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ChatGPT Gains Web Browsing Functionality

ChatGPT now has the ability to browse the web for real-time info; these enhanced capabilities are currently available to 'Plus' and 'Enterprise' users, with wider access planned.

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XR Breakthrough: Revolutionizing Management Learning and Research

An international business school has taken the pioneering step of introducing a comprehensive library of VR Learning Experiences. This expansion will enhance the effectiveness of management education and propel advancements in management research.

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Meta's AI Revolution: Infusing Smart Glasses With Celebrity AI

Meta has embarked on an ambitious plan to infuse artificial intelligence (AI) into digital assistants and smart glasses. Zuckerberg highlighted the role of AI advancements in creating diverse applications and personas to achieve various tasks. These developments are aimed at eventually integrating AI capabilities into stylish smart glasses.

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China Takes Action to Boost Smart Driving Innovation

China aims to become a global leader in intelligent connected vehicles by 2025, supporting smart vehicle supply chain companies in their formation of "innovation consortia." Over 42% of new vehicles have achieved Level 2, with Baidu leading the way in Level 3 automation.

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Vietnam: Pulling Ahead in the Global Microchip Rush

The current global race for AI supremacy, combined with the supply chain hurdles that come as a result of strained US-China relations is propelling Vietnam as a promising semiconductor production hub.

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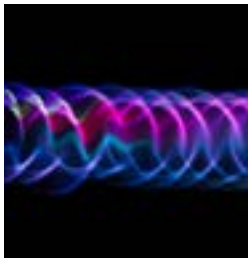

'Side Eye': Extracting Sound From Silent Photos and Videos

A new software tool called "Side Eye" has been developed that can extract sound and reconstruct its waves from silent photos and videos.

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Manoranjan "Mao" Mohapatra, CEO, Comviva

Comviva: Championing Growth - Forging the Path of Innovation

In an exclusive interview with Telecom Review, Manoranjan "Mao" Mohapatra, CEO of Comviva, talks about the company's remarkable 25-year journey of championing growth for organizations. He details how Comviva has consistently stayed at the forefront, adapting and innovating with a startup mindset in the dynamic world of technology.

Comviva will soon be celebrating 25 years of its successful industry journey. It's a remarkable achievement seen by only a select few technology product companies. What has been at the core of this extraordinary success?

Comviva was founded in 1999, and today we work with most of the largest Communication and Banking organizations globally. We partner with seven of the top 10 CSPs globally, and our solutions impact the lives of over 25% of the world's population.

It has been a truly extraordinary journey of 25 years where we have partnered and co-innovated with organizations.

There have been three core organizational values that have been the guiding light for us: Customer Centricity, Innovation and Ethical Governance.

Comviva is built on grassroots-level innovation, and we have institutionalized innovation amongst employees at multiple levels. These include incubated startups, employee ideathons, encouraging patents and innovation awards.

Most of our customer partnerships have extended for years. We run a customer satisfaction survey run by an independent agency every year. For the last 5 years continuously, we have had one of the highest CSAT scores in the industry.

And then foremost, Ethical Governance. We operate in over 90 countries, and our customers and partners respect us for integrity, transparency and ethical corporate governance.

These three pillars of our organization's DNA have powered us to drive excellence and partnership culture.

We are living in an extremely dynamic digital technology world. As you look forward, how does Comviva plan to remain ahead and grow in an ever-changing technological landscape?

We are fortunate to be in a time where technology is evolving at a rapid pace. It's an opportunity of a lifetime. At Comviva, we have been working on a Comviva 2.0 growth strategy and roadmap. This is being adopted at multiple levels: Diversifying Focus Markets, New Solutions, Customer Experience and Talent.

We have been a dominant player in the Middle East, Africa, and Southeast Asia markets. We are now aggressively investing and focusing on the European and US markets. We made investments to establish delivery hubs in Latin America, which are closer to the US

and European markets. A significant proportion of the new revenues in the next three years is expected from developed markets.

Central to our strategy is our extensive experience working closely with Communication and Banking organizations. We have been actively working on strengthening our portfolio of FinTech, DigiTech and MarTech solutions for new use cases around digital commerce, embedded payments, digital lending, customer experience, CPaaS, customer loyalty and management. Our 5G platforms going forward are expected to be a key driver for growth.

We are strongly focusing on enabling Telcos to empower the Enterprise market. As part of our solution strategy, we are going as close to the customers as possible. We are putting ourselves as close to the customers as we can as part of our product approach.

As a product company, we invest somewhere between 15 and 20% of our gross revenue in R&D investments. We experiment by investing in new areas, and not every area gives us a return in the short term, but we don't mind failing as long as we fail fast.

Finally, the biggest challenge for businesses has always been and will continue to be finding, developing, and keeping talent. We prefer hiring and acquiring talent from universities. We catch them fresh and take them through various learning and development programs to groom them. We have been scaling investment in our learning and development programs, and that will be a real differentiator.

How does Comviva empower Telcos to serve Enterprises and unlock growth?

Enterprise business for Telco has been a key focus. We refer to it as B2B2X and are very focused on this concept.

Earlier Telco solutions focused primarily on connectivity, but today's distributed environment allows businesses to use the connectivity provided by Telcos to provide value-added services to their clients. Most CSPs are grappling with the need for subscriber base growth, which has primarily relied on voice and data growth, a trend that is now plateauing. In response, they are increasingly looking to generate revenue from the enterprise sector. Research and analysis from various sources consistently forecast substantial B2B growth over the next five to ten years, and telcos are eager to claim a share of the enterprise market. This is precisely where Comviva is now focused, and we are ramping up our play and building technologies that will help Telcos serve Enterprises.

Technology advancements like 5G and IOT are going to accelerate this significantly. There is unbundling or disaggregation taking place in the market. With 5G adoption, computing and business technologies will be pushed to the edge. The 5G technology and other technologies, including the hyperscalers, give us the ability to take them out of the core of the telecom network, put them on the Edge and offer them to enterprises.

Our 5G-compatible Application Driven Network Platform (ADriN) platform offers dynamic capabilities to understand the behavior of connected devices in real-time and provide intent-driven experiences.

The other notable solution is our CPaaS proposition. Today, our next-generation Ngage CPaaS platform empowers CSPs with real-time communication capabilities, enabling them to seamlessly improve and customize the customer experience across various channels.

Similarly, our BlueMarble Digital BSS enables the modernization of customer engagement channels, revenue management procedures, order orchestration and fulfillment, as well as analytical decision-making using AI/ML in the customer service and assurance domains.

We are committed to empowering Telcos or partnering with them to leverage the thriving B2B sector, with a particular focus on serving SMEs across various verticals such as banking, finance, retail, and other industries.

How do you plan to leverage emerging digital technologies like AI, Cloud and Open API architecture to empower CSPs and Enterprises?

We have fully embraced digital technologies in all our solutions. We have a strictly cloud-first approach, and all of our new products are cloud-native, based on microservices.

Also, by default, every Comviva product today is built from an AI perspective. Our MarTech & CPaaS offerings are powered by AI, and that is playing a key role in empowering personalization at scale. Our Data-Science-as-a-Service (DSaaS) and AI workbench (MobiLytix AI) solutions accelerate the use of AI by CSPs and increase returns from their Customer Value Management programs.

We also recently announced Generative AI capabilities to revolutionize the way CSPs leverage AI to enhance customer experiences, optimize operations, and drive business growth.

We are also great believers in Open API, and our BlueMarble solution is among the leaders in TMForum Open API adoption certifications.

> There have been three core organizational values that have been the guiding light for us: Customer Centricity, Innovation and Ethical Governance

figure 1: The Outcomes

Deshbandhu Bansal, Chief Operating Officer, Messaging Solutions,Comviva

Transforming Customer Experience and Generating Over $20 Million in Annual Recurring Revenue for a Leading Operator in the Middle East

In the dynamic Middle Eastern landscape, a prominent business entity embarked on an extraordinary journey to reshape the customer experience for over 1400 enterprise clients. Their mission was to pioneer digital innovation, offering cutting-edge technologies like Cloud, Cyber Security, IoT, Omnichannel Commerce, Artificial Intelligence and Big Data Analytics.

In June 2023, the operator partnered with Comviva to redefine how businesses are connected and engaged with their customers, offering unmatched versatility.

At the core of this transformation stood Comviva's NGAGE, an intelligent omnichannel Communication Platform as a Service (CPaaS). NGAGE is more than a communication tool; it is, in fact, a catalyst for elevating customer engagement. Leveraging cognitive automation and Natural Language Processing (NLP), NGAGE enabled businesses to create personalized, context-rich experiences, leading to increased customer satisfaction and unwavering brand loyalty.

NGAGE's scalability, flexibility, and tailored pricing models made it the ideal choice for various industries. Operating on a cloud-based model, NGAGE was seamlessly integrated with business applications, ensuring secure real-time customer interactions and prioritizing security with end-to-end encryption and two-factor authentication.

The outcomes of this transformative partnership were astonishing as illustrated in figure 1 (caption:The Outcomes)

In a world where communication is paramount, the Operator bridged the gap between businesses and their customers, ushering in a new era of digital transformation and customer engagement with the NGAGE CPaaS platform.

"With our NGAGE CPaaS platform the operator is well positioned to create new possibilities for enterprises," says Deshbandhu Bansal, Chief Operating Officer, Messaging Solutions at Comviva.

The Operator celebrated the partnership as a pivotal milestone in creating an open and collaborative CPaaS ecosystem dedicated to delivering smooth and highly personalized customer experiences.

Revolutionizing Telco's Digital Transformation Journey

In the competitive world of telecommunications, innovation is key. For one major service provider in the Middle East, the path to digital transformation was marked by a complex IT landscape, outdated systems, and inefficient manual processes that hindered their agility. Dissatisfied customers, disconnected systems, and high order fallout rates were eroding brand loyalty.

> With our NGAGE CPaaS platform, the operator is well-positioned to create new revenue possibilities for enterprise

Recognizing the pressing need for change, the operator embarked on a transformational journey in partnership with the Comviva BlueMarble Commerce solution.

This collaboration was a game-changer, redefining the landscape

figure 2: Challenges Faced

Sachin Saraf, Senior VP & Global Head, Digital BSS Solutions, Comviva

of digital transformation in the telecommunications industry and positioning the CSP as a frontrunner. See figure 2 (caption: Challenges Faced)

The Telco transformation journey revolved around three pivotal pillars:

Federated Product Catalog: Implementing a centralized product catalog simplified product management and the introduction of new offerings.

Microservices-Based Headless Commerce: This modern architectural approach endowed Telcos with agility and scalability, enabling them to adapt swiftly to market demands.

On-Premise Deployment: BlueMarble Commerce's deployment on a robust platform ensured uninterrupted service.

The solution seamlessly integrated with Telcos' backend systems, CRM, call center, and digital channels, adhering to open API specifications for seamless data flow. Advanced monitoring and logging tools provided real-time insights, enabling proactive issue resolution.

The transformation yielded remarkable results: a 10% increase in conversion rates, a notable 40% reduction in order fallout rates, and a seamless experience across digital touchpoints, enhancing brand loyalty.

Telcos' newfound ability to configure the product catalog swiftly empowered them to launch new products and services within days, positioning them as a market leader in adaptability and innovation.

"This collaboration was a game-changer, redefining the landscape of digital transformation in the telecommunications industry and positioning the CSP as a frontrunner," notes Sachin Saraf, Senior VP & Global Head, Digital BSS Solutions at Comviva.

Comviva's Smart City Transformation: Pioneering Sustainable Urban Ecosystems

In an ambitious quest to shape the future of smart cities, one of the clients in the Middle East joined forces with Comviva. Their mission was to create a sustainable urban ecosystem driven by cutting-edge technologies. Together, they aimed to build a robust tech stack that would deliver innovative services to citizens and set new benchmarks for smart cities.

At the core of this transformation, Comviva's comprehensive Business Support System (BSS) stack played a pivotal role. This stack served as the foundational infrastructure for managing and monetizing the smart city's services. It encompassed a range of modules, including billing, customer relationship management (CRM), revenue management, and partner management. By seamlessly integrating these BSS components,

> This collaboration was a game-changer, redefining the landscape of digital transformation in the telecommunications industry and positioning the CSP as a frontrunner

they established a scalable and agile platform capable of effectively managing the complexities inherent in a smart city ecosystem. The result was a variety of services tailored to individual needs, empowering residents to effortlessly access and enjoy various amenities such as smart transportation, energy management, healthcare, and digital payments.

The project's primary objectives centered around expediting time-to-market, facilitating easy scalability, and

Chadi El Samad, Head of MENA Region, Comviva

figure 3: The Challenges

> Together, we have set a new benchmark for smart cities, redefining the urban living experience for its citizens and the world.

fostering innovative business models for the initial product proposition as well as future growth. By adopting a cloud-based deployment model and incorporating pre-integrated fiber use cases, the smart city could rapidly roll out solutions, ensuring swift responsiveness to evolving market demands.

The implementation of Comviva's BSS stack promised tangible outcomes, including Accelerated Time-to-Market, Enhanced Customer Experience & Monetization, and Revenue Growth, fostering collaboration and driving economic growth within the ecosystem. The tech stack laid the foundation for future advancements and the integration of emerging technologies such as IoT, AI and Blockchain, ensuring the smart city remained at the forefront of innovation.

"We helped our client establish the fundamental groundwork for facilitating, disseminating, and overseeing fiber connectivity and various IoT services within a futuristic and sustainable urban ecosystem. Together, we have set a new benchmark for smart cities, redefining the urban living experience for its citizens and the world." - Chadi El Samad, Head of MENA Region at Comviva

ooredoo

Cultivating Customer Delight: How a Successful Solution Revolutionized the Loyalty Eco-System.

As a leading multi-national Middle East-based communications service provider (CSP), with 2.3 million subscribers, **Ooredoo Qatar** delivers an array of services including mobile, wireless, wire line, and content. Driven by a customer-first approach and a robust dedication to digital advancement, this telecoms giant actively strives to achieve unparalleled connectivity. **Ooredoo Qatar** has an award-winning loyalty program - **Nojoom Rewards**.

Operating for 13 years, **Nojoom Rewards,** is **Ooredoo Qatar's** way of showing appreciation for its customers by rewarding them whenever they use Ooredoo services or make purchases at any of its extensive partner network. The program provides a wide range of rewards and benefits, such as product and service discounts, exclusive offers, and travel and entertainment benefits. See figure 3 (caption: The Challenges)

Nojoom Rewards has evolved to improve the customer experience with new technology and trends. The legacy solution had limited capabilities with most operations performed manually and didn't offer real-time rewards. Instead, loyalty points were collected in batch files and required manual approval for redemption, which sometimes took a few weeks or even up to two months, causing some frustration among subscribers and large processing times for partners. Moreover, points could only be redeemed through physical loyalty cards, making it a time-consuming, cumbersome experience, often taking more than a month to complete. In summation, there were many steps to perform any transactions not only for subscribers but also for partners.

The lack of integration with Point-of-Sale software also meant that customers couldn't earn points at retail stores leaving **Nojoom** unable to fully leverage its partnerships.

Furthermore, the limited availability of member profile information and the absence of a pertinent customer data collection system, meant Ooredoo

Qatar could not understand customer preferences or produce personalized offers leading to missed opportunities.

Solution
1. Launched integrated loyalty programs B2B, B2C & B2E powered by Comviva's unified solution-**MobiLytix Rewards.**
2. Easy real-time enrolment process.
3. Introduction of a unique dynamic Membership QR code to authenticate and identify **Nojoom** members.
4. Integrated POS ensured real time earn and burn of points at the click of a button.
5. Enabled online merchant onboarding and settlement with real time API.
6. Onboarded vast partner-ecosystem with numerous premium and aspirational brands.
7. Relevant personalized offers sent to enhance customer experience and increase brand affinity.

In response to the ever-evolving needs of digitally savvy subscribers, **Ooredoo Qatar** introduced a holistic and customer-centric loyalty and rewards solution called **MobiLytix Rewards** to support the **Nojoom** program. This innovative system enabled the introduction of user-friendly loyalty programs tailored to B2C, B2B, and B2E. This new approach brought digital transformation throughout the entire stakeholder journey, including simplified onboarding and settlement procedures with merchants, as well as the integration of retailers' point-of-sale systems through real-time APIs. The introduction of a digital membership card enhanced transaction security.

A unique dynamic Membership QR code acts as an authenticated, unique identifier that can be scanned at partner outlets to identify **Nojoom** members and enable seamless points earning and redemption. Nojoom members can redeem points for partner vouchers. Dynamic QR-coded digital vouchers are refreshed frequently and can be scanned at partner outlets on a POS device.

With this program in place, all reward settlements and point accumulations occur in real time, both digitally and physically, significantly enhancing the overall customer experience.

