online dangers and serving as early warning systems. Moreover, their secure communication mechanisms serve as robust barriers against cyber intrusions, bolstering the defense of our digital networks. This transformation of space technology into a cyber-defender marks a pioneering and essential security frontier, providing an additional layer of protection against emerging cyber risks.

## Forging a Secure and Collaborative Future

Envisioning a secure future demands unified efforts and innovative strategies in both space technology and cybersecurity. The synergy of expertise and the advent of pioneering strategies promise to fortify the environment against potential risks. Major entities, including NASA and leading technology firms, are combining forces and pooling their resources and knowledge to strengthen space assets and digital platforms against the dynamic and ever-evolving landscape of cyber threats. This collective commitment and strategic collaboration establish a pathway for a future where space technology not only fulfills its primary functions but also stands as a stalwart defender against cyber threats, ensuring a more secure and resilient digital landscape for all.

The fusion of space technology and cybersecurity isn't just about addressing risks: it's a cornerstone of shaping a safer and more innovative future. This collaboration paves the way for a world where security and technological advancement merge seamlessly. It's not merely defensive but a launchpad for unprecedented innovation. This convergence ensures a landscape where technological progress thrives under safeguarded measures. It signifies a future where safety doesn't hinder progress but propels it forward, where strides in space technology are both secure and at the forefront of innovation.



The fusion of space technology and cybersecurity isn't just about addressing risks; it's a cornerstone of shaping a safer and more innovative future





## **Five Sure-Fire Ways to Superior Digital Journeys for Customers**

When it comes to their success and growth, every business hopes to foster happy and contented customers as the primary component. However, keeping all the customers in a state of perpetual satisfaction can become daunting and even fleeting for most organizations. Telcos are no exception. To achieve such an ideal business state, telcos must align workable and scalable strategies to ensure smooth operations. In an increasingly digitalized world, telcos find themselves immersed in such strategies in every sector, be it education, healthcare, agriculture, industries, the environment and so on. Although telcos have remained at the center of comprehensive ICT operations for a long time, the new digital environment gives customers many options to pick from, and hence, telcos must stay at the operational forefront in order to stay relevant and on top of their game. Here are some considerations from a telco's perspective for maintaining a longlasting relationship with their customers moving forward. ata Bonuses for Favorite Activities In the age of content streaming, customers expect seamless

connectivity 24/7. A little lag or insufficient data means an interruption in the digital-experience flow. Bearing this in mind, industry leader Orange channelizes its position as an all-in-one entertainment service provider by offering complimentary data bonuses to access Spotify's service to keep its customers happy. For instance, Orange Middle East & Africa and music streaming company Spotify partnered to provide a new music experience to mobile users when subscribing to mobile offers. Every region has its own preferred form of engagement when it comes to social and recreational activities. Similarly, extra data can be provided to customers for educational or CSR purposes. Telcos can tap into such preferences to tailor their mobile offerings with adequate data availability for their customers' enhanced digital experience. In a rapidly evolving ICT industry, such upgrades play a vital role in attracting loyal customers and boosting competition among telecom companies in the growing market.

#### **Cyber and Physical Security**

A weak cybersecurity infrastructure puts corporate operations, brand reputation, financial conditions and overall trust at grave risk. It can hinder revenue-generating and servicedelivery processes and even snowball into legal and regulatory penalties, negatively impacting a company's financial performance. According to Statista, the global cost of cybercrime is expected to increase by nearly 70% over the next five years, growing to \$13.82 trillion by 2028. "Regardless of the organization's structure, those at the top have a duty to understand and monitor the critical cyberthreats that could impact the organization. They need to oversee the strategies, policies, and procedures required to adequately mitigate risks and ensure that there is a response plan to contain the impact of a compromise. They also need to ensure that they have systems to detect, investigate, and eradicate an intrusion and to comply with contractual, legal, and regulatory requirements," writes

Rafi Brenner, vice president, information security, at Fortinet. Furthermore, telecom networks are susceptible to physical threats, such as sabotage and damage. Consequently, telecom operators need to have robust security measures in place to protect the physical aspects of network infrastructure as well. With data governance and privacy taking precedence in today's digitalized economy, customers are always assessing this aspect scrupulously.

#### **Streamlined Communication**

Imagine a scenario where an important business-client deal cannot be closed because of an interruption in connectivity. Businesses spend a great deal of time, effort and capital onboarding clients, and steady and reliable communication channels are of prime importance in this regard. Telecom has proved it is a missioncritical infrastructure. Especially in light of today's dynamic business environment with an increasingly hybrid working trend, a unified communication platform that incorporates telephony service becomes a powerful tool for every business communication as it supports business-critical activities in terms of video conferencing and remote working. In addition, it allows families to keep in touch at all times. Customizing solutions that go beyond traditional methods of communication will spur innovative ways of strengthening collaboration while increasing productivity and driving the digital transformation agenda. Moreover, the digital economy is accelerating exponentially. The robustness and agility of public digital infrastructure (DPI) will be instrumental in developing the tools and opportunities to connect with a global audience and contribute to the digital revolution. DPI refers to platforms such as digital identification, payment infrastructure and data exchange solutions that help countries deliver essential services to their citizens, empowering them and improving their lives through digital inclusion. A network of reliable communication channels thus becomes a determining factor for the future of digitized economies.

#### **Fortified Partnerships**

Telcos are at a strategic intersection, and success in the new reality requires

putting consumers at the heart of their value propositions. To do this, telcos must design seamless new solutions protected by meaningful data security, observes Alex Holt, global head of telecoms & media at KPMG. Telcos cannot work in silos to achieve their customer experience targets. To come up with workable solutions that address the pain points of customers, telcos must forge strong partnerships with other industry specialists and work collaboratively towards the goal. A prime example of taking customer experience in the right direction is that of the UAE's e&, the global technology company. Through its many verticals - e& life, e& enterprise, e& international and e& capital – it offers customers secure and adaptive e-payment solutions, streamlining daily financial transactions for users. Its service suite caters to both individuals and businesses, encompassing offerings like investments in real estate, stocks, cryptocurrencies, and gold, as well as loans and financial consultancy. Such initiative not only bolsters the company's revenuegenerating capacity and enhanced customer experience, but it also adds to the operating country's economy.

#### **Attentive and Problem-Solving Services**

No matter how technologically sophisticated the telecom operators' services may be, if they lack the human factor, then the whole exercise can be futile. The entire process of subscribing to mobile services must be easy and flexible. For instance, customers should not have a harrowing time switching from one plan to another or revising their preferences. Many times, customers are seen haggling with the customer care representative over unresolved issues. Such occurrences stem from "unattended service gaps" that destroy the very idea of a superior customer experience. Even the signing of longterm commitments must be made flexible, and customers should have the option of selecting their preferred plans with minimal hassle. From a human perspective, any unpleasant experience from telecom providers is the last thing customers want. Ultimately, telcos must maintain a sustained focus on meeting customers' individual needs, thus ensuring that they remain valued and respected at all times.

## Tech Goes Green: Strategies for Environmental Innovation in the Digital Age

In a period where the imperative of environmental sustainability transcends optional considerations and emerges as an absolute necessity, technology companies stand poised at the frontline of an extraordinary journey toward adopting more eco-friendly practices. Undoubtedly, technology has wielded its transformative power to alleviate certain environmental strains, offering solutions like virtual meetings that curtail the need for extensive travel and remote work setups that eliminate daily commutes to the offices. However, amidst these commendable strides, the overarching energy consumption within the technology sector looms significantly large.

ecent findings, as articulated in a comprehensive report by the U.K. Parliament, underscore the magnitude of the challenge at hand. Information communications technologies, comprising a critical segment of the tech landscape, stand accountable for a substantial 4%-6% share of global electricity production. While technological advancements have enhanced energy efficiency within the sector, the relentless surge in demand for electricity continues to underscore the pressing need for a paradigm shift.

