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AN INSPIRING JOURNEY: Zain KSA and Red Sea Global Pioneering World's First Zero-Emission 5G Network







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John Pagano, CEO, Red Sea Global

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"Together, we are determined to make a meaningful impact that sets new

Eng. Sultan A. AlDeghaither, CEO, Zain KSA

Connections From Above: Harnessing Satellites for Connectivity and Transformation

Don't Shoot the Messenger. Embracing Media as a Cornerstone For ICT Ecosystem

From Deserts to **Digital Dominance: Tech Transformation** in the GCC





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Revolutionary Domestic Kirin 9000s Chip Debuts in Huawei's Mate 60 Pro+

Huawei has unveiled its latest flagship smartphone, the Mate 60 Pro+, which boasts the innovative Kirin 9000s chip, a first-ofits-kind domestically manufactured processor. This milestone achievement signifies a pivotal moment in China's tech industry.

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With the rapid acceleration of the global energy transition, an unprecedented opportunity presents itself in the electric vehicle (EV) supply chain. Canada has its sights set on its domestic battery ecosystem and is successfully luring top-tier companies to make substantial investments.



Meta Unveils Web Version of Threads App in Bid to Revive Platform

Meta is set to launch a web version of Threads, its social media platform aimed at challenging X, formerly Twitter. Threads initially experienced rapid growth after its launch in July but soon lost users due to limited functionality.

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Google's Duet AI Assistant Joins Race to Transform Work Processes

Google is launching Duet AI assistant across Workspace apps, offering features like converting outlines to presentations, generating charts and locating files. The platform challenges Microsoft's Copilot AI system, as both companies aim to revolutionize work processes with AI.

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An Inspiring Journey: Zain KSA and Red Sea Global Pioneering World's First Zero-Emission 5G Network

Zain KSA, the leading telecommunications and digital services provider, has been delivering essential communication services to millions of customers across Saudi Arabia for years. With a focus on innovation and customer satisfaction, the company has become a prominent player in the industry.

ecognizing its role as an enabler of nationwide digital transformation and an advocate of technology for sustainability, Zain KSA has been committed to making a meaningful impact toward

making a meaningful impact toward the advancement of the Saudi economy and society by serving Saudi Vision 2030 and its gigaprojects, including NEOM, MODON and The Red Sea tourism destination. By actively contributing to these flagship developments, Zain KSA aims to contribute to the sustainable development of Saudi Arabia while preserving the natural environment for generations to come.

One pioneering initiative in this regard is the zero-carbon 5G network at The Red Sea. The success story of Zain KSA's groundbreaking collaboration with the multi-project developer Red Sea Global (RSG) stems from shared values and sustainable foresight.

With its aim to transform a large portion of the Red Sea coastline into a sustainable, regenerative tourism destination, RSG is creating a new tourism model with regeneration at its core. Likewise, Zain KSA places a strong emphasis on sustainability with a focus on environmental responsibility through a comprehensive Environmental, Social and Governance (ESG) strategy that aligns with the national goals and aspirations as well as the global sustainable development goals.

This is the story of an inspiring journey powered by a shared commitment to make a real difference, combined with remarkable technical capabilities and an extraordinary capacity to harness ultra-modern technology in the service of sustainability.

Unleashing a Zero-Carbon-5G Revolution

The partnership to establish a sustainable 5G network at The Red Sea destination starts with Zain's stellar 5G journey. Following the launch of its 5G network in Saudi



Eng. Sultan A. AlDeghaither, CEO, Zain KSA

Arabia — the largest in Europe, the Middle East and Africa at the time of rollout — Zain KSA became the first MENA operator to introduce 5G Stand-Alone. This was followed by the rollout of multiple enhanced 5G technologies, including 5G 3CC. Zain KSA's world-class network was complemented by a large-scale vertical expansion that ushered in new innovative use cases across a wide range of consumer sectors, in addition to a full suite of enterprise solutions.

This deep expertise in establishing high-speed data networks has made Zain KSA the partner of choice for RSG in building an unprecedented 5G network solution. "As a leading digital provider in the Kingdom, Zain KSA extends its commitment to creating a flawless experience exclusive for the guests of Six Senses Southern Dunes, The Red Sea resort, by facilitating an unprecedented and highly efficient 5G network solution for the destination," said Zain KSA CEO, Eng. Sultan A. AlDeghaither.



The Red Sea zero-emission 5G network represents a pioneering initiative that showcases innovative concepts and technologies dedicated to enhancing the well-being of all







The Red Sea stands as a vibrant embodiment of Saudi Arabia's commitment to sustainability and economic transformation



"We aspire to be global pioneers of regenerative tourism development, adopting 100% renewable energy at our flagship destination, The Red Sea, and working towards the achievement of a 30% net conservation benefit by 2040. These ambitious goals demand ambitious partners, and our collaboration with Zain KSA transcends telecommunications, extending into sustainability and environmental protection," commented Red Sea Global Group CEO John Pagano.

High-Speed Connectivity Powered by ESG Ambitions

The decision to create the world's first zero-emission 5G network encompasses both technical objectives and ESG goals. "Together, we are determined to make a meaningful impact that sets new standards for sustainable development," added Pagano. The world-first 5G carbon-neutral project will achieve three primary goals: preserving the environment during setup, reducing emissions by utilizing renewable energy during operation and mitigating visual disruption.

From a technical aspect, RSG aims to build and manage a state-of-the-art 5G network that will enable seamless connectivity, faster data speeds and enhanced user experiences. This will support an elevated lifestyle that befits the company's vision of the Red Sea region as an avant-garde coastal destination.

Zain KSA's role in the deployment and management of 5G infrastructure at The Red Sea extends beyond digital empowerment. The primary focus is addressing the global challenge of climate change and minimizing ecological footprints.

Sustainability at the Core

The journey began when Zain KSA and RSG discovered their shared vision of enhancing quality of life with a commitment to sustainability and a true willingness to protect the present and future of people and the planet. Zain KSA was already dedicated to developing 5G networks, seeing the value of the technology in improving lives and empowering the nationwide digital transformation in the Kingdom. RSG was well on its way with its first two developments, The Red Sea and Amaala, both propelling the mission to redefine regenerative tourism in Saudi Arabia and beyond.

Both companies were thrilled upon realizing the potential of their collaboration on a world-first endeavor to sustainably harness the abundant renewable resources of the Red Sea region to enhance the lives of people and preserve the ecosystem. This shared passion inspired both organizations to team up on a journey that would revolutionize the future of technology — a future where progress and environmental responsibility go hand in hand.

The idea of empowering human development with no impact on nature seemed too good to be true at first. However, through the combined efforts of the teams of



Zain KSA and RSG, the project began to progress at a remarkable pace. The planning phase was initiated, with each step carefully crafted to serve the sustainability goals of both organizations and out of genuine consideration of the region's fragility and rich biodiversity. The network plans emerged based on extensive environmental studies and analysis that involved the potential impact on each species in the region and their homes. Comprehensive surveys documented the area's biodiversity, taking special care to avoid disturbing the natural habitats of turtles and other creatures in the area. Every decision was taken with the same diligence to ensure the protection of the region's rich ecosystems and natural landscapes below the sea and on land.

With a focus on combating visual pollution, Zain KSA's unique design for the network features small towers that seamlessly blend with the natural surroundings, in line with RSG's goal of developing less than one percent of the total area of The Red Sea destination. These towers are aesthetically pleasing and do not disrupt the golden and azure landscape of the region. Underscoring the project's commitment to fostering homegrown innovation and promoting the utilization of local content and resources, the network is being constructed through towers made with locally-sourced material.

Zain KSA has also adopted the latest infrastructure deployment solutions to eliminate carbon emissions throughout the construction of the network, which will be powered by renewable energy from over 760,000 solar panels. The collaborative approach also involves creating towers that can be shared with other telecom operators. This not only helps optimize resource utilization but will also reduce the need for multiple towers, minimizing the overall impact on the environment.



By setting new standards for an emission-free, tech-enhanced world, we are pursuing strategic industry goals of localizing the ICT industry and reducing carbon footprint



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These ambitious goals demand ambitious partners, and RSG's collaboration with Zain KSA transcends telecommunications, extending into sustainability



The revolutionary project is a critical part of the ICT infrastructure within The Red Sea destination's 90-island archipelago and will push the boundaries of sustainability, protecting every element of its diverse ecosystems.

Transforming the Red Sea Region With 5G

The technologies of 5G and 5G Advanced are driving profound transformations across virtually all sectors, playing an indispensable role at the core of modern advancements and reshaping how people interact with the world around them.

Within The Red Sea initiative, 5G plays a pivotal role in enabling innovative applications that enhance the project's functionality and environmental conservation efforts. Al-Deghaither emphasizes that the Green-5G network, meticulously designed for the region's unique needs, promises high-speed connectivity to residents, tourists and businesses alike: "Consider the impact of 5G in terms of IoT, where it facilitates the seamless connection of countless devices, enabling real-time data collection and analysis. This has far-reaching implications for a wide range of industries, including smart hospitality and healthcare, both key pillars of regenerative tourism."

In the context of environmental enhancement, 5G will underpin around 2,500 IoT sensors throughout key locations, including coral reefs, lagoons and turtle nesting sites. These sensors are essential for realtime monitoring and measurement, supporting RSG's ambitious goal of achieving a 30 percent net enhancement of its environmental conservation value by 2040.

Geared to welcome its first guests in 2023, The Red Sea will offer visitors tech-enhanced experiences with improved navigation, access to unique insights and personalized recommendations. The destination will also ensure guest experiences take a universally inclusive approach supported by smart city functionalities to enhance luxury tourism experiences for everyone. These tailored experiences can turn each visit to The



Red Sea into an immersive adventure amid the natural beauty and wonder of the place.

Extending This Success to Broader Horizons

The Red Sea zero-emission 5G network represents a pioneering initiative that showcases innovative concepts and technologies dedicated to enhancing the well-being of all. Balancing human prosperity with environmental preservation, the groundbreaking project reaffirms a deep-rooted commitment to supporting Saudi Vision 2030's goals for nationwide digital transformation and sustainability, including the goals to achieve carbon neutrality by 2060 and localize technology.

The invaluable technical expertise gained from the project will enhance Zain KSA's position in the field of sustainable connectivity. "By setting new standards for an emission-free, tech-enhanced world, we are pursuing strategic industry goals of localizing the ICT industry and reducing the carbon footprint. This will further advance the Kingdom's position as a digital hub, championing a future powered by sustainable tech," Al-Deghaither pointed out. While this network has been uniquely designed for The Red Sea, its success does not preclude the possibility of replicating and expanding the project to other areas in Saudi Arabia, the region, and the world. By extending the experience to other regions, Zain KSA and RSG will achieve their common goal of catalyzing sustainable development and leaving a positive, enduring impact within the Kingdom and beyond.

Next-Level Sustainability

The Red Sea stands as a vibrant embodiment of Saudi Arabia's commitment to sustainability and economic transformation. This regenerative tourism destination not only elevates the nation's luxury tourism and sustainability offerings but also sets a global example by prioritizing the well-being of people and the planet, safeguarding and enhancing the natural environment, and bringing forth a legacy of environmental stewardship for generations to come.

In parallel, Zain KSA's commitment to sustainability and climate change mitigation is an integral part of a broader vision of enriching the environment for future generations. Their holistic approach has proven instrumental in enhancing environmental well-being, raising living standards and ensuring sustainability.

The remarkable story of The Red Sea's fully sustainable 5G network reflects a shared dedication to creating a digital ecosystem that is both technologically advanced and environmentally conscious. "Zain KSA has demonstrated a deep understanding of our requirements and provided us with the services and solutions necessary to achieve our strategic objectives," Pagano indicated.

The zero-carbon 5G project represents a remarkable milestone in digital transformation, marking the beginning of a new chapter of leveraging cutting-edge innovation to serve the environment and introducing a worldfirst solution that sets the stage for a new era of connectivity. As we eagerly anticipate the full realization of The Red Sea 5G vision, there is no doubt that this pioneering initiative will leave an indelible mark on the region and inspire similar endeavors worldwide. In the words of Zain KSA's CEO. "This is a pioneering step in our journey to leverage tech for sustainability."



HUAWEI CLOUD: Creating a Digital Oasis in Saudi Arabia for the Middle East

Saudi Arabia, an Arab cultural and religious nexus for centuries, has now emerged as a hub for innovation and transformation in the Middle East, ushering in a new digital and intelligent era driven by its ambitious Vision 2030.

eing on the ground in Saudi Arabia, you're immediately inspired and filled with immense hope for the future. The whole country is in a period of digital and intelligent acceleration, backed by ambitious and visionary government leaders.

The Kingdom has made incredible achievements in realizing its national vision, and from this, we can already start seeing a new era of Saudi Arabia on the global map. The country has prioritized innovative technologies such as cloud and AI to drive this evolution. This approach opens up opportunities for publicprivate partnerships, combining the capabilities of ICT leaders with the Kingdom's immense resources.

Huawei, as a global tech giant and a key player in Saudi Arabia for over two decades, leads this transformation. Our journey in Saudi Arabia shows the enduring partnership between Huawei and the nation. Huawei has provided cutting-edge technology and solutions that have powered Saudi Arabia's digital transformation for the past 20 years. And as a committed ICT partner for the Kingdom, we strongly believe that investing in robust cloud infrastructure and services is one of the best ways to accelerate digitalization in Saudi Arabia. At Huawei, our responsibility is to help enterprises migrate to the cloud and learn to use and manage it better while considering aspects like data security, ROI optimization and new technology applications.

We recently launched the HUAWEI CLOUD Saudi Arabia Region in Rivadh. ushering in a new era of technological progress and economic growth for the region. This is a significant milestone in our contribution in line with Saudi Arabia's Vision 2030. However, this state-of-the-art cloud infrastructure benefits Saudi Arabia and the Middle East, Central Asia and Northern Africa as the core region for Huawei Cloud. Huawei will invest heavily in Saudi Arabia over the next five years, deepening its roots in the country and fostering a thriving ecosystem for digital transformation.

Huawei's primary objective in Saudi Arabia is to empower the nation's digital future. Towards that end, Huawei has several key initiatives to accelerate innovation, create jobs and drive economic growth.

First, Huawei will empower 200,000 new developers in Saudi Arabia over the next five years. We will provide them with the necessary tools, knowledge and support, laying the foundation for a new generation of tech-savvy individuals who can contribute to the country's technological advancement. Second, Huawei will partner with 1,000 local companies to develop joint solutions that address the unique challenges and opportunities in the Saudi market. This collaborative approach will foster innovation and strengthen the local economy.

Moreover, we will support 2,000 startups, helping them navigate the complexities of the business world and providing them with the resources to thrive. By nurturing these startups, Huawei will sow the seeds of entrepreneurship and foster a culture of innovation in Saudi Arabia.

A Bridge to a Digital Future

As China and the Middle East strengthen their ties, Huawei wants to play its part as a bridge, facilitating the exchange of insights and cooperation between these two regions. The Middle East and Africa (MEA) region's public cloud services market is expected to reach \$4.5 billion in 2023, growing at a CAGR of 20.7% between 2018 and 2023. The report says growth is driven by the region's digital transformation initiatives, leading to increased adoption of cloud technologies.

But cloud computing is not just a technological advancement; it's a catalyst for unlocking economic potential through digitalization. I believe that in order to achieve our ultimate goal of a real intelligent world, we need to build future-proof digital infrastructure leveraging the cloud. Huawei's commitment to building a stable and secure cloud infrastructure aligns with the country's and the region's cloud-first aspirations for digital progress.

Today, HUAWEI CLOUD maintains 83 Availability Zones in 29 regions worldwide, providing reliable cloud services. The Riyadh region is the 30th addition to this global network, enhancing Saudi Arabia's global connectivity.

Huawei shares its global experience in digital transformation openly with Saudi Arabia. Its international experts provide insights, best practices and proven strategies that enable Saudi businesses to enhance user experiences, optimize processes and unlock new growth opportunities.

The launch of HUAWEI CLOUD in the Kingdom is just our latest commitment to Saudi Arabia. Over the last two decades, we have significantly contributed to Saudi Arabia's economy, creating over 20,000 local jobs, injecting \$3 billion into local procurement and contributing \$1 billion in taxes. We have also collaborated with over 20 ICT academies to train more than 7,900 learners, ensuring that Saudi Arabia has the skilled workforce necessary to drive its digital future. In addition to infrastructure and job creation, Huawei is bringing advanced technologies, including AI, to the forefront of Saudi Arabia's digital transformation. I strongly believe that the use of AI in various industries will be the next big tipping point for mankind, ushering in a new era of ubiquitous connectivity and intelligence. With the introduction of Pangu Models 3.0, Huawei is enabling Saudi Arabia to harness the power of AI. These models, trained with hundreds of billions of parameters, outperform their peers in understanding and generation. Huawei Cloud Pangu models help enable industrial-scale AI development so that the power of AI can truly be unleashed in industries. They can be deployed on both the public cloud and on-premises, offering flexibility and customization to meet Saudi Arabia's unique needs.

Huawei recently demonstrated the power of AI to make an impactful contribution to humanity. In a HUAWEI CLOUD whitepaper published in Nature magazine, one of the world's top scientific journals, Huawei researchers showcased Pangu-Weather AI that harnesses the power of the cloud to process vast amounts of environmental data worldwide. By utilizing AI algorithms, Pangu can analyze intricate patterns and dynamics within our climate system that were previously inconceivable. With unmatched accuracy, it can identify and predict climate patterns, such as the intensity of storms, sea-level rise and regional temperature changes. The model enables a 10,000x improvement in prediction speed, reducing global weather prediction from 7 days to 1 hour. This innovation is critical as the world reels from climate change-related extreme weather.