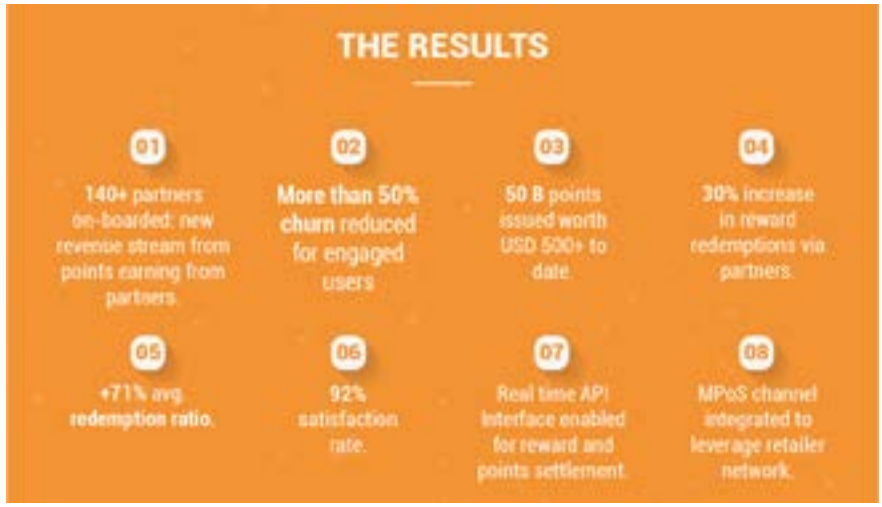

figure 4: The Results

The **Nojoom** program successfully onboards and manages a diverse partner ecosystem featuring numerous premium and aspirational brands, supported by Comviva **MobiLytix**.

Benefits:
- **Enhanced Customer Engagement:** Nojoom delivers tailored offers and promotions via digital channels, resulting in heightened customer engagement. Ooredoo's clientele can effortlessly monitor their points and rewards, which increases loyalty program engagement and satisfaction.
- **Augmented Data Insights:** Nojoom can optimize its loyalty program and craft precise marketing campaigns by closely monitoring customer interactions. These insights empower the identification of customer preferences, needs, and reward preferences.
- **Heightened Security:** QR code-based identification substantially diminishes the risk of fraud, identity theft, and data privacy breaches. Members are not obligated to disclose personal information during loyalty transactions, ensuring a heightened level of security.
- **Cost savings:** Digital platforms with real time points processing reduce both the resources required for manual processing and loyalty program operational costs.
- **Synergy and Convenience:** Nojoom delivers a more seamless and convenient customer experience by using the same network of POS terminals to provide digital services for recharge, billing, and mobile money payments. This technology integration equips Ooredoo to expand its service offerings to customers effectively.

Nojoom Rewards delivers an enhanced and secure loyalty program, seamlessly integrated with other services while delivering cost savings and underscores its innovative and forward-looking approach to leveraging technology for the benefit of its customers and business. See figure 4 (caption: The Results)

Nojoom is one of the best loyalty programs, not only rich in features but also in enrollments across the Middle East. **Nojoom's** updated loyalty ecosystem powered by **MobiLytix Rewards** resulted in a huge surge in customer satisfaction. With the on-boarding of numerous well-known brands, an extensive catalog of rewards was created and curated. **Nojoom** profiles all members instead of just primary account members. Based on this profile information, **Nojoom** designs rewards that provide better value for customers based on their lifestyles, creating more exciting campaigns that are relevant to their interests.

Additional Benefits
1. Elevated customer experience across loyalty management lifecycle through physical and digital channels.
2. Cultivating customer delight by building an emotional connection with subscribers. TR

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Mohammed Nizar Al-Nusif,
CEO, solutions by stc Kuwait

solutions by stc Kuwait: Empowering Kuwait's Digital Aspirations

In an exclusive interview with Telecom Review, solutions by stc Kuwait's CEO, Mohammed Nizar Al-Nusif, explains how the company actively contributes to the realization of Kuwait Vision 2035 and fosters the growth of Kuwait's digital economy through innovative solutions and strategic collaborations.

What sets solutions by stc Kuwait apart as the preferred one-stop solutions partner in Kuwait and beyond?

At the heart of solutions by stc Kuwait's success lies our steadfast commitment to delivering a comprehensive spectrum of services spanning Connectivity, IT, and ICT. Additionally, we stand out in our market as a comprehensive provider of both fixed and wireless connectivity solutions, offering a one-stop shop for all your business needs. These unique capabilities position us as an exceptionally convenient and trustworthy partner for businesses of all sizes. Our dedication to putting our customers at the forefront is a pivotal differentiator, as we actively seek and incorporate customer feedback, ensuring that our services align perfectly with their diverse needs.

Moreover, we are part of the stc group, a globally renowned telecommunications powerhouse with a substantial regional presence, which further bolsters our standing locally and throughout the region. This position uniquely equips us to provide top-tier business and wholesale solutions

to our customers across the region. Our robust financial performance underscores our unwavering commitment to excellence, while our extensive customer base stands as a testament to the trust our partners place in us.

Can you share insights into the meticulous strategies that have catapulted solutions by stc Kuwait to prominence?

Our unwavering customer-centric approach has paved the way for dynamic partnerships with local and globally recognized collaborators, esteemed technology providers, and industry luminaries. These strategic alliances empower us to harness cutting-edge technologies, innovations, and domain expertise, enabling us to offer unparalleled services. stc Kuwait's strategic acquisition of E-Portal Holdings has further fortified our capabilities in the B2B and ICT sectors, allowing us to offer a broader range of services, granting access to new markets. To further empower our customers and align with their needs, we built digital channels for complete account management, complemented by delivery services all across the country.

Additionally, our commitment to sustainability and corporate responsibility is an integral pillar of our overarching strategy. Sustainability is woven into the very fabric of our corporate strategy and is integrated into every aspect of our operations and initiatives. stc's extensive Corporate Social Responsibility (CSR) framework encompasses a diverse array of initiatives, events, and programs aimed at empowering our community and nurturing the next generation. Our educational 'Weyak' entrepreneurship initiative operates in line with our CSR objectives of enabling the digital transformation journey for SMEs and local start-ups, supporting our commitment to uphold the local economy.

Our role as a catalyst for Kuwait's flourishing start-up ecosystem is pivotal. Our first intake of the "inspireU" program in Kuwait, which has been run for 10 years by stc group, a first-of-its-kind startup incubator, is the perfect accelerator for new business ideas, providing support, guidance, training and social networking opportunities to finance SME ideas into a successful business. Through the provision of essential infrastructure services, access to cloud resources, and the cultivation of a collaborative culture, we advocate innovation and entrepreneurship, driving Kuwait's digital economy to greater heights.

Cybersecurity will continue to remain a core priority, especially with the recent years marked by escalating cyber threats. Our robust cybersecurity solutions aim to protect Kuwait's digital assets and critical infrastructure, providing a secure digital environment conducive to economic activities.

To facilitate the growing technology needs of Kuwait's business segments, solutions by stc Kuwait collaborated with strategic connectivity and solution partners across the globe, marking strong growth in the Wholesale Connectivity segment. Today, we are a leading contender in enterprise connectivity across the GCC, Iraq and beyond into Europe, and we have expanded our ICT vision into adjacent markets, including Egypt and Saudi Arabia.

What is your vision for Kuwait's digital economy in the near future?

The growth trajectory of Kuwait's digital economy holds immense promise, with solutions by stc Kuwait playing an active pivotal role in nurturing this development. Several key factors contribute to the growth of Kuwait's digital economy. Firstly, Kuwait has demonstrated its commitment to digital transformation through substantial investments in ICT infrastructure, forming the foundation for digital advancement and economic expansion. The Kuwaiti government has also initiated transformative digital projects as part of Kuwait Vision 2035, aiming to modernize a diverse array of sectors, including E-commerce, Fintech, Healthtech and Smart City solutions. These visionary initiatives are designed to catalyze e-government services and stimulate innovation, positioning Kuwait as a formidable contender on the global digital stage. The country is fostering a thriving start-up ecosystem, supported by government incentives, incubators, and funding opportunities. These start-ups are driving innovation and economic diversification, propelling Kuwait's digital transformation journey.

In what ways does solutions by stc Kuwait accelerate Kuwait's transformation goals, aligned with Kuwait Vision 2035?

solutions by stc Kuwait acts as the catalyst for Kuwait's expanding digital economy by implementing a multifaceted approach. This includes offering a comprehensive suite of digital solutions, empowering businesses to embark on their digital journey, and strengthening their competitive edge in the digital landscape. Our active involvement in Smart Cities, Fintech, E-commerce and Healthtech solutions substantiates urban development, perfectly aligning with Kuwait's vision to modernize infrastructure and elevate urban living standards. These solutions are designed to seamlessly integrate with other smart city infrastructure components, such as IoT sensors, traffic management systems, and data analytics, forming the foundational pillars of a broader smart city ecosystem.

Our investment in ICT infrastructure, pioneering the deployment of cutting-edge 5G networks led by stc, establishing state-of-the-art data centers, and provisioning high-speed internet connectivity further amplify Kuwait's digital readiness. Our proactive engagement with government entities, businesses, and international partners fuels digital transformation efforts both domestically and on a global scale.

These strategic initiatives form the core of our business strategy, designed to transcend customer expectations and pave the path for Kuwait's digital transformation through cutting-edge technological solutions. Kuwait's digital economy is on the brink of exponential growth, and solutions by stc Kuwait is well positioned to be a key enabler of this growth, actively participating in the nation's journey towards becoming a thriving digital economy. TR

Salvador Anglada, CEO, e& enterprise

e& enterprise: Expanding the Boundaries for Digital Excellence

In an exclusive interview with Telecom Review, Salvador Anglada, CEO, e& enterprise, shares his company's ambitious vision toward innovation and its endeavors to become a market leader in line with e&'s overall digital transformation mission.

How has e& enterprise's journey been in 2023, and how have you contributed to the digital services landscape in the region?

e& enterprise has had a strong year in 2023, with significant progress in contributing to the digital transformation landscape by helping businesses adopt new digital technologies and supporting them to drive their transformation journey, technology disruption and enhanced security for businesses across the UAE and region. Through our expanding footprint, we have delivered growth, formed partnerships and created value for the group and all its stakeholders. Our innovative value propositions have enabled more sustainable developments, safer cities, better government services, connected healthcare, enriched education, the future of banking, highly automated industries, manufacturing and logistics.

We continued on our ambitious path of innovation and mission of becoming a market leader, remaining aligned with e&'s overall digital transformation from telco to a techco. The focus was on supporting large-scale enterprises in optimizing operational efficiencies, increasing customer engagement and empowering data-driven decision-making by enabling seamless, sustainable and secure transitions into the ever-evolving digital era while driving scale, revenue growth and operational excellence.

Our innovative digital solutions brought business value and addressed the specific challenges of organizations across industries seeking to maximize their digital capabilities. With our ability to deploy and operate complex solutions and the most resilient and flexible infrastructure in the region, we supported organizations to co-create and successfully navigate their end-to-end digital transformation journey and turn their vision into reality.

With sustainability a key focus area for businesses today, how do you think the businesses have evolved, and how

are you supporting them to future-proof their business models?
Businesses today cannot afford the cost of not being sustainable. Taking proactive steps to make sustainability a central aspect of their strategic choices is imperative for future-proofing their business models. Embracing sustainability not only ensures compliance but also creates positive environmental and socio-economic impact, meeting the customer expectations of a responsible and forward-thinking business.

To tackle these sustainability challenges and realize the competitive advantage and impact that it brings, businesses must work within the right ecosystem of partners to drive value and integrate sustainability into their overall propositions. Today, no business can solve sustainability challenges on its own; collaborations and partnerships are the way forward. This is our mantra for the journey ahead with our customers and partners. As a global community, we need to embrace digital technology to create solutions that build symbiotic relationships between businesses, helping to remove roadblocks and speed up our sustainability efforts. Our core mission is to be a partner of choice for government and large companies that aim at working together towards a sustainable future, leveraging technology and innovative solutions.

Specifically catering to enterprise-level sustainability challenges, e& enterprise has embraced this transformation chapter, taking a crucial role in supporting companies in shaping a sustainable future through the use of technology. Innovation, transformation, and sustainability are more interconnected than ever, and e& enterprise is acting swiftly to address the need for sustainable transformation.

Sustainability isn't an end state but a factor that will have to be embedded in the strategy of every company. To support companies more effectively in their transformation journey, we are intensifying our commitment to putting technology at the service of sustainability, working closely with partners like Microsoft and others, deepening our understanding of business requirements and designing solutions to help organizations deliver on their sustainability agenda.

One example of this is our collaboration with the Dubai Multi Commodities Centre (DMCC) for its Smart District. As part of DMCC's Smart & Sustainable Strategy, DMCC and e& enterprise partnered to transform Jumeirah Lake Towers into a Smart District by implementing various smart city technologies focused on addressing the challenges related to fulfilling sustainability objectives. The solutions deployed integrated smart buildings, street lighting, waste management, parking, and environmental monitoring, resulting in reduced field operations, lower energy consumption while improving service utilization, and transforming JLT into the region's first smart and sustainable district.

Moving forward, what are your priorities, and what can we look forward to in the company's future?
The future of e& enterprise is truly promising, filled with innovation, expansion, and a commitment to digital excellence. Our journey forward is characterized by several key elements that define our vision.

We are looking at expansion and a broader global reach. While we've established a strong presence in the UAE, KSA and Egypt, our ambition is to take our digital expertise to a global audience. This expansion will enable us to work with diverse industries, addressing unique challenges on a larger scale.

Staying at the forefront of technology is fundamental to our future endeavors. We're deeply invested in emerging technologies like Artificial Intelligence, the Internet of Things (IoT), Cloud and Cybersecurity. Research and development will play a pivotal role as we strive to push the boundaries of what's possible in the digital landscape.

Sustainability is a core element of our vision. We're committed to creating and implementing digital solutions that positively impact the environment. This sustainability drive will extend across various sectors, including healthcare, smart cities, and more.

The healthcare sector holds immense potential for digital transformation. We're focused on expanding our healthcare offerings, leveraging IoT and AI to enhance patient care, streamline operations, and improve the overall healthcare experience.

Artificial Intelligence, particularly ChatGPT, is revolutionizing customer support and interactions. We'll continue to innovate in this domain, offering advanced solutions such as Converse-AI. These innovations aim to elevate customer experiences while driving operational efficiency.

Industry 4.0 is another area where we're deeply involved. Our partnership with Maxbyte in Industry 4.0 solutions exemplifies our commitment to reshaping manufacturing and digitalization. We aim to be at the forefront of this transformative wave, collaborating with industries to implement smart and efficient processes.

As AI becomes more integrated into our daily lives, ethical considerations become increasingly important. We'll continue to advocate for the responsible use of AI, addressing issues like bias and privacy, to ensure that AI benefits society.

Education and training are crucial components of our strategy. To realize our vision, we need a skilled workforce. Therefore, we're planning to invest in the next generation and training programs to nurture talent in fields like AI, IoT, and other digital technologies.

Lastly, collaboration is key to innovation. We're actively seeking partnerships with research institutions and universities to expand the boundaries of what's possible in the digital landscape.

Our future is marked by expansion, technological innovation, sustainability, healthcare transformation, AI-driven solutions, Industry 4.0 leadership, ethical AI, education, and research collaboration. We're thrilled to embark on this journey and contribute to a smarter, safer, and more sustainable world through digital excellence. TR

Osama Said, business development leader for mobile networks, Nokia MEA

Nokia: Boosting Network Efficiency and Capabilities Through the Latest Technologies

In an exclusive interview with Telecom Review, Osama Said, business development leader for mobile networks at Nokia MEA, expounds on his company's neutral hosting practices and how they simplify network management and implementation to streamline complex operations.

How does Nokia contribute to achieving a host-neutral approach in its operations?

Telecommunication networks are evolving rapidly on all fronts. Catering for traffic demand drives continuous expansions; hosting new use cases requires further network adaptations; boosting network efficiency and capabilities requires continuous hosting of newer technologies; cloudification; virtualization; and improving energy efficiency and sustainability. All this produces overstretched network infrastructure for service providers. These overstretched networks are impacting every service provider in the same country with different adaptation speeds and priorities. Neutral hosting practices provide superior solutions to many domains that have less competitive sensitivity and can reduce capital investment, reduce network complexity, and simplify network management.

In a neutral host model, infrastructure companies lease their infrastructure assets to multiple tenants, recouping their network build costs by hosting various CSPs on the same foundation. Nokia, as a telecommunications provider, plays a key role in enabling the markets for neutral-host operations. Nokia's strategy is to enable simplicity in network management and implementation. Nokia has adopted a strategic focus on neutral host domains to understand market trends, private and public investment movements, and the different stakeholders that are required to facilitate more neutral hosting practices in the different markets.