As nations worldwide grapple with the urgency of curbing emissions and mitigating the profound impacts of climate change, the onus falls heavily on technology leaders to strategically prioritize and champion environmentally sustainable innovation. It is within this crucible of responsibility that the tech industry finds itself compelled to forge a path toward a greener, more prosperous future. As custodians of innovation and drivers of global connectivity, tech companies bear a unique responsibility to transcend traditional business paradigms and usher in a new era— one where ecological mindfulness and technological progress seamlessly coexist.

#### Embrace the Triple Bottom Line

The triple bottom line—people, planet, and profit—captures the essence of sustainable innovation. Beyond mere environmental considerations, it involves integrating social, environmental, and economic factors into decision-making processes. By embracing this holistic approach, tech executives can align their organizations with a broader commitment to sustainability, leading to improved employee engagement, enhanced brand reputation, and longterm financial viability.

Studies show that consumers are increasingly willing to pay extra for sustainable products, with 67% expressing such a preference. Additionally, a staggering 97% of C-suite executives have encountered drawbacks from climate change, highlighting a growing demand for sustainable solutions. Executives who recognize these trends and adapt accordingly position their companies to thrive in the evolving landscape.

#### Set Clear Sustainability Goals

Driving sustainable change necessitates clear and measurable goals integrated into a company's overall strategy. Executives should establish targets that align with their business objectives, whether focused on reducing greenhouse gas emissions, enhancing energy efficiency, or incorporating renewable energy sources. Experts emphasize the importance of setting specific, ambitious, yet realistic goals, aligned with core business activities, both short-term and long-term. Understanding the starting point, tracking progress and fostering a sense of purpose among employees are critical elements of goal-setting. By incorporating sustainability goals into the company culture, executives create a roadmap for innovation that aligns with global environmental objectives.

#### Foster a Culture of Sustainability

Sustainable innovation requires a cultural shift within organizations. Executives must promote awareness, education and accountability at all levels. This can be achieved through training programs, internal communication campaigns and recognition of employee-led sustainability initiatives. By empowering employees to contribute to sustainability efforts, leaders tap into the collective power of their workforce.

For both office-based and remote teams, creating contests and incentives can encourage environmentally friendly behaviors. Offering rewards for green initiatives, such as biking to work, can foster engagement. For remote workers, initiatives like supporting the installation of solar panels or providing energy-efficient IT equipment contribute to the overall reduction of emissions. Recent studies indicate that remote work can lead to an 80% reduction in personal emissions, making it a powerful strategy in the pursuit of sustainability.

### Leverage Partnerships and Collaboration

Recognizing that no company operates in isolation, tech leaders should actively seek partnerships and collaborations with other organizations, suppliers, vendors and industry peers. Through shared knowledge, resources and best practices, companies can accelerate the development and adoption of green technologies. Collaborative efforts also create new business opportunities, shape industry standards and influence regulatory frameworks favoring sustainability.

Collaborations can span corporate entities within the business value chain, including distributors, manufacturers and retailers. Additionally, partnerships with non-corporate entities such as government bodies and NGOs contribute to a more comprehensive approach. The last few years have seen a 200% increase in green tech projects, reflecting a commitment to collaborative efforts in areas ranging from solar energy platforms to emissions monitoring tools.

The era of sustainable innovation in business is upon us, and tech executives play a pivotal role in shaping its trajectory. Prioritizing green technologies and sustainable practices not only contributes to mitigating climate change but also positions companies as leaders in a rapidly evolving market. By embracing the triple bottom line, setting clear goals, fostering a culture of sustainability and leveraging partnerships and collaborations, tech companies can remain ahead of the curve and reap the benefits of a greener and more prosperous future.



The era of sustainable innovation in business is upon us, and tech executives play a pivotal role in shaping its trajectory



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## A Leader in MEA: e& Hailed as Fastest-Growing Tech Brand, Most Valuable Brand



Following the successful transformation of e& to a technology group, e& has flourished, becoming a leader of Middle Eastern and African (MEA) brands.

The Brand Finance Global 500 2024 Report confirmed e& as the MEA's fastest-growing technology brand and the most valuable brand portfolio in the MEA.

#### Most Valuable Brand in MEA

e&'s evolution into a global technology and investment group saw its brand portfolio skyrocket to USD 17 billion. The 15% YoY increase solidifies stakeholder confidence and cements e&'s position as the most valuable brand portfolio in the MEA.

Hatem Dowidar, Group CEO of e&, said: "We launched the e& brand only two years ago, and it is wonderful to see the brand's vitality and strength in the technology sector in the MEA after such a short period. We are also similarly delighted with etisalat by e& being ranked as the strongest telecom brand in the world. These are great achievements, and of course this only increases our aspirations for the future."

e&'s evolution from telecom brand leader to the MEA's fastest-growing tech brand underscores the progress of the Group's transformation. Dowidar said that to better serve the needs of its diverse customers, e& has a lot more in store as it continues to roll out innovations and strengthen its position in emerging technologies such as AI, IoT, and cloud computing. Playing a major role in the transformation of e&, Dowidar was recognized as the 'Global Merit Leader CEO of the Year – Operator' at the Telecom Review Leaders' Summit.

#### etisalat by e&: Strongest Telecom Brand in the World

Additionally, Brand Finance named etisalat by e&, the Group's telecom pillar, the strongest telecom brand in the world for 2024, with a BSI score of 89.4 out of 100, resulting in a AAA rating. etisalat by e& also preserved its leading position as the strongest brand in the MEA for the fourth year across all categories.

Taking all this in consideration, etisalat by e& is among today's top 20 strongest brands globally.

CEO Masood M. Sharif Mahmood stated that "embracing innovation and digitalization is critical to etisalat by e&'s success."

## **Ooredoo Oman Leads the Future of IoT-Enabled Services**



Ooredoo Oman has rolled out Narrowband Internet of Things (NB-IoT) technology to power various IoTenabled applications that could result in energy savings and supply chain management optimization. IoT is an umbrella term for devices connected to, and communicating with, the internet and each other— merging the digital and physical worlds. From wearable devices to meters that allow for remote readings of water and gas usage to solutions that track the delivery of packages, IoT has entered the mainstream, and Ooredoo is at the forefront of this transformation.

"The Internet of Things technology drives the digital transformation of businesses and the economy. It has become embedded in our daily lives and the operations of entities in the private and Government sectors. Companies and consumers are employing these smart solutions to streamline operations, manage physical assets, and improve their health and well-being," said Saoud Al Riyami, Chief Business and Wholesale Officer at Ooredoo Oman. "As a leading connectivity and infrastructure provider, boosted by the roll-out of our NB-IoT network, we ensure Internet of Things-enabled devices stay connected and functional."

Ooredoo has been at the forefront of adopting the latest IoT technology, and its benefits for their customers.

The company has also stepped up the future-proofing of IoT-enabled devices which currently rely on mobile 3G connectivity. In August 2023, the Ooredoo Group became the first telecommunications operator in the GCC region to join the IoT World Alliance (the world's largest Mobile Network Operator cooperative) to drive connectivity to the next level.

The company also entered the LoRa Alliance— a nonprofit association of members supporting IoT deployments. Ooredoo leverages these partnerships to collaborate with other IoT service providers, chip manufacturers, solution developers, and other businesses, addressing the industry's demands and propelling the technology forward. Ooredoo also partnered with the Nama Holding company, successfully installing 330K IoT-enabled smart water meters and continuing connections of more than 285K electricity meters.

## du Completes Gulf Region's First 50G PON Trial



du, commercially rebranded from Emirates Integrated Telecommunications Company (EITC), marked a significant milestone by completing the Gulf region's inaugural trial of 50G PON (Passive Optical Network) symmetrical technology. Recognized as the evolution standard by the International Telecommunication Union (ITU) after 10G PON, this cuttingedge technology transforms fiber broadband infrastructure, delivering lightning-fast speeds with 50Gbps downlink and uplink connections.