HUAWEI CLOUD is also at the forefront of cloud-native technologies, contributing significantly to opensource projects like Kubernetes and Istio. This commitment to openness ensures that Saudi Arabia can access a wide range of cloud solutions and services, avoiding vendor lock-in and promoting choice.

Enhanced Ecosystem Support

Collaborating with ecosystem partners,

HUAWEI CLOUD is developing tailored solutions for various industries, including manufacturing, automotive, e-commerce/retail, digital government, electric power, finance and media/ entertainment. These solutions leverage Huawei's industry expertise to accelerate digital transformation and innovation in Saudi Arabia.

For example, HUAWEI CLOUD is helping automotive companies understand local compliance requirements and expand their operations in Saudi Arabia and the Middle East. In the finance sector, the company offers tailor-made solutions to drive digital transformation and enhance customer experiences. In media and entertainment, HUAWEI CLOUD's multimedia services offer ultra-high definition, low latency and powerful interaction, enabling companies like EYON to improve user experiences and expand their user base significantly.

I believe that ecosystem enhancement will accelerate innovation and application. Huawei recognizes the importance of a robust ecosystem to drive digital transformation and innovation. Through its "Go Cloud, Go Global" program, the company is actively collaborating with partners and customers in Saudi Arabia, including industry leaders like Alnafitha IT, to share expertise and insights into global and regional industries. This collaborative approach aims to help Saudi enterprises go global and Chinese enterprises go local, fostering economic growth and technological progress in the region.

In conclusion, Huawei's unwavering commitment to Saudi Arabia is a testament to the nation's potential as a digital and intelligent powerhouse in the Middle East. With a wealth of experience, cutting-edge technologies and a dedication to fostering economic growth and innovation, Huawei is poised to play a pivotal role in Saudi Arabia's journey toward a digital oasis in the heart of the Middle East. As Saudi Arabia and Huawei become aligned and global, the future is bright, innovative, inclusive and open.

By Frank Dai, President of HUAWEI CLOUD Middle East and Central Asia



and CSR Officer, Sofrecom

Sofrecom's SMART **Approach:** A Digital **Strategy With a Purpose**

In an exclusive interview with Telecom Review, Claire Khoury, chief marketing, communication and CSR officer, Sofrecom, discussed how telcos innovate and find new opportunities for value, Sofrecom's expertise and digital strategies, the importance of CSR and her views on gender equality.

> ow does Sofrecom encourage telcos to evolve their business models profitably and sustainably?

Faced with increasing competition from new technology services companies, which have succeeded in capturing a significant part of the value of the sector, and with the necessary investments in network modernization. telecom operators are experiencing

weak or declining growth. Given these challenges, they need to innovate and find new opportunities to maximize value.

By capitalizing on their technological expertise, infrastructure and large customer bases, telecom operators have great value-creation potential. These include:

- Capitalizing on the virtualization/ softwarization of their networks and accelerating the digitization of their operations to gain efficiency and agility.
- Leverage 5G and Fiber opportunities by developing new use cases, particularly for the enterprise sector, and considering the challenges of each industry.
- Monetizing customer data, whether technical or commercial.
- Seize environmental challenges to generate savings in energy consumption and the circular economy, and above all, to develop new sustainable business models.
- Skills challenges and business transformation: emerging digital technologies represent a crucial challenge, as their adoption can lead to significant productivity gains. They open up a wide range of opportunities and challenge the way work is currently organized. These changes have already begun. We therefore need to anticipate them to prepare operators and their employees for the transformations to come by providing answers to the following questions: What are the high-impact technologies for the telecoms sector? What are the main use cases, and what jobs do they impact? How can we prepare for this transition?
- Finally, to continue to enhance the value of their technical infrastructures.

At Sofrecom, we help leading telecom operators meet the major challenges facing the sector. Telecom operators need to revamp their strategic and operational plans.

With a unique expertise in telecommunications. can vou share Sofrecom's global understanding of operational strategies across the

entire value chain (business, IT and networks)?

Increasing market convergence between telco networks, software, services and content businesses is blurring the existing lines among traditional players in the telecom value chain. These fast-changing markets and uses are pushing the pace of innovation even faster. DATA AI. cloudification/virtualization. new 5G/6G mobile networks... challenges abound. The telecom industry's future leadership will depend on these issues. Telecom operators, whether incumbents or new players, are engaged in this far-reaching movement and are facing increasing difficulties to ensure a good return on investment in mature markets. They will have to boost these efforts to consolidate or enlarge their market positions.

The recent increase in competitive intensity will have major consequences for all players, who will need to achieve profitable growth while improving their operating model, the attractiveness and differentiation factors of their offers and services, and their customer loyalty.

In this new era, most telecom operators will have to wage multiple battles: fine-tuning their customer approaches, enhancing their customer experience, increasing their organizational agility, managing their ecological transition, optimizing the value generated by their innovations in a sector where only 10% offer a measurable competitive advantage, improving their talent management, but also preparing for future regulatory changes affecting pricing, population or territorial coverage obligations, and environmental and biodiversity issues.

At Sofrecom, what are the best practices the company follows to improve its digital strategies for marketing and communication purposes?

A marketing strategy has a purpose, but it must also be based on clearly defined objectives. The challenge is to draw up a scrupulously orchestrated action plan. We see our digital strategy as a path – the objectives of our marketing action being the different stages that drive our achievements! That's why we capitalize on the SMART objectives approach:

- S for Specific: the objective to be achieved.
- **M for Measurable:** we define the KPI to be monitored.
- A for Attainable: the result to be achieved.
- **R for Realistic:** the feasibility and risks to be managed.
- and T for Time-bound defined marketing to frame our actions: the deadline and timeframe for achieving this objective.

These 5 SMART criteria enable us to focus on the most useful actions for achieving our digital objectives and to mobilize our teams around these actions to move forward effectively, step by step. They enable us to effectively monitor the actions we take and measure how they are contributing to reaching our goals. Finally, they enable us to identify sources of problems and successes in our digital strategy.

What are the vital steps that Sofrecom applies to succeed in digital transformation while addressing CSR challenges?

Corporate Social Responsibility (CSR) has become a must, enabling companies to address and manage their businesses' human and environmental impact. Digital transformation consulting and services companies have a double commitment: making their own transition and encouraging/ supporting their customers to successfully complete their digital transformation while meeting sustainable development challenges. We encourage such involvement by:

- Internal alignment of employees and managers on CSR issues.
- In-house training and awarenessraising for our teams and support for our customers.
- Actively listening to the expectations of our teams and customers to prioritize our actions and plan our various initiatives over time.
- A value proposition and support for our customers around the issues at stake, with specialist consultants in the field.

- Support and mobilization of our partners around these challenges in order to maximize the impact of these initiatives and establish them over the long term.
- Regular communication on the progress of action plans to reassure and motivate.

As a female leader working in the ICT industry, please share your views on the importance of creating a more inclusive and diverse sector that drives innovation, fosters economic growth and improves the lives of women around the world.

In an increasingly digitalized world, the way we live and work has changed. While these changes may seem insignificant at first glance, they are having a significant influence on our mindsets and behaviors. Against this backdrop, gender equality is key. More than a fundamental right, this equality is essential to building modern, successful organizations. There can be no diversity of thought and experience without a fair representation of women within organizations; diversity underpins corporate performance and improves organizational culture.

A new study by the Alliance for Affordable Internet and the World Wide Web Foundation estimates that the digital divide between men and women has cost low- and middle-income countries \$1,000 billion over the last ten years. According to the World Bank, this is equivalent to almost two-thirds of sub-Saharan Africa's combined annual Gross Domestic Product (GDP).

The European Commission also estimates that the inclusion of more women in the digital economy could create an annual increase in GDP in the European Union of 9 billion euros.

In this sense, promoting equal access for women to the potential of digital technologies should be at the heart of national digital strategies. At Sofrecom, we are working to promote the employment of women in this sector, both as a company and within our own teams, as well as through our missions with the various players in the sector.



Nokia Answers MEA Region's Performance and Capacity Demands

In an exclusive interview with Telecom Review, Omar Moya, Head of Center of Expertise, Mobile Networks at Nokia MEA, discussed the exciting advancements in Nokia's mobile networks and how the newly launched RAN solutions meet the MEA region's demands for performance, capacity and energy efficiency. Moya emphasized how Nokia's innovations efficiently address scalable network coverage and capacity, ensuring CSPs' growth. The interview shed light on the significant role of ReefShark SoC in capturing 5G opportunities and empowering MEA with cutting-edge mobile network evolution.

calable network coverage and capacity are fundamental to CSPs' growth. How do Nokia's innovations in mobile networks ensure this fundamental requirement is efficiently addressed? Nokia has been a key player in the telecommunications industry for many years, and it has made significant innovations in mobile networks to address the fundamental requirement of scalable network coverage and capacity for Communication Service Providers (CSPs).

Nokia's AirScale Radio Access portfolio provides a flexible and scalable solution for CSPs. It supports multiple frequency bands, including mmWave, and allows CSPs to efficiently deploy and upgrade their networks to meet growing capacity needs.

Network Automation: Automation is a key element of Nokia's approach to efficiently addressing network capacity and coverage. Automated processes for network configuration, optimization and troubleshooting help CSPs scale their networks without a proportional increase in operational costs. An important aspect of scalability is the impact of OPEX. Accordingly, Nokia also focuses on improving the energy efficiency of mobile networks, reducing both operational costs and the environmental impact of network expansion.

Additionally, Nokia's network slicing technology allows CSPs to partition their networks into virtual slices, each tailored to specific services or customer segments. This enables efficient use of network resources and ensures that capacity is allocated where it's needed most.

Nokia's innovations in mobile networks encompass a wide range of technologies and solutions designed to address the fundamental requirement of scalable network coverage and capacity for CSPs. By leveraging these innovations, CSPs can effectively meet the growing demands of their subscribers while optimizing network resources and operational efficiency.

Nokia ReefShark SoC technology is a primary building block of Nokia AirScale radio and baseband solutions. Why is this a key to seizing 5G opportunities?

Nokia ReefShark SoC (System-on-Chip) technology plays a crucial role in seizing 5G opportunities because it offers several key advantages that are essential for the successful deployment and operation of 5G networks.

ReefShark SoCs are designed to deliver high processing power and performance efficiency. This is vital for handling the increased data throughput and low-latency requirements of 5G networks. It allows for faster data transmission and more responsive services, which are critical for applications like autonomous vehicles, augmented reality and industrial automation.

While energy efficiency is a significant concern in 5G networks, ReefShark technology is engineered to be power-efficient, reducing the energy consumption of network equipment. This not only lowers operating costs for CSPs but also contributes to environmental sustainability. As 5G networks continue to evolve and new features and capabilities are introduced, ReefShark SoCs can be updated with software upgrades, reducing the need for costly hardware replacements. This helps CSPs stay competitive and adapt to future technology advancements.

In summary, Nokia ReefShark SoC technology is a key building block of Nokia's AirScale radio and baseband solutions, and it is instrumental in seizing 5G opportunities because of its performance, energy efficiency, scalability, cost-effectiveness and support for essential 5G features like network slicing and security.

Nokia recently launched new nextgeneration RAN solutions. How are these solutions impacting the MEA region's demands for performance, capacity and energy efficiency?

Nokia's new next-generation RAN solutions have important characteristics that can have positive impacts for CSPs in MEA. I can list them in the following ways:

- **Performance:** Nokia's new RAN solutions are designed to deliver significantly improved performance over previous generations. For example, the Osprey and Habrok 5G TDD Massive MIMO solutions that can provide higher performance and capacity which are critical for the MEA region. Additionally our Pandion 4G/5G RFunits that bring maximum capacity for LTE and potential 5G in the smallest form factor (B3/B1/B7). This is critical for the MEA region, which is experiencing rapid growth in mobile data traffic.
- Capacity: Nokia's new RAN solutions are also designed to support more users and devices. For example, the Lodos and Levante Baseband capacity units designed for high capacity, often seen dense urban deployments and increase the number of users per cell site. This is important for the MEA region, which has some of the highest population densities in the world.
- Energy efficiency: Nokia's new RAN solutions are also designed to be more energy efficient. All RF units in recent launches improve further the power consumption to address

customer OPEX targets. This is important for our region, which is facing rising energy costs.

In addition to these specific benefits, Nokia's new RAN solutions also offer several other advantages that are relevant to the MEA region, such as:

- Reliability: Nokia's new RAN solutions are also designed to be highly reliable, with features such as carrier aggregation and load balancing to ensure that users always have access to the best possible service. This is important for the MEA region, which has some of the most challenging environmental conditions in the world.
- Security: Nokia's new RAN solutions are also designed to be highly secure, with features such as encryption and authentication to protect user data. This is important for the MEA region to prevent cyberattacks.
- Overall, Nokia's new next-generation RAN solutions are well-suited to meet the demands of the MEA region for performance, capacity and energy efficiency. These solutions can help mobile operators provide their customers with the best possible mobile experience while also reducing their operational costs.

What advancements can B2B customers expect from Nokia's mobile networks to support the long-term network evolution of 5G-Advanced and beyond?

Nokia already offers private LTE and 5G network solutions that can be customized to meet the specific needs of B2B customers. These networks can provide B2B customers with greater control over their network performance, security and reliability.

We are committed to developing and delivering innovative mobile network solutions that support the long-term network evolution of 5G-Advanced and beyond. Our innovations are aimed at enabling B2B customers to deploy new and innovative applications (use case adaptability) and services and to improve the performance, reliability and security of their existing applications and services.

Intelligent Operations

Adapt & Thrive: The Telco Operations Revamp

reailize

In the 21st century, communications technology advancements have hastened the pace of change for telcos. In addition, the pandemic amplified the urgency of profound telco reinvention by increasing societal reliance on physically distanced communication.

he resultant increase in consumer demand further accelerated the necessity for telco operations modernization. Telcos need to adopt an IT-like operation paradigm to decrease operational costs, hasten time-to-market and increase revenue. On the path to growth at scale, Cognitive AI will provide the means to lessen the adverse impact of network incidents on revenue. Likewise, migration to centralized open OSS/BSS tools with open APIs will reduce licensing fees associated with individual domainspecific OSS tools by eliminating duplicated tasks and overlapping workgroups.

The Resolution Path

Opportunity is one of the business drivers leading telcos to embrace transformation. New revenue streams are emerging thanks to modern technologies (mMTC, URLLC and eMBB). Services such as industrial and vehicular automation, mission-critical broadband, augmented reality, smart city cameras, etc., require guaranteed SLAs and OLAs. Best effort Quality of Service (QoS) is no longer an option. To beat the competition, telcos must expedite time-to-market for new services and products. These success criteria generate the need for agility in service fulfillment, closing the loop with the service assurance process.

The characteristics of (unintelligent) telco operations:

- Siloed incident management promotes inefficient workflow overlaps and longer resolution times.
- Unreliable inventory updates complicate inventory integration into OSS/BSS systems.
- Domain-specific individual OSS tools increase licensing and support service costs.
- The scope of the data available (from different domains) convolutes decision-making, generating the need for machine processing (ML) and realtime workflows (AI) to reduce OpEx (operational expenditure) and enhance customer experience.

The adoption of Intelligent Operations will help telcos overcome the challenges in the present landscape.

This article describes these new operations from the 3P (People, Processes, Products) approach. The progression of the Product pillar will be addressed through the design and enablement of centralized cloud-native OSS/BSS tools. These tools must handle data with centralized governance over collaborative data lakes to allow support teams to indest the relevant data, which will be democratized under some governance rules to assure quality and availability. Additionally, these systems must use AI to provide real-time workflows aligning service assurance and service fulfillment in a closed-loop approach. Further, they need to deliver real-time monitoring and detection with preventative warnings and automated resolutions. TM Forum provides a comprehensive framework through Open Digital Architecture (ODA) and Open APIs to facilitate multi-vendor interoperability. OSS/BSS tools must

be built in compliance with standards. ODA replaces traditional operations and business support systems (OSS/BSS) with an innovative approach to building software for the telecom industry. ODA is comprised of an architecture framework, a common language, design principles and specifications for standardized, interoperable software components and Open APIs.

On the People pillar, the goal is to populate operational organizations with DevOps-skilled collaborators. Collaborators should be able to take E2E ownership of service incidents. The biggest hurdle here is to convert the mindset of people from siloed operations organizations to a collaborative, customer-centric manner of assurance. The intended outcome is automated network operation that allows high-paid human resources, such as Engineers, to focus on QoS/QoE by gradually enabling ML/AI to take care of manual tasks in monitoring, detection, alerting, remediation and service fulfillment.

On the Process pillar, intelligent operations should assess and evolve legacy processes. The Legacy approach to network assurance was siloed, inefficient, and riddled with overlap. As the pace of change in the telco industry continues to accelerate, goals have transitioned towards establishing processes focused on service assurance/fulfillment through a closedloop approach. The telco processes of the future must eliminate manual, repetitive tasks and workflow overlap.

Intelligent operation is no longer just a theoretical framework; real-world telcos like China Mobile and BT are already reaping the benefits. China Mobile, the champion of the AIempowered 5G intelligent operations project, demonstrated how to use AI to boost efficiency, improve customer experience and energy consumption, and reduce OpEx. BT used the TM Forum Catalyst program to develop a solution for consolidating network inventory systems, resulting in significant operational savings and a 100x reduction in the time it takes to onboard network components (from 18 months (about one and a half years) to just days)

Reailize supports telcos on their evolutionary journeys to Intelligent Operations. Our Continuous Assurance solution with anomaly detection and prediction and root cause analysis automation provides customers with a tried-and-tested product with a TM Forum ODF (Open Digital Framework)compliant architecture.