Nokia has implemented a wide spectrum of multi-tenant capabilities across its entire product and solution portfolio, enabling the right foundation and removing the technology barriers.

Nokia solutions are designed to enable additional tenant hosting through software updates, only allowing very efficient and seamless operations and rollout without the need to visit every

individual location. This results in great savings on costs and a faster time to market.

What specific initiatives or technologies has Nokia implemented to support host-neutral practices?
One of the Nokia initiatives in that domain is Nokia Rural Connect. The Nokia Rural Connect solution offering includes a full suite of rural radio site solutions, including Towers, Power, Transport, Antennas and all active elements. These solutions can be adapted to customer needs and multiple rural solution scenarios.

Nokia's lean site solution provides a unique value proposition when it comes to space requirements, superior energy efficiency, modularity, and readiness for multi-tenant hosting.

Nokia's technology of Baseband and Radio modules allows the start of low technologies and configuration and seamlessly paves the way toward site upgrades and the introduction of new technologies. Neutral host solutions can start from as low as 2G-only sites and be upgraded to cater for increasing traffic or for new tenant introductions. Upgrades to higher configuration levels can be done, introducing new sectors or new technology such as 3G/LTE and 5G.

Nokia's Virtualized Airscale Controller and Management System offers low cost and multi-front scalability to cater for capacity demands and provide the capability to adopt multi-tenant neutral hosting deployments.

Can you provide examples of how Nokia's host-neutral approach has positively impacted the environment and local communities?
As part of Nokia's social responsibilities in the markets in which we operate, we work with our partners to connect the unconnected, reduce the digital dividend and provide voice and data for local communities. Telephony services will provide these communities access to the whole country's ecosystem of services, such as financial, logistics, medical, etc., and will enable government initiatives to extend their reach in the country.

As part of our environmental sustainability approach, we provide zero-carbon footprint solutions through our energy-efficient solutions that can be solely supplied by environmentally friendly off-grid power solutions. These practices also have a direct impact on improving employment rates, as it is Nokia's vision to depend solely on local talent to operate and maintain these deployments.

Are there any specific challenges or obstacles that companies like Nokia face when implementing host-neutral practices?
Neutral host practices are operations that involve multiple stakeholders. It starts with understanding the regulatory requirements of that specific implementation and preparing the required licenses and practices to allow a neutral host/multi-tenant environment. We see a very positive movement in many countries in the Middle East and Africa and will continue to facilitate such solutions in more countries.

Service providers, potential neutral host companies (InfraCo, for example), and telecommunications providers must work hand-in-hand to qualify and develop scenarios and areas of collaboration.

Qualifying one of the neutral host use cases requires a deep understanding of the business environment, adopting a suitable go-to-market approach that serves the Tricon interests (service providers, InfraCos and telecommunication providers) and, moreover, provides practical value to businesses, communities and ESG domains.

Adopting a neutral host approach for service providers translates into a strategic shift from capital expenditure and asset ownership to operational expenditure, recurring subscription models and a more neutralized and competitive landscape. Moreover, moving these nominated business domains to Neutral Host providers will require a transition phase and the buildup of competence.

These are the main challenges and topics that require continuous collaboration to facilitate neutral hosting implementations with a wider presence.

How does Nokia collaborate with other stakeholders to promote host-neutral practices and drive sustainability in the telecommunications industry?
Service providers are under pressure to find new business models to help them free up capital to invest in core business areas, meet different regulatory obligations on committing minimum levels of service across the country, and ease financial pressure on overstretched telecommunication infrastructure while helping them provide shareholder value.

Nokia has a strategic focus on understanding the reshaping of investment in the telecom markets and taking a leading position in identifying the various opportunities that arise from investment in telecom infrastructure.

InfraCo (a real estate company that owns the passive infrastructure) has started to realize different opportunities to diversify its investment and play a vital role in digitalization. The primary growth element was to increase multi-tenancy on the passive infrastructure as physical assets.

The second growth strategy for platform expansion was to enter into active domains, positioning themselves as a neutral host in domains where there is a higher and faster ROI. Rural opportunities, early adaptation of niche technologies and maturing old technologies that are not competitive and sensitive represent good areas for Neutral Hosts in general.

Nokia is playing an important role in shaping these different use cases, go-to-market strategies and creating business models that elaborate the value to infraCO, service providers and regulators. Through these use cases, along with its strong business sense for all parties, it also brings a great contribution toward social responsibility and ESG domains, which are core values for Nokia. TR

Omar Beydoun, Country General Manager - UAE, Atos

Atos' Sustainability Pledge: Integral to UAE's Telecom Industry

In an exclusive interview with Telecom Review, Omar Beydoun, Country General Manager - UAE, at Atos, shared his insightful views about the telecom and technology sector in the UAE, as well as the company's sustainable IT practices, digital transformation initiatives and successful collaborations.

"As a global leader in digital services, Atos is committed to nurturing technology's future while safeguarding the planet's future. Hence, we follow a holistic approach to sustainable IT services," explained Beydoun.

In the vibrant landscape of the UAE, ensuring the sustainable growth of the Digital and Information Technology sector is important. It necessitates a multi-faceted approach: innovation, environmental stewardship, and a profound commitment to societal welfare.

Innovating Responsibly: Atos UAE's Sustainable IT Journey

The revolution of integrating sustainable IT services is now reshaping the way businesses become socially responsible and intensifying the act of preserving the environment.

Atos UAE underscores its commitment to sustainability in operations by directing investments toward renewable energy sources and the enhancement of its Digital Transformation programs' execution. Their pledge includes a goal to derive the vast majority of their worldwide energy consumption from renewable sources.

The company is deeply involved in carbon offset initiatives, guaranteeing not only a reduction in net carbon emissions but their complete neutralization. Additionally, they incorporate circular economy principles into their business model to extend the life of IT equipment, reduce electronic waste and advocate responsible recycling.

Beydoun noted, "By harnessing advanced technology and innovative approaches, Atos is not only decreasing its carbon footprint but also empowering businesses to follow suit."

Regarding the procurement of products and services, Atos maintains strong collaboration with suppliers who are aligned with their dedication to sustainability and ethical business standards. They go a step further by encouraging employees to embrace sustainable behaviors both in the workplace and in their personal lives. Fostering education and raising awareness about sustainability also stands as a core focus within Atos' initiatives.

Green Transformation: UAE Embraces Sustainability

Substantial shifts in the UAE's corporate landscape are anticipated over the next decade, fueled by factors including technological progress, economic diversification and an increasing focus on sustainability.

With the ongoing adoption of green technology, Beydoun underscores the likelihood of businesses directing investments towards energy-efficient systems, renewable energy sources and eco-conscious practices as a means to curtail their carbon footprint. Concurrently, the drive for regulatory compliance will usher in a transition toward sustainable business models and environmentally friendly processes. Governments' increased attention to sustainability is also poised to introduce more stringent regulations and heightened compliance standards.

There has also been a greater emphasis on CSR endeavors linked to sustainability within businesses. Moreover, prioritizing collaboration with technology partners and suppliers who share a commitment to environmental consciousness will be a key objective.

Having said that, Atos envisions a surge in upcoming green infrastructure projects, encompassing sustainable construction, eco-sensitive transportation systems and the development of smart cities.

"These endeavors will not only diminish our ecological footprint but also pave the way for fresh business prospects across industries," added Beydoun.

Atos: Powering the Digital Shift in the UAE's Telecom Industry

The Middle East is a strategic region for the Atos Group to support the countries in redefining new ways of doing business through digitalization and innovation. As a trusted digital partner, the Atos team in the Middle East contributes to the success of its telecom partners.

Citing notable partnerships, Beydoun highlighted, "Atos, as a global frontrunner in digital transformation, has played a pivotal role in empowering the regional telecom operators with groundbreaking solutions."

Atos is harnessing 5G and IoT technologies to support telecom operators in enhancing their network performance and explore new revenue streams. With emphasis on data governance and making leverage of API economies, Atos is helping its customers perform at their best and inspire constant improvement.

AI constitutes yet another domain that Atos is leveraging for the telecom sector. As we know, telecom networks generate massive amounts of data regularly. Through the utilization of machine learning algorithms, Atos is aiding operators in analyzing this data and detecting patterns to forecast prospective network outages and improve efficiency and coverage. As a testament to their achievements, Atos works in close collaboration with its clients on executing comprehensive digital transformation strategies, to boost customer experience and improve sustainable journeys.

Themodernization of outdated systems alongside the enhancement of operational efficiencies across the entire organization is part of Atos' pledge to develop sustainable strategies for deploying emerging technologies.

In a broader context, Atos' ground-breaking solutions are spearheading a sustainable digital evolution that encompasses all sectors of UAE society, driven by the emergence of a wide array of new technologies. Beydoun concluded with optimism, stating, "This expertise has been pivotal in transforming telecommunications services, leading to improved customer experiences, cost efficiencies and enhanced network performance. At the current trajectory, we can anticipate a host of promising developments on the horizon."

As UAE prepares to host COP28 later in this month, Atos is also gearing up to hold its own Sustainability Conference in Dubai on 6th December. TR

> As a global leader in digital services, Atos is committed to nurturing technology's future while safeguarding the planet's future

Fahad Al Hassawi, CEO, du and Liu Jiawei, CEO, Huawei UAE at the MoU signing event.

du and Huawei to Develop New Cloud Services for SMEs and Start-Ups

du, from Emirates Integrated Telecommunications Company (EITC), has partnered with Huawei, a leading global provider of information and communications technology (ICT) infrastructure and smart devices, to jointly develop innovative cloud services catering to the evolving needs of the UAE market. The agreement was signed at GITEX GLOBAL 2023 in the UAE, aiming to identify the right segment and joint go-to-market (GTM) strategy for innovating cloud services for SMEs, start-ups, gaming, fintech, media & entertainment, automotive, Web3.0, etc. with tailor-made comprehensive offerings.

Under the agreement, du and Huawei will partner to set up localized cloud infrastructure in the UAE, which is one of the key highlights and benefits the partnership offers to enterprises, as well as cutting-edge technologies and cost efficiency.

With all the infrastructure being set up locally, enterprises in the UAE can host all their applications locally, thus ensuring low latency, high bandwidth connections and compliance with all local data sovereignty regulations. The service will also provide access to cutting-edge solutions such as big data, Artificial Intelligence (AI) and IoT to businesses in the UAE. Finally, UAE enterprises, especially SMEs, start-ups, gaming, fintech, media & entertainment, automotive and Web 3.0, can benefit from scalable cloud solutions to reduce capital expenditure and lower their barriers to entry for innovative business.

Fahad Al Hassawi, CEO of du, stated, "As we recognize the critical role of small and medium enterprises (SMEs) in fueling the UAE's economy and the immense potential of start-ups in shaping the future, our collaboration with Huawei as a trusted technology partner represents a transformative step. By forging this alliance, we aim to empower the technology sector through unparalleled access to cutting-edge solutions that will foster a culture of innovation and unlock new opportunities. Our goals align with the UAE's national agenda, highlighting our shared commitment to nurturing a knowledge-based economy, fostering entrepreneurship and driving technological advancements to propel the nation towards a sustainable future."

Speaking at the occasion, Liu Jiawei, CEO of Huawei UAE, said: "By leveraging the power of advanced technologies such as AI, cloud and big data, enterprises can better understand their customers' needs and innovate with greater agility to craft a more personalized experience. We believe that collaboration across industries will drive innovation at scale. With this MoU, we have strengthened our partnership with du and further fueled the digitization journey. Huawei and du are fully aligned to support the UAE government's vision of fostering innovation and entrepreneurship. This new cloud service will be a game changer, providing local SMEs and start-ups with the tools they need to thrive in a highly competitive global market."

du and Huawei have successfully collaborated on multiple projects, including cutting-edge mobile services, Fintech and other ICT solutions that have accelerated digital transformation in the UAE. The two companies now aim to leverage their expertise and resources to deliver cloud services in the UAE.

Huawei has been operating in the UAE for over 22 years, supporting the country's digitalization goals in line with the UAE Centennial Plan 2071. Huawei Cloud continues to work to provide Everything-as-a-Service, including Infrastructure-as-a-Service, Technology-as-a-Service and Expertise-as-a-Service, aiming to help customers unleash the power of digital faster. Huawei Cloud was recognized in Gartner's 2022 Magic Quadrant for Cloud Infrastructure & Platform Services (CIPS). The number of Huawei Cloud developers now exceeds 4 million globally. TR

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Fatima Sultan Al-Kuwari, Group Chief Human Resources Officer, Ooredoo Group

Ooredoo Group's Fatima Sultan Al-Kuwari Details Her Path of Determination and Resilience

In this unprecedented era, women have the opportunity to be proactive, not only staying updated with emerging technologies and industry trends but also influencing them as well.

Having two decades of experience in the telecom industry, what can you observe as the most dominant changes?

Over the past two decades, the telecom industry has witnessed profound transformations driven by huge technological advancements.

One of the most notable and positive changes has been the increasing presence of women in telecom and technology fields, reflecting broader efforts to promote STEM (Science, Technology, Engineering and Mathematics) education.

I see this shift as a significant and encouraging one, as it diversifies the industry's talent pool, bringing fresh perspectives and ideas to the table.

However, while undeniably encouraging progress has been made, gender diversity in our industry is still an area that requires continuous effort and support. But I'm not worried; the future looks promising.

Another significant change is the unprecedented speed at which innovations and developments occur.

In the last five years alone, we've seen more innovation than in the previous two decades. This accelerated pace can be attributed to various factors, including rapid advancements in computing power, the increased production and spread of smart mobile devices, and the expansion of the internet.

I believe that the COVID-19 pandemic has also acted as a catalyst for digital transformation, forcing businesses and individuals to adapt quickly to remote work and digital communication tools. These changes have created fertile ground for innovation, resulting in breakthrough technologies, services, and applications.

For example, the adoption of 5G has opened up opportunities for real-time communication and the Internet of Things (IoT). Cloud computing has revolutionized how businesses store and access data, enabling greater flexibility and scalability. Artificial Intelligence (AI) and Machine Learning (ML) have empowered telecom companies to analyze vast amounts of data, provide more personalized services, and address network or service issues before they impact customers.

For instance, Ooredoo Qatar has successfully implemented a Mobile Network Fault Management system known as AGILITY, powered by Artificial Intelligence and Machine Learning (AI/ML) technologies. AGILITY employs advanced analytics and automation to monitor Ooredoo's mobile network operations in real-time, rapidly detecting issues and potential problems before they impact the customer. This has enabled faster incident response times, improved troubleshooting, and more effective problem-solving.

All these advancements are very exciting, but they have also introduced challenges. The increased connectivity and reliance on digital infrastructure have raised concerns about cybersecurity and data privacy. The rapid pace of innovation has led to skills gaps, requiring continuous upskilling and reskilling of the workforce. Another ongoing challenge is ensuring that technology benefits all segments of society and does not exacerbate existing inequalities.

This rapid pace of change requires us to be agile and continuously adapt to emerging technologies and trends.

At Ooredoo, we have adopted a forward-thinking strategy. We prioritize staying at the forefront of technological changes, ensuring that our employees are equipped with the skills needed for the digital era. We focus on customer-centric solutions that harness the latest innovations to enhance connectivity and offer new services. We are also committed to addressing the digital divide across the markets we serve, working to extend the benefits of technology to underserved communities, and promoting its responsible and ethical use.

We now operate in a world of "smart telecom", where technology intertwines with every aspect of our lives. As experts in this industry, we must continue expanding our horizons beyond traditional telecommunications.

What key takeaways have you learned within the telecom industry, and how did this influence your growth as a woman and a professional?
One of the key lessons I've learned in the telecom industry is the critical role our services play in advancing societies.

Whether it's voice, data or emerging technologies, telecom services have proven to be enablers of progress for people, businesses, and nations.

Understanding this impact has not only shaped my professional growth but has also deepened my sense of responsibility to contribute to the advancement of my beloved country, Qatar; my organization, Ooredoo; and the many communities we serve across our footprint.

From your perspective, is there enough progress in bridging the digital skills gap? What more can be done to enhance talent development in the sector?
Some progress has indeed been made in addressing the digital skills gap, but the pace of technological advancement requires us to intensify our efforts continually.

In today's rapidly evolving digital landscape, staying ahead demands a commitment to continuous learning and upskilling. As technology becomes increasingly integrated into every aspect of our lives, digital literacy is no longer an option but a necessity.

To enhance talent development in the sector, a few key strategies can be implemented, such as encouraging young people to pursue STEM education from an early age, which can spark interest and passion for these fields and lay a strong foundation for future careers in technology-related sectors.