#### Elevating Service Offerings and Experiences

Leveraging its cutting-edge technical prowess, the 50G PON integrates all-

optical 10 Gbps connectivity across the board, harmonizing effortlessly with existing optical distribution networks (ODNs). This seamless integration facilitates service upgrades through the reuse of existing optical line terminations (OLTs), effectively reducing the total cost of ownership (TCO). This strategic methodology not only boosts the average revenue per user (ARPU) but also elevates the service experience for du's customer base in the UAE. These state-of-theart technologies are well-positioned to support future innovative services.

Saleem AlBlooshi, Chief Technology Officer at du said: "We are honored to be the first operator in the Gulf region to complete the 50G PON trial, a landmark achievement that is a testament to du's unwavering commitment to providing our customers with the latest and most advanced technology solutions. This milestone would not have been possible without the collaborative effort of our valued customers. We look forward to further advancements as technology continues to evolve, and we remain dedicated to upgrading our networks to ensure that our customers always enjoy state-of-the-art solutions."

#### Harnessing High-Bandwidth, Latency-Sensitive Applications

The new technology, 50G PON, empowers businesses and consumers to harness high-bandwidth, latency-sensitive applications. This includes 8K-interactive video applications, 3D cloud design, highgraphic/high-quality AI/ML applications, and more.

This successful trial marks a significant leap forward in the domain of fiber home broadband, showcasing the benefits of strategic partnerships and a commitment to staying at the forefront of technological advancements. Following the successful verification of 50G PON technology on the du network, du plans to commercialize this cutting-edge technology beginning in 2024. The primary focus of this service will be on businesses, providing them with the most advanced technology available.

## Vodafone Qatar Records Strong Financial Performance in 2023



In a significant financial update, Vodafone Qatar has reported a net profit of QR 540 million in 2023, showcasing a robust 7.5% increase compared to the previous year. The notable surge is primarily attributed to the growth in EBITDA.

Total revenue, excluding the impact of the World Cup in 2022, demonstrated a remarkable 6.1% year-on-year (YoY) increase, reaching QR 3.1 billion. This substantial rise is credited to sustained growth across diverse business segments, including fixed broadband services, managed services, IoT, and others. However, the reported total revenue for the year saw a 1.5% increase. Service revenue, excluding the World Cup's impact, experienced an impressive 8.9% growth, reaching QR 2.8 billion. The reported service revenue also saw a noteworthy increase of 5.5%.

The EBITDA for the period reached QR 1.3 billion, marking a 4.2% growth compared to the previous year. This positive trend was influenced by higher service revenue and the continued success of the cost optimization program. Consequently, the EBITDA margin expanded to 41.3%, growing by 1.1 percentage points.

The total number of mobile customers for Vodafone Qatar reached 2.15 million, showcasing an underlying increase of 2% YoY.

In light of Vodafone Qatar's commitment to enhancing shareholder value and the strong financial performance, the board of directors has recommended the distribution of a cash dividend amounting to 11% of the nominal share value (QR 0.11 per share). This proposal will be presented at the company's next annual general assembly for approval, reflecting the company's dedication to rewarding its stakeholders for their continued support.

Sheikh Hamad Abdulla Jassim Al-Thani, Vodafone Qatar CEO, added: "In 2018, we launched our Digital 23 Strategy, with the aim of successfully transforming our business from a traditional mobile operator to a diverse, global digital player. Over five years since launch, it is heartwarming to see that we have not only achieved that aim, but we have also helped to establish Qatar as one of the most technologically advanced countries in the world. Our focus on digital transformation remains steadfast, and we will continue to prioritize digital-first lifestyles, putting our customers and their businesses at the core."



## **Digital Transition Demands:** Unifying Networks for Success

The challenge faced by enterprises in achieving success in the realm of private 5G and Wi-Fi lies in the imperative need for a unified approach to management. This necessity arises from the proliferation of disparate systems and management dashboards. The complexity is particularly pronounced on the network forefront, where a myriad of technologies, including wired, Wi-Fi and private 4G/5G networks, are essential for seamlessly interconnecting an organization. A comprehensive survey, involving 402 North American enterprises, underscored the magnitude of this challenge. Remarkably, over 85% of respondents acknowledged having distinct deployments or future plans for each of these critical technologies.

nified Management Challenges Enterprises find themselves grappling with the daunting task of managing an intricate network landscape characterized by numerous systems and dashboards. The complexity is further compounded as they endeavor to oversee the coexistence of wired, Wi-Fi and private 4G/5G networks. This multifaceted challenge underscores the evident need for unified

management solutions to navigate the intricacies of contemporary network environments.

**5G vs. Wi-Fi: The Need for Both** In the ongoing discourse regarding the supremacy of cellular services over Wi-Fi, the survey revealed a crucial revelation—that customers desire both technologies. While Wi-Fi offers ubiquitous connectivity for user devices, cellular 4G/5G proves advantageous in scenarios requiring broad coverage, mobility or minimal latency. The industry's acknowledgment of the dual reliance on both technologies emerges as a key finding, emphasizing the nuanced requirements of diverse use cases.

#### The Toll of Technological Complexity

As enterprises grapple with the multitude of technologies demanded by modern networks, the toll on network professionals becomes increasingly apparent. The intricate task of managing separate systems for wired, Wi-Fi and private 4G/5G networks adds a substantial laver of stress and complexity. The survey revealed that 70% of enterprises are contending with the challenge of running two or more management, security and QoS systems for each network type. This underscores the enormity of the issue. This statistic serves as a stark reminder of the strain placed on network management personnel, who must navigate the intricate web of technologies to ensure seamless operations.

The transition to a digital model across industries has been an ongoing process, gaining momentum in recent years; further accelerated by the COVID-19 pandemic, which prompted a massive shift online for various activities. As organizations endeavor to adapt to this digital shift, they grapple with the intricate complexity of their technology, process, and data environments. Implementing change safely and effectively has become a formidable challenge, particularly in driving innovation at scale. Many organizations struggle with the challenge of dealing with outdated technology and its inherent complexity. This is especially true for those who dedicate a significant portion of their technology budget to the upkeep of existing systems, leaving them with limited resources for innovation. Addressing this complexity is a prolonged, multiyear process that necessitates

setting standards, defining metrics and gradually measuring progress. Even modest gains at the outset can be impactful, emphasizing the importance of initiating the journey toward reducing complexity and fostering innovation within organizations.

#### **Time and Budget Allocation**

The toll of managing intricate networks extends beyond mere complexity, manifesting in tangible resource wastage. Network operations staff, crucial to an organization's efficiency, spend a considerable portion of their time-17%-dealing with the intricacies of separate access networks. Additionally, 19% of the budget allocated to network operations is directed towards managing these distinct systems. This inefficiency highlights the urgent need for streamlining network management processes to optimize both time and budget resources.

#### **Unmet Enterprise Needs**

Despite the clear need for simplification in network management, both enterprises and major system vendors have yet to internally address this pressing challenge. The urgency to streamline operations and refocus on core business activities is substantial. The discrepancy between the evident need and the current state of internal responses emphasizes the ongoing struggle for simplicity in the increasingly complex landscape of network management.

#### Converged Multi-Access Wireless Networks

The resounding consensus among enterprises is a call for a converged multi-access wireless network. This collective belief is expressed by nearly 9 in 10 enterprises, transcending various sectors: including public venues, manufacturing, and transportation. The universal appeal of a converged strategy for enhanced operational efficiency is underscored: emphasizing the shared vision among enterprises for a streamlined and unified approach to wireless network management. In summary, the intricate challenges of managing diverse technologies in modern networks are stressing network professionals, with 70% of enterprises dealing with multiple systems for each network type. The urgent need for unified management solutions is evident as organizations navigate the complexities of the digital shift, exacerbated by the pandemic. Overcoming legacy technology complexities is a gradual process, emphasizing the importance of setting standards and metrics for sustained innovation. Enterprises must strategically streamline network management for enhanced efficiency and ongoing innovation.