In addition, our Solution provides SME consultancy to assess, plan, and implement the progression of the People and Process pillars. We offer tailored assessment, implementation, and operating services to align our clients' processes with the three pillars of Intelligent Operations. Our transformation system reviews each client's specific business drivers. It then leverages GNOC resources, SOC Expertise and Cognitive NOC capabilities to implement Intelligent Operations in compliance with TM Forum standards and recommendations.

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By Alejandro Neme, Solutions Architect, Reailize

> The adoption of Intelligent Operations will help telcos overcome the challenges in the present landscape





مكتب الشارقة الرقمية Sharjah Digital Office

Sheikh Saud bin Sultan Al Qasimi, Director of the Sharjah Digital Office (SDO)

Digital Sharjah for 2024: A Vision of Comprehensive Digitalization

Sharjah has undergone a remarkable evolution in technology adoption. In an exclusive interview with Telecom Review, Sheikh Saud bin Sultan Al Qasimi, Director of the Sharjah Digital Office (SDO), shared details about the emirate's journey into the digital realm.

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ow does the Sharjah Digital Office (SDO) facilitate the digitalization process of Sharjah

government entities and thus better ensure digital transformation in the UAE?

The Shariah Digital Office (SDO) plays a pivotal role in advancing the digital transformation journey of Sharjah's government entities. By working collaboratively with these entities, SDO leverages its expertise to design and implement innovative digital solutions that streamline processes, enhance efficiency and elevate the overall quality of government services. Through the provision of strategic guidance, technological infrastructure and a unified vision, SDO empowers government bodies to seamlessly transition into the digital era. This holistic approach ensures that digital transformation becomes integral to their operations, contributing to a more technologically adept and forward-looking UAE.

Can you give a brief outlook on Sharjah's technological advancements over the years and how they improve people's experiences?

Over the years, Sharjah has undergone a remarkable evolution in technology adoption, leading to significant enhancements in people's experiences. Integrating digital solutions across various sectors has revolutionized how citizens, residents and businesses interact with government services. Technological advancements have created a more user-friendly environment, from instant access to essential information to the seamless completion of administrative processes. These developments have saved time and effort and fostered transparency and convenience, thus enriching the lives of individuals and bolstering their confidence in digital services.

Please share how Sharjah continues its journey in the digital realm. What is the core impact of digital

initiatives on Sharjah's economic and societal development?

Sharjah's journey in the digital realm is marked by its commitment to comprehensive digitalization; the core impact of our digital initiatives resonates deeply across economic and societal dimensions. On the economic front, digital solutions drive efficiency, enabling businesses to thrive in an environment that encourages entrepreneurship and innovation. This, in turn, propels economic growth and positions Sharjah as a hub for investment and trade. Societally, digital initiatives empower residents by offering accessible and convenient services that cater to their evolving needs. By fostering digital literacy and inclusion, we are creating a betterequipped society to adapt to rapid technological changes, paving the way for a more sustainable and progressive future.

How do you aim to fulfill Digital Sharjah's campaign for 2024 and beyond?

The Digital Sharjah campaign for 2024 is a visionary endeavor that encapsulates our commitment to creating a complete digital ecosystem. Through targeted strategies and collaborative efforts. we aim to establish an innovative hub that fosters inclusivity, sustainability and technological advancement. By leveraging emerging technologies, refining existing processes and promoting a culture of innovation, we are poised to offer an unparalleled digital experience to residents, businesses and government entities. This campaign is a testament to our dedication to achieving digital excellence and solidifying Sharjah's role in the digital landscape.

From your perspective, how will a holistic digital transformation, spurred on by today's technologies, influence the way Sharjah and the whole UAE function as a society? A holistic digital transformation powered by today's technologies will usher in a paradigm shift in how Sharjah and the entire UAE function as a society. It will engender a more connected and efficient environment where government services are seamlessly accessible and tailored to individual needs. This transformation will amplify collaboration between the public and private sectors, nurturing innovation and entrepreneurship. Moreover, a digitally adept society will be better equipped to address challenges and harness opportunities in diverse sectors, from healthcare to smart infrastructure and sustainable development. Ultimately, this transformation will propel us towards a future where technological empowerment becomes the cornerstone of progress, making Sharjah and the UAE leaders in shaping a digitally driven society.



Over the years, Sharjah has undergone a remarkable evolution in technology adoption, leading to significant enhancements in people's experiences





Transforming Tech: Exploring the Boundless Potential of GPT-3

In today's rapidly evolving technological landscape, one innovation stands out for its boundless potential: GPT-3. This remarkable language model, developed by OpenAI, has sparked excitement and curiosity across industries. Its ability to engage in natural, human-like conversations and generate coherent and creative content has captured the imagination of developers, entrepreneurs and researchers worldwide.

PT-3 stands as a testament to the exponential growth and potential of artificial intelligence. Its vast neural network, containing

a staggering 175 billion parameters, enables it to comprehend and respond to a wide range of queries and prompts. Whether it's answering questions, writing essays, creating poetry or even programming code, GPT-3 shows us a glimpse of what the future holds for human-machine interaction.

But it's not just about convenience and efficiency. The implications of GPT-3 reach far beyond its practical applications. It's a system that challenges us to rethink our understanding of technology and its role in our lives. As we explore the limitless possibilities of GPT-3, we must also consider the ethical and societal implications that come with such a powerful tool.

Navigating Ethical Concerns: Responsible Development and Usage of GPT-3

As we delve into the realm of GPT-3's boundless potential, it is crucial to

acknowledge the ethical concerns that arise alongside its capabilities. One major concern is the model's potential for generating misinformation or biased outputs.

Given the vast amount of data GPT-3 learns from, there is a possibility that it may inadvertently produce misleading or inaccurate information. This can have serious consequences, especially in domains where accuracy and reliability are paramount, such as news reporting or medical advice.

To address these concerns, the responsible development and usage of GPT-3 become imperative. Developers and organizations utilizing GPT-3 should prioritize implementing strong oversight mechanisms and guidelines to ensure the ethical use of this powerful tool.

One approach is to establish clear guidelines for the training data used to train GPT-3. Ensuring diverse and representative datasets can help mitigate biases and reduce the risk of propagating misinformation. Additionally, continuous monitoring and evaluation of the outputs generated by GPT-3 can help identify and rectify any inaccuracies or biases that may arise.

Transparency is another key aspect of responsible usage. Openly acknowledging that GPT-3 is a language model and not a human can help users understand the limitations and potential biases associated with its outputs. By providing clear disclaimers or indicators when GPT-3 generates text, individuals can make informed decisions based on the understanding that the information is machine-generated.

Collaboration between developers, researchers and regulatory bodies is also crucial. Engaging in open dialogue and sharing best practices can foster a collective effort to address ethical concerns associated with GPT-3. This collaboration can lead to the establishment of industry-wide standards, guidelines and regulations that promote responsible development and usage. While the potential of GPT-3 is vast, it is essential to approach its development and usage with ethical considerations in mind. By prioritizing responsible practices, implementing strong oversight mechanisms and fostering collaboration, we can mitigate the risks of misinformation and biased outputs, ensuring that GPT-3 is indeed steered toward the betterment of society.

Potential Downsides of GPT-3

When discussing the topic of transforming the tech landscape and exploring the boundless potential of GPT-3, it is important to consider potential drawbacks or concerns that may arise. Here are some points to consider when focusing on the potential downsides or limitations of GPT-3:

1. Overreliance on Automation: While GPT-3 can automate various tasks, there is a risk of overreliance on machine-generated content. This may lead to a decrease in human creativity and critical thinking skills if individuals rely solely on GPT-3 for content generation or its decisionmaking processes.

2. Lack of Contextual Understanding:

GPT-3's language model is based on patterns and data it has learned from, but it may lack deep contextual understanding. This can result in responses that are technically accurate but lack a nuanced understanding of complex subjects or cultural sensitivities.

- **3. Data Privacy and Security:** As GPT-3 requires vast amounts of data to train and operate effectively, there are concerns regarding data privacy and security. Discuss the need for robust measures to protect user data and ensure compliance with relevant regulations.
- **4. Unequal Access and Bias:** Consider the potential for unequal access to GPT-3 and the impact it may have on various industries and individuals. Discuss the need to address any biases in the training data to ensure fair and equitable outcomes.
- 5. Unintended Consequences: Explore the potential unintended

consequences of widespread adoption of GPT-3. This could include job displacement as certain tasks become automated or the amplification of existing inequalities if GPT-3 is not deployed and regulated responsibly.

Such concerns remind us that this technology is in its infancy and we still have a way to go toward understanding it, let alone mastering it. But by discussing these potential downsides or limitations of GPT-3 along with its seemingly endless possibilities, we can engage in critical thinking about the implications of its usage and ultimately gain a more balanced perspective on its transformative potential.







Kuwait Ministry of Health Embraces AI for Diagnosis and Treatment



The Kuwait Ministry of Health has adopted cutting-edge artificial intelligence (AI) technologies for diagnosis and treatment across various medical disciplines. The ministry has initiated comprehensive training programs to equip its workforce with proficiency in this emerging technology.

Al applications are now in full swing within Kuwait's healthcare landscape, encompassing clinical care, research, pharmaceutical production and administrative enhancements. Dr. Suleiman Al-Mazidi, chief surgeon at Jaber Hospital, highlighted the remarkable utility of Al in diverse medical fields, particularly radioactive diagnosis, surgical procedures and scientific research.

Dr. Al-Mazidi emphasized that Al integration has led to a reduction in medical errors, streamlined surgical procedures and shortened operation durations. Jaber Hospital has embraced the latest technological advancements, employing Al in surgeries, endoscopic procedures, indocyanine green enhanced fluorescence (ICG) tools and the use of assisting robots.

One milestone achievement at Jaber Hospital was the utilization of the Olympus device for surgery, marking the first instance in the Gulf region. Surgeons now benefit from 3D devices for detailed visualization of patients' internal organs during procedures.

Furthermore, the hospital successfully conducted its maiden endoscopic operation employing AI technology to pinpoint tumors within the colon and stomach — another first in Kuwait. This groundbreaking technology enables the detection of tumors that are otherwise invisible to the naked eye.

Dr. Al-Mazidi announced the upcoming inauguration of an Al training division at the hospital, scheduled for October. Additionally, the hospital already boasts a specialized department known as the "virtual division," where medical professionals receive training in state-ofthe-art Al techniques.

Kuwait's healthcare system is undergoing a transformative shift with the integration of AI, promising enhanced patient care, improved accuracy and innovation in medical practices.

GCC Nations Showcase World-Class Connectivity



The Gulf Cooperation Council (GCC) markets, which encompass Bahrain, Kuwait, Oman, Qatar and Saudi Arabia, are at the forefront of providing exceptional mobile network experiences.

Among this group of nations, Saudi Arabia, with its extensive land area within the GCC, distinguishes itself by achieving a remarkable 5G availability rate of 22%, showcasing substantial advancements in mobile network infrastructure. Meanwhile, Qatar has emerged as the frontrunner in 5G download speed, achieving an impressive 20.8% boost.

Examination of the GCC markets in the EMEA region reveals that they feature some of the highest 5G speeds. Consistently, these markets maintain an average 5G download speed that exceeds 200 Mbps. With substantial improvements in overall download speed experience over the past year, Qatar recorded the highest increase at 24.3%, with Saudi Arabia also experiencing a notable 13.6% rise.

In further comprehensive analysis, Kuwait, Bahrain and Qatar have emerged as standout high performers for 5G users on the latest generation network. Moreover, the UAE and Qatar lead the table in overall availability, with users connected to 3G, 4G or 5G signals 98.9% of the time.

These remarkable advancements in mobile network experience solidify the GCC's position as a global leader in telecommunications, underscoring the commitment of regional operators to delivering world-class connectivity to their users.

Saudi Arabia Embraces Caller ID Revolution From October 2023



From October 1, 2023, mobile phones within Saudi Arabia will start displaying the name and identity of callers.

This service exclusively allows the names of legitimate entities, whether governmental or private, to be displayed when they contact users. These entities must subscribe to the service with their service providers.

The Communications, Space and Technology Commission (CST), the regulatory authority overseeing digital matters in Saudi Arabia, has completed all necessary preparations for this implementation. The specification primarily focuses on enabling the feature of displaying the connected party's name on mobile network-operated terminal devices in Saudi Arabia.

Previously, the CST had introduced a draft technical specification for showing the caller's name and identity. This specification mandates that the caller's name and number must be visible in the call log, and the mobile device must be capable of receiving and displaying this information across various technologies.

The specification leverages modern technologies to reduce deceptive or spoofed calls, safeguard users and reduce reliance on unreliable programs and applications that breach caller privacy. It also serves as an educational tool for users regarding the feature related to displaying the connected party's name.

It is now mandated that mobile and landline service providers should implement the necessary solutions to make this feature available within their networks, aligning with the specified criteria.

Kuwait's MoC Chooses Public-Private Model to Complete Fiber Rollout



This will be accomplished through an upcoming competitive open tender process to select a strategic partner, conducted in collaboration with the Kuwait Authority for Partnership Projects (KAPP). As part of the MoC's strategy, this public-private partnership will result in the establishment of a specialized company licensed by the Communication and Information Technology Regulatory Authority (CITRA). This company will be jointly managed by representatives from both the government and the selected private sector partner.

The MoC has outlined its commitment to maintaining ownership and responsibility for the infrastructure of the fiber broadband network while granting wholesale access to Kuwaiti internet service providers and telecom companies. These providers will, in turn, offer fiber services directly to end-users. A dedicated committee has been established to thoroughly examine this new project and oversee its implementation process.

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TDRA Further Advances Government Digital Transformation Skills Across the UAE



pioneering initiative aims to enhance the digital transformation expertise of government employees.

The launch of the DGOV Academy represents a pivotal step in ongoing efforts to empower government entities across the country with the skills and knowledge required for the digital age. The partnership between Smart Umm Al Quwain and TDRA underscores a commitment to equipping government staff with the tools needed to excel in a rapidly evolving digital landscape.

This event is part of a broader initiative led by TDRA in collaboration with various local digital government entities throughout the nation, marking a significant step forward in the UAE's journey toward comprehensive digital transformation.

The Telecommunications Regulatory Authority has partnered with Smart Umm Al Quwain to launch the DGOV Academy in Umm Al Quwain. This

Qatar Launches Initiative to Boost Government Digital Services



The Digital Factory initiative, launched by the Ministry of Communications and Information Technology (MCIT), seeks to bring about a profound change in the way government digital services are provided.

This shift involves moving away from the current multi-channel approach and transitioning towards a more cohesive and unified model in alignment with Qatar's National Vision 2030.

Focusing on user-centered, proactive services, the initiative strives to enhance digital governance by providing solutions that align with the demands of a digitalsavvy society.

The breadth of the Digital Factory's approach is comprehensive,

encompassing state-of-the-art infrastructure, advanced data aggregation, government data exchange and core segments such as the data and intelligence hub, human experience design and innovation delivery.

By incorporating advanced technologies such as AI and blockchain, the Digital Factory is positioned to establish its dominance in the arena of digital service advancement.

Over an articulated span of three years, the Digital Factory has outlined its operational trajectory: the commencement year is dedicated to enhancing services predominantly for citizens and residents; the second year is when the agenda broadens to address the digital requisites of businesses and visitors; and the final year is reserved for the refinement and tailoring of services.

The Digital Factory addresses the nation's current challenges, which include 35% of government services

encountering procedural delays, 45% poised for full-scale digitization and a mere 27% of the population currently utilizing e-services.

The latest initiative represents Qatar's strategic reaction, emphasizing MCIT's steadfast commitment to raising the quality of digital services for all involved parties.

Minister of Communications and Information Technology, H.E. Mohammed bin Ali Al Mannai, remarked: "Our collaboration with Accenture in representing the Digital Factory captures Qatar's forwardthinking commitment to seamlessly blend cutting-edge technology into our societal ethos, thereby heralding a phase characterized by unparalleled innovation, operational efficiency and user-centricity."

Overall, the Digital Factory's vision is to equip government agencies with a robust platform and state-of-the-art tools for forthcoming endeavors, thus helping them create or adjust services as society's needs change.



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Telecom Review Panel: '5G Deployment in North Africa'

Telecom Review successfully presented its latest webinar titled "5G Deployment in North Africa," which gathered industry experts to discuss the adoption rates and potential coverage, along with opportunities and challenges related to spectrum issues.

ssam Eid, COO of Telecom Review Africa, was the moderator of the panel, which featured executive panelists, including Kenechi Okeleke, director, GSMA Intelligence; Mostafa Hegazy, director, IT & network innovation and strategy, Orange Egypt; Zoran Lazarević, chief technology officer for market area Middle East & Africa, Ericsson; and Youssef Mrabet, CTO for North and West Africa, Nokia.

In his opening note, Kenechi Okeleke shared insights from various GSMA reports on the implementation of 5G in North Africa. He provided a worldwide perspective on 5G commercialization, revealing that by June 2023, 238 operators in 94 markets globally had launched 5G operations, with 106 of them in 52 markets also introducing fixed wireless access connections.

Notably, 254 operators in 110 markets had conducted 750 trials on 5G, with companies like Nokia and Ericsson leading in supporting these trials. Okeleke emphasized that the midband frequency range (1-7 GHz) was the driving force behind global 5G deployments. Comparatively, North Africa was lagging behind in 5G commercialization and spectrum allocation when compared with other regions on the continent. He highlighted that North Africa's readiness for 5G was indicated by high levels of smartphone and 4G adoption, as well as significant investment by operators in network modernization. Okeleke stressed the urgent need for spectrum allocation in North Africa and projected that commercial 5G services could be available by 2024, potentially resulting in over 130 million 5G connections in the region by 2030, equivalent to 41% of total mobile connections in North Africa. He concluded that the adoption of 5G

could contribute \$6.6 billion to the North African economy by 2030.