I believe educational and government institutions and industry players should all collaborate closely to provide accessible and quality STEM education programs that align with industry needs. Such types of public-private partnerships can help bridge the skills gap by equipping students with the knowledge and expertise required in the digital age.

Developing a culture of continuous learning within organizations is equally essential.

Companies can take the initiative to provide training programs, coaching and mentoring, and upskilling opportunities to keep their workforce competitive.

At Ooredoo, we have recently launched the Ooredoo Learning Academy, which is set to become the Group's learning arm, bridging existing skills gaps and meeting future business-critical needs.

The Academy provides easily scalable training programs across the Group and operating companies and will ultimately act as the core enabler in achieving the company's strategic goals — championing the distinctive Ooredoo way of working and supporting a culture of continuous learning and performance excellence.

Finally, I want to stress the importance of diversifying our teams.

Diversity and inclusion are vital components of talent development. Beyond being a moral imperative, diversity has become a strategic advantage. Diverse teams bring together a wide range of perspectives and ideas, fostering innovation and adaptability. Encouraging diversity in the workplace should be a priority for organizations seeking to thrive in the digital era.

The Middle East is transforming extensively in the digital landscape, particularly with the support of ICT. How can women maximize this opportunity and emerge as a significant part of innovation?
Women in the Middle East have a unique opportunity to be at the forefront of and play a pivotal role in the region's digital transformation.

As you mentioned, the Middle East is experiencing extensive growth in the digital landscape. This growth opens up many opportunities for women to contribute to and benefit from the ongoing digital revolution.

Whether by embracing technology, building networks, aspiring to leadership roles, fostering innovation, or advocating for gender diversity, women can play an integral part in shaping the future of the Middle East's digital landscape.

To maximize this opportunity, I believe that we, as women in ICT, must be proactive in staying updated with emerging technologies and industry trends.

Building a strong professional network within the technology industry is key. Seek out mentors who can provide guidance and support, and connect with like-minded women in the tech sector. Networking can indeed lead to valuable opportunities and collaborations.

Women shouldn't hesitate to innovate and aspire to leadership roles.

They can challenge the status quo, propose fresh ideas and creative solutions, and bring a valuable perspective to leadership positions. Their presence in decision-making can definitely shape the digital landscape in a more inclusive and diverse manner, creating a more equitable technology industry.

Please share a motivational message to women all over the world on how they can conquer their lives and careers in the modern era.
Believe in yourself and your abilities. Continuously invest in your personal and professional growth. Develop a clear plan with actionable steps, and regularly review your progress. Seek out a trusted mentor, preferably a woman in your field, who can provide guidance and support.

Remember that success is a journey, not a destination, so keep moving forward with determination and resilience. Your potential is limitless, and you have the power to shape your life and career in a way that can leave a positive impact. TR

Imad Kreidieh, CEO and Chairman, Ogero

Always at the Forefront: How Ogero Turns Its Vision into Reality

In this exclusive interview with Telecom Review, Imad Kreidieh, CEO and chairman of Ogero, discusses the challenges confronting the telecom sector, the repercussions of currency devaluation and the role of 5G technology in Lebanon's telecommunications landscape, among other insightful topics.

What challenges has Ogero faced in terms of providing reliable internet and phone services, and how are you managing to address the difficult situation that the sector is going through?

The most significant challenge we are currently grappling with is related to power supply. In fact, ever since EDL stopped providing round-the-clock service, we have experienced numerous interruptions due to a shortage of fuel. As a result, we have been forced to rely on our own resources and funding to power our exchanges and continue delivering services to the Lebanese citizens. This power supply issue has been our primary challenge. It's important to note that our core network and technology have been functioning quite well; the interruptions have primarily occurred at points where exchanges had to be shut down due to power problems.

Lebanon has experienced a significant devaluation of its currency. How has this currency devaluation impacted the telecom sector, and what strategies have been employed to mitigate its effects?

This issue doesn't only affect Ogero but also extends to most of the public sector. While other public sector entities like EDL and other public services have managed to price their services in dollars and receive payments in US dollars, unfortunately, our bills are still denominated in Lebanese pounds. We are still using an exchange rate of LL. 26,000 to the US dollar, which is insufficient to cover Ogero's operating costs. This situation is unsustainable, especially given the expected continued volatility of foreign currency in the market, which will likely lead to further devaluation of the Lebanese pound.

In the near future, we anticipate returning to square one in terms of the currency devaluation crisis. Regrettably, it seems that we have no choice but to consider billing in

US dollars or, at the very least, in Lebanese pounds tied to the exchange rate platform that BDL is planning to implement.

Do you have any long-term sustainability plans in place to ensure that Ogero continues to provide stable services?

Under the circumstances, the whole country lost its capacity for proper planning. In effect, the political & financial crisis disrupted the completion of the 2017 technology road map. FTTH project came to an abrupt stop, the optical transmission network (OTN) is half done along many more critical projects. Sectorial improvements faded away, Ogero entered survival mode. Nevertheless, we have elaborated a plan to ease the pressure during 2024 by regaining control over the power issue & consequently optimizing the management of our cashflow. Ogero shall bank on the government emergency funding, the allocated quota of the Iraqi oil donation & the Chinese donation of solar energy equipment.

Could you provide more details about the Chinese donation for the solar energy project and how Ogero plans to transition to renewable energy?

In 2017, I proposed transitioning Ogero to green energy, but it wasn't a priority back then. I wish the Ministry of Telecommunications had embraced the idea earlier to avoid our current situation. Ogero lacks the funds for this project, so we sought help from CDR, securing a Chinese government donation to power 358 sites with solar energy, mainly in rural areas. The donation's progress is promising, with the tendering process in China. However, we anticipate equipment arrival and deployment by summer 2024.

Switching to alternative energy sources at Ogero offers several advantages, notably significant cost reduction, including a $10 million yearly cut in fuel expenses, as we generate 23 megawatts of power daily. Solar panels and solar energy will lower our carbon footprint, reduce operating costs, ensure service sustainability, maintain connectivity and enhance profitability by easing cash flow constraints.

In your opinion, how significant is the telecom sector for Lebanon, and what are the future plans for building a resilient sector that takes into consideration other sectors?

Lebanon has a rich history in pioneering telecommunications in the Middle East. It's essential to remember that we were the first country in the region to launch GSM operations, and we have not only been pioneers in the field but have also contributed by providing human capital and expertise that has aided the development of the telecommunications sector in other countries in the Middle East. Lebanon remains a vital source of know-how and expertise in the telecommunications sector, and this is one of our key strengths.

Looking forward, I have no doubt the telecom sector will recover, if decision-makers within the Ministry of Telecommunications are more engaged in medium to long term strategic planning. Provided the Council of Ministers urgently enforces the implementation of Telecommunication law 431. Lebanon has all the ingredients not only to recover but to excel, all we need is a vision with a plan.

What is the future of digital transformation and 5G technology in Lebanon?

In Lebanon, several attempts have been initiated to launch a digital transformation of the public services. OMSAR, with the help of the European Union and the world bank came up with a strategy and a roadmap. Unfortunately, the October 2019 unrest, the political crisis & the financial collapse halted the launch of this strategy. The real reason behind failing to adopt the strategy, remains the undoubted lack of commitment of the various governments to the project.

This lack of commitment is clearly demonstrated through the reluctance of the different ministries to cooperate with OMSAR regarding the rollout of the initiative & their deep desire to maintain a so-called autonomy in managing the technology side as well as the safeguarding of their data. What is required today from the Lebanese government, is a clear mandate to an empowered ministry &/or a governmental body to lead the implementation of the strategy.

It is worth noting Ogero Telecom has been proactive in building several data centers as well as a public cloud, offering data hosting and high-speed connectivity to market players. It is a matter of fact that the CERN supercomputer is hosted by Ogero as well as the "IMPACT" platform. What I am saying here is we do have a robust infrastructure to enable the digital transformation in the country, it only takes the will and the planning to move forward.

Ogero, with its hosting capabilities, is becoming a central hub for digital transformation in Lebanon. However, for effective transformation, clear responsibilities need to be defined, and it should be initiated by the government, requiring cooperation among ministries to centralize and launch a concerted effort towards digital transformation.

Regarding 5G deployment, I do believe the absence of concrete use cases (smart cities, automated industries etc.…) does not justify a commercial and economically viable deployment of 5G technology. If I was at the helm of the wireless operators, I would increase the penetration of the LTE-a technology, reduce the operating cost of the 3G networks & increase digital offerings for now.

At Ogero, we have consistently played the role of disruptors, refusing to accept 'no' for an answer. We have always strived to push forward and be resilient. Since 2019, we have championed a 'can-do' attitude in Lebanon, and this determination has been crucial in keeping the sector afloat. We are eager to continue making progress and enhancing Lebanon's infrastructure, and we hope to have the support of decision-makers to achieve even more in the future. TR

Lead Digital Transformation Innovation, Unleash Infinite Possibilities

Today, we are all living in a digital era where the competition between telecom operators is becoming fiercer by the minute. They are under a lot of pressure to optimize their services and products to provide the best offer to their customers, while improving their revenue at the same time. Digital transformation has thus become a necessity for the telco carriers, in order to cope with the rapid technological evolution.

As traditional business models become outdated, operators need to rethink their operating models to have more intelligent operations that can enable them to provide more agile services to users with the best quality and unlimited experience.

According to the TM Forum's newest digital transformation tracker survey, CSPs' progress with digital transformation has accelerated substantially in the past year. Much of this was driven by a desire to increase operational efficiency. But CSPs' next goal must be to transform their business outcomes – for

example, retain more customers, deliver superior experience to them – and offer the level of business flexibility and agility they now require, in order to remain aligned with rapidly changing markets and emerging opportunities.

At Huawei OTF-2021 Event in Barcelona, we promised to establish our Digital Operation Transformation Center in the Middle East, and to provide the required digital platforms, expertise and share the latest best practices, to help carriers achieve their strategic digital transformation program and reach sustainable business growth.

Since then, Huawei has been able to collaborate with more than 20 carriers to implement their digital transformation vision and objectives. However, there is still a long way ahead for operators aiming for innovation. A collaborative approach is crucial at this point in a way that all key telecom players participate and share their innovative thoughts, experiences and learned lessons.

We want to give more chances to all stakeholders to jointly innovate and share their latest digital use cases. "Pooling Intelligence, Innovating Together, and Exploring the Road to Digital Transformation", is the objective of our digital transformation innovation contest (DTIC), which is taking place for the first time in our Middle East and Central Asia region.

In line with our commitment to fostering progress and innovation, we have thoughtfully designed three digital transformation tracks that cater to the unique requirements of carriers: intelligent operations, ultimate experience, and agile business. Through these distinct tracks, participants can gain invaluable insights into the latest industry practices, unearth hidden talents, explore the vast potential of digital transformation, and bolster their capabilities across all aspects of the transformation journey.

Huawei believes that this is only the beginning. Many other excellent useful cases are yet to be revealed, and many excellent practices are yet to be shared, but this contest is certainly driving our operators to explore, share, and cooperate more with each other on the way to digital transformation.

During DTIC this year, Huawei invited award-winning teams, industry analysts, and experts from the digital transformation field to share expertise and insights.

Carrier representatives shared Huawei's digital transformation practices and experience and said, "Digital transformation is not a one-time effort, it's like a continual improvement. We need to keep exploring what and how we can improve and digitize."

Representatives of the digital transformation team shared cases of achieving business success in digital transformation by focusing on customer experience and intelligent operations based on their own digital transformation strategies.

During Huawei DTIC, more than 80 applications have been submitted by different telco carriers in ME&CA regions, while the top 20 have qualified for the final stage and where divided into three groups: Intelligent operation (6 Cases), unlimited experience (8 Cases) and agile business (6 Cases).

All of these submitted cases show how beneficial digital transformation is. Some achieved significant improvement in their operational efficiency of up to 40%, improved customer care response from days to hours and reduced customer complaints number by 30%, while other cases provided superior experience specially for VoLTE service quality assurance and VoLTE user number growth that increased fivefold in 4 months only compared to pre -digital transformation phase. Moreover, they achieved strategic business goals for improving marketing conversion ratio and ROI for new sites installed in the network for coverage or expansion purposes.

In summary, Huawei DTIC provide fruitful UCs from different operators in ME&CA region who were able to show tangible benefits and results obtained from digital transformation practices rather than only theoretical ones. Huawei will keep collaborating with customers in ME&CA region and globally as a key partner to develop more our tools, approaches and capabilities in digital transformation in order to enable carries to manage their digital transformation challenges and pave their way for the digital era with multiple digital services opportunities that lead to business growth and a more intelligent, connected and digital future. TR

Huawei has been able to collaborate with more than 20 carriers to implement their digital transformation vision and objectives

Diffusion Models: Empowering ML and AI for Seamless Data Synthesis

Diffusion models, inspired by the natural phenomenon of particle dispersion, have emerged as a transformative force in artificial intelligence (AI). These models utilize the concept of diffusion to generate new data samples that closely resemble existing data. Diffusion models produce diverse outputs by applying a noise schedule repeatedly to an initial condition. This captures the underlying distribution of the training data.

The power of diffusion models extends across various domains of AI, revolutionizing processes and applications. In image generation, diffusion models produce high-quality images that can be virtually indistinguishable from real-world examples. In text generation, they create coherent and contextually relevant text, serving in applications such as chatbots and language translation.

Moreover, diffusion models offer several advantages that make them a preferred choice in AI applications. They are relatively easy to train and demand fewer computational resources compared to other deep learning models. Their flexibility allows easy adaptation to diverse problem domains through modifications to the architecture or loss functions. As a result, diffusion models have gained popularity across a variety of fields, like computer vision, natural language processing and audio synthesis.

Understanding Diffusion Models

As their name suggests, diffusion models draw inspiration from the physical concept of diffusion. In physics and chemistry, diffusion is the process by which particles spread from areas of high concentration to those of lower concentration over time. In the realm of AI, diffusion models utilize this concept to simulate and generate data, such as images and text.

These models simulate the gradual spread of information or features across data points, effectively blending and transforming them to create new, coherent samples. This inspiration from diffusion enables diffusion models to generate high-quality data samples, finding applications in image generation, text generation and beyond.

There are four primary types of diffusion models:

1. Generative Adversarial Networks (GANs): GANs comprise a generator network and a discriminator network. The generator produces data samples, while the discriminator evaluates their realism. Both networks are trained simultaneously to improve the generator's output quality.

2. Variational Autoencoders (VAEs): VAEs use a probabilistic approach to learn a compressed representation of input data. They consist of an encoder network that maps data to a latent space and a decoder network that reconstructs data from the latent space.

3. Normalizing Flows: These models transform input data into a simple probability distribution through invertible transformations. The transformed data is then sampled to generate new data samples.

4. Autoregressive Models: Autoregressive models generate new data by predicting the next value in a sequence based on previous values. They are commonly used for time-series data.

How Diffusion Models Operate

Diffusion models operate by progressively refining a random noise vector to match the distribution of training data. A sequence of layers applies nonlinear transformations to the input noise vector, with each layer possessing learnable parameters that dictate the transformation. Nonlinear activation functions, such as sigmoid or tanh, introduce non-linearity to the model.

Training involves defining a loss function that measures the difference between the generated samples and the target data distribution. Common loss functions include mean squared error (MSE) and binary cross-entropy. Optimization algorithms like stochastic gradient descent (SGD) or Adam adjust model parameters to minimize the loss.

During training, the model generates samples by iteratively applying the diffusion process to a random noise vector. The loss function calculates the difference between the generated sample and the target data distribution.

Advantages of Diffusion Models in ML

Here are some of diffusion's benefits:

1. Diverse and Coherent Samples: Diffusion models excel at generating diverse and coherent data samples. Unlike other generative models, they do not suffer from mode collapse, where the generator produces limited variations of the same output.

2. Complex Distribution Modeling: Diffusion models can be trained on complex distributions, including multimodal or non-Gaussian distributions, which are challenging for traditional machine learning techniques.

3. Applications Across Domains: Diffusion models find applications in computer vision, natural language processing and audio synthesis. They generate realistic images, coherent text and lifelike sounds.

Recent Advancements in Diffusion Models

Recent years have witnessed significant advancements in diffusion models. Denoising Diffusion Models (DDM) have gained attention for their ability to generate high-quality images with fewer parameters than other models. Diffusion-based Generative Adversarial Networks (DGAN) combine the strengths of diffusion models and GANs, resulting in diverse and coherent samples.

Probabilistic Diffusion-based Generative Models (PDGM) merge diffusion models and Gaussian processes for more flexible distribution modeling. Non-local Diffusion Models (NLDM) incorporate non-local information, and Hierarchical Diffusion Models (HDM) introduce hierarchical structures into the generation process.