The challenge faced by enterprises in achieving success in the realm of private 5G and Wi-Fi lies in the imperative need for a unified approach to management



**TELECOM Review** 



## **Explosive Growth in Roaming Clearing Market Fueled by Global 5G Data**

In recent years, the global telecommunications industry has witnessed a remarkable transformation fueled by the advent of fifth generation (5G) technology. As 5G networks continue to expand worldwide, the demand for seamless connectivity and high-speed data transmission has skyrocketed.

n this rapidly evolving landscape, the roaming clearing market has emerged as a key player, facilitating the exchange of data between telecom operators, and ensuring a seamless roaming experience for customers around the globe. With the explosive growth in 5G data usage, the roaming clearing market is experiencing unprecedented expansion, revolutionizing the way international roaming is managed and paving the way for enhanced connectivity on a global scale.

#### Increased Demand for Roaming Services Amidst 5G Technology Adoption

The worldwide adoption of 5G technology has resulted in an increased demand for roaming services. As countries around the globe transition from 4G to 5G networks, users are experiencing faster data speeds, improved network capacity, and enhanced connectivity. This transformative technology has fueled the explosive growth in the roaming clearing market, which is responsible for managing and settling financial transactions between mobile network operators in different countries.

One of the main factors driving the increased demand for roaming services is the superior data speeds offered by 5G networks. With faster download and upload speeds, users can stream high-quality videos, participate in video conferences, and engage in real-time

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online gaming without experiencing significant lag or disruptions. This high-speed connectivity enables users to stay connected even while traveling, leading to a surge in demand for roaming services.

Moreover, the enhanced network capacity provided by 5G technology plays a vital role in the soaring demand for roaming services. The increased capacity allows an increase in simultaneous connections without sacrificing performance. This is particularly appealing to users who heavily rely on data-intensive applications and services, such as video streaming, cloud computing, and virtual reality. The ability to use these data-heavy services seamlessly while roaming has contributed to the upward trend in demand for roaming services.

As the demand for roaming services continues to rise, the roaming clearing market is experiencing significant growth. This market ensures that the necessary infrastructure and processes required are implemented to ensure that financial transactions between mobile network operators are accurately tracked, recorded, and settled. The utilization of 5G networks in roaming services necessitates efficient and reliable roaming clearing solutions to handle the increased volume of data and transactions.

The faster data speeds and enhanced network capacity offered by 5G networks have revolutionized the way users stay connected while traveling. As a result, the roaming clearing market is experiencing explosive growth: increasing the need for efficient and reliable solutions to handle the higher volume of transactions generated by global 5G data roaming.

#### **Empowering Land Clearing Practices**

The advent of 5G technology has revolutionized various industries, and one of the sectors benefiting significantly is land clearing. With its lightning-fast speeds and enhanced connectivity, 5G has paved the way for the utilization of cutting-edge technologies in land clearing practices. Among these innovations, drones equipped with high-resolution cameras and advanced imaging systems have emerged as powerful tools, empowering professionals in the landscape management industry.

### Enhanced Mapping and Surveying Abilities

Traditional methods of mapping and surveying land can be time-consuming and labor-intensive. However, 5G-enabled drones equipped with high-resolution cameras and advanced imaging systems have transformed this process. These agile aerial devices swiftly navigate through landscapes, capturing detailed images and data. With this technology, a comprehensive understanding of the terrain, vegetation density, and potential hazards can be obtained more efficiently and accurately than ever before.

#### **Real-Time Monitoring and Analysis**

Real-time monitoring plays a crucial role in land clearing projects; ensuring safety, efficiency, and optimal resource allocation. 5G technology enables seamless communication between drones and project teams, allowing for immediate analysis and decision-making. High-resolution images and data captured by drones can be transmitted instantaneously, enabling professionals to identify any problem areas promptly. This real-time collaboration promotes faster response times, improved coordination, and ultimately enhances overall project management.

#### **Precision and Safety**

With the assistance of 5G-powered drones, land clearing professionals can achieve unmatched precision and safety in their operations. Equipped with advanced imaging systems, drones can detect potential hazards (such as diseased or unstable trees) with unprecedented accuracy. This allows proactive measures to be taken: mitigating risks and ensuring the safety of workers and surrounding environments.

#### Improved Efficiency and Cost-Effectiveness

By leveraging 5G technology and advanced drones, land clearing practices become more efficient, resulting in significant cost savings. The rapid data transfer capabilities of 5G ensure that project managers receive up-to-date information to make informed decisions promptly. This streamlined workflow minimizes delays, reduces errors, and optimizes resource allocation, ultimately increasing operational efficiency and reducing project costs.

The convergence of 5G technology and advanced drones has ushered in a new era of landscape management, empowering professionals with unparalleled capabilities. 5G-enabled drones have become essential tools in the land clearing industry due to their advanced mapping and surveying capabilities, real-time monitoring and analysis features, heightened precision and safety measures, as well as improved overall efficiency and cost-effectiveness. Embracing these innovations will create a landscape management future that is efficient, sustainable, and technologically advanced.

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The worldwide adoption of 5G technology has resulted in an increased demand for roaming services



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## The Dynamic Trio of Speed, Power, and Performance in Modern Data Centers

In the realm of modern data centers, the triumvirate of speed, power, and performance reigns supreme. In this ever-evolving digital landscape, data centers have become the nerve centers that drive the heartbeat of our interconnected world. They are the powerhouses that propel industries forward, the catalysts that enable seamless communication, and the enablers of innovation.

peed, Power, Performance At the heart of every modern data center lies the first member of this dynamic trio- speed. Due to its relentless pursuit in achieving faster processing, instantaneous data transfers, and near-instant response times, speed is the force that keeps the wheels of progress spinning. It allows businesses to swiftly analyze massive volumes of data. make informed decisions. and adapt to rapidly evolving market dynamics.

Power, the second element of this trinity, represents the foundations upon which modern data centers are built. The raw energy, both physical and virtual, fuels their operations, providing the necessary infrastructure to house and safeguard vast amounts of information. From state-of-the-art cooling systems to redundant power supplies, these centers ensure uninterrupted service, offering unparalleled reliability and dependability.

Last but certainly not least, performance completes this powerful triad. It encapsulates the ability of modern data centers to deliver exceptional efficiency, scalability, and flexibility. Through cutting-edge technologies, such as virtualization and automation, data centers optimize resource utilization, adapt to fluctuating demands, and provide seamless scalability— giving businesses the tools they need to thrive in the face of a rapidly changing technological landscape.

The dynamic trio of speed, power, and performance represents the backbone of modern data centers. As stakeholders embark on this exciting journey, they must prepare to witness the incredible feats achieved by this formidable trio. From empowering businesses to unlocking new potentials, this convergence of forces promises an era of unprecedented possibilities and paves the way towards a future shaped by the limitless potential of the modern data center.

#### The Significance of Power Management and Energy Efficiency Measures in Data Centers

Power management and energy efficiency measures hold great significance in modern data centers, not only from an environmental standpoint but also in terms of cost savings and operational efficiency. As the demand for data processing and storage increases, data centers consume vast amounts of electricity, making it crucial to implement sustainable practices.

One way data centers can reduce their environmental impact is through the adoption of renewable energy sources. By harnessing solar, wind, or hydroelectric power, data centers can significantly decrease their reliance on fossil fuels and decrease carbon emissions. This shift towards renewable energy not only contributes to a cleaner environment but also helps mitigate the effects of rising energy costs.

Intelligent cooling systems are another vital component of power management in data centers. These advanced systems utilize sensors and automation to optimize cooling; ensuring that servers and networking equipment stay within temperature limits without excessive energy consumption. By effectively managing and controlling airflow, these systems minimize the energy required for cooling, resulting in substantial energy savings without compromising performance or equipment reliability.

In addition to renewable energy and intelligent cooling, data centers can employ various energy-efficient measures. For example, using energyefficient hardware components, including servers, storage devices, and networking equipment, helps reduce overall power consumption. Implementing virtualization techniques, where multiple virtual servers run on a single physical server, can also lead to significant energy savings by maximizing hardware utilization.