New Solutions and Services Coming

The first question addressed the current status of 5G deployment and shared updates on commercial testing progress. Hegazy stated that nearly all operators in North Africa have initiated testing and field trials for 5G. In Egypt. they have received regulatory clearance for 5G field testing and believe they are prepared from a network standpoint. Discussions between operators and regulatory authorities are underway regarding the allocation of more spectrum, particularly in the 3.5 GHz band. In recent years, Egyptian operators have secured extensions for the 4G service spectrum in the 2.6 GHz band. Hegazy suggested that this band could be utilized in the early stages of 5G deployment. He also mentioned that the initial transition of traffic from 4G to 5G is anticipated to be modest due to the availability of 5G-capable handsets in the region's smartphone market.

Mrabet highlighted that many countries have already started announcing their 5G roadmaps, and various levels of demonstrations, tests and trials have been conducted since 2019. He emphasized the need for modernizing radio access networks to accommodate the increased demand and capacity brought about by 5G. Mrabet noted that network evolution is a constant process across generations and emphasized the significance of frequency allocation by regulatory bodies.

Lazarević emphasized that with proper frequency allocation, a mutually beneficial outcome can be achieved. This not only affects how telcos serve African customers with high-performing networks but also influences the costeffectiveness of network construction. Spectrum allocation is a crucial aspect of 5G deployment in North Africa.

Unlocking 5G FWA Opportunities

Next up was a question about how 5G might affect the GDP growth of North African countries. Mrabet pointed out that there's been a lot of research in this area. He highlighted extensive studies on 5G's impact. PwC projects a global

GDP impact of \$1.3 trillion by 2030 due to 5G. While stronger, more modern economies are expected to benefit the most, Mrabet believes that North Africa holds a particularly crucial opportunity.

He emphasized the potential of 5G fixed wireless access (FWA) in bridging the digital divide, especially in rural areas where it complements fiber-optic buildouts. This technology plays a pivotal role in North Africa's push towards 5G and digitalization, as exemplified by national plans in countries like Morocco, Tunisia and Egypt.

Hegazy also said that there are opportunities in private networks, citing examples in sectors like marine harbors, trading and logistics in Egypt where 5G could streamline operations and reduce resource expenditure.

Lazarević emphasized the importance of home broadband in North Africa, noting that FWA is a more effective solution compared to extensive fiber-optic networks. He anticipated a substantial surge in FWA adoption in the region by 2024. For Ericsson, their focus on 5G use cases in Africa follows a step-by-step approach, with FWA taking center stage. They plan to explore more complex applications like private networks, gaming and augmented reality in due course.

Okeleke expressed confidence that North Africa will embrace 5G as new solutions emerge, citing the \$6.6 billion estimated economic impact. He believes 5G will significantly boost productivity across various sectors and improve government service delivery.

The Sustainability Factor in 5G

The discussion shifted to the impact of 5G deployment on energy consumption for service providers. Lazarević emphasized that 5G represents a significant leap in energy efficiency and that while previous generations (1G, 2G, 3G and 4G) improved network performance, they also led to unsustainable increases in energy consumption. With 5G's standardized processes and design, there is potential for a reduction in energy usage. Lazarević drew attention to an Ericsson report highlighting that ICT contributes to 1.4% of CO2 emissions and that 5G could potentially cut emissions from other industries by up to 15%.

Mrabet echoed this sentiment, emphasizing the integral role of digitalization in improving energy consumption. He advocated for a swift shift towards 5G and phasing out legacy networks to make the former more appealing for operators and environmentally efficient.

Okeleke added that using renewable energy sources like solar and wind to power telecom networks is a costeffective way forward. He emphasized the need for cheaper energy sources to efficiently deploy 5G, especially with its densification and increased energy consumption.

Hegazy acknowledged that transitioning to 5G will initially lead to higher energy consumption due to coexisting with older generations. He emphasized the long-term energy efficiency of 5G but stressed the importance of mitigating early-phase consumption increases. Exploring renewable energy sources is crucial to achieving these green targets.

Maximizing 5G Benefits

Regarding 5G deployment, the industry leaders provided valuable insights into effective strategies for optimizing investments and improving user experiences. Lazarević emphasized the critical role of meticulous planning in achieving efficiency and success. Many operators are opting for non-standalone (NSA) deployment as a starting point, as highlighted by Lazarević, who acknowledged its strategic advantages.

Mrabet further supported this approach, underscoring the popularity of NSA deployment due to its network simplicity and its potential for experimenting with and maximizing 5G capabilities. Importantly, he emphasized that investments in NSA are fully compatible with future standalone 5G deployments, ensuring a seamless transition.

Okeleke pointed out the increasing awareness of 5G among consumers and predicted that this awareness



will drive interest and adoption. He also noted that consumers may not experience significant price increases during the transition to 5G, enhancing its attractiveness.

Hegazy emphasized the critical importance of monetization in the 5G landscape, acknowledging that it is a pressing concern for many operators. These insights from industry experts serve as valuable guidance for vendors and operators seeking to navigate the complexities of 5G deployment while effectively monetizing investments and delivering superior user experiences.

Optimizing 5G Spectrum Allocation in North Africa

The final question addressed the acquisition of new spectrum that operators should secure for 5G deployment. Lazarević said that now is the pivotal moment for 5G implementation in North Africa. He highlighted the effectiveness of deploying 5G within the existing spectrum, although with potentially limited impact compared to the use of a dedicated new spectrum. The allocation of fresh spectrum is crucial for realizing significant strides in 5G. He stressed that regulators play a crucial role in securing additional spectrum, as many carriers require significant bandwidth. Effective allocation is vital to maximizing usability and return on investment. Lazarević advocated for avoiding the reuse of existing spectrum to prevent degradation.

Mrabet underlined the critical importance of allocating sufficient bandwidth for operators. He noted that 100 MHz has become the standard for effective equipment utilization. Adequate capacity through spectrum allocation is vital for fixed wireless access, which serves fixed subscribers. Mrabet also highlighted the need for technology neutrality in spectrum allocation.

Hegazy stressed the need for at least 50 MHz of spectrum to ensure a satisfactory 5G experience, particularly for 4G subscribers. He suggested gradual progress in spectrum allocation to meet growing demand and achieve the full benefits of 5G.

Poll Questions

Moderator Issam Eid then presented three poll questions to the audience, with panelists providing their insights on each.

The first question asked viewers about their familiarity with the current availability and progress of 5G in North African countries. The results showed that 75% of the audience indicated "in progress," while 25% felt it hadn't yet begun. The second question focused on comparing 5G deployment in North Africa to its concurrent global progress. The responses were as follows: 75% voted "lagging behind," and 25% chose "limited data."

The third question explored the likelihood of North African countries offering widespread access to 5G networks soon. In response, 25% of the audience believed it to be "highly probable," while 75% thought it "seems unlikely in the near future."



Connections From Above: Harnessing Satellites for Connectivity and Transformation

Since the inception of commercial satellite systems in the 1960s, satellites have expanded their capabilities to provide a diverse and far-reaching array of vital services all over the world.

atellite communication is a pivotal technology that enables the transmission of information, data and signals between various points on Earth and space through the use of satellites. This revolutionary mode of communication has transformed how

people, businesses, governments and even scientific endeavors connect and share data across vast distances.

By leveraging the principles of electromagnetic radiation and advanced engineering, satellite communication has overcome geographical barriers and provided crucial solutions for global connectivity, remote sensing, navigation, broadcasting and more. Satellites positioned in different orbits play key roles in establishing communication links that facilitate real-time and reliable interactions.

The complexity of satellite communication involves intricate systems onboard the satellites, including transponders, antennas and processors, as well as ground stations equipped with high-tech equipment for signal reception, processing and transmission. From enabling international phone calls to delivering weather forecasts, disaster management and scientific research, satellite communication has revolutionized the way we communicate, collaborate and gather information in the modern age.

Because terrestrial networks face limitations, non-terrestrial networks elevate the resilience, reliability and reach of communication, underscoring their indispensable importance in building a more connected and informed society.

With the growing demand leading to an increase in both the quantity and scale of satellite constellations, the effective management of this "space within space" becomes imperative to ensure long-term sustainability.

Global Progress

In the upcoming ITU World Radiocommunication Conference 2023 (WRC-23), such discussions will be crucial toward enhancing both radiocommunication services and the use of radio-frequency spectrum and satellite orbits.

The development and implementation of new technologies should be encouraged at the conference and beyond, particularly in the fixedsatellite service (FSS) for broadband applications, as these systems are capable of providing high-capacity and low-cost means of broadband communication even to the most isolated regions of the world.

Indeed, frequency bands such as 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) have been globally allocated on a primary basis to the FSS.

As a result, satellite systems are increasingly being used to deliver broadband services, which can help enable universal broadband access.



In addition, the frequency range of 43.5-45.5 GHz is primarily designated for mobile, mobile-satellite, radio navigation and radio navigationsatellite services.

Moreover, to meet the evolving requirements of modern civil aviation, satellite systems can be used for the relay of VHF communications compliant with International Civil Aviation Organization (ICAO) standards. They do this while operating under the aeronautical mobile service in order to complement terrestrial communication infrastructures when aircraft are operating in oceanic and remote areas.

Satellite Deployments

Satellites are categorized into four general types based on their orbital attributes: Low Earth orbit (LEO), positioned between 200 and 2,000 kilometers above the Earth's surface; Medium Earth orbit (MEO), mainly located between 8,000 and 20,000 kilometers above the Earth's surface; geostationary Earth orbit (GEO), Satellite communication has revolutionized the way we communicate, collaborate and gather information in the modern age



stationed at a fixed position 35,786 kilometers above the equator; and highly elliptical orbit (HEO), which may extend to 40,000 kilometers from Earth at its farthest point in the orbit.

To ensure operational integrity while averting disruptive interference, the ITU designates frequencies, positions (for GEO satellites) or orbital attributes (for non-geostationary satellites) for every transmitting and/or receiving satellite within each orbital category. These allocations are documented in the Master International Frequency Register (MIFR).

When necessary, coordination between satellite operators and centralized global registration fosters efficient spectrum and orbital resource utilization across nations and discourages the hoarding of frequencies that could be used for other purposes.

The process of introducing new satellite deployments involves intricate technical calculations and collaboration among established administrations and operators whose satellite systems and terrestrial stations might otherwise be affected by transmissions from a new satellite.

As an example, in a bid to enhance broadband and 5G coverage nationwide, the UK government is contemplating a potential £160 million satellite fund aimed at advancing the next generation of satellite communications development, predominantly represented by LEO satellites. These satellites will prove instrumental in delivering connectivity to remote and rural areas within the UK.

In line with this, Ookla asserts that the realization of universal Internet access can be comprehensively achieved through satellite constellations positioned in LEO, coupled with high data transmission rates (exceeding 200 Mbps) and low latency (below 100 ms). This compelling vision has attracted substantial investments from prominent global technology companies. Additionally, LEO satellite systems are poised to play a crucial role in the era of the Internet of Things (IoT). As more devices become interconnected, the need for reliable and widespread connectivity becomes paramount. LEO satellites are equipped to meet this demand, providing the essential infrastructure for IoT applications spanning smart homes, cities, autonomous vehicles and industrial automation.

Nonetheless, the successful operation of LEO satellites hinges on their ability to withstand the challenging conditions of space. Components must surmount hurdles such as extreme temperature fluctuations and intense high-energy particle radiation. Moreover, these components must execute missions while contending with a limited power supply, an absence of repair options and a restricted operational lifespan.

Enhancing Spectrum Utilization

There are potential mitigations that might lead to more efficient use of the satellite-focused spectrum. This can help address current and future demand requirements.

One avenue involves advancements in satellite antenna beam-focusing technologies, which could enable satellites to employ smaller, more targeted beams. By implementing geographical discrimination, frequency bands can be repurposed, thereby amplifying satellite capacity.

Incorporating novel transmitter and receiver technologies, as well as adopting refined standards, could also optimize spectrum use. This encompasses innovative, spectrumefficient waveforms, improved compression methods and filtering techniques to eliminate undesirable signals.

Furthermore, augmenting the efficiency with which satellite networks share spectrum resources with other users (such as terrestrial applications) assumes paramount importance. Simultaneously, alterations to satellite network parameters, such as stipulating a minimum diameter for transmitting earth stations or imposing constraints on the power flux density radiated towards other satellites, could potentially reduce the orbital separation between GSO satellites.

Conclusion

Satellite communication serves as a transformative tool for digital inclusion and telecommunications, enabling previously underserved or unreachable populations to benefit from the advantages of modern communication technologies. Its ability to transcend geographical barriers and offer reliable connectivity holds immense potential for improving the quality of life, fostering development and driving innovation in diverse communities around the world.



Satellite communication serves as a transformative tool for digital inclusion and telecommunications





Malicious AI Is Here: Vigilance a Must in Confronting New Threats

The world is undergoing rapid and morally ambiguous changes. We now have the ability to communicate with people thousands of miles away, fly to the other side of the world in less than a day and access vast mountains of knowledge through our devices. In parallel with technological advances, the rate of technological progress itself is increasing, leading to a significant acceleration. Specifically, recent advances in Artificial Intelligence (AI) have resulted in its growing power and transformative impact on the world. One of the most significant and threatening challenges humanity will face in the coming decades will be the possible malicious use of AI.



ybersecurity and AI All facets of cybersecurity now critically depend on AI, including threat detection, prevention and response. Traditionally, effective and recognizable malware signatures were employed by anti-virus and anti-malware software to detect an infection. However, Al-based solutions can now detect unusual behavior patterns and identify polymorphic malware as well as zeroday threats.

AI-based threat prevention leverages data from IT asset inventories, security measures and common threats across industries to identify key weaknesses and predict the likelihood of a breach for a particular organization. Armed with this information, IT staff can proactively patch systems, tighten security and increase cyber resilience.

Al-powered solutions can also support overburdened and underresourced security professionals during incident response. By autonomously categorizing large amounts of raw data, prioritizing warnings, evaluating root causes and presenting a comprehensive overview of significant security events or vulnerabilities, AI can help allocate human resources where they are most needed.

What to Expect From Al's Dark Side

In attack mode, AI can amplify current dangers and attack vectors, undermine AI-based defenses and turn them against the very institutions that they were designed to protect.

Al dataset poisoning/adversarial learning: To deceive AI-based security systems into identifying potentially harmful behaviors as innocuous, bad actors might manipulate machine learning algorithms and "poison" AI training datasets. Failure to detect dataset poisoning can have disastrous results, making pure datasets difficult to secure.

AI-powered malware: Hackers can develop extremely elusive and situationally adept malware and ransomware that can evaluate and undermine the defenses of the targeted system. They can also mimic regular system communications to evade detection and even exploit device cameras to avoid facial recognition verification.

Al-driven spear phishing: Al can improve spear phishing through reconnaissance tasks such as examining hundreds of thousands of social media profiles to identify pertinent high-profile targets. Once identified, Al can autonomously engage in tailored, human-like conversations to lure victims into providing attackers with a backdoor. Spear phishing is already challenging to detect, and AI-powered spear phishing will likely become an even more pervasive threat.

Deep fake fraud: Using AI technologies, cybercriminals can produce deep fakes that are nearly impossible to spot. These deep fakes, including images, audio and video, can be used to propagate false information or enhance the effectiveness of spear phishing attacks.

Is Damaging AI a Fiction or a Pressing Danger?

Offensive AI has previously been dismissed by some cybersecurity experts as a distant and exaggerated danger. While fully autonomous cyberattack tools with human-like abilities are still a ways off, history has shown that seemingly impossible things can become a reality.

Deep fakes have already caused significant concerns for social media platforms. Only a few years ago, cybercriminals successfully impersonated the voice of a German company's CEO using deep-fake technology to fraudulently transfer \$243,000.

Offensive AI compensates for its current limitations in reasoning and logic through attack volume, speed and reach. And if the threat becomes too great for humans to handle, AI becomes, ironically, the only viable option. It's like fighting fire with fire. With the help of AI, security can improve threat intelligence, handle the overwhelming volume of security alerts, eliminate false positives and identify zero-day threats.

Establishing and enforcing regulations for acceptable use is crucial to addressing the human component of cybersecurity. Employees must understand that it is improper to utilize company equipment for personal use. Phishing awareness training and simulation programs are essential as phishing attempts become more sophisticated. Staff should continue to be trained, reskilled and tested until doublechecking and overall prudence become second nature.

Implementing best practices to defend against common phishing attacks, which often lead to ransomware and other malware schemes, can also help protect against AI-based assaults in the future. Unfortunately, no set of guidelines or restrictions can ensure absolute success. Successfully evading an attack will only mean better preparation for the next conflict against a similar foe. Thus, maintaining constant vigilance and effort will be essential.



All facets of cybersecurity now critically depend on Al, including threat detection, prevention and response





Promise Awaits: Al's Potential to Improve the Treatment of Mental Health

In recent years, artificial intelligence has emerged as a powerful tool in various fields, and mental health care is no exception. With its ability to analyze vast amounts of data, identify new patterns and make predictions, AI holds tremendous promise for transforming the way we understand, diagnose and treat mental health conditions. There are a lot of exciting possibilities that AI brings to the table: it can enhance diagnostic accuracy, enable personalized treatment approaches and even provide timely interventions. However, we must also acknowledge the challenges and ethical considerations that arise when integrating AI into mental health care.

pportunities for Integrating AI for Mental Health Care The integration of AI in mental health care presents a myriad of opportunities that have the potential to

ation of health care: al health nts • Enhanced diagnostic accuracy: Al

algorithms can analyze vast amounts of data, including medical records,

revolutionize the field. Here are some

harnessing the power of AI in mental

key opportunities associated with

genetic information and behavioral patterns, to assist in more accurate and timely diagnoses. This can lead to early identification and intervention for individuals at risk of developing mental health disorders.