Diffusion models open up new possibilities in AI by transforming data into novel, coherent and diverse forms. Through the harnessing of natural diffusion processes, these models empower creative exploration and innovation, expanding the boundaries of what AI can achieve. TR

> The power of diffusion models extends across various domains of AI, revolutionizing processes and applications

ZainTECH and FICO Join Forces to Propel AI and Advanced Analytics in MENA

ZainTECH, the integrated digital solutions provider of Zain Group, entered a strategic partnership with global analytics software provider FICO to accelerate the adoption of artificial intelligence (AI) and advanced analytics for clients in the Middle East. The agreement was signed at GITEX Global 2023, where ZainTECH made its inaugural presence as an exhibitor.

FICO and ZainTech Collaboration Industry Expansion

The collaboration with FICO will see ZainTECH expand its reach into new industries in the domains of data science and analytics and digital transformation in the region. By harnessing FICO's decision-making, analytics, and data streaming capabilities, ZainTECH aims to broaden its range of data-driven and analytics-powered solutions for telecommunications, financial services, retail, and power & utilities companies. This will empower these businesses to enhance their operational efficiency and discover fresh sources of revenue.

ZainTECH already boasts a solid AI and Data Science practice dedicated to helping clients solve their business challenges through the effective, secure, and responsible use of data. By transforming untapped business data into Connected Intelligence, ZainTECH empowers organizations to uncover powerful insights, optimize decision-making, enhance customer experiences, boost operational efficiency, strengthen risk management, streamline compliance, and uncover new revenue streams.

Endorsed by Andrew Hanna (CEO, ZainTECH) and Marcelo Kekligian (VP, Partnerships, FICO)

Commenting on the partnership, Andrew Hanna, CEO of ZainTECH said, "The impact of data sciences on businesses and society at large is undeniable, and we believe this is a technological advancement that will continue to be truly transformational in the future. We have been proactive in dedicating significant resources to AI and data analytics, and this latest partnership with FICO reflects our commitment to working with best-in-class technology providers to accelerate the development and delivery of innovative data solutions to our clients."

Marcelo Kekligian, Vice-President of Partnerships – Africa, Middle East, and Asia Pacific at FICO, commented, "ZainTECH is a regional leader in data science solutions, and this partnership will help MENA firms compete more effectively and meet their customers' needs for analytics-powered solutions."

The Role of Connected Intelligence at ZainTECH

wConnected Intelligence refers to ZainTECH's approach to connecting enterprise-wide data in a way that is correctly governed, analyzed, and applied in real-world situations to enhance a business's performance. The approach involves combining organizational data with deep industry insights, and then applying it precisely to industry-specific situations.

ZainTECH assists clients on their digital transformation paths by delivering industrial AI and data solutions that facilitate nimble and accurate decision-making. These solutions leverage top-tier technology, and this technological prowess is set to grow even further through the collaboration with FICO.

H.E. Omar Sultan Al Olama Emphasizes the Importance of AI Governance

The swiftly evolving AI industry presents a regulatory challenge as authorities aim to instill public trust in AI, while fostering innovation and competitiveness in local industries.

During the third day of the Expand North Star event, H.E. Omar Sultan Al Olama, Minister of State for Digital Economy, Artificial Intelligence, and Remote Work Applications, as well as Chairman of the Dubai Chamber of Digital Economy, disclosed that the UAE Government has initiated a collaborative program with Oxford University. This program's primary goal is to educate public officials about the governance of artificial intelligence, the auditing of AI systems, and the exploration of practical applications.

H.E. Al Olama stressed that regulations should be tailored to individual countries, recognizing that the challenges faced by the USA differ from those in the UAE, Japan, China, or England. To prevent technology from causing harm to the public, there is a global necessity to establish a foundational set of regulations. These regulations would define what is permissible, how legislation can be enacted, and how it can be put into practice.

Given the immense potential of AI and its capacity to transform and uplift the world, the call for AI regulation becomes increasingly apparent. AI's diverse range of applications can notably benefit small businesses and developing nations.

New President Appointed for Qatar's Communications Regulatory Authority

His Highness the Amir Sheikh Tamim bin Hamad Al-Thani issued Amiri Decision No. 79 of 2023, designating Eng. Ahmed Abdullah Al Muslimani as the new President of the Communications Regulatory Authority (CRA).

The decision takes effect immediately upon its issuance and will be officially published in the Gazette.

As an entity, the CRA oversees the telecommunications and information technology industry, postal services and digital media access in Qatar. It actively fosters and advocates for a vibrant and competitive information and communications technology (ICT) sector that delivers cutting-edge, creative, and dependable communication services. At its core, CRA strives to maintain equilibrium between the rights of consumers and the requirements of service providers.

Enhancing Gulf Fiber Speeds: How ISPs Support Router Configurations and Upgrades

Recent improvements in Gulf countries' fiber coverage and adoption have resulted in faster and more affordable internet services. This positive development reflects their commitment to enhancing the digital experience for residents. However, a significant challenge remains: the prevalent use of outdated Wi-Fi 4 standards in home networks. This legacy technology limits the full utilization of high-speed broadband, with over one-third of users still relying on it as of Q2 2023. As a result, many customers are unable to experience the full potential of their fixed broadband connections.

Modern Wi-Fi Standards Boost Internet Speeds

In Q2 2023, a significant speed difference was observed for users in the Gulf region who upgraded to modern Wi-Fi standards. Customers using Wi-Fi 5 enjoyed a median download speed over five times faster than those stuck with Wi-Fi 4. Similarly, Wi-Fi 6 outperformed Wi-Fi 5, providing an average speed boost of 1.2 times. As most Gulf fixed broadband subscribers utilize fiber services, those with Wi-Fi 4 routers stand to gain the most from upgrading their Customer Premise Equipment (CPE).

To ensure customers fully benefit from these advancements, Internet Service Providers (ISPs) should take steps to ensure that routers and smartphones are configured correctly. Even when consumers have modern devices, they may inadvertently be using Wi-Fi 4 due to misconfigurations and coverage issues. ISPs can play a crucial role in educating consumers on proper router setup and offering solutions to optimize indoor connectivity, particularly by utilizing the more efficient 5 GHz spectrum band.

Gulf Countries Rise in Fixed Broadband Rankings

Since 2020, most Gulf countries have significantly improved their global fixed broadband speed standings. The Gulf Cooperation Council (GCC) region, including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE, has emerged as the leader in fiber coverage and adoption within the Middle East.

Local Internet Service Providers, in collaboration with government support, have expedited fiber network expansion to meet the surging demand for data services. This effort aligns with national broadband development strategies aimed at ensuring widespread access to high-speed internet. Notably, in September 2022, the UAE claimed the top spot in global fiber household coverage, reaching an impressive 98.1%, maintaining its position since 2016. Qatar closely followed in second place with 97.8% coverage.

These GCC nations outperformed their global counterparts, including Singapore (96.5%), Hong Kong (91.6%) and China (89.4%). Meanwhile, Bahrain recorded over 88% of households connected to fiber infrastructure, with Saudi Arabia exceeding 60% coverage and Oman reaching 52%.

Gulf Countries' Internet Speed Rankings Soar

In the rapidly evolving landscape of internet speeds in the Gulf region, notable advancements have been recorded in Q2 2023. According to the latest data, the UAE stands at the forefront with a remarkable median download speed of 236.67 Mbps, doubling since Q2 2022. Meanwhile, Bahrain's progress is equally impressive, achieving a median download speed of 70.17 Mbps, signifying a 46% year-on-year increase.

Significant strides have also been made in upload speeds, with Oman and Qatar experiencing notable gains of 61% and 40%, respectively, reaching speeds of 29.27 Mbps and 73.21 Mbps. However, Bahrain takes the lead in median upload speed growth, doubling from Q2 2022 to Q2 2023 and now standing at 20.37 Mbps.

Navigating the Future: The Trends Shaping Data Loss Prevention

Amid our swiftly evolving technology landscape, the significance of data loss prevention (DLP) in shaping the future has grown immensely. Growing technological advancements, combined with our deepening connections to digital platforms, underscore the importance of well-constructed and reliable DLP strategies. In this era where the intricate tapestry of information weaves through every facet of our lives, the demand for comprehensive measures to safeguard against data loss is paramount. As innovation and interconnectedness gain in strength and importance, the conversation around DLP takes center stage, evolving to encompass the intricate dance between human ingenuity and digital progress while safeguarding our data-rich future.

The Evolution of Data Loss Prevention

Originally, the primary focus of DLP was on safeguarding data confined within an organization's network. With the advent of cloud computing and the rapid proliferation of mobile devices, these boundaries have expanded immensely. This shift has highlighted the need for an all-encompassing approach to DLP, one that transcends the traditional confines of an organizational network.

One momentous trend shaping the future trajectory of DLP is the widespread adoption of artificial intelligence (AI) and machine learning (ML) technologies. These remarkable innovations have the potential to reshape the landscape of DLP by facilitating a more forward-leaning approach. For instance, AI and ML can meticulously scrutinize the patterns of data movement, identifying anomalies that could signal a possible security breach. This proactive vetting allows organizations to respond swiftly to emerging threats, effectively minimizing potential data loss.

Moreover, the seamless integration of AI and ML into DLP solutions has the potential to redefine data classification itself. By automatically categorizing data based on its level of sensitivity and inherent value, these technologies enable organizations to strategically allocate their protective measures and resources. Such accurate assessments not only make data security mechanisms more efficient, but they also elevate the levels of compliance with the ever-evolving regulations surrounding data protection. In essence, this convergence allows data protection to evolve from a static endeavor into an agile, intelligent and anticipatory procedure.

Navigating Its Future

Another notable trend influencing DLP's future is the increasing focus on privacy. Formidable data protection regulations such as the General Data Protection Regulation (GDPR) in Europe and the California Consumer Privacy Act (CCPA) in the United States have prompted organizations to prioritize the safeguarding of personal data. As a result, DLP strategies are undergoing a transformation, with a stronger emphasis on protecting such data at the individual level.

In response, DLP solutions are evolving to provide finer control over data access and utilization. Indeed, several solutions now incorporate features like data masking and encryption, both of which are effective in shielding sensitive data even during periods of heightened access and sharing. This not only bolsters data security but also assists organizations in fulfilling their compliance mandates.

Looking ahead, DLP will continue to innovate and advance into the future. Just as technology progresses, data security threats will continue to evolve. Organizations must therefore remain agile by adapting and refining their DLP strategies to ward off emerging challenges.

In conclusion, the trajectory of data loss prevention within the ever-evolving tech landscape is shaped by distinct trends. As technology continues its rapid progress, these trends serve as important markers pointing to the direction that DLP strategies are best to take. TR

As technology continues its rapid progress, these trends serve as important markers pointing to the direction that DLP strategies are best to take

Successfully Balancing IoT Adoption and Revenue Growth

The adoption and advancement of notable technologies such as Machine-to-Machine (M2M), Internet of Vehicles (IoV), Internet of Things (IoT) and cloud platforms are gaining momentum across the Middle East region as more industries and enterprises embark on the digital transformation journey.

These new technologies are quickly becoming the key components that make up the automation infrastructure. As such, the need for more reliable and ubiquitous connectivity is ever-growing, and the convergence of these cutting-edge technologies is paving the way for a truly connected future. Furthermore, 5G wireless technology promises remarkable advancements in data transfer speeds, capacity and latency reduction. With its ability to handle massive amounts of data in real-time, 5G serves as the backbone for the seamless integration of IoT devices, propelling us towards a hyper-connected ecosystem.

The global IoT monetization market was valued at $396.6 billion in 2022 and is projected to reach $25.1 trillion by 2032, growing at a CAGR of 51.7% from 2023 to 2032.

However, the lack of IoT standards across platforms and the uptick in privacy and security concerns are being seen as the biggest challenges to IoT global market growth. Recent market findings show that 70% of enterprises do not get service revenues from their IoT products. Moreover, IBM Security's latest annual Cost of a Data Breach Report has highlighted that the total cost of a data breach for organizations in the Middle East reached SAR 29.9 million (≈ US$8 million) in 2023 — an all-time high for the report. This represents a 15% increase over the last three years and a marked 155.9% increase over the last decade. The report highlights AI and automation as formidable defenses against data breaches; however, in contrast, cyber activity watchers have attributed data attack access to end-point connected devices, including IoT devices.

To generate revenue from IoT products, the data generated from such devices needs to be analyzed meticulously to provide better services that create value-added services for customers, increase productivity and save time and operating costs. Moreover, the growing trends of "lights-out factories," smart lighting and smart city ventures are projected to provide immense growth opportunities for the global IoT monetization market in the upcoming years. The adoption of IoT monetization solutions has increased in the automotive and transportation industries as automotive manufacturers are extensively using IoT, fueling the growth of the market. Moreover, IoT implementation at electric vehicle (EV) charging stations is important in the drive for clean energy. IoT connectivity capability enables businesses and charging station operators to have real-time insights into the charging status, availability and performance of charging points, etc. Software-enabled connectivity also allows for the implementation of advanced load management techniques, optimizing charging processes through algorithms and data analysis. Also, the demand for smart consumer electronics is expected to increase with their rise in use in building smart offices, smart cities and smart buildings.

> Telcos are well poised to play a pivotal role in unlocking the full potential of IoT and bringing value out of the increasingly interconnected ecosystem

How Telcos Can Best Position Themselves

In the process of IoT monetization, telcos play a key role in ensuring that the IoT products implemented by

organizations generate a positive ROI from their operations by offering connectivity, managed services, security solutions, data analytics and more.

Securing IoT devices: Perpetrators utilize embedded devices and systems to access an organization's IT infrastructure, causing unwanted business downtime. A robust cyber-defense strategy requires cybersecurity personnel to focus on the prevention of cyberattacks rather than follow-up action once the damage is done. Telecom operators must work hand in hand with the cybersecurity regulatory authorities to establish efficient cybersecurity control systems, specifically governing IoT products. Telcos can offer enhanced security services such as VPNs (Virtual Private Networks), firewall solutions and threat detection for IoT devices and networks. They must provide their customers with both technical and manpower support, such as helping them identify vulnerable digital products in the procurement phase, conducting risk assessments and continuing threat hunting, to name a few. As connectivity providers, telcos can offer cellular, LPWAN (Low-Power Wide Area Network) and NB-IoT (Narrowband IoT) services for various IoT use cases and device requirements as value-added services with recurring subscription fees.

Taming AI: The overnight popularity of artificial intelligence projects, such as OpenAI's ChatGPT, has taken the world by storm. However, it would do well to hear what the proponents themselves have to say about the technology. "If this technology goes wrong, it can go quite wrong," Sam Altman, the poster boy of AI, told lawmakers in the US. "OpenAI was founded on the belief that artificial intelligence has the potential to improve nearly every aspect of our lives, but also that it creates serious risks," Altman added during the recent hearing aimed at establishing new rules for big tech companies in the US. There is no doubt that AI brings to the table advantages such as enhanced customer experience, seamless operations, efficient supply chain management, data analytics, etc.; however, total dependence on AI algorithms alone may lead to unfavorable decision-making. Hence, a well-rounded AI policy to govern organizational operations is a prerequisite for monetizing IoT offerings.

Special Data Plans: Telcos can package specialized data plans and bundles for IoT devices, tailored to the specific needs of IoT applications that suit various use cases, from industrial automation to smart city operations, agriculture, healthcare, transportation and so on.

Data Analysis: Telcos can provide insights to their customers based on data generated by their IoT devices, helping businesses make informed decisions and optimize their operations.

Platform as a Service (PaaS): Telcos can provide IoT platforms that enable device management, data storage and application development. These platforms can be offered as a service, and telcos can charge based on the number of devices, the amount of data processed, or the features utilized by customers.

APIs and Developer Tools: Telcos can provide APIs (Application Programming Interfaces) and developer tools that allow third-party developers to build applications and services on top of their IoT infrastructure. They can charge developers for API usage or offer premium developer support services.

In conclusion, telcos are well poised to play a pivotal role in unlocking the full potential of IoT and bringing value out of the increasingly interconnected ecosystem to both their enterprise and consumer segment customers. However, telcos need to remain vigilant and proactive about interplay among industry players to make the most out of their innovative IoT offerings. TR

Energy-Efficient Connectivity in the Era of Cloud and AI

IT operations have taken the driver's seat for business success in the rapidly changing digital world.

The success of today's businesses hinges on many factors, and arguably the most important one involves harnessing the advantages of sustainable technology. It has become imperative for companies to abide by global and regional environmental goals to remain relevant in the global market. For instance, the UAE is making significant efforts to achieve climate goals set by global initiatives and events such as the Paris Agreement, the Sustainable Development Goals and the World Urban Forum. In Dubai, both the Dubai Clean Energy Strategy 2050 and the Dubai Net Zero Carbon Emissions Strategy 2050 aim to provide 100% of Dubai's total power production capacity from clean energy sources by 2050. As such, businesses must adopt the necessary upgrades for cleaner operations, and telcos must provide achievable options for energy-efficient networks to meet the objectives.