Furthermore, efficient power management practices in data centers

involve monitoring energy usage, identifying areas of inefficiency, and implementing power-saving features such as dynamic power scaling. These approaches allow data centers to optimize power consumption based on workload fluctuations, ensuring that resources are used efficiently without wasting energy.

By integrating power management and energy efficiency measures into data center operations, organizations can achieve numerous benefits. Beyond reducing environmental impact and energy costs, these measures contribute to enhanced reliability, longer equipment lifespan, and improved overall performance. They also demonstrate corporate social responsibility by aligning data center operations with sustainability goals and encouraging a greener future for the IT industry and all its vested stakeholders.



In this ever-evolving digital landscape, data centers have become the nerve centers that drive the heartbeat of our interconnected world





## **Automating Finance:** The Rise and Impact of Machine-to-Machine Payments

The IoT market has experienced remarkable growth in recent years, and the advent of machine-to-machine (M2M) solutions is poised to be the next revolutionary step in the realm of payments.

rojections suggest that by 2025, approximately 75 billion devices will be digitally interconnected. Consequently, the concept of direct transactions between machines, devoid of human intervention, is emerging as an essential prerequisite to fully unlocking the potential of IoT.

Having said that, the integration of M2M payments is anticipated to play a pivotal

role in shaping the digital economy, influencing diverse sectors such as connected cars, smart homes, industrial automation and e-commerce. By enabling IoT devices to autonomously interact and communicate, M2M payments have the potential to profoundly impact the future landscape of the payment industry.

#### What Are M2M Payments?

The active involvement of machines in the payment process is a fundamental component of the Fourth Industrial Revolution. This transformative era is reshaping societal operations through the convergence of technologies. Machine-to-machine payments leverage 5G mobile networks to autonomously execute transactions and employ blockchain technology, utilizing smart contracts to ensure secure and efficient payment processes.

By simple definition, M2M payments refer to automated transactions conducted between machines through

digital wallets, eliminating the need for human intervention or confirmation. Ideally, autonomous vehicles, including cars, forklifts and trucks, as well as other industrial machines, can independently cover expenses such as fuel, maintenance, road tolls and insurance.

In the sharing economy, industrial machines have the potential to generate income by renting themselves to other machines, receiving payments based on actual usage. The realization of these capabilities hinges on the advancement of 5G mobile networks, specifically 5G-Advanced. This evolution in financial transactions is giving rise to innovative business models tailored to the emerging M2M payment paradigm.

Here are some examples of machine-tomachine payments:

#### 1. Smart Grids and Utilities:

- Use Case: Smart meters in a utility grid communicating with each other to optimize energy distribution.
- Payment Scenario: When a device identifies a need for more energy or detects an opportunity to sell excess energy, it can autonomously initiate and complete a payment transaction with other connected devices.

#### 2. Vending Machines:

- Use Case: Smart vending machines equipped with IoT technology.
- Payment Scenario: Vending machines can automatically restock themselves by ordering new inventory when supplies are low. The payment is initiated and completed between the vending machine and the supplier without human involvement.

#### 3. Fleet Management:

- Use Case: Connected vehicles in a fleet equipped with IoT devices.
- Payment Scenario: Vehicles may automatically pay for tolls, parking fees, or maintenance services based on their usage, with transactions occurring between the vehicle and the corresponding service provider.

#### 4. Supply Chain and Logistics:

- Use Case: IoT-enabled shipping containers or pallets.
- Payment Scenario: Containers equipped with sensors can

automatically trigger payments for transportation services, route optimization, or customs fees based on real-time data during the shipping process.

#### 5. Smart Office Building:

- Use case: Efficient and timely inventory monitoring and supply.
- Payment scenario: An embedded M2M payments system would automatically order light bulbs when supplies run low, meaning maintenance staff will always have a fresh bulb on hand when a light goes out.

#### 6. Smart Home Devices:

- Use Case: Various smart home devices such as thermostats, refrigerators, or security systems.
- Payment Scenario: Devices can make payments for subscription services, order consumables, or purchase software updates autonomously based on usage patterns or predefined conditions.

#### 7. Industrial IoT (IIoT):

- Use Case: Connected machinery in manufacturing plants.
- Payment Scenario: Machines can automatically purchase raw materials, schedule maintenance services, or order replacement parts without human intervention.

#### 8. Autonomous Vehicles:

- **Use Case:** Self-driving cars equipped with IoT technology.
- **Payment Scenario:** Vehicles can pay for parking, tolls, and charging services without requiring the involvement of the vehicle owner.

#### 9. Advanced Traffic Management System:

- Use Case: Intelligent traffic lights equipped with sensors and communication capabilities.
- Payment Scenario: In this M2M payment scenario, the devices (smart vehicles and traffic lights) autonomously negotiate and execute transactions based on predefined rules and conditions, contributing to a more efficient and automated urban infrastructure.

These examples showcase the diverse applications of machine-to-machine

payments across various industries, demonstrating the efficiency and automation capabilities that IoT technologies can bring to financial transactions.

## Benefits of Using Machine-to-Machine Payments

Machine-to-machine (M2M) payments represent the convergence of two significant technological trends: the proliferation of connected devices (IoT) and the automation of payment decisions (invisible payments). The machine economy relies on two essential elements: (i) a network of interconnected devices equipped with payment capabilities; and (ii) the intelligence to determine when and how payments should occur.

IoT lays the groundwork for autonomous payments triggered by the behaviors of consumers, workers, or the machines themselves.

- Automatic: Eliminate the need to remember to restock; machine-tomachine payments automatically procure essential items for consumers before they run out.
- Contactless: Conduct payments without any human contact or interaction.
- Cashless and cardless: Remove concerns about carrying cash or cards; purchases can be made without the need for physical currency or cards.
- Autonomous purchases based on preferences: Thanks to the interconnected nature and knowledge possessed by these machines, they can autonomously make purchases aligned with customer preferences, requiring no additional actions.

## Addressing Technical Challenges in Machine-to-Machine Payments

Machine-to-machine payments entail automating payment decisions without explicit user input, a synergy facilitated by the convergence of IoT and digital payments. IoT enables connected devices with payment capabilities, and machine learning translates IoT-generated data into autonomous payment decisions. However, for the machine economy to succeed, it must effectively address genuine customer



needs by eliminating payment obstacles and ensuring high reliability and trustworthiness.

- Standardization of device-to-device payments is crucial. While existing payment standards like ISO 20022 messages can contribute, they have not yet become the prevailing form of payment.
- Achieving full payment automation may require the implementation of programmable payments, akin to smart contracts in ledger-based systems, but ideally without the complexity and overhead associated with current blockchain initiatives.
- Streamlining fund transfers and enhancing standardization in electronic wallet solutions would be beneficial, aligning with discussions surrounding digital currencies.

## M2M Context: Outlook for Payment Innovation

The integration of M2M payments with IoT devices will extend beyond traditional domains. Industries such as healthcare, agriculture, and retail will experience transformative changes as connected devices autonomously facilitate transactions, contributing to improved services and resource optimization.

Overall, M2M payments have the potential to enhance financial inclusion, particularly in regions with limited access to traditional banking services. The ability of connected devices to perform financial transactions autonomously can empower individuals and businesses, fostering economic growth.

Furthermore, advancements in M2M payments will play a crucial role in simplifying cross-border transactions. The ability of devices to conduct transactions without human intervention can reduce the complexities associated with international payments, leading to more accessible global trade.

In conclusion, the future of M2M payments holds immense promise for positive transformation across industries. The convergence of advanced technologies, a commitment to security, and a collaborative approach are expected to propel payment innovations, fostering a more efficient, inclusive and interconnected global financial landscape.