• Personalized treatment approaches: Al algorithms can analyze individual patient data, including symptoms, genetics and treatment history, to provide tailored treatment plans. This personalized approach can optimize treatment effectiveness and minimize adverse effects.

- Early detection and intervention: Al-powered tools can monitor and analyze user-generated data, such as social media posts and smartphone usage patterns, to detect early signs of mental health deterioration. With early detection, timely interventions can be implemented to prevent the escalation of mental health concerns.
- Accessible mental health support: Al technologies, such as chatbots and virtual assistants, can provide accessible and immediate mental health support to individuals in need. This can help bridge the gap between the demand for mental health services and the limited availability of mental health professionals.
- Data-driven insights for research and policy-making: AI can analyze large-scale datasets to identify trends, risk factors and treatment outcomes, providing valuable insights for research and policymaking in the field of mental health care. This can lead to evidencebased practices and improved resource allocation.

While the opportunities are promising, it is crucial to address challenges such as ethical considerations, data privacy and ensuring human oversight to maintain the ethical and responsible integration of AI in mental health care.

Addressing Challenges in Integrating AI for Mental Health Care

The integration of AI in mental health care is not without its challenges. Notably, ethical concerns arise, encompassing issues of privacy, data security and the potential for bias in algorithms. Furthermore, the lack of human touch in AI interventions may hinder the vital human connection and empathy necessary for effective mental health care, potentially impacting patient trust and engagement. Limited data availability poses another obstacle, as AI models require extensive, high-quality data to be trained accurately, yet mental health data is often limited, fragmented and sensitive. This limitation can make it challenging to develop precise Al algorithms for mental health care.

Diagnostic accuracy is also a challenge, as AI algorithms may struggle to definitively diagnose complex mental health conditions, relying heavily on available data and potentially failing to capture the full complexity of individual experiences.

Additionally, AI models developed in one population or setting may not generalize well to other populations or cultures, leading to biased or inaccurate predictions and recommendations. Legal and regulatory considerations further complicate the integration of AI in mental health care, raising issues of liability, accountability and compliance with privacy and data protection laws. Striking the right balance between human expertise and AI assistance is crucial, as human-AI collaboration should enhance human capabilities rather than replace human clinicians, fostering a collaborative approach.

Access and equity are also concerns. as the potential for AI to improve mental health care may be hindered by the digital divide and disparities in technology reach and availability, exacerbating existing inequalities. User acceptance and trust are important factors, as patients and clinicians may question relying on AI for mental health care, fearing misdiagnosis or misinterpretation and potentially feeling a loss of the human connection. Lastly, continuous monitoring and improvement of AI models in mental health care is essential to ensure their accuracy, effectiveness and safety, necessitating ongoing research, development and resources.

In conclusion, the potential for AI to improve diagnosis and treatment in the field of mental health is promising. AI technologies can assist in the early detection and accurate diagnosis of mental health disorders by analyzing large amounts of data and identifying patterns that may not be easily recognizable by humans. Additionally, AI-powered virtual assistants and chatbots can provide personalized and accessible mental health support to individuals, offering them a safe space to express their feelings and receive guidance. However, it is important to approach the use of AI in mental health with caution, ensuring ethical considerations, privacy protection and the involvement of trained professionals in the decision-making process. Overall, AI has the potential to revolutionize mental health care by augmenting human expertise and improving access to timely and effective interventions.

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The potential for AI to improve diagnosis and treatment in the field of mental health is promising





Discovering the Impact of Energy Scavenging on Internet Connectivity

The technology sector is witnessing a growing interest in understanding the impact of energy scavenging on internet connectivity. Energy scavenging, also referred to as energy harvesting, involves capturing minute amounts of energy typically dissipated as heat, light, sound, vibration or motion. This accumulated energy is then stored and utilized to power electronic devices, including those that facilitate internet connectivity.



he Pervasiveness of Digital Technology In a world where digital technology is omnipresent, the need for continuous and dependable internet connectivity is substantial. Still, the escalating energy consumption of the devices facilitating this connectivity has become a pressing issue. This is where energy scavenging becomes crucial. By capturing and utilizing otherwise

wasted energy, we can power these devices in a more sustainable, ecofriendly and efficient manner. There are several approaches to achieving this:

Piezoelectric Harvesting

In this method, sources of energy are

materials that experience pressure from various sources, such as human motion, low-frequency vibrations or acoustic noise. Utilizing piezoelectric harvesting, innovative products like battery-less remote controls and piezoelectric floor tiles can be created.

Thermoelectric Harvesting

This method involves gathering electricity from materials that generate a voltage due to the temperature difference between them. By selecting two dissimilar objects, an electric voltage can be created through temperature opposition. This energy is then harnessed through thermoelectric harvesting. To maintain a steady voltage output, the two materials must be kept at a relatively constant temperature. This approach opens the door to the development of further innovative technologies like temperaturepowered phone chargers and thermoelectric generators for cars and trucks.

Pyroelectric Harvesting

Pyroelectric harvesting involves collecting electricity from materials that generate current due to temperature fluctuations over time. Presently, this method is relatively limited in its application. The voltage source is derived from temperature changes, which are primarily utilized in sensors at present. It is important to note that this method is not yet fully suitable for commercial systems. One example of its application is the Pyroelectric sensor, commonly used in passive infrared (PIR) sensors that detect heat signals from approaching motion, such as in outdoor lighting. The pyroelectric element within the sensor generates a small voltage from the heat signal emitted by the approaching person, which proves sufficient to power the light.

The Benefits of Energy Scavenging

Energy scavenging's substantial impact on internet connectivity lies in its potential to significantly prolong the lifespan of batterypowered devices. Devices like smartphones, tablets and laptops - those commonly used for internet access — can reap the benefits of energy-scavenging technologies. By harnessing and utilizing ambient energy, these devices can operate for extended periods without requiring frequent recharging. This not only enhances user convenience but also diminishes the environmental impact associated with frequent charging.

Additionally, energy scavenging plays a vital role in energizing Internet of Things (IoT) devices. These devices encompass a wide range, from smart home appliances to industrial sensors, and demand continuous power to sustain their connectivity. Conventional power sources may prove impractical or inefficient for such devices, especially those situated in remote or challenging-toaccess locations. Energy scavenging presents a sustainable solution, enabling these devices to harness and utilize energy from their surroundings.

Besides extending device longevity and energizing IoT devices, energy scavenging can play a role in bolstering the resilience of networks. In scenarios where the power supply is unstable or inaccessible, such as in rural regions or during natural disasters, energy scavenging can aid in sustaining internet connectivity. By powering network devices like routers and base stations with scavenged energy, they can continue to operate effectively even under challenging conditions.

The Challenges of Energy Scavenging

It is imperative to acknowledge that while energy scavenging shows immense potential, it also comes with notable challenges. The energy harvested from the environment is often modest, and the efficiency of energy-scavenging technologies may fluctuate. Additionally, effectively storing and managing the scavenged energy can be intricate. However, continuous research and development endeavors are dedicated to improving the efficiency and feasibility of energy scavenging.

Energy scavenging possesses the capacity to make a substantial impact on internet connectivity. By offering

a sustainable power source for devices and networks, it can prolong the lifespan of devices, facilitate the functioning of IoT devices and enhance network resilience.

While these challenges may persist, it's important to note that ongoing research, development and overall ambition in energy-scavenging technologies promise a more sustainable and efficient future for internet connectivity.

> By capturing and utilizing otherwise wasted energy, we can power devices in a more sustainable, eco-friendly and efficient manner





Don't Shoot the Messenger. Embracing Media as a Cornerstone for ICT Ecosystem

ICT technologies have made tremendous progress in the last two decades, impacting the technological landscape like never before. The global ICT market was valued at US\$341.64 billion in 2022 and has been projected to grow at a CAGR of 11.26% to reach \$582.33 billion by 2027, according to GlobalData findings. Indeed, the digital transformation journey cannot be imagined without ICT's role in the internal and external operations of modern businesses.

owever, the story of ICT advancement is incomplete without the influence of media platforms that maintain the ebb and flow of information. This keeps the industry relevant and interactive among the enterprise and consumer segments, providing enormous benefits to the ICT ecosystem as a whole. Moreover, nearly 100% of ICT companies are benefiting from social networking sites to grow their businesses and attract customers.

Processing the Progress Taking a simple example from the

popularity of the latest use case of artificial intelligence across sectors, it is interesting to see how decisionmakers in companies have been able to understand the use of this new technology and adopt it for their operations. Market findings suggest that 35% of companies are already using AI in their businesses. and an additional 42% are exploring AI. Media platforms have been constantly working on providing bite-sized information to different categories of customers through the use of language, audio, visuals and physical engagement. They have also openly discussed these topics, and through such knowledge sharing, even non-tech CEOs can comprehend the workings of the technology and harness its potential. Within a span of less than a year, the global artificial intelligence market was valued at \$150.2 billion in 2023 and is expected to grow at a CAGR of 36.8% from 2023 to 2030, according to MarketsandMarkets. This has been the case with all the emerging technologies that hit the market and ultimately to the customers.

Visual Impact

Complex technologies such as digital twins, network slicing and virtual and augmented reality are being discussed in the boardrooms of many companies. The imaginative efforts of computer programmers, concept creators, graphic designers, illustrators and video editors are crucial elements of such information dissemination. This creative process involves a significant amount of research, trial and error, and amendments before the fruits of this labor can be made available for public consumption. Due to these efforts, it has become commonplace to imagine these concepts in the context of applications and use cases for business operations. Such visualization helps people understand better. Similarly, these painstaking processes successfully bring the marketing materials of intangible digital products to consumers' attention.

The Power of the Phygital

The effectiveness of human and

technological collaboration was put to the test during the coronavirus pandemic in 2020. When the world was at the mercy of the COVID-19 virus, several countries conducted successful hybrid tech events, including the UAE. The use of ICT technologies such as videoconferencing and broadcasting brought the industry together through online forums to collaborate with investors, partners and other stakeholders. Even the signing of Memorandums of Understanding (MoUs) and mergers and acquisitions (M&As) took place during these events. Such activities were vitally important to keep both emotional morale and economic determination sparked in otherwise dour times. From this, and despite various logistical and organizational challenges, media platforms continue to conduct major ICT events that serve as a bridge between service providers, suppliers, system integrators and other stakeholders; these help to actualize mutually beneficial economic and financial goals.

Preparing the Recruits

The ICT industry is currently faced with crippling talent shortages. Without the preparation of skilled IT workers, the prospects for the industry could look bleak. However, ICT-focused media platforms are able to provide education/re-education to professionals and the general public through webinars, video tutorials and online courses. Millions of people across the globe are acquiring knowledge through these platforms and staying on track with the latest advances in the industry. These programs are instrumental in creating new job opportunities and upskilling the ICT workforce to be ready for them.

Promoting Advocacy

In a dynamic ICT industry, advocacy strategies play a key role in influencing government policies and regulations that impact the industry. Company press releases, key announcements and legal and financial transparency become important aspects of gaining support and raising awareness about important issues. The media plays an important and responsible role in forging the path toward the intended destination. Especially, in the age of generative AI with rampant content generation, the media plays a responsible role in verifying the authenticity of the intended message so that disinformation and misinformation are kept at well at bay.

In conclusion, communication technologies enable businesses to coordinate with internal and external stakeholders – access that is critical for their continued and successful existence. The ICT industry is central to this interoperability, and the media industry is the catalyst enabling the industry's seamless operations in an increasingly volatile digital economy.



The media industry is the catalyst enabling the industry's seamless operations in an increasingly volatile digital economy



TELECOM Review

Zain KSA Achieves 'A' Rating on MSCI ESG Index



Zain KSA continues to demonstrate excellence in Environmental, Social and Governance practices in Saudi Arabia's telecommunications sector, recently achieving an "A" rating on the MSCI ESG Index.

Zain KSA's improved rating on the index, from "BBB" to "A," reflects the significance of the company's initiatives, programs, and practices within the framework of environmental and social responsibility and effective governance. This comes as part of Zain KSA's solid commitment to spreading an organizationwide ESG culture, embedding ESG performance indicators across its operational, financial and administrative levels, and throughout all departments and divisions.

Commenting on the achievement, Eng. Sultan bin Abdulaziz Al-Deghaither, CEO of Zain KSA, stated, "Zain KSA's new (A) rating in the MSCI ESG Index reflects our robust sustainability strategy and our commitment to our role and responsibility in achieving economic, social and human development in the Kingdom, contributing to the goals of Saudi Vision 2030."

Translating Zain KSA's environmental sustainability plans into action, the telco recently launched the world's first zerocarbon 5G network in partnership with Red Sea Global.

Eng. Al-Deghaither also emphasized their commitment to social development through several partnerships, including the collaboration with the Family Safety Program as part of the Child Helpline project and the partnership with the Ministry of Human Resources to train 50,000 young men and women from all over the Kingdom.

"This upgraded rating is a true indication of how our corporate sustainability strategy perfectly aligns with the United Nations' Sustainable Development Goals (SDGs)," the CEO concluded.

The MSCI ESG Index is a worldleading provider of ESG indicators. The index involves more than 1,500 indicators designed to provide institutional investors with effective tools to integrate ESG considerations into their investment processes and portfolios by measuring performance and reporting on ESG mandates.

Notably, Zain also achieved an advanced rating in Management Scope "A-" in the Carbon Disclosure Project (CDP), a classification for companies that disclose information on the environmental impact of their initiatives and operations after meeting the CDP standards.

Ooredoo Oman Readies for Full Transition to 4G, 5G and NB-IoT



As Ooredoo and Oman continue to embrace fast, reliable and efficient 5G services, they also diligently prepare for the phase-out of 3G, a process globally dubbed "sunsetting."

According to the

Telecommunications Regulatory Authority (TRA), the 3G sunset will start in Oman in Q3 2024. In response to this, Ooredoo has intensified its efforts to ensure the long-term compatibility and resilience of smart Internet of Things (IoT) devices that presently depend on mobile 3G connectivity.

Saied Al Lawati, director of business marketing and ICT solutions at Ooredoo Oman, said, "Currently, most Internet of Things devices rely on 3G connectivity, which is why futureready Ooredoo is upgrading them if necessary. The once cutting-edge 3G network must gradually make room for the next generation of technology."

Recently, Ooredoo carried out a limited connectivity trial on specific IoT devices, including smart point-of-sale solutions, intelligent meters designed to autonomously record energy and water consumption, and an In-Vehicle Monitoring Solution (IVMS) for realtime vehicle tracking.

By temporarily disabling the 3G services currently supporting these devices, Ooredoo assessed their hardware and will conduct additional enhancements if needed, all while ensuring that their data remains compatible with cloud-based systems.

"4G, 5G and Narrow Band IoT (NB-IoT) networks provide unparalleled internet speeds, low latency, ultrareliable connectivity, and are more environmentally friendly. We are confident that this new era will result in the efficient powering of rapidly evolving next-generation technologies like IoT and augmented reality," explained Al Lawati.

stc Extends 'InspireU' Initiative to Nurture Kuwaiti Start-Ups and SMEs



stc, the Kuwait Telecommunications Company, renowned for its digital leadership and innovative services, continues to champion the digital transformation journey in Kuwait by announcing the continuation of the first phase of its groundbreaking "InspireU" initiative. This entrepreneurial incubator and accelerator have been pivotal in supporting budding start-ups and small to medium-sized enterprises (SMEs).

The InspireU initiative in Kuwait is an integral part of stc's "Weyak" umbrella initiative, dedicated to fostering Kuwaiti SMEs, start-ups and local innovative concepts. In this landmark 10th iteration of the InspireU program hosted by stc, three promising startups have been selected from the Kuwaiti market, meeting the stringent criteria established by the program. These three ventures are set to join a cohort of 20 companies participating in the program's tenth edition.

Following their selection, these start-ups will undergo an intensive six-month training camp aimed at accelerating their growth and refining their business strategies. As part of this unique opportunity, they will also visit the InspireU facility in the Kingdom of Saudi Arabia, where they will engage in rigorous courses designed to propel their growth trajectories.

The InspireU initiative offers entrepreneurs access to workspaces in both Kuwait and Saudi Arabia, along with invaluable assistance in obtaining permits and licenses for their projects. Practical guidance and tailored training are provided to ensure the success of these ventures.

Winning projects will gain access to extensive networking opportunities through participation in international conferences. Moreover, InspireU offers financial support to help start-ups realize their innovative ideas and aspirations.

Danah Al-Jasem, general manager of corporate communications at stc, expressed her excitement, stating, "We are thrilled to shortlist the three winning projects in our inaugural 'InspireU' program in Kuwait, a program that has been running successfully for a decade within the stc group. This initiative aligns perfectly with the core objectives of our 'Weyak' SME and entrepreneurship initiative. stc stands as a staunch supporter of Kuwaiti SMEs and start-ups, particularly those charting their digital transformation journeys to innovate and streamline their operations."

Al-Jasem concluded, "We take great pride in launching 'InspireU' in Kuwait and witnessing the remarkable turnout for this initiative. We extend our warmest congratulations to the shortlisted projects and wish them the best of luck in their upcoming training camp and overall entrepreneurial journey."

Omantel Offers Fiber, 5G Services in Al Rusayl Industrial City



Al Rusayl Industrial City has entered into a Memorandum of Understanding

(MoU) with Omantel, aiming to provide fiber optic networks and 5G services to every business that chooses to invest in the industrial city. The expected completion date for this project is the first quarter of 2024.