Data Explosion Due to Cloud and AI

The excitement around emerging technologies such as Cloud and artificial intelligence is getting stronger by the day. A recent report on the revenue performance of the top four cloud computing companies — Amazon Web Services (AWS), Microsoft Azure, Google Cloud and Oracle Cloud — shows a combined revenue generation of $58.6 billion in Q2 2023, an 18% increase compared to 2022. This is a stark reflection of the growing influence of Cloud in the digital landscape. Similarly, enthusiasm for AI continues to grow, especially given the meteoric popularity of generative AI technology in the enterprise and consumer sectors. As such, semiconductor makers that are integral to the processing of AI functions are reaping the benefits. With such demand for AI services, leading chip manufacturer Nvidia's adjusted gross margins nearly doubled to 71.2% in its second quarter, and average semiconductor companies' gross margins have hovered around 50% and 60%. Moreover, according to a recent survey,businesses in the UAE are most likely to use AI in IT operations (97%), followed by cybersecurity (95%).

As such, there has been a marked increase in the growth of data centers — the engines of data transmission across networks. Regarding the ICT sector's impact on the environment, the energy used by these data hubs is a significant concern. The International Energy Agency (IEA) data shows that data centers use 200 TWh of electricity and generate 3.5% of the GHG emissions, the majority of which is utilized within the ITC sector. Studies reveal that data centers alone will use 8% of global electricity by 2030.

However, the good news is that the ICT industry is acutely conscious of the need to reduce its direct and indirect carbon footprint. As per a Boston Consulting Group (BCG) report, most major telcos have signed up to reduce the energy needed per unit of traffic by about 70% by the end of this decade. This action by the ICT industry could eliminate up to 15% of all global emissions by 2030, more than a third of the total emissions reductions needed to meet global sustainability targets, BCG notes. In total, 12.1 gigatons of CO2 could be saved, which is equal to $6.5 trillion.

The choice of greener telecom networks to incorporate fiber optics into their operations is indeed an innovative option to better ensure environmentally responsible usage of communication networks and related sources. In addition, however, the following points also prove integral to achieving a sustainable ICT ecosystem:

Extended Device Use and Reparability: Among the biggest environmental impacts in the mobile industry are the devices that utilize various resources, which further add to the emissions. However, such a challenge can be dealt with through a more circular economy. As such, industry leader GSMA propagates a strategy to move the telecoms industry towards greater circularity — a future where devices have as long a life-span as possible; where they are made with 100% recyclable and recycled content using 100% renewable energy; and where no device ends up as waste. Studies have shown that extending the lifetime of all smartphones on earth by just one year has the potential to save up to 21.4 million metric tons of CO2 emissions annually by 2030 — an amount equal to removing more than 4.7 million cars from the road. Moreover, as telcos look for ways to be more sustainable, industry experts agree that demand for refurbished telecom equipment is likely to increase, driving the value of the market up to £2 billion globally.

Sustainable Manufacturing: To minimize the risk of CO2 generation, the aim should be to provide connectivity with the lowest possible GHG emissions. The goods that are manufactured, supplied, distributed and discarded must do so with the lowest possible carbon footprint.

As such, a suitable strategy would be the use of eSIM instead of traditional SIM cards. Through the use of eSIMs, mobile operators can add additional customers to the network without having to distribute new cards. Doing this greatly cuts the plastic and paper waste generated from packaging and

Businesses must adopt the necessary upgrades for cleaner operations, and telcos must provide achievable options for energy-efficient networks to meet the objectives

results in lower carbon emissions. Hence, the introduction of eSIM support for smartphones is a step in the right direction toward reducing environmental impact and securing a greener telecom future.

Working with Energy Companies and Partners: Operators can sign up for clean energy power purchase agreements (PPA) with energy companies providing electric power from sustainable sources such as solar and wind energy. Doing this will help operators accelerate their net-zero journey in line with their national green goal objectives. For example, Vodafone has agreed with Iberdrola, one of the world's largest renewable energy companies, to use 410 gigawatt-hours (GWh) of clean, renewable photovoltaic (PV) solar energy per year in the three countries — Spain, Portugal and Germany.

In the UAE, both operators — e& and du — have vouched for commitments to reach net zero goals by accelerating the decarbonization of activities and focusing on mobile network modernization alongside partners such as Huawei, Nokia and Ericsson with the deployment of the latest generation of energy-efficient radio equipment (both hardware and software), increased use of renewable energy sources and carbon offsetting initiatives. For instance, e& uses a cutting-edge solution that unifies data intelligence and offers organizations a highly automated and comprehensive view of the emission impact of their operations and value chain that allows their customers to make informed decisions regarding their green targets.

Demand for Green Telco Products

As the world's inclination towards sustainable strategies grows, industry watchers strongly urge ICT companies to put their "green act" together as a priority. The industry should see the sustainability agenda as a prime opportunity to up the ante on their green goals and charge a premium to their young consumers, who are increasingly in sync with such a proposal and share such concerns and commitments toward a more sustainable future. TR

> The excitement around emerging technologies such as cloud and artificial intelligence is getting stronger by the day

e&'s Industry-Leading Financial Results and Key Highlights for Q3 2023

e& announced its consolidated financial results for Q3 2023 reporting consolidated revenues of AED 13.4 billion with a YoY increase of 3.3%, while consolidated net profit was AED 3 billion, a YoY increase of 20%.

At constant exchange rates, consolidated revenue increased by 8% and consolidated EBITDA increased by 6.9%, resulting in a resilient EBITDA margin of 51%.

The number of etisalat by e& subscribers in the UAE reached 14 million in Q3 2023, representing an increase of 4.7% over the same period last year. Aggregate group subscribers reached 167 million, a 3.3% increase.

Financial Highlights for Q3 2023

Commenting on the results, Hatem Dowidar, Group CEO, e&, said, "e&'s strong performance this quarter is a testament to our resilience, and commitment to delivering value and growth to our customers and shareholders. We will continue our focus on championing innovation to enrich the lives of our customers and make a positive impact across the societies we serve. We remain committed to leading the change by taking our first steps in sustainable mobility and transforming our business with AI powered solutions, while realizing our vision of digitally empowering societies."

Ooredoo Launches Pioneering 5-Year Digital Transformation Initiative

Ooredoo has entered into a transformative, long-term partnership with Shell Oman Marketing Company (Shell Oman), igniting a massive project set for five years. Ooredoo is boosting Shell Oman's digital journey with cutting-edge end-to-end (E2E) and ICT solutions, undertaking to amplify operational agility and deliver cost-efficiency benefits to over 200 service stations.

Under this agreement, Shell Oman secures seamless access to Ooredoo's comprehensive suite of digital products and services, including an automated plan for unpredicted disruptions, cutting-edge hardware, top-tier digital security and 24/7 customer support.

Saud Al Riyami, acting chief business and wholesales officer at Ooredoo, said: "As an integrated telecom provider, we aim to support the digital transformation of entities of all sizes and across all sectors. We are therefore delighted to have signed this agreement with Shell Oman that enables them to leverage our cutting-edge, end-to-end digital capabilities on its journey to become even more efficient, effective and reliable. Meanwhile, this partnership is the latest in long-standing ventures between our two companies in the business-to-business and business-to-consumer spheres."

"WE" Expands Its Smart Real Estate Telecommunication Services

The Egyptian telecommunications company "WE," Egypt's first integrated operator of communication and information technology services, has signed a cooperation protocol with Prime Real Estate Development Company. This partnership aims to provide integrated communication services and smart systems for their diverse real estate projects in the market.

Under this agreement, WE will implement the technological infrastructure for Prime Real Estate Development projects and supply them with the necessary fiber-optic network. WE will thereby contribute to providing high-speed internet access to all residential, administrative and commercial units within these projects.

WE is committed to delivering comprehensive communication services to these projects, including landline telephone services, high-speed internet, internet-based television (IPTV) and other smart communication services such as camera integration, electricity, water, irrigation and more. Additionally, WE will offer Wi-Fi services in public and service areas, relying on it for the control, management and maintenance of advanced infrastructure.

du Achieves 98.5% 5G Coverage Across UAE

du, from Emirates Integrated Telecommunications Company (EITC), has achieved 98.5% 5G population coverage across the UAE. The milestone reaffirms du's commitment to providing customers with future-ready network experiences in alignment with the UAE's national vision to create a smart and connected nation.

In its ongoing pursuit of innovation, du has partnered with Huawei to bring the future of connectivity to households with the development of 5G Advanced (5G-A), also known as 5.5G. Their collaborative effort resulted in the unveiling of the world's first 5G-A Demonstration Villa, showcasing the potential of 10.5Gbps smart home living.

Fahad Al Hassawi, CEO at du, said, "We are proud to announce that we have achieved a 98.5% 5G population coverage across the UAE. This milestone not only showcases our commitment to providing customers with cutting-edge network experiences but also contributes to the UAE's vision of embracing advanced digital infrastructure. As we continue to push the boundaries of innovation, our partnership with Huawei has resulted in the world's first 5G-A Demonstration Villa. The project represents the possibilities of 5G Advanced technology, immersing residents in a transformative and interactive smart home environment."

As a leading digital telco, du aims to foster an ecosystem that harnesses the unique features of 5G Advanced technology, including improved connectivity, faster speeds, comprehensive IoT capabilities, and widespread coverage.

stc Kuwait Excels in First Three Quarters of 2023

stc Kuwait, a world-class digital leader providing innovative services and platforms to customers and enabling the digital transformation in Kuwait, highlighted the most significant achievements and financial and operational performance in addition to the social initiatives made by the company during the first nine months of 2023.

On the financial side, stc's total revenue reached KD 259.8 million in the first nine months of 2023, with a growth rate of 4.2% compared to KWD 249.4 million in the same period of the previous year. This growth is attributed to the expansion of the company's operations through its focus on providing digital services to the enterprise sector as well as offering integrated technical solutions to companies across various sectors.

It is also worth noting that stc Kuwait has successfully enhanced its operations through its well-developed, evolving infrastructure.

Commenting on this announcement, stc Kuwait CEO Eng. Maziad Alharbi said, "stc has achieved strong financial results by leveraging its technical and human capabilities in accordance with the aspirations and expectations of both its customers and shareholders."

Eng. Alharbi disclosed that these outcomes resulted in a growth of EBITDA by 3.9% to reach KD 63 million in the first nine months of 2023 compared to KD 60.6 million in the same period of 2022, supported by the increase in the company's revenue.

As a result, the company's net profit during the nine-month period reached KD 24.4 million, with a growth of 0.5% compared to KD 24.3 million during the same period in 2022. stc's customer base also reached its 2.4 million mark at the end of September 2023.

stc Kuwait Achieved Robust Financial and Operational Results

Eng. Alharbi further noted that stc Kuwait continues to reap the rewards of implementing its corporate strategy and the strategic expansion of its operations throughout the past years.

"Whereby, stc achieved robust financial and operational results during the first nine months of 2023, demonstrating the Company's commitment to enhance its internal capabilities and expanding its operations to deliver unique services in terms of design and efficiency, besides driving the digital transformation process," the CEO stated.

stc Kuwait maintains its market share by providing its customers with an unparalleled experience through strengthening its digital channels as well as leveraging its solid infrastructure to reach a new level of exceptional speeds and better coverage in line with the intense competition in Kuwait's ICT sector.

"stc [Kuwait] is committed to continuously review and update its financial and operational strategies with the aim of enhancing the company's capabilities with exceptional effectiveness. By keeping abreast of the latest developments in the telecom industry, stc [Kuwait] is determined to channel its resources into delivering a comprehensive range of services, including voice, digital and data solutions, to enhance profitability, achieve the desired financial and operational outcomes, and ensure its sustained cash flow," explained Eng. Alharbi.

The Power of Data and Telecom Convergence

Data and telecom convergence refers to the integration of data and telecommunications services into a single network infrastructure. This convergence represents a significant shift in the way information is transmitted, received and processed.

Traditionally, data and telecom services were separate entities operating on distinct networks. However, with the rapid advancement of technology and the increasing demand for seamless connectivity, the convergence of data and telecom has become a necessity.

One of the key benefits of data and telecom convergence is the ability to transmit different types of information, such as voice, video and data, over a single network. This integrated approach simplifies network management and reduces costs by eliminating the need for multiple networks and infrastructures.

Moreover, data and telecom convergence enables greater flexibility and scalability. Organizations can easily adapt to changing business needs and accommodate increased data traffic without the need for extensive network upgrades. This scalability also allows for the efficient deployment of new services and applications, providing businesses with a competitive edge.

Additionally, the convergence of data and telecom enhances the overall user experience. It enables seamless communication and collaboration across various devices and platforms, ensuring that individuals can access and share information effortlessly.

Furthermore, data and telecom convergence opens up new opportunities for innovation and the development of advanced technologies. With a unified network infrastructure, organizations can explore emerging technologies such as the Internet of Things (IoT), artificial intelligence (AI) and cloud computing, enabling them to harness the power of data and drive digital transformation.

However, it is important to note that data and telecom convergence also presents challenges. Ensuring network security, managing increased data traffic and maintaining quality of service are among the key considerations that organizations must address.

Data and telecom convergence is revolutionizing the way information is transmitted, transforming the telecommunications landscape. This integration of services offers numerous benefits, including cost savings, scalability, an enhanced user experience and the ability to leverage emerging technologies. As organizations continue to embrace digitalization and connectivity, data and telecom convergence will play a pivotal role in shaping the future of telecommunications.

Enhanced Data Analytics

Enhanced data analytics refers to the ability of organizations to collect, analyze and derive valuable insights from vast amounts of data, enabled by the convergence of data and telecom. This convergence allows organizations to leverage various data sources, including structured and unstructured data, from within and outside their networks.

With the increasing volume, variety and velocity of data generated by various sources such as social media, sensors and customer interactions, organizations need robust data analytics capabilities to make sense of this wealth of information. By combining data and telecom, organizations can collect and aggregate data from different sources, including internal systems, external databases and IoT devices.

The convergence of data and telecom provides organizations with the infrastructure and tools needed to process and analyze large datasets, often in real time. Advanced analytics techniques such as machine learning, artificial intelligence and predictive modeling can be applied to uncover patterns, trends and correlations within the data.

By analyzing this data, organizations can gain valuable insights into customer behavior, market trends, operational inefficiencies and potential risks. These insights enable data-driven decision-making, allowing organizations to make informed choices based on objective evidence rather than relying solely on intuition or past experiences.

Enhanced data analytics also allow organizations to identify new business opportunities. By analyzing customer data, organizations can better understand their preferences, needs and buying patterns, enabling personalized marketing campaigns and targeted product recommendations. This can lead to increased customer satisfaction, loyalty and revenue.

Furthermore, enhanced data analytics can help organizations optimize their operations and improve efficiency. By analyzing operational data, organizations can identify bottlenecks, streamline processes and reduce costs. For example, analyzing sensor data from manufacturing equipment can help identify maintenance needs in advance, minimizing downtime and optimizing production schedules.

This integrated approach simplifies network management and reduces costs by eliminating the need for multiple networks and infrastructures

> Through data and telecom convergence, robust and reliable connectivity is provided, allowing for the exchange of data in real-time

Seamless IoT connectivity

Seamless IoT connectivity refers to the ability of various devices and systems to connect and communicate with each other in a smooth and uninterrupted manner. This connectivity is made possible through the convergence of data and telecom networks.

Data and telecom convergence plays a crucial role in supporting the Internet of Things (IoT) by providing the necessary infrastructure for robust and reliable connectivity. IoT relies on the exchange of data between multiple devices and systems, and this data needs to be transmitted efficiently and securely.

By integrating data and telecom networks, IoT devices can seamlessly connect to the internet and communicate with each other. This convergence ensures that connectivity is not limited to specific devices or technologies but rather extends to a wide range of connected devices, including sensors, actuators, wearables and appliances.

The robust and reliable connectivity provided by data and telecom convergence facilitates the development of various IoT applications, such as smart homes, smart cities and industrial automation. In smart homes, for example, IoT devices like smart thermostats, security systems and lighting controls can communicate with each other to create an interconnected and automated environment. Similarly, in smart cities, the IoT enables efficient management of resources, such as energy and transportation, through the integration of various systems and devices.

Industrial automation is another area where seamless IoT connectivity is crucial. By connecting machines, sensors and control systems, the IoT enables real-time monitoring, remote operation and predictive maintenance. This not only improves efficiency and productivity but also enhances safety in industrial settings.