By enabling IoT devices to autonomously interact and communicate, M2M payments have the potential to profoundly impact the future landscape of the payment industry



## Huawei, HBKU Inaugurate AI ICT Lab to Equip Digital Talents in Qatar



Huawei Technologies and Hamad Bin Khalifa University (HBKU) inaugurated the Huawei HBKU AI ICT Academy Lab, signifying a new chapter in collaborative efforts between Huawei Technologies and HBKU. This state-of-the-art facility represents a fusion of innovation and education, solidifying the fostering of technological advancements and nurturing talent in the fields of artificial intelligence (AI) and Information and Communications Technology (ICT).

The official opening ceremony of the Huawei HBKU ICT Academy Lab took

place in the presence of Dr. Mounir Hamdi, Founding Dean of HBKU's College of Science and Engineering, Alex Zhang, CEO of Huawei Technologies LLC in Qatar, and other officials from both parties.

The Huawei HBKU AI ICT Academy Lab is poised to become a hub for fostering innovation and hands-on learning experiences. Equipped with cutting-edge infrastructure and resources, the lab will offer specialized training programs, workshops, and certification courses designed to empower students and industry professionals in the rapidly evolving fields of AI and ICT. As part of the collaboration. Huawei will provide comprehensive support, including curriculum development, training materials, and access to their global expertise in AI and ICT. This partnership aims to bridge the gap

between academia and the industry, enabling participants to acquire practical skills aligned with the demands of the rapidly evolving technological landscape.

Alex Zhang, CEO of Huawei Technologies LLC in Qatar. stated. "We are excited about the inauguration of the Huawei HBKU AI ICT Academy Lab, which stands as a testament to our commitment to nurturing talent and driving technological innovation. Through this collaboration, we aim to empower individuals with the skills and knowledge required to thrive in the digital economy. We continue to be keen on applying connectivity. Cloud, and other ICT technologies to education to help universities and vocational schools cultivate innovative talent, accelerate innovation related to teaching and scientific research, and bridge the digital divide."

## Nokia Overcomes Market Headwinds: Posts Resilient Q4 and Full-Year 2023 Results



Nokia Corporation released its financial report for the fourth quarter (Q4) and full year of 2023, highlighting a resilient performance in the face of macroeconomic challenges.

#### **Financial Highlights**

In Q4 2023, Nokia Corporation showcased resilience amidst challenging economic conditions, reporting a 21% year-on-year (YoY) decline in net sales in constant currency (-23% reported). The fullyear net sales were down 8% YoY in constant currency (-11% reported). Despite these challenges, the company demonstrated its ability to maintain profitability, with the Q4 comparable gross margin declining by 40 basis points YoY to 43.1%. The comparable operating margin for Q4 also declined by 70 basis points YoY to 14.8%, reflecting a robust performance relative to the net sales decline. Notably, the Q4 free cash flow was positive at EUR 1.7 billion, contributing to a net cash balance of EUR 4.3 billion for the full year. In a move to return value to shareholders, the board proposed a dividend authorization of EUR 0.13 per share and initiated a two-year EUR 600 million share buyback program.

#### Nokia's Resilient Performance Amid Economic Challenges in Q4 2023

Net sales for the quarter experienced a 21% YoY decline in constant currency (-23% reported), contributing to an 8% YoY decrease for the full year (-11% reported). Despite these economic headwinds, the company demonstrated resilience with a 40 basis points decline in comparable gross margin to 43.1% and a 70 basis points decrease in comparable operating margin to 14.8% in Q4. Nokia's positive Q4 free cash

flow of EUR 1.7 billion led to a strong net cash balance of EUR 4.3 billion for the full year. The board proposed a dividend authorization of EUR 0.13 per share and initiated a two-year EUR 600 million share buyback program, signaling confidence in Nokia's financial stability and commitment to shareholder value.

#### Nokia's Forward-Looking Strategy

Looking ahead, Nokia anticipates a challenging business landscape for the first half of 2024, acknowledging the persisting economic uncertainties. Despite these challenges, the company has identified positive indicators, notably in the improved order intake, particularly within the Network Infrastructure segment. Nokia has set ambitious targets for 2024, aiming for a comparable operating profit ranging between EUR 2.3 billion to 2.9 billion. Furthermore, the company is focused on enhancing its free cash flow conversion, targeting a range of 30% to 60%.

## Ericsson PCEO on 2023 Results: Improving Performance, Focusing on Profitability



Due to a focused execution and increased resiliency, Ericsson was able to adapt in a challenging environment and delivered solid Q4 results.

Commenting on the results, Börje Ekholm, President and CEO of Ericsson said, "In 2023, we continued to execute on our strategy to strengthen our leadership in mobile networks, grow our enterprise business and drive cultural transformation. We concluded 2023 with a Q4 EBITA margin of 11.4% and a historic 5-year USD 14 b. contract. Despite headwinds and a very weak mobile networks market, we were able to generate a full-year EBITA of SEK 21.4 b." In the disclosed data, the Group experienced a YoY organic decline of -17% in sales. However, excluding restructuring charges, the EBITA reached SEK 8.2 billion, showcasing an EBITA margin of 11.4%. Demonstrating a robust commitment to profitability, Ericsson achieved a notable gross margin of 41.1%.

"While the actions we have taken to improve performance are paying off, we are not satisfied with our profitability and there is more work to do," expressed Ekholm.

Networks sales decreased organically by -23% YoY but enterprise sales grew by 7% organically YoY— mainly driven by enterprise wireless solutions. In Cloud Software and Services, the vendor has continued to increase commercial discipline, automation and delivery efficiency, focusing on long-term profitability. The company is striving to revert to its established long-term goal of achieving free cash flow before M&A at a range of 9-12% of net sales.

"In this environment, we remain laser-focused on managing elements within our control, including operational efficiency and tight cost management. We are confident in our strategy and are committed to driving long-term value for our shareholders," emphasized Ekholm.

#### **Driving Strategy Execution**

According to the PCEO, Ericsson's first strategic pillar is to further enhance their leadership in mobile networks. "Technology leadership is core to our strategy, enabling customers to build highperformance, programmable and open networks to deliver a superior customer experience, maximize return on investment (ROI) and accelerate business innovation."

### Fortinet Unveils Pioneering Secure Networking Solution with Wi-Fi 7 Support



Launched as the industry's only comprehensive secure networking solution integrated with Wi-Fi 7, Fortinet's first Wi-Fi 7 access point, FortiAP 441K, delivers increased speed and capacity, while the new FortiSwitch T1024 is purpose-built with 10 Gigabit Ethernet (GE) access and 90W Power over Ethernet (PoE) technology to support Wi-Fi 7 bandwidth requirements.

These new devices deliver the cuttingedge wireless performance today's enterprises need and, as part of the Fortinet Secure Networking solution, seamlessly integrate with AlOps and FortiGuard Al-Powered Security Services to enable unmatched security, visibility, and control.

"Fortinet is the only vendor converging networking technology and AI-powered security into a single, holistic solution to connect and protect the wired and wireless LAN," said John Maddison, Chief Marketing Officer and EVP, Product Strategy at Fortinet. "We're putting the latest wireless technology breakthrough into the hands of customers, who can now take advantage of Wi-Fi 7's increased throughput while keeping their wireless traffic secure and their business efficient."

#### Harnessing the Power of Wi-Fi 7

Enterprises are eager to embrace the

increased speed and bandwidth of Wi-Fi 7 (the latest generation of wireless technology) to support data-heavy applications and wireless devices in their networks. However, new technologies like Wi-Fi 7 can expand an organization's attack surface, and legacy security solutions may struggle to inspect and secure the increase in data-rich traffic.

In today's sophisticated, constantly evolving threat landscape, organizations cannot leave gaps in their security posture unchecked. Fortinet's comprehensive Secure Networking solution supports Wi-Fi 7 while delivering the enterprise-grade protection, AI-powered security, and AIOps automation capabilities customers need to keep their wireless traffic secure.