The MoU was formally executed by Eng. Mohsin bin Zahran Al Hinai, the CEO of Al Rusayl Industrial City Company, and Eng. Saleem bin Ahmed Abdullatif, the acting vice president of the consumer unit at Omantel. This partnership aims to enhance telecom services within the industrial zone, fostering an environment that is instrumental to business expansion and streamlined manufacturing and production processes.

Furthermore, this agreement underscores a dedicated commitment to deliver valueadded services and aligns with Madayn's vision of strengthening the Sultanate's role as a prominent regional center for manufacturing, ICT, innovation and entrepreneurship excellence.

du, Nokia to Unlock Innovative Use Cases in Robotics, AR and AI



du, from Emirates Integrated Telecommunications Company (EITC) and Nokia have signed a strategic framework agreement on innovative 5G-driven advanced technology possibilities for UAE enterprises. This collaborative effort will empower du to spearhead innovative 5G applications to build advanced technologies for the enterprise sector.

The signing ceremony was attended by Fahad Al Hassawi, CEO of du, and Hamdy Farid, senior VP, cloud and network services business applications at Nokia, as well as a number of senior executives from both parties. Under the terms of the agreement, Nokia will offer du its cutting-edge end-to-end enterprise solutions, encompassing high-speed digital solutions and 5G use cases, for resale through Nokia's Global Partner Program.

Jasim Al Awadi, chief ICT officer, du, said, "This new agreement will unleash fresh 5G opportunities, affirming our role as a driving force in further accelerating the digital transformation of the UAE and positioning it as a regional center of excellence for advanced technology innovation." Nokia's 5G constant efforts on innovations and its solutions continue to equip du to deliver a superior network performance to its customers, paving the way for network upgrades to support future technologies.

Meanwhile, Rima Manna, VP, Middle East Market Unit, Nokia, stated, "5G possesses immense potential for driving enterprise digitization and unlocking innovative use cases. With its low latency and ultra-highspeed capabilities, 5G will unlock a realm of possibilities, enabling new revenue streams through industry transformation."

This partnership will allow the deployment of exponential technology use cases for various verticals, including factories, warehouses, smart cities and utilities, that will be powered by du's 5G network. Several other use cases for Robotics, Augmented Reality and AI will also be made available for the benefit of UAE customers.

Vodafone Launches 4G and 5G Services at Major West End Tube Stations



Vodafone customers now have access to 4G and 5G services at two major West End Tube stations, Oxford Circus and Tottenham Court Road. This expansion allows commuters and travelers to stay connected using mobile data while navigating the London Underground.

The activation of Vodafone's 5G and 4G services encompasses various areas within these stations, including the ticket halls on the Central line platforms, the tunnel connecting both stations and the Northern line platforms at Tottenham Court Road. This expansion joins existing Vodafone 5G availability at seven

locations, such as Camden Town and Notting Hill Gate and Vodafone 4G at 18 locations, including Westminster and Waterloo. Vodafone WiFi, reintroduced across the Underground in April 2023, complements this network upgrade.

Passengers traveling on the Tube have already consumed a significant amount of data, equivalent to approximately 1.5 billion WhatsApp messages daily, across Vodafone's 4G, 5G and WiFi services.

This connectivity enhancement is part of Vodafone's agreement with Transport for London (TfL) and Boldyn Networks, which will eventually bring 4G coverage to all London Underground and Elizabeth line stations, including platforms and tunnels. Furthermore, Vodafone plans to introduce 5G to all stations in the future.

In the upcoming weeks, Northern and Central line passengers can anticipate

the extension of 4G and 5G coverage to stations such as Euston, Goodge Street, Chancery Lane and Bank.

Andrea Dona, Vodafone UK's networks and development director, mentioned: "Our customers expect connectivity wherever they travel, so Vodafone 5G and 4G arriving at these busy Tube stations is great news. We continue to work hard to ensure our customers have the best network in London, wherever they live, work or travel, and look forward to more stations going live across the year."

The ambitious project is being executed by Boldyn Networks, a renowned neutral host network provider. Boldyn Networks secured a 20-year concession from TfL in June 2021 to deliver high-speed mobile connectivity throughout the London Underground network.

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From Deserts to Digital Dominance: Tech Transformation in the GCC

In 1981, a historic economic agreement was formed between Bahrain, Kuwait, Oman, Saudi Arabia, Qatar and the United Arab Emirates, giving birth to the Gulf Cooperation Council (GCC). This union had ambitious goals, seeking common ground in culture, regulations and currency, as well as technological and scientific innovation. More recently, GCC member states have shifted their focus toward diversifying their economies and transitioning to digital technologies.

n fact, the GCC E-Performance Index of 2022 is a testament to the remarkable progress in digital transformation, with all GCC nations excelling in five key global indicators. This progress signifies their dedication

to becoming significant players in the global tech industry.

Yet challenges persist, particularly with regard to innovation and talent acquisition. Finding and recruiting tech professionals, such as machine learning engineers, data solutions experts and supply chain architects, remains a hurdle in some GCC countries.

Nevertheless, the Middle East stands at the precipice of a digital revolution, and both GCC-based companies and governments understand the advantages of embracing new technologies and digitization. These benefits encompass cost optimization, enhanced resource management, improved customer satisfaction, expanded customer bases and a competitive edge gained through digital integration.

Simultaneously, as organizations across the region mature in their digital journey, they must shift from merely enabling digital transformation to operating as fully digital entities. This shift entails deriving a substantial portion of their revenues from digital products, services, channels and platforms.

GCC business leaders recognize that digitalization offers not only operational efficiency but also a pathway to embracing advanced technologies, paving the way for entirely new business models.

Recognizing the importance of innovation, GCC nations have taken significant steps toward cultivating an innovation-driven culture. Now, it's imperative for the private sector to capitalize on these government initiatives and nurture a culture of innovation within their organizations.

Innovation serves as a catalyst for economic growth through various avenues. At its core, innovation represents the change that unlocks new value, drawing from concepts like creativity, experimentation and prototyping. Fostering this culture begins with innovative leadership that introduces, facilitates and empowers innovation within an organization, ultimately manifesting in society as a whole.

In GCC, ICT Takes the Lead

The challenges associated with technology infrastructure are diminishing as the region witnesses the expansion of data center facilities and telecom operators rush to introduce advanced 5G networks capable of supporting data-intensive products and services.

When it comes to industries, it's no surprise that the ICT sector leads

the way in adopting advanced technologies. This sector offers businesses a range of solutions and has found widespread integration into core products and services across various sectors, including consumer goods and retail, financial services and media and entertainment.

In the realm of advanced technology pioneers in the GCC, the ICT industry takes the lead. By 2024, the UAE is projected to allocate an estimated US\$23 billion for ICT spending, with Qatar's spending expected to reach around US\$9 billion and Kuwait's spending predicted to hit US\$10 billion in that same year.

In response to the demands of the digital era, organizations within the GCC countries are significantly increasing their investments in technology as part of the ongoing digital transformation taking place in the region. Various technologies play pivotal roles in this endeavor.

Connectivity

In recent years, GCC countries have made significant investments in the development of 5G mobile networks. This advanced wireless technology offers the potential for higher speeds, reduced network latency and increased capacity to support more devices without compromising performance. The primary goal of these investments is to enhance various sectors, including the gaming industry, customer services, automation in industries such as oil and gas, healthcare and automotive, as well as the establishment of smart, interconnected cities.

As of Q2 2023, the UAE has emerged as the fastest-growing 5G market globally, according to data from Ookla Speedtest Intelligence. Meanwhile, Qatar has also achieved the highest average 5G download speeds within the GCC region, reaching an impressive 312 Mbps, as reported by Opensignal. Bahrain set itself apartby ranking among the top 20 countries globally in terms of fiber penetration, offering the most cost-effective fiber broadband services within the GCC.

• Internet of Things (IoT)

In the GCC, numerous tech companies offer IoT platforms for collecting data from devices and machines, along with tools for analyzing and translating this data into actionable business insights. The industrial sector leads in adopting advanced manufacturing and robotics technologies, often incorporating IoT. In the retail sector, large GCC retailers use sensors and beacons to enhance the shopping experience.

For instance, Qatar General Electricity and Water Corporation (Kahramaa) has deployed 280,000 smart meters for electricity and water, equipped with IoT capabilities. The Egyptian government has designed the New Administrative Capital (NAC) as a technologically advanced city with IoT services for both residential and business users, featuring state-of-the-art buildings and infrastructure.



The Middle East stands at the precipice of a digital revolution, and both GCC-based companies and governments understand the advantages of embracing new technologies and digitization





Cloud Computing

Security concerns initially held back many companies from transitioning their infrastructure and applications to the cloud, but those concerns have largely been resolved. Now, businesses of all sizes in the region are embracing cloud technology and services enthusiastically. The adoption of cloud computing by SMEs in the GCC is expected to double the market size by 2024, with 77% of UAE CIOs stating that they are investing in cloud technology.

A notable example is Expo 2020 Dubai, which became the first World Expo and the largest event in the Arab world to employ a multi-cloud approach for its infrastructure, utilizing both Etisalat 1C and AWS. The cloud computing market in Saudi Arabia has been steadily expanding, with annual spending on public cloud services projected to reach US\$2.5 billion by 2026.

Data and Analytics

In GCC countries, major corporations utilize analytics to monitor consumer

behavior, track website traffic, predict demand and adjust pricing, among other applications. They gather data from IoT-connected devices, payment systems, augmented reality apps and more to enhance product positioning and user experiences.

The transformation of vast datasets into actionable intelligence is the core promise of data science. The presence of committed leadership and state-of-the-art technology and infrastructure positions GCC countries to set ambitious goals for becoming leaders in data science. This is evident through government initiatives like the UAE's Smart Data Strategy, Qatar's Tasmu program, Saudi Arabia's Open and Big Data Strategy, and Bahrain's Open Data Strategy.

Artificial Intelligence

One of the major tech trends in the GCC involves the widespread adoption of AI and machine learning, particularly in the UAE and Saudi Arabia. According to a report by Oliver Wyman, the GCC could potentially save US\$7 billion annually by automating routine tasks, especially in government functions like licensing, registration and tax filings. In 2023, GCC nations are further exploring the potential of generative AI tools as they continue to advance in e-government maturity.

PwC's Strategy & Middle East predicts that Saudi Arabia and the UAE will reap significant benefits from the growth of these technologies. In the UAE, nearly 75% of companies have either maintained or increased their investments in Al initiatives. Saudi Arabia is poised to lead in Al's contribution to GDP, with an estimated US\$135.2 billion, while Bahrain, Kuwait, Oman and Qatar are expected to collectively contribute US\$45.9 billion to GDP by 2030. Additionally, Saudi Arabia plans to train 20,000 data and AI specialists by 2030 to support its AI-related goals, while Kuwait is embracing AI to elevate its urban innovation efforts.

Local Workforce

GCC universities are gaining recognition for their effective use of new technologies to enhance education. In the list of the top 10 Arab universities, Saudi Arabia secured five positions, alongside Qatar University, the University of Sharjah, UAE University and Abu Dhabi University.

In March 2023, Bahrain's Nasser Vocational Training Centre introduced the Smart Coders initiative, aiming to train around 2,000 adults in computer coding. By 2027, the initiative plans to prepare a total of 10,000 Bahrainis to enter the job market as programmers. Additionally, the UAE Ministry of Education launched an innovation strategy featuring DisruptED, a platform designed to assist students and professionals in adapting to new skills and work methods as the digital economy evolves.

Smart Factories

To ensure the sustainability of the industrial sector's resources and enhance its productivity and efficiency through automation and modern technologies, it is essential to adopt the best practices. Bahrain has unveiled a national initiative called "iFactories," with the goal of facilitating the industrial sector's transition to Industry 4.0. This initiative involves evaluating factory readiness, assessing their digital maturity, and providing support for investments in technology infrastructure and manufacturing automation. The objective is to convert 300 factories into smart factories by 2026.

Smart Mobility

Saudi Arabia expressed its intention to produce and export over 150,000 electric cars by 2026, in line with its goal of having a minimum of 30% of all vehicles be electric by 2030. Smart mobility strategies are driving the future of urban transportation in the GCC region.

Saudi Arabia's ambitious gigaprojects, such as NEOM, Qiddiya and Roshn, plan to incorporate electric vehicle (EV) fleets. Dubai is taking futuristic steps by approving models of aerial taxi vertiports, with plans to launch flying taxis by 2026. Meanwhile, Muscat has implemented smart road technology to manage traffic, and Kuwait is employing an intelligent traffic control system to address congestion at busy intersections.

• RDI

Saudi Arabia has introduced a new program centered on research, development and innovation (RDI) with the goal of contributing SR60 billion (\$16 billion) to the GDP by 2040. This initiative is anticipated to generate high-value jobs in the fields of science and technology.

Meanwhile, the UAE's National Innovation Strategy continues to serve as a comprehensive guide, overseeing significant investments in research and development across seven priority sectors: renewable energy, transportation, education, healthcare, technology, water and space. Across the GCC countries, there is a growing emphasis on the roles of science and technology in bolstering RDI capabilities to establish national innovation systems.

Construction

Cutting-edge technologies are increasingly prevalent in GCC region projects, reflecting a broader trend of technological integration in construction. This shift is driven by the GCC countries' efforts to enhance infrastructure and promote economic diversification through long-term initiatives like Saudi Vision 2030 and the Dubai 2040 Urban Master Plan.

Industry reports reveal a nearly unanimous agreement among professionals that digital technology enhances project delivery. Construction technology providers attribute the widespread adoption of innovative technologies such as building information modeling (BIM), connected construction, digital twins, robotics and AI to the need to meet strict deadlines and ensure accurate project completion. This trend is particularly pronounced in large-scale, complex projects like Neom, the Red Sea Project and the Etihad Railway.

Sustainability

GCC businesses have a significant opportunity to achieve their net-zero and decarbonization objectives. The region's potential to generate 164 GW of solar energy by 2030, as projected by IRENA, can lead to substantial reductions in carbon emissions. Saudi Arabia is targeting 50% of its power to come from renewables by 2030, and the UAE has increased its greenhouse gas emissions reduction target to 31% by 2030.

The upcoming COP 28 event offers the GCC region a global platform to showcase concrete sustainable practices. While discussions will revolve around aligning digital transformations with the UN SDGs, the summit also provides an opportunity for more profound conversations on how digital transformation plays a vital role in establishing sustainable networks. In a similar context, Egypt's fourth-generation cities, powered by renewable energy and smart technology, embrace modern architecture and sustainable, green infrastructure. These cities are connected through multi-modal

transport networks, marking a significant step toward sustainability.

Conclusion

The GCC governments' proactive efforts to digitize their systems and pioneer smart city initiatives have set global benchmarks, with ongoing plans for further development. Simultaneously, private sector firms are harnessing cutting-edge technologies to refine their operations and services.

In a world rapidly embracing digital transformation, it is imperative for the GCC region to leverage its strengths and create opportunities for growth within the tech sector. This not only holds the potential to boost economies but also nurtures a culture of innovation and continuous learning, ensuring the region remains at the forefront of the global technological landscape.

In the realm of advanced technology pioneers in the GCC, the ICT industry takes the lead





Deepfake Technology: Unveiling the Illusion, Impact and Ethical Implications

Deepfake technology, a rapidly advancing field of artificial intelligence, has garnered significant attention in recent years. It involves the creation of highly realistic synthetic media, such as videos or audio, where individuals can be convincingly manipulated to say or do things they never actually did. his technology has raised profound concerns regarding its potential impact on society, including the spread of misinformation and

the overall erosion of trust in digital media.

The Technology's Underlying Techniques and Algorithms

At the core of deepfake technology lies the use of deep neural networks, specifically generative adversarial networks (GANs). GANs consist of two main components: a generator network and a discriminator network. The generator network is responsible for creating the synthetic media, while the discriminator network attempts to distinguish between real and fake media.

The process of creating deepfakes typically involves two main steps: training and generation. During the training phase, the deepfake algorithm is fed with a large dataset of real media, such as videos or images, along with corresponding labels. The algorithm learns the patterns, features and nuances present in the real media to create a comprehensive understanding of the visual or auditory elements.

Once the training is complete, the generation phase begins. In this phase, the algorithm takes input from source media, which could be a video or image of a target individual, and applies the learned patterns and features to manipulate and morph the source media into a new output that resembles the target individual. This process involves mapping the facial or vocal expressions of the target individual onto the source media, resulting in a convincing deepfake.

Several techniques and algorithms are employed within deepfake technology to enhance the realism of the synthetic media. For example, facial landmark detection is used to identify key points on a face, such as the eyes, nose and mouth, to accurately map and align facial expressions. Deep neural networks are also utilized to generate realistic textures, lighting conditions and background elements to further enhance the authenticity of the deepfake.

It is worth noting that while deepfake technology has gained attention for its potential to create convincing and deceptive media, it also has legitimate creative applications in fields such as entertainment, visual effects and virtual reality. However, the misuse and malicious intent associated with deepfakes have raised significant concerns about their potential impact on society, media integrity and ethical implications.

Regulation That Balances Innovation and Security

The regulation of deepfake technology poses complex challenges due to its rapidly evolving nature and the potential for misuse. Governments and organizations worldwide are grappling with the task of creating effective regulations that balance technological advancements and freedom of expression with protection against harm. One approach to regulation involves focusing on the detection and labeling of deepfakes. By implementing policies that require clear labeling of synthetic media, users can be informed about the authenticity of the content they consume. Additionally, there is a growing call for platforms and social media companies to take responsibility for combating deepfakes by implementing robust content moderation policies and investing in advanced detection algorithms.

Another aspect of regulation involves the protection of individuals' rights and privacy. Laws and regulations can be put in place to ensure that deepfakes are not used to harm or defame individuals and to establish clear guidelines for obtaining consent for the creation and dissemination of deepfakes. Furthermore, some argue for the need for legal frameworks that hold creators and disseminators of malicious deepfakes accountable for their actions. However, regulation must also strike a balance that preserves the potential benefits of deepfake technology, such as its use in entertainment, art and research.