In conclusion, the convergence of data and telecom networks holds immense power and potential in various aspects of our lives. It enables seamless connectivity and communication between a wide range of devices, forming the foundation for the Internet of Things (IoT) ecosystem.

Through data and telecom convergence, robust and reliable connectivity is provided, allowing for the exchange of data in real-time. This connectivity facilitates the development of smart homes, smart cities and industrial automation, where devices and systems can interact and collaborate to create more efficient and intelligent environments.

The integration of data and telecom networks enables the efficient management of resources, improves productivity, enhances safety and promotes sustainability. It paves the way for innovative applications and solutions that can transform how we live, work and interact with our surroundings.

As the world becomes increasingly connected, data and telecom convergence will continue to play a crucial role in shaping the future of technology and society. Its power lies in its ability to bridge the gap between devices, networks and industries, creating a seamless and interconnected ecosystem that drives progress and innovation. TR

Why Smart Cities Must Factor Into Every Telco's Gameplan

According to the UN, 70% of the world's population is expected to live in smart cities by 2050. That is around 6.86 billion individuals doing their daily activities in cities should the world population swell to 9.8 billion by then from the current 7.6 billion.

As such, the traditional infrastructure and public service systems will not hold water as the demands of city life become more complex and interconnected. To be more efficient, the data and information generated within the systems — utility, telecoms, transport, health, finance, economy and energy — must be utilized in a way that fosters innovation and the interoperability of essentially disparate systems.

We are aware that the ICT sector plays a pivotal role in optimizing the value of data to facilitate the exchange of information and promote innovation, knowledge and overall governance. And smart cities offer telcos unprecedented opportunities to garner a competitive advantage and bolster their growth momentum. One prime example of such opportunities for telcos is the Dubai Digital Authority's new digital transformation strategy. This seeks to harness the power of data, innovation and smart solutions to better enhance the quality of life of its citizens and residents and build an advanced digitally-enabled economy and society. This roadmap focuses on seven critical pillars: the Digital City, Data and Statistics, Cybersecurity, Digital Competitiveness, Digital Economy, Digital Talent and Digital Infrastructure. Each pillar is aimed at realizing meaningful economic, social and environmental outcomes.

The Need for Growth

The concept of smart cities has evolved as a consequence of countries' needs to keep pace with global advancements. The smart city model incorporates the use of digital technology to provide solutions to monitor, manage and enhance key infrastructure and public services to improve the experience of its citizens. Conversely, with this potential explosion of the population in cities, governments are under pressure to look for ways they can reduce energy use, lower carbon emissions and save costs. Hence, technology can play an important part in tackling many of these challenges, and smart cities factor heavily in this priority. The case in point can be the Dubai Economic Agenda 'D33,' which aims to double the size of Dubai's economy over the next decade and consolidate its position among the top three global cities.

D33 includes 100 transformative projects, with economic targets of AED32 trillion over the next 10 years, doubling foreign trade to reach AED25.6 trillion and adding 400 cities as key trading partners over the next decade.

With smart city growth becoming such a global trend, telecom technologies are extremely important in connecting critical sub-segments such as information management, emergency disaster management, inter-agency collaboration, critical infrastructure management, citizen services and immigration, law enforcement, public administration services and so on.

A Slice of the Intelligent Technology Pie

The "level next" of smart city evolution will increasingly see the use of data and artificial intelligence (AI) to improve city operations and provide accurate insights for developing new use cases, revenue streams and innovative services for the city's population. Urban infrastructure projects will witness the increasing integration of technologies such as AI, IoT, data analytics, and digital twins for building optimized designs. Current industry findings point towards protocol standardization and limited wireless connectivity options as roadblocks in IoT deployment; however, substantial industry efforts are underway to resolve them. Leveraging IoT platforms can support the city's extensive network of connected devices and sensors, as well as the huge amount of data that will be gathered through them. The popularity of AI among businesses cannot be overlooked today. Since its launch earlier this year, the Dubai Center for Artificial Intelligence (DCAI) in the UAE has seen 615 startups from 55 countries sign up for AI accelerator programs that provide advanced technology startups and entrepreneurs with an opportunity to develop AI uses and applications in the government and media sectors at AREA 2071.

Sustainable Value Creation

As countries and companies compete to stay relevant in the global context concerning sustainability and energy efficiency, ICT's role in supporting these key metrics will only become more significant. A remarkable example of tapping into this value creation aspect is the collaboration between Zain KSA and the Red Sea Global project. Zain KSA came up with the world's first zero-carbon 5G network at the Six Senses Southern Dunes resort at the Red Sea. The revolutionary 5G network that can provide the highest data transfer speeds for 5G connectivity is powered by 100% renewable energy from over 760,000 solar panels that Red Sea Global has built to power the entire 28,000 km2 tourist destination. "Zain KSA has demonstrated a deep understanding of our requirements and provided us with the services and solutions necessary to achieve our strategic objectives. Together, we are determined to make a meaningful impact that sets new standards in sustainable development," John Pagano, Group CEO at Red Sea Global, noted of the recent development. Zain KSA's move is in line with the basic principle of smart cities: if cities want to be smarter, they need to be less technology-centric and more human-focused. This is a deep reflection of how cities of the future will be designed and managed. All telcos would do well to align their strategies based on this innovative approach.

Realizing Inclusivity

Furthermore, the IMD Smart City Index 2023 report suggests that an increasing number of cities are deploying new efforts to encourage diversity and inclusion as part of their smart strategies, which are variously linked to strategies to attract or retain talent. Higher levels of tolerance for immigrants and minorities are becoming a marker in the quality of life category and in leaving no one

behind — a key phrase in defining the future of smart cities. Moreover, cities continue to accept and seek new roles as central governments strive to become more agile through decentralization. Openness and inter-city collaboration may very well become key components of next-wave globalization. Fittingly, Dubai's 'Digital Harmony' initiative follows that direction by aiming to facilitate the synergy between individuals and digital products and services in Dubai. The Authority's 'Digital City Experiences' program develops a unified digital ecosystem for citizens, residents, visitors and entrepreneurs that values privacy, is user-centric and provides many options. As such, armed with cutting-edge technological support, operators command an advantageous position to build new digital businesses. Moreover, with the growth of satellite operators, telcos must leverage this wireless technology to connect underserved communities around the continent. In a recent development, Vodafone and Project Kuiper, Amazon's low Earth orbit satellite (LEO) communications initiative, have announced a strategic collaboration through which Vodafone and Vodacom plan to use Project Kuiper's network to extend the reach of 4G/5G services to more of their customers in Europe and Africa. Such developments can well be a welcome move from connectivity providers in their effort to close the digital divide gap.

In conclusion, although the concept of smart cities is appealing to telecom companies for its growth potential, there is plenty of groundwork to be done. This calls for continuous and productive consultations among operators, vendors, system integrators, city planners, regulators and other key industry players to make the most of the opportunities afforded by a globally interconnected smart city ecosystem. TR

“Although the concept of smart cities is appealing to telecom companies for its growth potential, there is plenty of groundwork to be done”

Connected Cars and Data Privacy: Challenges and Solutions in a New Automotive Era

The automotive industry stands out as one of the most data-intensive sectors globally. A recent study uncovered alarming trends among leading global car manufacturers, casting them as major contributors to data privacy concerns. This revelation comes just as driving is becoming increasingly digitized.

In its recent study, Mozilla indicated that car brands have essentially transformed vehicles into massive data collection and distribution machines. While we've been concerned about potential privacy breaches from our internet-connected doorbells and smartwatches, car manufacturers have entered the data arena with remarkable stealth. According to Mozilla's findings, Tesla emerged as the worst offender, closely followed by Nissan. Tesla faced a data breach earlier this year that exposed the personal information of over 75,000 individuals, while Nissan also had to contend with a data breach — one affecting nearly 18,000 of its customers.

Mozilla's research further disclosed that an overwhelming 92% of car brands offer users limited to no control over their personal data. The exception to this limitation seems to be France's Renault and its Dacia brand, which afford users the right to delete their data, likely in adherence to European Union regulations.

Car manufacturers possess a multitude of data collection opportunities and can gather personal information through various channels, including interactions with the car itself, usage of connected services within the vehicle and even third-party data sources.

The ever-present connectivity and digital experiences, coupled with the data accumulation integral to the modern connected car experience, are fundamental to the industry's evolving business model. However, they simultaneously introduce substantial privacy and data protection vulnerabilities.

Exploring In-Vehicle Data in Detail
Depending on the carmaker, a connected vehicle can generate up to 25 gigabytes of data per hour, sourced from at least 200 sensors embedded within the vehicle. This data primarily exits the vehicle through in-vehicle cellular connections. It is then initially stored in data centers or cloud platforms controlled by the original equipment manufacturers (OEMs).

In-vehicle data is categorized into two basic types: non-personal data collected by sensors and personal data that can be linked to the driver. The latter can include journey details, driving behavior and data from the driver's mobile device.

When individuals synchronize their phones or connect via Bluetooth in a car, whether it's their own vehicle or a rental, they often unwittingly transfer extensive information, encompassing call logs, contacts, text messages, music preferences and even social media updates, to the car's data storage.

This sensitive data traverses numerous environments and platforms, both on-premises and in the cloud, where employees and contractors can access it worldwide. This reservoir of information exposes manufacturers to substantial risks from cyberattacks.

The abundance of highly sensitive data in connected vehicles necessitates an elevated level of protection, especially against threats like ransomware, cyber warfare and other attacks exploiting vulnerabilities in software and hardware.

In-vehicle data serves a multitude of purposes, ranging from the development of autonomous vehicles and enhancing transport efficiency to enabling new business models. The significance of the parties with a vested interest in in-vehicle data further underscores its importance; these include insurers tailoring policies to drivers' behaviors and governments aiming to improve traffic management and road safety in smart cities.

Addressing Data Privacy in the Automotive Industry

Data privacy is a critical concern in today's world, and while we often hear about data breaches from various other sources, we may overlook the potential privacy risks associated with our vehicles. In reality, the automotive industry is a significant user of data and faces substantial data security risks.

The proliferation of smart technology, coupled with the massive generation of vehicle data, extensive network coverage and automation in road traffic, has led to an unprecedented volume of dynamic data. With multiple OEMs involved, data processing occurs at various stages and locations. This in itself substantially increases the risk of data breaches.

In response to the legal, financial and reputational consequences of data breaches and the subsequent emergence of data privacy regulations, the automotive sector must adopt robust data protection policies to safeguard information and ensure compliance.

Depending on the carmaker, a connected vehicle can generate up to 25 gigabytes of data per hour, sourced from at least 200 sensors embedded within the vehicle

Automotive companies must provide access to hardware and software security throughout the entire lifecycle of a vehicle, from design and manufacturing to operation and retirement. Additionally, securing in-vehicle networks is paramount to protecting processed personal data. Furthermore, the secure implementation of cloud security services is just as vital.

In the era of what are essentially "computers on wheels," data privacy concerns in modern vehicles have mounted. A Mozilla study highlighted these trepidations, revealing that a substantial 84% of car brands openly shared users' personal data with service providers, data brokers and other undisclosed entities. The majority of manufacturers (76%) admitted to selling customer data, while over half confirmed sharing data with government and law enforcement agencies upon request.

Moreover, the expanding connectivity of vehicles via vehicle-to-vehicle communications, vehicle-to-infrastructure communications, over-the-air updates, Wi-Fi, Ethernet, 5G and other technologies has increased the vulnerability to cyberattacks.

Due to such concerns about the growing volume of data collected by vehicles, the California Privacy Protection Agency (CPPA) is actively monitoring the privacy practices of automakers and vehicle technology companies. They are particularly interested in those features that allow vehicles to automatically collect information regarding drivers' locations and preferences — in essence, their daily lives.

Regulators worldwide, including the Dutch government, the European Commission and the European Data Protection Board (EDPB), are beginning to recognize the importance of privacy protection as a fundamental prerequisite for the responsible collection and exchange of in-vehicle data. Such institutions are actively engaging with relevant stakeholders to develop and enhance privacy frameworks in response to the increasing in-vehicle usage of personal data for entertainment, performance and safety.

Conclusion

In this day and age, the next major cyber threat may not be your computer or credit card; it may very well be the vehicle that gets you from point A to B. Legislation concerning automotive cybersecurity and data privacy is evolving to become more tailored and more stringent. While nations have borders, OEMs must soon develop similarly protective, privacy-conscious and cyber-secure solutions. Once in place, such parameters will serve not only the individual markets but also the millions of connected cars operating across them. TR

In this day and age, the next major cyber threat may not be your computer or credit card; it may very well be the vehicle that gets you from point A to B

From ChatGPT to Future Frontiers: The Promises and Pitfalls of AI in Healthcare

Since the launch of ChatGPT in November 2022, there has been a remarkable surge in interest in artificial intelligence (AI) within the medical domain. The mobile application that offers a user-friendly interface to the ChatGPT large language model achieved an unprecedented milestone by attracting 100 million users in just two months after its release. Currently, the application continues to draw in a monthly audience of one million visitors.

While the release of ChatGPT democratized decades of AI advancements, it's worth noting that the medical field has been harnessing AI capabilities since the 1940s. These early AI endeavors included automated analytics, data synthesis and optimization strategies. However, the real impact of AI in healthcare has been particularly pronounced over the last 15 years, thanks to the convergence of several key developments. These include significant progress in big data analytics, the proliferation of cloud computing with associated improvements in memory and storage capabilities, as well as the availability of extensive curated healthcare data from electronic health records and emerging sources.

Current and Future Uses of AI in Medicine

While the realm of AI is swiftly broadening, its prevalent applications in the field of medicine encompass several key aspects. These include the categorization of patient risk based on personal or medical profiles, the detection of abnormal laboratory or imaging findings, and the issuance of alerts to patients, physicians and other healthcare professionals. AI is also instrumental in diagnosing medical conditions by leveraging available clinical information and facilitating the conversion of spoken words into written text for clinical documentation purposes. Notable instances of AI applications in healthcare encompass cardiac risk assessment, sepsis notifications and drug-drug interaction warnings, all of which underscore the extensive integration of artificial intelligence into routine clinical practice.

Furthermore, AI holds significant promise for future advancements in medical care, spanning areas such as medical education and research. It stands to enable the simulation of patient scenarios, the synthesis of vast datasets and the provision of recommendations for diagrams, references and other educational aids. In the realm of medical research, AI tools like ChatGPT and similar technologies have already begun to aid in the analysis of extensive datasets, including unstructured text extracted from research articles, and have even shown the capacity to generate research hypotheses. Additionally, the deployment of AI in clinical care is expected to continue expanding as the mobile health application ecosystem, telemedicine services, and personalized healthcare experiences undergo exponential growth. As AI ventures into new frontiers within the field of medicine, we should anticipate the emergence of fresh challenges and ethical dilemmas.

Concerns to Address

Although AI has the same potential to revolutionize other industries, there are still numerous unanswered questions in the fields of:

- **Ethical Concerns**

Early experiences with ChatGPT have highlighted the AI "black box" problem, making it challenging for both users to understand AI outputs and developers to explain the basis of those outputs. In medicine, this raises concerns about clinicians' confidence in using AI results in their decision-making and their ability to communicate these decisions to patients. To safeguard patient autonomy and ensure informed consent, transparency about AI's role in care should be a guiding ethical principle.

- **Regulation**

AI-related regulatory matters have taken center stage as lawmakers have conducted hearings, and AI industry leaders have urged lawmakers to implement more comprehensive regulations for their technology. Biases can arise from using unrepresentative data to train AI models, amplifying existing inequalities. For instance, sentiments associated with names from specific racial groups can exhibit both positive and negative biases, but similar challenges are expected to continue emerging.

- **Responsibility**

In healthcare, the adoption of automated analytics and decision-making introduces ambiguity regarding who holds responsibility and liability for patient care. There is a pressing need to develop standardized care guidelines for the essential integration of AI into clinical practice.

In conclusion, the advent of ChatGPT in 2022 triggered a surge of interest in AI within healthcare. AI's historical and recent impact in the field, from diagnostics to education and research, is undeniable. However, significant ethical and regulatory concerns, such as the black box problem, biases and responsibility issues, must be addressed as AI continues to evolve in healthcare. Moving forward, balancing innovation with responsibility will be crucial for the ethical and equitable integration of AI in medicine. TR

AI holds significant promise for future advancements in medical care, spanning areas such as medical education and research

etisalat by e& and Netcracker Unveil Middle East's Largest Full-Stack BSS Revolution

Netcracker Technology and etisalat by e& announced a strategic partnership for a large-scale, multi-year BSS transformation project delivering innovation across the business and all customers.

etisalat by e& was founded in Abu Dhabi more than four decades ago and is the UAE's first telecommunications company. The company has been on a journey to become a technology company. Through this transformation, etisalat by e& remains at the forefront of propelling the digital society by providing faster, differentiated, and personalized services to its customers across all service offerings.