# Al at the Ready: Transforming the Future of Cybersecurity

In the ever-evolving technology landscape, where innovation rules supreme, the realm of cybersecurity faces an ironic and perpetual challenge. Here, innovation proves to be a double-edged sword, not only empowering individuals and organizations but also providing fertile ground for cybercriminals. These perpetrators continually seek vulnerabilities to exploit in the ever-expanding world of software, systems and devices — a battleground where defenders strive to anticipate and prevent the increasingly sophisticated tactics employed by malicious actors.

midst this dynamic backdrop, it becomes important to take a look at how recent advancements in Artificial Intelligence (AI) have significantly influenced the field of cybersecurity. As technology advances, so does the sophistication of cyber threats. propelling cybersecurity experts on a seemingly never-ending race to fortify digital defenses. The balance between technological progress and ongoing efforts to safeguard against cyber threats comes into sharper focus as we delve into the transformative impact that AI has had on the cybersecurity ecosystem.

#### The Imperative Shift: Advantage to Defenders

One of the primary challenges faced by defenders is the asymmetry of the attacker. Cybercriminals can emerge from any corner, strategically choosing their points of entry and putting defenders in a perpetual race of catchup. Researching vulnerabilities and detecting exploits can take weeks or even months, leaving defenders at a considerable disadvantage.

The increasing integration of technology into various aspects of our lives necessitates that defenders maintain their advantage. Failure to do so risks escalating cyberattacks, which can become more devastating and personal and erode trust between individuals and the technology they rely on daily.

Fortunately, the rapid progress in AI presents an opportunity for such a needed security advantage. AI technologies can equip defenders with the tools needed to win at the point of attack, potentially tipping the scales in their favor.

#### Integrating New Tools in Cybersecurity

The emergence of generative AI, a product of decades of research, promises to bring about a new era of computational power. Beyond the impressive applications in various fields, generative AI has the potential to revolutionize cybersecurity. The tools powered by AI can provide real-time visibility across data and systems, negating threats and enabling defenders to anticipate and respond to attacks swiftly. This shift from reactive to preventive measures offers defenders a sizable advantage over their cyber adversaries.

Large language models like ChatGPT-4 can contribute to the development of secure tools that leverage advanced expertise and integrate known threat signals and security data. This integration allows for a more comprehensive and effective defense against cyber threats.

Some companies, like Microsoft, are harnessing the power of AI in security, analyzing an astonishing 65 trillion signals daily and detecting over 4,000 password attacks per second. Training AI on such vast intelligence allows for rapid and efficient threat detection, reducing the time it takes to identify anomalies from months to seconds. The combination of human ingenuity and AI capabilities can usher in a paradigm shift in security, enabling security teams to tackle incidents with unprecedented speed and accuracy.

#### AI's Role in Fighting Talent Shortages and Promoting Diversity

The security industry is grappling with a severe talent shortage and a lack of diversity, aggravated by a rapidly evolving threat landscape. Al presents a unique opportunity to address these challenges by breaking down barriers related to location, language and access to training. With AI, individuals new to the field can be up-skilled, and barriers preventing underrepresented communities from entering the cybersecurity workforce can be dismantled.

Currently, only 24% of the cybersecurity workforce is comprised of women, and a mere 20% are people of color. Al can play a pivotal role in bridging this gap, enabling a more diverse pool of talent to contribute to the defense against cyber threats. Breaking down these barriers is not only a necessity but a strategic move to become more familiar with the diverse backgrounds from which cyber attackers often emerge.

#### Shaping the Future of Security

Diversity in the cybersecurity workforce is crucial to understanding the multitude of perspectives that attackers bring. As the industry grapples with a talent shortage, it is imperative to embrace diversity to effectively defend against the ever-evolving threat landscape.

Generative AI stands as one of the most consequential technological achievements of our time. However, its full potential can only be realized through the collective efforts of a diverse array of contributors. As we navigate this transformative era in history, human ingenuity is essential in shaping the development of AI, ensuring that it reflects, includes and benefits all of us. Only under such stewardship can generative AI play a pivotal role in changing the world while ushering in support for cybersecurity, where defenders maintain the upper hand.



The increasing integration of technology into various aspects of our lives necessitates that defenders maintain their advantage



## Vodafone and Microsoft Sign Symbiotic 10-Year Africa/Europe Digital Services Partnership

Vodafone and Microsoft Corp. have signed a 10-year strategic partnership, which will see companies leverage each other to offer scaled digital platforms to more than 300 million businesses, public sector organizations, and consumers across Africa and Europe.

The companies will collaborate to transform Vodafone's customer experience using Microsoft's generative AI, hyperscale Vodafone's leading managed IoT connectivity platform, develop new digital and financial services for businesses (particularly SMEs across Europe and Africa), and overhaul its global data center cloud strategy.

Vodafone will invest USD 1.5 billion over the next 10 years in cloud and customer-focused AI services, developed in conjunction with Microsoft. In turn, Microsoft will utilize Vodafone's fixed and mobile connectivity services.

Microsoft also intends to invest in Vodafone's managed IoT connectivity platform, which will become a separate, standalone business by April 2024. The intention is to use the new company to attract new customers, and drive growth in applications, while also expanding the platform to connect more devices, vehicles, and machines.

The digital services provided by the new partnership will utilize the latest generative AI technology to provide highly-personalized and differentiated customer experiences across multiple channels. They will be built on unbiased and ethical privacy and security policies under Vodafone's established framework for responsible AI.

### New Gateway to Mexico and South America

Telstra International, a global arm of Telstra, has taken the first step to extend its network capabilities into Latin America by establishing a new dedicated point-of-presence (PoP) at Stemmons Towers in Dallas, Texas and collaborating with leading Mexican telecommunications providers, Axtel and Vivaro.

Telstra International will focus its initial expansion efforts on Mexico, as the new PoP is a critical gateway for internet and IP traffic to and from the region. This will allow enterprise and wholesale customers located in countries all over the world (including throughout Latin America) to easily integrate into Telstra's expansive connectivity network, enhancing their global reach and accessibility. The strategic location also enables Mexican multinational corporations seeking to connect to other regions to plug into the network to reach Asia-Pacific and Europe and likewise, APAC multinationals can now reach Mexico through the same gateway.

Telstra International's expansion is driven by the increasing demand for connectivity solutions in the region. On average, 84% of the total internet traffic to and from Latin America currently goes through the United States and Canada. This is expected to grow as international bandwidth demand steadily increases in Latin America and major international bandwidth markets in the region such as Mexico, continue to rely on connectivity into the U.S. to reach global markets such as Asia-Pacific and Europe.

### AWS Invests Further in Japan's Growing Al Market

Amazon Web Services (AWS) announced that it is expanding its facilities in Tokyo and Osaka to meet the increasing demand from customers. This investment is in addition to the approximately USD 10 billion that AWS has already spent in Japan between 2011 and 2022.

#### Japan's Al Sector Expansion

AWS first entered the Japanese market in 2009 and established a cloud region in Tokyo in 2011, followed by Osaka. This holds significant implications in the age of AI. As a major player in the global cloud computing industry, AWS's expansion into Japan underscores the increasing demand for scalable and innovative cloud services worldwide.

The establishment of cloud regions in Tokyo and Osaka by AWS not only facilitates the growth of the Japanese tech sector but also addresses specific needs of local businesses. The reduced latency afforded by these local cloud regions enhances the performance of AI applications, supporting real-time data processing and interactive functionalities. Additionally, AWS's presence allows businesses to meet data residency and compliance requirements, aligning with local regulations and industry standards. Moreover, the entry of AWS into Japan contributes to economic growth by attracting businesses, fostering technological innovation, and creating job opportunities in the tech industry.

## The Need for Robust Semiconductor Infrastructure

This expansion comes at a time when Japan's AI sector is growing. Prime Minister, Fumio Kishida, has held meetings with Sam Altman, CEO of OpenAI, and Jensen Huang, CEO of NVIDIA, to discuss the country's AI and semiconductor infrastructure.