Achieving the right equilibrium between regulation and innovation is a complex task that requires collaboration between governments, technology companies, researchers and civil society to ensure that deepfake technology is used responsibly and ethically.

In conclusion, the rise of deepfake technology has brought forth a new era of possibilities and challenges. While it has demonstrated the remarkable potential for entertainment and creative expression, it also raises significant concerns about the potential for misuse and the subsequent erosion of truth. The impact of deepfakes extends beyond the realm of entertainment, with potential implications in politics, journalism and personal privacy, to name a few. As we navigate this evolving landscape, it is crucial to address the ethical implications and establish robust safeguards to protect individuals and society as a whole. Only through a combination of technological advancements, legal frameworks and heightened media literacy can we embrace the magic of deepfake technology while mitigating its potential for harm.



Only through a combination of technological advancements, legal frameworks and heightened media literacy can we embrace the magic of deepfake technology while mitigating its potential for harm



Huawei, MTC Forge Dynamic Partnership and Launch eKit SOHO Products in UAE



Huawei, a leading global provider of information and communications technology (ICT) infrastructure and smart devices, has embarked on a transformative journey of connectivity in collaboration with MTC, unveiling the revolutionary eKit SOHO (small office/ home office) products to the UAE market, supported by the Huawei eKit platform.

The event happened at the H Hotel, Dubai, under the theme "Grow Together, Win the Future," where more than 120 partners joined to set the stage for a new era of connectivity solutions designed to empower businesses and individuals alike.

The newly launched Huawei eKit distribution business aims to cater to the needs of a diverse variety of small and medium-sized businesses (SMBs), including medium-sized hospitals, educational institutions, supermarkets, dining establishments, cafes and various other sectors. As per IDC (International Data Corporation) predictions, global spending on digital transformation is expected to reach an astounding \$3.4 trillion by 2026. As of mid-2022, the number of small and medium enterprises in the UAE was 557,000, and SMEs contribute as much as 63.5% to the non-oil GDP. It is forecast that there will be 1 million SMEs in the UAE by the year 2030. Recognizing the immense potential within the SMB segment, Huawei is committed to empowering these businesses with the tools needed to seize growth opportunities in the digital age.

The event commenced with a warm welcome by Brent Li, managing director of Enterprise Business Group at Huawei UAE, who set the tone for a day of innovation and collaboration. By leveraging the power of advanced technologies, Huawei UAE Enterprise Business is dedicated to aiding government and enterprise customers in various sectors with digital transformation. The UAE's growing smalland medium-sized businesses demand digital solutions, prompting Huawei to invest more in the SMB market, introduce new brands and products and collaborate with MTC as the first Gold Distributor of Huawei Datacom SOHO.

Houssam Mobied, CEO of MTC, delivered an opening speech, saying, "We are thrilled to witness the successful launch of Huawei eKit SMB networking range, an achievement that underscores Huawei's commitment to innovation and customer satisfaction. This milestone wouldn't have been possible without the dedication of Huawei and MTC talented teams and the unwavering support of our partners and customers. We look forward to the positive impact that the Huawei eKit SMB solutions will bring to the market."

Moreover, Huawei has also designed comprehensive channel strategies and incentive plans to empower its partners and distributors. The event marked a significant achievement as three elite partners, namely New Trend Computer Networks, LLC; Al Selsal Trading, LLC, and Multi Star Electronics, LLC, were onboarded into the Huawei eKit Distribution Business. Huawei has organized the onboarding ceremony for the Elite Partners to celebrate their dedication and exceptional contributions to the partnership. This milestone further strengthens the commitment of these partners to driving innovation in connectivity solutions.

AWS Telecom Competency Partners: Helping Customers Innovate and Thrive



AWS customers now have the convenience of swiftly discovering approved partners for creating, deploying or managing comprehensive telecommunications solutions.

The recently introduced AWS Telecom Competency Partners offerings are designed to assist telecommunications companies (telcos) in accelerating their time to achieve results and modernizing their services by leveraging the latest offerings in the telecommunications industry, such as Integrated Private Wireless on AWS and AWS Telco Network Builder.

In the era of 5G, telcos are facing the challenge of devising new methods to construct, operate and monetize networks while providing enhanced value to their customers. Consequently, telcos are adapting to system disaggregation, open specifications and harnessing the capabilities of cloud technology.

This journey has made the process of selecting consulting partners more intricate and time-consuming, particularly when specific expertise, experience and services are needed.

To respond to this, the AWS Telecom Competency Program spotlights specialized AWS Partners who offer professional services in critical telecom domains, including operations support systems (OSS), business support systems (BSS), communications-asa-service (CaaS), mobile networks, and media and TV.

Among the esteemed AWS Telecom Competency Partners endorsed by AWS are Amdocs, Cognizant, Deloitte, EPAM, IBM, NTT DATA, Prodapt, Tata Consultancy Services and Tech Mahindra.

Nokia Launches Open Innovation Lab in Dubai to Drive AI-Powered Technology in the Region



Nokia has unveiled plans to establish an Open Innovation lab in Dubai, United Arab Emirates (UAE), with the primary goal of igniting regional innovation and expediting the integration of cutting-edge technologies like Artificial Intelligence (AI) and Machine Learning (ML) for network automation and optimization across the Middle East and Africa (MEA) region. This strategic initiative signals Nokia's unwavering commitment to enhancing its global collaborative efforts within the region.

The lab is poised to concentrate its efforts on three pivotal domains, offering substantial advantages to both network operators and businesses. Firstly, it seeks to spearhead innovation in the Cloud RAN space by collaborating with technology partners, including market leaders, and engaging with prominent hyperscale players. Nokia's innovative "anvRAN" approach is set to reshape Cloud RAN, enabling seamless coexistence with purpose-built RAN systems while maintaining consistent performance. This approach empowers operators and enterprises with unparalleled flexibility in selecting technology providers and operational

environments, aligning with their desires for openness and efficiency.

The second critical focus area revolves around private wireless networks and industrial connectivity. The lab will serve as a showcase for pioneering Industry 4.0 use cases and industrial edge applications, all orchestrated on Nokia's widely acclaimed MX Industrial Edge (MXIE) platform. This will facilitate the acceleration of regional enterprises' transition to Industry 4.0.

Lastly, the lab is poised to play a pivotal role in advancing network intelligence by propelling the adoption of AI and ML solutions for network automation and optimization. Nokia's cutting-edge MantaRay solution portfolio, designed for intelligent network management and automation, will be prominently featured and put to use within this innovative laboratory.

Netcracker Introduces Groundbreaking Generative AI Solution



Netcracker Technology announced its new GenAI Telco Solution, which brings the value of transformative Generative AI (GenAI) technology to the telecom industry. With the new solution, communications service providers (CSPs) can harness their valuable telecom data and knowledge in a secure and controlled way to bring exceptional benefits to customers, partners and their own businesses. This includes support for specialized telco-centric scenarios such as Care Assistant, Agent Partner, Sales Assistant, Catalog Assistant and Digital Operations Technician.

Most telco data is highly confidential, and the telco business is highly specialized, requiring new techniques for CSPs to benefit from the transformational capabilities of GenAI models. In addition, a large proportion of telco data changes constantly, creating challenges for operators to leverage real-time data to deliver exceptional value and productivity gains.

With the GenAl Telco Solution, Netcracker has combined its extensive telecom IT domain leadership and expertise with AI technology innovations. The solution comprises a GenAI Telco Platform consisting of Knowledge Management to build, test and optimize telcofocused scenarios, such as customer care, business operations, sales and network operations. It also includes a GenAI Trust Gateway that integrates with the telco IT and data analytics environment, works in real time to create the best-personalized prompts to ensure the highest guality GenAI interactions, and obfuscates sensitive telco data, which ensures the highest levels of security and accuracy.

Netcracker has integrated its solution with the most popular commercial GenAl models, creating a unified approach that enables CSPs to choose their preferred combination of public and private models that best meets their business needs and maximizes return on investment. Netcracker has also created powerful out-of-the-box use cases for each area of the telco business to speed up adoption and realize benefits quickly.

"Netcracker's GenAl Telco Solution enables service providers to securely tap into their telco data and maximize the value from multiple GenAl models and platforms," said Bob Titus, CTO at Netcracker. "When leveraging enterprise telco data with GenAl, it is crucial to address the data privacy, security and quality concerns. Our solution and library of interaction models allow service providers to quickly generate tangible business value from GenAl for their customers and their internal operations."

MYCOM OSI Launches Alnsights for Enhanced Predictive Applications



MYCOM OSI has enriched its Experience Assurance & Analytics™ (EAA) applications portfolio by launching the AInsights application for predictive AI-based insights, combined with a comprehensive Data Fabric that powers Big Data Lakes with normalized network and service data.

This critical enhancement to MYCOM OSI's EAA suite enables CSPs to continuously predict the performance of their network and services and to proactively identify and resolve problems before they impact their customers. This is specifically essential for the delivery and assurance of high-reliability and lowlatency 5G enterprise services.

"We are delighted to extend the benefits of EAA to CSPs through unique AI-driven insights to support their growth and transformation plans," said Mounir Ladki, president and CTO at MYCOM OSI. "AInsights enables CSPs to rapidly move from reactive to predictive assurance and operations of their networks and services. The Data Fabric capability will deliver the high-quality data that is critical to the success of such AI initiatives. This exciting launch is a step forward in achieving our vision for EAA to [become] the brain of Autonomous Networks."

The MYCOM OSI Alnsights application is available as part of its SaaS offering operated on Amazon Web Services (AWS) as well as the CSPs' private clouds. With this, MYCOM OSI customers and partners will benefit from high scalability and low-error predictive data insights from the network and its services in near realtime. Alnsights' replicable data models can be applied to different network functions for a deeper 360-degree network view. A factory approach using Open APIs enables intelligent data to be consumed seamlessly by any component of the CSP ecosystem.

Cisco and Splunk Unite to Champion Security and Resiliency for AI-Powered World



Cisco intends to acquire Splunk, a leading cybersecurity and observability company, for \$157 per share in cash, representing approximately \$28 billion in equity value.

The acquisition builds on Splunk's expertise in helping organizations enhance their digital resilience and aims to accelerate Cisco's strategy to secure connectivity. The combination of these two established leaders in AI, security and observability will help make organizations more secure and resilient, according to a joint statement. "We're excited to bring Cisco and Splunk together. Our combined capabilities will drive the next generation of AI-enabled security and observability," said Chuck Robbins, chair and CEO of Cisco. "From threat detection and response to threat prediction and prevention, we will help make organizations of all sizes more secure and resilient."

"Uniting with Cisco represents the next phase of Splunk's growth journey, accelerating our mission to help organizations worldwide become more resilient while delivering immediate and compelling value to our shareholders," said Gary Steele, president and CEO of Splunk.

Cisco and Splunk will strive to address the challenges of today's hyperconnected world head-on.

Cisco and Splunk's complementary capabilities will provide observability

across hybrid and multi-cloud environments, enabling the company's customers to deliver smooth application experiences that power their digital businesses. Cisco and Splunk are well positioned to help customers responsibly harness the power of Al given their substantial scale, visibility into data and foundation of trust.

The boards of directors of both Cisco and Splunk unanimously approved the acquisition. It is expected to close by the end of the third quarter of the calendar year 2024, subject to regulatory approval and other customary closing conditions, including approval by Splunk shareholders.

Upon completion of the acquisition, Splunk president and CEO Gary Steele will join Cisco's Executive Leadership Team, reporting to Chair and CEO Chuck Robbins.

The Quantum Energy Revolution: Shaping the Future of Telecommunications

As the telecommunications landscape experiences an important transformation, quantum energy generators are emerging as a prominent player in the high-speed internet arena. Positioned at the forefront of a technological revolution, these generators hold the potential to revolutionize the way we communicate and access information, leading to an era of unparalleled speed and efficiency.

hat is Quantum Energy? Quantum energy, at its core, is a concept rooted in the fundamental principles of quantum mechanics, a branch of physics that delves into the behavior of matter and energy at the smallest scales of existence. Unlike classical physics, which describes energy as a continuous, flowing entity, quantum energy operates on discrete, quantized levels. It encompasses the notion that energy is fundamentally granular, existing in discrete packets called quanta. These quanta can exhibit intriguing phenomena like superposition and entanglement, enabling quantum systems to store, transfer and process information in unique ways. Harnessing quantum energy holds immense potential, not only for highspeed telecommunications but also for groundbreaking advancements in computing, cryptography and various other fields.

Unlocking the Potential of Quantum Energy Generators

Quantum energy generators are grounded in the difficult world of quantum mechanics, a branch of

physics that delves into phenomena occurring at the subatomic level, encompassing molecules, atoms, and particles beyond. A pivotal concept in quantum mechanics is "superposition," where a particle can inhabit multiple states simultaneously. This principle serves as the base of quantum energy generators, empowering them to execute many tasks concurrently, leading to an exponential surge in both efficiency and speed.

Revolutionizing High-Speed Connectivity

In the realm of high-speed internet and telecommunications, quantum energy generators hold the potential to revolutionize the industry. Conventional internet and telecommunications systems operate on binary data, denoted by 0s and 1s. In contrast, quantum systems leverage superposition to represent data across multiple states concurrently. Consequently, quantum systems boast the capability to process and transmit data at remarkable speeds, potentially catapulting internet speeds to orders of magnitude beyond current standards.

Enhancing Security Through Quantum Entanglement

Quantum energy generators also promise enhanced security for internet and telecommunications systems. Quantum mechanics introduces the intriguing concept of "entanglement," where two particles become intricately connected, causing changes in one particle to instantly affect the other, irrespective of their physical separation. This inherent property could establish highly secure communication channels, as any interception attempts would disrupt the entanglement, immediately alerting users to potential breaches.

Overcoming Quantum Challenges

Nonetheless, tackling the complexities associated with quantum energy generators within the internet and telecommunications introduces its own set of obstacles. Quantum systems exhibit remarkable sensitivity to their surroundings, with even the slightest disruptions capable of inducing "decoherence," thereby interrupting superposition and returning the system to a conventional binary state. Maintaining a stable quantum state across substantial distances, a prerequisite for telecommunications, stands as a formidable challenge.

The challenges extend beyond quantum energy; it is essential to remember that the groundbreaking field of quantum computing also encounters numerous obstacles, including:

- **Connectivity Issues:** Quantum computers prove exceptionally susceptible to noise and errors stemming from their interactions with the environment.
- Scalability Dilemma: The endeavor to expand quantum computers to encompass hundreds or even thousands of qubits, all while upholding remarkable coherence and minimizing error rates, continues to pose a significant challenge.
- Establishing Standards and Protocols: As the domain of quantum computing advances, there is a pressing requirement for standards and protocols governing hardware, software and communication interfaces. The development of these standards will prove indispensable in guaranteeing compatibility and interoperability across diverse quantum computing platforms.

The Pursuit of Quantum Progress

Despite these obstacles, the field of quantum energy generators is advancing rapidly. Dedicated scientists and engineers worldwide are tirelessly working to surmount these challenges, bringing the realization of quantum energy generators closer to fruition. Recent breakthroughs have shown promise, with researchers successfully maintaining stable quantum states over increasingly vast distances.

Beyond High-Speed Connectivity

The potential benefits of quantum energy generators extend far beyond the realm of high-speed internet and telecommunications. They have the capacity to redefine computing, introducing quantum computers that can resolve intricate problems at a pace far beyond their traditional counterparts. This breakthrough holds vast implications, from revolutionizing climate modeling and drug discovery to myriad other fields of science and technology.

A Quantum Leap in Connectivity Awaits

In conclusion, quantum energy generators stand as a promising frontier in the domain of high-speed internet and telecommunications. While formidable challenges arise, the potential rewards are monumental. With ongoing research and development, we may soon witness a transformative shift in the way we communicate and access information. Certainly, the future of high-speed internet and telecommunications holds great promise, and quantum technology is poised to play a pivotal role.



Maintaining a stable quantum state across substantial distances, a prerequisite for telecommunications, stands as a formidable challenge





Empowering Users: Consent, Social Media and Responsible Publishing in the Digital Age

In the digital age, social media has become an integral part of our daily lives, offering a platform for communication, self-expression and information sharing. However, with the power and reach of social media comes the need to navigate complex issues such as consent and responsible publishing. As users, it is crucial to understand the intersection of social media, consent and responsible publishing in order to empower ourselves and others in the digital realm. This exploration aims to shed light on the importance of informed consent, ethical content creation and the responsible use of social media platforms. By understanding and practicing these principles, we can create a safer, more inclusive and more empowering digital environment for all users.

he Importance of Informed Consent on Social Media The importance of

informed consent in the context of social media cannot be overstated. Obtaining and respecting consent is crucial when it comes to sharing personal information, images, or content on these platforms. Consent serves as a fundamental ethical principle that allows individuals to maintain control over their own digital presence and protect their privacy.

Informed consent means that individuals have a clear understanding of what they are agreeing to and have the ability to make an informed decision about sharing their personal information or content. This includes being aware of how their data may be used, who may have access to it and the potential risks involved. Without informed consent, individuals may unknowingly expose themselves to privacy breaches, identity theft, or even online harassment.

Navigating consent in a digital context can be challenging due to the complex nature of online platforms. Users often encounter situations where their personal information or content can be easily shared or even exploited without their knowledge or consent. Additionally, the fast-paced nature of social media can lead to impulsive sharing without fully considering the potential consequences.