## MTN and Ericsson Join Forces for Financial Empowerment in Africa

MTN Group and Ericsson have strengthened their partnership to enhance mobile financial services and to financially empower millions of citizens across Africa. The partnership is set to broaden the scope of financial inclusion from first-time users to highend business applications, utilizing MTN's Mobile Money (MoMo) service on the Ericsson Wallet Platform.

The comprehensive suite of services will provide MTN's customer base across Africa with access to a worldclass mobile connectivity-based financial ecosystem. In addition to ramping up MTN's goal of advancing financial inclusion for the unbanked, the service provider will offer advanced financial services to address the rapidly evolving digital financial needs of individuals and enterprises.

Powered by the Ericsson Wallet Platform, MTN Mobile Money enables individuals and businesses to conduct secure and convenient banking and payment transactions with ease, directly from their mobile devices. MTN MoMo customers can securely manage funds, pay merchants and utility providers, and access loans and insurance services with ease and affordability, promoting financial freedom and stability.

The platform places a strong emphasis on financial technology (FinTech). It focuses on the growth of merchant and e-commerce payments, facilitating national and international money transfers among family members and others (remittance services), advancing banking solutions (BankTech), and offering insurance services (InsurTech).

### Malaysia and UAE Form Strategic Partnership for Extensive Data Center Development

Malaysia's Ministry of Investment, Trade, and Industry (MITI) announced that it has formed a strategic partnership with the United Arab Emirates' Ministry of Investment to develop data centers in Malaysia.

The two ministries will reportedly collaborate to develop a robust digital infrastructure that will boost Malaysia's status as a regional data center hub, with potential projects totaling 500 megawatts.

## Becoming the Preferred Destination for Digital Investments

According to MITI, Malaysia has already established itself as a preferred destination for data centers in Southeast Asia, and growing demand from regional SMEs will elevate its status as a major regional player in the digital economy.

This initiative not only enhances Malaysia's ability to accommodate the growing demand for data storage and processing but also positions it as an attractive location for both local and international businesses seeking reliable and advanced facilities to support their digital operations in Southeast Asia.

The development of data centers in Malaysia is particularly strategic in meeting the increasing demand from small and medium enterprises (SMEs) in the region. As SMEs play a significant role in Southeast Asia's business landscape, catering to their digital needs is essential for Malaysia's long-term competitiveness. By providing accessible and efficient data center services, Malaysia can solidify its reputation as a favorable destination for businesses of all sizes looking to harness digital solutions for growth and innovation. This focus on supporting SMEs underscores Malaysia's commitment to fostering economic development and technological advancement in the digital age.

### Rogers Hits Record High in Complaints, Investors Warned of Red Flags

In its 15-year history, the federal telecom and television ombudsman recorded the highest number of complaints against Rogers, surpassing any other Canadian provider for the first time. One out of every five complaints is concerning Rogers, overtaking Bell Canada, which received the most complaints in every previous year.

The Commission for Complaints for Telecom-television Services (CCTS), an Ottawa-based agency that aims to resolve customer issues around wireless, internet, home-telephone and TV services, received a total of 14,617 complaints between Aug. 1, 2022 and July 31, 2023 – a 14% increase from the previous year. Following its merger with Shaw last year, complaints about Rogers shot up by 44% YoY to 2,893. The Torontobased telecom's share of complaints has been rising over the past four years, from 11% to 20% out of the total complaints received by the CCTS.

As a key service provider, about 1 in 3 Canadians are customers of Rogers. And for the stakeholders, an analysis by Sandpiper Investment Research highlighted why they should not own any of the telco's shares: it's losing customers to competitors; complex family involvement within the company's governance; rising CAPEX; less favorable regulatory environment; and highly-levered balance sheet.

## Generative AI Applications to Propel High-Speed Ethernet Switches

In its most recent Data Center Switch Long-Range Forecast Report, Crehan Research predicts that 800 gigabit Ethernet (GbE) switches will see rapid customer adoption and will surpass 20 million ports in annual shipments within four years – equating to the fastest ever data center Ethernet switch speed ramp. An expected key driver of the fast adoption is generative AI, which requires much higher networking bandwidth than other workloads.

"Generative AI is potentially the biggest killer application to emerge in decades," said Seamus Crehan, president of Crehan Research. "As the de facto data center networking technology, with an installed base of over 400 million switch ports as well as the proven ability to incorporate additional features to handle the requirements of new applications, we expect Ethernet to be the main enabler of these workloads," he said. "Already, Ethernet networking is seeing generative AI enabling deployments in five of the top seven hyperscale cloud service providers, as well as the world's fastest supercomputers including the Frontier exascale system and the Aurora system."

Alongside the increased adoption of high-speed Ethernet switches tailored for generative AI applications, Crehan's report forecasts a surge in shipments of 100- Gbps Serializer/ Deserializer (SerDes) technology. The company predicts that within three years, 100-Gbps SerDes shipments will outpace those of 50-Gbps SerDes, becoming the most widely deployed data center Ethernet switch SerDes speed.

## Harbour Centre's MMR5 Propels Vancouver to the Forefront of the Digital Revolution

Harbour Centre, a cornerstone of Western Canada's digital landscape, proudly announced the launch of Meet-Me-Room 5 (MMR5) — an inaugural step towards a cutting-edge, digitalfirst complex that integrates both the Harbour Centre and Spencer Building.

#### Expanding Interconnection Capacity

At a time when demand for robust and expanded connectivity capacity in Vancouver is rising, Harbour Centre's new MMR5 is set to meet the burgeoning interconnection needs of carriers, cloud providers, network operators and other service providers, both locally and internationally. It will be the conduit between Harbour Centre's longstanding legacy as Vancouver's primary interconnection point and the new focal point for the futuristic growth of vital, digital infrastructure in the city, such as the Spencer Building. The expanded interconnection capacity and the strategic footprint opportunities

created by MMR5 will reinvigorate Vancouver's position as an attractive destination for those seeking a launchpad for success in the region's ever-expanding digital arena.

The new, central MMR5 seamlessly interconnects to Harbour Centre's existing four MMRs, while directly connecting to the Spencer Building Carrier Hotel, Moreover, MMR5 offers an additional colocation space with secure access to up to 28 cabinets, with a cabinet power density of 10kW+. Most importantly, Harbour Centre is making it simple and affordable for service providers to establish their footprint in MMR5. Until December 31, 2024, all new cross connects in MMR5 will be discounted to USD 75 per cross connect per month. Additionally, existing tenants could benefit from personalized transition plans that will enable them to install their equipment in MMR5's active and passive rooms at minimal cost.

## FTC Probes Multi-Billion-Dollar Al Investments and Partnerships

Federal Trade Commission (FTC) issued compulsory orders to major cloud service providers Microsoft, Google and Amazon and generative AI startups OpenAI and Anthropic, requiring them to provide information regarding recent investments and partnerships.

The US antitrust regulator said it was probing the multi-billiondollar-investments made between Microsoft and OpenAI, Amazon and Anthropic, and Google and Anthropic.

Amazon, operating through its Amazon Web Services (AWS) division, along with Microsoft and Google, stands as one of the leading providers of cloud-based data centers globally. These centers, facilitating the storage and processing of data on an extensive scale, contribute to the immense wealth of these tech giants.

In the realm of generative AI, Microsoft has been a trailblazer, making a substantial \$13 billion investment in OpenAI, the entity behind ChatGPT. Anthropic, established by former OpenAI personnel, garnered significant financial backing, with Google investing up to \$2 billion. Amazon announced up to \$4 billion investment in this startup, with Anthropic also agreeing to use Amazon's cloud infrastructure and chips to develop its next models.

FTC studies are intended to gain a "deeper understanding of market trends and business practices" and any conclusions can guide the commission toward taking legal action, the regulator said.

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Discover the possibilities for progress and innovation by exploring Africa's technology sector, and join us in a new virtual panel to explore the dynamic world of rural connectivity in Africa.

Place: Virtual

### **MWC Barcelona**

Join the mobile technology ecosystem at the largest and most influential connectivity event; where global companies, international governments and tech businesses converge.

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### LEAP

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