Not obtaining proper consent can have significant ramifications. It can violate an individual's privacy, damage their reputation, or even lead to legal consequences. In cases where personal information or images are shared without consent, individuals may experience emotional distress, harassment, or become victims of cyberbullying. The consequences can extend beyond the individual, affecting their relationships, career prospects and overall well-being.

To address the challenges of obtaining and respecting consent in the digital age, it is essential for social media users to be aware of their rights and responsibilities. This includes understanding the privacy settings and terms of service of the platforms they use, as well as being mindful of the potential consequences of sharing personal information or content. It is equally important for social media platforms to prioritize user consent and provide clear and transparent mechanisms for obtaining and managing consent.

Ultimately, by prioritizing informed consent, individuals can maintain control over their digital presence, protect their privacy and contribute to a more respectful and ethical online environment.

Tackling Online Harassment and Cyberbullying for a Safer Online Community

Online harassment and cyberbullying have become alarmingly prevalent on social media platforms, posing serious threats to individuals' mental wellbeing and overall digital experience. It is crucial to acknowledge the significance of creating a safe and respectful online environment. This involves raising awareness about the harmful impacts of online harassment, promoting empathy and understanding, and fostering a culture of respect and kindness. Effective strategies for combating and preventing these harmful behaviors include implementing robust reporting systems, educating users about online etiquette and responsible digital citizenship, and fostering open conversations about the consequences of online harassment. By collectively addressing this issue, we can work towards cultivating a digital landscape that is inclusive, supportive and free from the detrimental effects of online harassment and cyberbullying.

Education and raising awareness about the intersection of social media, consent and responsible publishing are of utmost importance in today's digital age. It is crucial to understand the implications of our actions online and the need for informed consent when sharing personal information. Schools, organizations, and individuals all have a vital role to play in promoting digital literacy and ethical behavior. By integrating digital literacy programs into education curricula, schools can equip students with the necessary skills to navigate the online world responsibly. Organizations can provide resources and workshops to educate individuals about the potential risks and consequences of irresponsible

social media use. Additionally, individuals themselves must take responsibility for their online behavior and actively seek knowledge about privacy settings, online etiquette and the impact of their digital footprint. Through collective efforts, we can foster a culture of responsible social media use and ensure a safer and more respectful digital environment for all.

As we move forward into the future, it is imperative to empower users in the digital age to navigate the complex landscape of social media, consent and responsible publishing. By prioritizing education and raising awareness about the potential risks and ethical considerations associated with online interactions, we can equip individuals with the necessary tools to make informed decisions and protect their privacy. Schools. organizations and individuals all play a vital role in promoting digital literacy, ethical behavior and responsible social media use. Through collaborative efforts and a commitment to empowering users, we can create a digital environment that fosters respect, consent and responsible publishing, ensuring a brighter future for all in the digital age.



As users, it is crucial to understand the intersection of social media, consent and responsible publishing in order to empower ourselves and others in the digital realm





Al in the Workplace: Key Legislation Seeks to Chart Our Ethical Path

Amidst the backdrop of dynamic technological advancement, esteemed US Senator Bob Casey has introduced two comprehensive legislative proposals as a response to the swift and transformative rise of artificial intelligence (AI) in the workplace. These bills seek to preemptively address the multifaceted challenges and implications presented by the accelerated integration of AI technologies into modern work environments. Senator Casey's vision extends beyond mere acknowledgment and instead aims to create a robust framework that both protects the rights of employees and job applicants and establishes a foundation for meticulous oversight of AI deployment in all employment contexts.

afeguarding **Employment Decisions** The "No Robot Bosses" Act. the cornerstone of Senator Casey's legislative vision, is a pioneering initiative designed to raise a protective shield against the unchecked deployment of automated decision-making software. This ambitious legislation implements essential transparency by mandating that employers openly disclose their use of AI systems. The core aim is to empower individuals with essential insights into how AIdriven employment determinations work. This is achieved by offering a comprehensive understanding of the mechanisms governing the operation of such systems.

The Challenges of Leaving AI Unchecked

By implementing such a proactive approach, Senator Casey is acknowledging the significant impact of AI technologies like ChatGPT on critical workplace decisions, which, in many instances, are now being handled with minimal human involvement. This influence spans various employment processes, including recruitment, hiring. promotions, disciplinary actions and employee terminations. The Senator's concern lies in the potential dangers of unchecked AI proliferation, often referred to as "robot bosses." Without proper oversight and protective measures, there is a profound risk of biased outcomes, perpetuating unfair punitive actions and undermining safe working conditions.

Balancing Oversight With Innovation

At the heart of the "No Robot Bosses" Act lies an intricate balance between innovation and accountability. This legislative proposal does not only advocate against total reliance on automated systems for employment decisions; it mandates a continuous cycle of rigorous evaluation. Such an overview is designed to identify instances of discriminatory or biased outcomes and best ensure that the employment process remains untainted by systemic disparities. Simultaneously, the legislation



underscores the imperative of human oversight in governing the symbiotic relationship between AI and human judgment, the dynamic that is fundamental to the pursuit of ethical and equitable employment practices under the "No Robot Bosses" Act.

Interagency Collaboration for an Ethical AI

In an additional legislative introduction, the Senator's "Exploitative Workplace Surveillance and Technologies Task Force Act" also emerges as a potent and protective force. This groundbreaking initiative proposes the establishment of an interagency task force, with the Department of Labor and the Office of Science and Technology Policy taking the lead. This task force will serve as gatekeepers of AI ethics, responsible for unraveling the complex implications of automated decision-making systems and workplace surveillance - an essential beacon casting light on all manner of Al influence in the employment realm.

In the spirit of collaboration, various coordinating lawmakers are emphasizing the need to understand the wide-ranging impact of AI on modern workplaces. Algorithms and automated systems are increasingly entrusted with workforce surveillance and consequential decisionmaking. However, there is a lack of comprehensive insight into data collection methodologies and potential anti-discrimination violations. Senator Casey's legislative initiatives aim to bridge this knowledge gap and foster informed, inclusive and ethically sound AI integration in employment dynamics.

In short, Senator Casey's legislative efforts serve as monumental safeguards against the challenges posed by AI in the employment context. The bedrock of these initiatives is one of transparency, accountability and scrupulous oversight, creating an impervious shield safeguarding the rights, interests and overall well-being of employees and aspirants alike. With their potential to become legal statutes, these legislative endeavors pave the way for a future marked by conscientious, equitable and ethically harmonious AI integration in the workplace. 🎹

From Telco to Techco: Indosat Ooredoo Hutchison's Vision to Transform the Digital Future of Indonesia

On the sidelines of Digital Transformation World 2023 (DTW23-Ignite), the leading digital telco in Asia, Indosat Ooredoo Hutchison (Indosat or IOH), held a media roundtable to discuss the infinite opportunities for empowering Indonesia.

Welcoming the notable global media representatives, including Telecom Review, were President Director and CEO of Indosat Ooredoo Hutchison Vikram Sinha and SVP Head of Corporate Communications Steve Saerang.

In his presentation, CEO Vikram Sinha proudly confirmed that Indosat has emerged as one of the top global telcos at present. Since the successful merger between Indosat Ooredoo and Hutchison 3 Indonesia, Indosat has become the second-largest mobile network operator in Indonesia. With more than 100 million customers, Indosat thrives in the fourth-most populous country in the world.

The Indosat C-level executive described what being a techco means for them, explaining it in two ways. First, they want to "learn the best" when it comes to being a techco, which means being agile and having the ability to learn. Second is their focus on "innovation and cocreation," which involves coming up with products that solve real problems and challenges in Indonesia.

Empowering Indonesia. According to Twimbit, in the next four years, there will

be 22 million first-time users in rural Indonesia. Indosat is committed to inclusively bridging the digital divide across this community.

When asked by Telecom Review about the main trends shaping the telco sector in Southeast Asia and globally, Sinha shared his unique perspective, stating that COVID-19 served as a silver lining by renewing a healthy respect for the telecom industry. "The digital infrastructure is driven by telcos; the whole backbone is connectivity and data," Sinha explained. "Our opportunity is to drive that growth, and COVID helped us to build on that."

As an important part of the overall discussion, SVP Steve Saerang also cited the three main focuses of Indosat's corporate social responsibility (CSR) program: women's empowerment, digital literacy and the environment.

Importantly, with its direct impact on the lives of 14,000 women, the notion of giving equal opportunities to women has commercial value as well.

In terms of industry consolidation, Sinha suggested that Indonesia's biggest challenge is demographics, having a geographical area equal to that of Europe. The country's CAPEX intensity is very high, and this stands to enable a good-quality 5G network for the benefit of all.

Tech Giants to Be 'Gatekeepers' Under New DMA Internet Competition Law

The huge tech companies Alphabet, Amazon, Apple, ByteDance, Meta and Microsoft have been designated as "gatekeepers" under the EU's newly enacted Digital Markets Act (DMA). This legislation aims to control tech sector overreach and enhance competition within internet services. Consequently, these corporations will face heightened competition regulations in relation to their key services, including search engines, web browsers, advertising platforms and social media applications. They are required to align their platforms with the new rules by March 2024.

India Establishes Working Committee to Promote Telecom Exports

India's Department of Telecommunications (DoT) has organized eight working groups under the ambit of the Telecom Equipment and Services Export Promotion Council (TEPC) to lead the nation as a top exporter of telecom technologies.

These new working groups have been constituted in key focus areas, including collaborations of OEMs and system integrators; telecom standardization and testing; radio, wireless and satellite equipment; wireline, optical and transmission, and networking equipment; optical fiber and other cables; wireline access and enterprise solutions; IP phones, IP EPBX and sensors; 4G/5G/6G and future networks' core and radio networks: and EMS and component ecosystems for telecom equipment manufacturing.

"Our vision is to work to transform India as a telecom manufacturing hub for global relevance and gain market share in both developed and emerging markets. The working group recommendations are likely to give a fillip to this," said N.G. Subramaniam, chairman of the Telecom Equipment and Services Export Promotion Council.

"These working groups will also submit suggestions for promotion of [the] export of the respective equipment in the global markets," TEPC said in a statement. They will also provide recommendations for promoting the export of the relevant equipment to worldwide markets. These task groups will be led by industry professionals.

A New Transatlantic Subsea Cable Will Connect Portugal, Bermuda and the US by 2026

Nuvem, the Portuguese term for cloud, is set to enhance network resilience across the Atlantic, addressing the increasing need for digital services.

The new subsea cable path will add international route diversity and support the development of ICT infrastructure in Europe and North America.

Over the last few years, the Government of Bermuda has undertaken significant efforts to attract investment in subsea cable infrastructure, including passing new legislation to create cable corridors and streamline permitting.

Nuvem will not only be the inaugural cable to land in this setting but also the first to establish a connection between Bermuda and Europe.

"Bermuda has long been committed to the submarine cable market, and we welcome the Nuvem cable to our fast-growing digital Atlantic hub," said Walter Roban, Bermuda Deputy Premier and Minister of Home Affairs.

Portugal has emerged as a significant hub for subsea cables, primarily due to its advantageous geographic position in southwestern Europe and its dedicated efforts to fortify digital economy infrastructure. Nuvem, with intentions to land in Portugal, will join the ranks of Portugal's growing subsea cable network.

Digital Solutions Are Building Blocks Toward 2030 UN SDG Goals, Says ITU

More than two-thirds of the UN's targets for sustainable development can benefit directly from digital technologies, according to the International Telecommunication Union (ITU) and the United Nations Development Programme (UNDP), organizers of SDG Digital.

The SDG Digital Acceleration Agenda, a global analysis of the connections between digital technologies and sustainable development, was released as part of SDG Digital to provide a roadmap to governments on their digital transformation journey and to promote action and financing.

"With only a fraction of the SDGs on track at the halfway point of the 2030 Agenda, it is urgent to ensure that everyone, everywhere, can build their own digital futures," said ITU Secretary-General Doreen Bogdan-Martin along with UNDP Administrator Achim Steiner in the foreword of the SDG Digital Acceleration Agenda. "When you look at these gamechanging digital solutions, you can see the actual building blocks that can drive us toward universal and meaningful connectivity," said Bogdan-Martin. "This is how we can — and will — work together to ensure our shared digital future is inclusive, sustainable, and safe and responsible — and to do it in this decade."

"We turn to the future with the launch of SDG Digital Acceleration Agenda, which is a call to action. It's a call to action that contains a road map for navigating challenges as diverse and critical as digital skills, governance, regulation, financing, infrastructure and security, explained Bogdan-Martin.

According to UN assessments, progress on half of the 169 SDG targets is either weak or insufficient at the 2030 Agenda's halfway point. 30% of the SDG targets have either stalled or gone in reverse.

New UK-US Data Bridge to Take Effect in October

The UK Department for Science, Innovation and Technology has announced details on the new transatlantic data flow mechanism for UK-to-US personal data transfers.

The decision to establish a data bridge with the United States of America is a UK extension to the EU-US Data Privacy Framework (DPF) finalized in July.

From October 12, UK businesses and organizations will be able to make use of this data bridge to safely and securely transfer personal data — subject to the UK General Data Protection Regulation (GDPR) — to certified organizations in the US.

The UK government has defined "data bridge" as the decision to permit the flow of personal data from the UK to another country without the need for further safeguards. It symbolizes the connection between destinations that is established by these decisions and encapsulates the UK's collaborative approach with international partners.

Now, US entities under the scope of the Federal Trade Commission (FTC) or the Department of Transportation (DOT) have the capability to self-certify for the UK extension to the DPF, thus gaining access to the advantages offered by the new UK-US data bridge.

Banks, insurance companies and telcos, among others, are currently unable to participate in the DPF program.

In 2021, the UK exported more than £79 million of data-enabled services to the US. The expectation is that the newly established data flow agreement will not only promote economic growth between the two nations but also foster an environment for businesses to expand their operations globally.

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Verizon, Bell Canada and Vodafone Conduct First 5G Transatlantic Holographic Meeting

Verizon, Bell Canada, Vodafone and Matsuko achieved a milestone by successfully hosting the inaugural cross-continental collaborative meeting featuring multiple holographic participants located in Canada, the US and the UK. This remarkable feat was accomplished through the utilization of 5G technology and multi-access edge computing (MEC).

Holographic representations of employees situated in three distinct nations were seamlessly connected: Toronto, Canada, via Bell's 5G network; New York in the US, facilitated by Verizon's 5G network; and London, UK, through Vodafone's 5G network. These holograms were generated using MATSUKO's real-time software, employing only a single camera, and subsequently streamed using spatial computing — an immersive technology that combines elements of virtual and augmented reality. The success of this call was attributed to the high-speed capabilities of 5G, complemented by the low-latency advantages of MEC technology, which brings computational resources closer to the network's edge. This setup ensured a more dependable and consistent holographic experience, eliminating delays caused by multiple data transfers across various locations and the internet.

"Through its active participation in the 5GFF, Bell continues to support the developer community to access 5G MEC technologies and to ensure their solutions take full advantage of Bell's 5G network in Canada, and to interoperate globally," said Bell's Costa Pantazopoulos, VP Product. "This holographic video meeting demo illustrates how Bell - with partners Verizon and Vodafone - is making it easier for developers to leverage 5G capabilities to innovate and achieve their application goals."

Leading Tech Companies Enhance Connectivity in Schools Across Cook Islands

Ciena, Avaroa Cable Limited (ACL), BW Digital and Vodafone Cook Islands are collaborating with the Ministry of Education Cook Islands (MoE) on a three-year plan to improve digital connectivity for 30 schools across the island country.

The companies plan to address the long-standing issue of limited and unstable internet access, particularly in the outlying islands, where some schools have relied only on satellite services. Slow and intermittent internet connectivity has prevented students and faculty from fully using online resources and communication channels, which are significant for today's learning demands.

The project will use the existing Hawaiki underwater cable, which is now owned by BW Digital, as well as the Manatua undersea cable. Meanwhile, Ciena's cutting-edge Ciena 5160 Service Aggregation Switches will be deployed in both the Cook Islands and Sydney. These switches will significantly accelerate the delivery of connectivity services, enabling a swift online learning experience. Ciena will also shoulder all ongoing maintenance and support costs for the duration of the project.

Head of Ministry at the Ministry of Education Cook Islands, Danielle Tungane Cochrane, expressed enthusiasm for the potential of this project to transform learning in the country, saying, "Having improved and strengthened connectivity for our schools will revolutionize the teaching and learning experience for each of our education sectors. We are seeing more and more of our teaching and assessment opportunities being digitized or delivered online, and having a dedicated and sustainable platform for our schools, including our tertiary and vocational providers, will mean we can confidently continue to deliver a quality education system."

Gambia's Second Submarine Cable Project Receives World Bank Support

The Gambia is working on its second international fiber optic cable, expected to be operational by 2025. Minister Ousman A. Bah, responsible for communication and digital economy, announced that the World Bank is funding the project with an estimated cost of between \$30 and \$35 million. While exact technical specifications were not given, Bah mentioned The Gambia's participation in the Cabral submarine cable project under ECOWAS. By teaming up with Guinea Conakry, they've managed to lower expenses, and the cable will run directly from Cape Verde to The Gambia.

The government initially announced its intention to fortify the national broadband telecom infrastructure in January 2022 by linking The Gambia to a second submarine cable. Since 2012, the country has relied heavily on the ACE (Africa Coast to Europe) cable for high-speed Internet services, but frequent disruptions have posed challenges.

In addition to the submarine cable endeavor, the Gambian government is exploring enhanced national connectivity through satellite technology. Banjul intends to grant all necessary licenses to the American company Starlink by the end of September, diversifying Internet access options beyond ACE. This strategic approach aims to make satellite services accessible without the need for physical cable installations, benefiting both Gambian and non-Gambian users.

These multifaceted initiatives are poised to elevate the quality and affordability of broadband telecom services in The Gambia while extending their availability to a broader population.

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