The Integration of Netcracker Digital BSS

The substantial new engagement entails the integration of Netcracker Digital BSS, a component of the Netcracker Digital Platform, in a comprehensive implementation covering various products and functions. This encompasses order management, CRM, product catalog management, self-service and digital channels enablement, service fulfillment, analytics and reporting, as well as partner management. This large-scale commitment will directly benefit all etisalat by e&'s customers across both consumer and business segments. This includes improved time to market, enhanced service delivery and a superior customer care experience through a GenAI-driven platform.

"Our partnership with Netcracker gives our teams the capability to provide always-on services that help us to meet and exceed customer expectations," said Khalid Murshed, CTIO at etisalat by e&. Murshed also advocated the importance of harnessing the power of 5G to change lives and businesses. "We are confident that strategic partners like Netcracker will help us deliver more for our customers by giving us real business results today and keeping us on the long-term path for etisalat by e& to become a fully automated digital services provider. They will bring their expertise to this long-term project to modernize our systems and processes and deliver the next generation of customer experience."

"We are extremely honored that etisalat by e& has selected Netcracker to play a major role in this important, large-scale, AI-driven transformation project that will deliver significant benefits to our customer and their entire business," said Sylvain Seignour, President of Netcracker. "We have enjoyed a close partnership with etisalat by e& and are looking forward to helping them along this journey to become a modern digital service provider and deliver exceptional value and differentiated service experiences to their customers."

AWS Pioneers New Initiatives to Foster Inclusion and Diversity in STEM

Amazon Web Services (AWS), the world's most comprehensive and broadly adopted cloud, proudly announced the launch of two groundbreaking programs at the "TheNewSySTEM: Reshaping the Tech Landscape" event held in Dubai. The first program, Qudwatech, aims to support young Emirati women in various stages of their STEM careers. Additionally, AWS signed a Memorandum of Understanding (MoU) with the Dubai Business Women Council (DBWC) to introduce a second program, focusing on mid- to senior-level women in technology.

The exclusive launch event was attended by Safaa Khanfar, head of strategic partnerships and innovation at Emirates; Amna Al Redha, head of aviation at X Lab; Tanuja Randery, managing director and vice president of AWS, EMEA; and Nadine Halabi, business development manager at DBWC. The gathering marked a significant milestone in advancing women in technology.

Nadine Halabi of DBWC said, "DBWC is entrusted with a vital mission to enhance gender parity in the UAE by encouraging women to play an active role in building the country and stimulating sustainable development through education, training, and networking opportunities for UAE-based businesswomen. We're delighted to see entities such as AWS take such a proactive role in reshaping the regional tech landscape and look forward to a long, successful partnership."

Tanuja Randery of AWS emphasized, "The Memorandum of Understanding that AWS has signed represents a pivotal step in advancing gender diversity and inclusion in the tech landscape. This partnership with the Ministry of Youth and DBWC enables us to launch targeted programs that empower women at different career stages in technology. It's a cornerstone of our global strategy to drive innovation and diversify the tech industry. We're not just creating opportunities; we're actively participating in the reshaping of the industry for a better, more inclusive future in every country where we operate."

AWS has a longstanding commitment to gender diversity and equal opportunities, striving to create inclusive spaces for women to excel in technology. These initiatives are aligned with the UAE's strong commitment to gender inclusion and diversity, which is notably reflected in the high percentage of women among STEM graduates in the MENA region.

Nokia Corporation's Q3 2023 Interim Report: Insights and Highlights

Outlook Maintained Despite Weak Operator Spending Weighing on Q3.

This is a summary of the Nokia Corporation Q3 and January-September 2023 Interim Report published today. The summary is only of its financial reports in stock exchange releases. The summary focuses on Nokia Group's financial information as well as Nokia's outlook. The detailed, segment-level discussion will be available in the complete financial report hosted at www.nokia.com/financials. A video interview summarizing the key points of our Q3 results will also be published on the website. Investors should not solely rely on summaries of Nokia's financial reports and should also review the complete reports with tables.

Pekka Lundmark, president and CEO, Nokia, on Q3 2023 results:

Our third-quarter performance demonstrated resilience in our operating margin despite the impact of the weaker environment on our net sales. In the last three years, we have invested heavily to strengthen our technology leadership across the business, giving us a firm foundation to weather this period of market weakness.

We continue to believe in the mid- to long-term attractiveness of our markets. Cloud Computing and AI revolutions will not materialize without significant investments in networks that have vastly improved capabilities. However, given the uncertain timing of the market recovery, we are now taking decisive action on three levels: strategic, operational and cost. I believe these actions will make us stronger and deliver significant value for our shareholders.

First, we are accelerating our strategy execution by giving business groups more operational autonomy. Second, we are streamlining our operating model by embedding sales teams into the business groups, and third, we are resetting our cost base to protect profitability. We target between EUR 800 million and EUR 1,200 million in cost savings by 2026. These actions keep us on track to deliver our long-term target comparable operating margin of at least 14% by 2026.

In the third quarter, we saw an increased impact on our business from the macroeconomic challenges that are pressuring operator spending, resulting in a 15% net sales decline in constant currency compared to the prior year. Network Infrastructure declined 14% due to weaker spending impacting IP Networks, while Fixed Networks was impacted by the same challenge combined with customer inventory digestion. In Mobile Networks, net sales declined 19% as we saw some moderation in the pace of 5G deployment in India, which meant the growth there was no longer enough to offset the slowdown in North America. Cloud and Network Services proved more robust in the quarter with a 2% decline and continued to benefit from strong growth in the Enterprise Solutions business.

InfraX, Fortinet to Enhance UAE's Managed Network Landscape

InfraX, a subsidiary of Digital DEWA, the digital arm of Dubai Electricity & Water Authority, achieved Fortinet's Secure SD-WAN Specialization as part of the Fortinet Engagement Partner Program. This strategic agreement will allow InfraX to position Fortinet as its main SD-WAN partner in the UAE.

Through an ongoing partnership, InfraX and Fortinet aim to enhance the managed network landscape in the UAE, providing businesses and organizations with robust, integrated and secure SD-WAN managed connectivity services. InfraX's achievement was announced on the sidelines of GITEX Global 2023.

With the Secure SD-WAN Specialization, partners are validated by Fortinet to provide a high-performance, scalable and flexible secure SD-WAN solution for organizations to deliver superior quality of experience, simplify and secure WAN architecture, and achieve operational efficiencies at the WAN edge. These partners understand convergence and the value of maximizing a secure networking approach for digital acceleration for customers.

"We are thrilled to join forces with Fortinet to offer cutting-edge managed network solutions to our valued clients in the UAE. This partnership represents a significant step forward in our commitment to enhancing organizations' digital services in the country. While we are excited about the opportunities it brings, we are confident that our combined strengths will lead to the development of innovative, tailored solutions that address the unique challenges faced by businesses in this region," said Rashid AlAhmedi, COO of InfraX.

"Leveraging our Secure SD-WAN managed service, the partnership with InfraX will empower organizations in the UAE to optimize their network connectivity, ensuring reliable and secure data transmission. With cyber threats constantly evolving, our joint efforts will ensure that businesses have access to the most advanced and effective cybersecurity measures. We will work closely together to not only protect assets but to enable our clients to harness the full potential of digital transformation securely. We look forward to a successful collaboration," said Alain Penel, vice president, Middle East, Turkey, and CIS, Fortinet.

Impactful Convergence: The Intersection of AI and Cloud in Business Analytics

In the ever-evolving landscape of technology, the convergence of cloud computing and business analytics has ushered in enormous possibilities. This fusion of immense capabilities has unlocked a host of advantages for businesses across diverse industries. As we delve into the synergy between artificial intelligence (AI) and the cloud, we witness the unfolding of an ideal partnership, one that empowers organizations to harness the full potential of AI while streamlining data management and accessibility.

AI and the Cloud: An Ideal Partnership

AI fuels the development of intelligent systems capable of acquiring knowledge, making informed decisions and engaging in rational processes. Nonetheless, harnessing the full potential of AI necessitates extensive data for training its algorithms, and this data management demands a robust and expandable storage solution. This is where cloud computing steps in.

In this context, this useful amalgam emerges as a pivotal driver of innovation, delivering a multitude of benefits to businesses across various industries:

1. Scalability and Resource Optimization: As AI algorithms grow in complexity, their need for data and computational resources also expands. The beauty of cloud computing lies in its unparalleled scalability. This dynamic environment allows organizations to effortlessly adjust their computing power and storage capacity to match the demands of AI workloads, all without the need for substantial upfront investments. This adaptability ensures that businesses can harness the full potential of AI without the constraints of fixed infrastructure.
2. Accessibility and Democratization: The integration of AI into cloud computing platforms has revolutionized the accessibility of cutting-edge AI services. Small and large enterprises are now privy to a vast array of AI-powered tools and solutions, even if they lack in-house AI expertise.
3. Advanced Data Management: Cloud computing platforms are renowned for their robust data management and analytics capabilities. By merging AI with these platforms, businesses can unlock copious data-driven insights and decision-making processes. Predictive analytics, real-time data analysis and advanced data processing become readily accessible, allowing organizations to derive actionable intelligence from their data at an unprecedented pace and scale.
4. Cost-Efficiency and Resource Optimization: The integration of AI and cloud computing optimizes resource utilization and expenditures. Organizations can efficiently allocate said resources on a pay-as-you-go basis, minimizing waste and ensuring that computational power is dedicated precisely where and when it's needed. This cost-effective approach makes AI adoption financially viable for a broad spectrum of businesses.

Navigating AI's Expansion Into Business Intelligence

Historically, the domain of business intelligence has revolved around the analysis of corporate data to uncover actionable insights. This process, although essential, relied heavily on manual, labor-intensive efforts and often struggled with the deluge of unstructured data. AI marks a revolutionary shift in this landscape, offering the ability to efficiently process vast datasets, recognize underlying patterns and even predict future trends.

AI models like the GPT series take this progression a step further. These models go beyond mere data analysis and interpretation. They possess the remarkable capability of generating text that closely mimics human language. Such a groundbreaking development democratizes access to information and insights, making them available to individuals far beyond the traditional data science domain.

The AI Revolution in Business Analysis

The GPT series and other AI innovations represent innovative design achievements capable of producing text that closely resembles human composition. These AI models, firmly grounded in machine learning principles, undergo training using extensive datasets. Typically, these are sourced from the internet, which serves as the foundation for their subsequent predictive modeling.

This intersection of cloud computing and business analytics gives way to an exciting and transformative landscape. AI's remarkable capabilities seamlessly integrated with the scalable, accessible, and cost-effective infrastructure of cloud computing make for an ideal partnership, empowering organizations to scale their AI endeavors, democratize access to insights and optimize data management.

Moreover, as AI continues to expand its reach into business intelligence, advanced AI models immerge, redefining how data is analyzed and insights are generated. These models, equipped with natural language processing, predictive analytics and automated reporting capabilities, bridge the gap between complex data and actionable insights.

In this new era, businesses can navigate the ever-changing landscape with confidence, leveraging the transformative power of AI and cloud computing to make data-driven decisions, predict future trends and enhance their competitiveness. As the journey continues, the possibilities for innovation and growth are boundless, offering exciting prospects for the future of business intelligence and beyond. TR

> This fusion of immense capabilities has unlocked a host of advantages for businesses across diverse industries

Amazon Web Services to Introduce European Sovereign Cloud

Amazon Web Services (AWS) has announced that it will launch the AWS European Sovereign Cloud, a new and independent cloud for Europe, to assist public sector clients and those in highly regulated industries in meeting the most strict regulatory data residency and operating requirements.

The AWS European Sovereign Cloud will be physically and logically separate from existing AWS Regions, with the same security, availability and performance, providing customers with additional choice to meet their data residency, operational autonomy and resiliency needs. The AWS European Sovereign Cloud will launch with its first AWS Region in Germany and will be available to all European customers.

Customers will have the same control and confidence that AWS won't access or use their data for any reason without their consent as they have with current AWS Regions, in addition to access to the best sovereignty controls available among top cloud providers. The AWS European Sovereign Cloud will only be operated and supported by EU residents who work for AWS and are based in the EU. The AWS European Sovereign Cloud, which will have its own billing and use metering systems, will enable clients with enhanced data residency needs to store any metadata they produce (such as the roles, permissions, resource labels and configurations they use to run AWS) in the EU.

"The AWS European Sovereign Cloud reinforces our commitment to offering AWS customers the most advanced set of sovereignty controls, privacy safeguards and security features available in the cloud," said Max Peterson, vice president of Sovereign Cloud at AWS. "For more than a decade, we've worked with governments and regulatory bodies across Europe to understand and meet evolving needs in cybersecurity, data privacy and localization, and more recently, digital sovereignty."

Peterson added that the new offering will give customers and partners in Europe more options to achieve the operational independence they need without compromising on the most comprehensive and in-depth cloud services that millions of customers are already familiar with and use today.

SuperPay: A Game-Changing E-Payment Venture in Egypt

Etisalat Egypt, in collaboration with Banque Misr, has unveiled a new joint e-payment venture named 'SuperPay', which is set to make waves in the Egyptian market.

The CEO of this newly established electronic payments company, Tarek Nagy, revealed that the company boasts a capital of EGP 500 million ($161,999). He further emphasized the company's ambition to secure a 10% market share.

Akef Al-Maghrabi, the deputy chairman of Banque Misr, highlighted that the bank had approximately 5000,000 POS electronic payment machines as of June 2023. He also underscored their numerous partnerships with international firms aimed at streamlining the payment systems across various sectors. He added that the customer base for collection services saw an impressive 100% growth. Additionally, the transaction volume through the electronic payment portal doubled during the first half of 2023 when compared to the corresponding period in 2022.

Hazem Metwally, CEO of Etisalat Egypt by e& said, "We have always been early adopters and change-makers, following our curiosity to connect the seemingly unconnected and make these connections accessible to people, enriching their everyday lives. Today, this mission holds truer than ever before."

Zimbabwe Plans Free Internet Access for Citizens

Tatenda Mavetera - minister of information and communication technology, postal services, and courier in Zimbabwe - has unveiled a government initiative to offer free public internet access to the population. While the Minister didn't provide specific details about the project, she emphasized its potential to enhance citizens' information accessibility and boost e-commerce in the country.

This move aligns with the Zimbabwean government's broader digital transformation goals. Earlier this year, the executive validated the implementation of the national broadband program for the 2023-2030 period. The program's objective is to accelerate broadband availability in Zimbabwe and lower its associated costs. The government is committed to reducing broadband expenses from 10.1% of an average Zimbabwean's monthly income in 2022 to just 2% over the next seven years.

This announcement closely follows Starlink's recent request for authorization to initiate commercial services in Zimbabwe. Additionally, Zimbabwe is actively developing its second satellite, which is expected to significantly enhance the quality and coverage of telecommunications services nationwide.

According to the latest data from the regulator, Zimbabwe recorded 9.9 million mobile internet subscriptions in the second quarter of 2023 (April-June), resulting in a penetration rate of 65.2%. It's worth noting that actual figures may be lower, as some individuals possess multiple SIM cards registered under their names.

Canada, UK, Australia, Japan and US Establish Global Telecom Coalition

The Government of Canada is working with international partners to ensure that keeping telecommunications networks secure, resilient and innovation-focused is a global priority.

"Canadians rely on telecommunications services every day. The Global Coalition on Telecommunications provides an opportunity to advance important work with our allies toward more secure and reliable telecom networks. We look forward to deepening our collaboration with our allies on these crucial issues to provide Canadians with secure and reliable telecommunications services," commented the Honorable François-Philippe Champagne, Minister of Innovation, Science and Industry.

Canada has joined the United Kingdom, the United States, Australia and Japan in launching the Global Coalition on Telecommunications (GCOT). This initiative seeks to build a coalition of countries and stakeholders to foster diverse supply chains, secure and interoperable standards, and innovation in the telecommunications sector.

The GCOT sets out to explore opportunities for closer collaboration and coordination in areas including but not limited to information sharing; research and development; alignment of funding priorities; vision setting and standards development; and international outreach and collaboration.

EXA Announces New Southerly Transatlantic Fiber Cable Route

EXA Infrastructure has added a fifth transatlantic fiber route to its network footprint with the addition of the Dunant cable, connecting the US and Europe via a southern corridor across the Atlantic.

This new route complements EXA's existing cables connecting Paris and Bordeaux in France to the large data center clusters of Virginia Beach, Richmond and Ashburn in the US. This new route offers excellent diversity from other transatlantic cables as well as connecting to EXA's extensive European backbone onwards to Madrid, Barcelona and Marseille via differentiated routes.

"The transatlantic is the largest subsea market globally and with the anticipated growth in the market EXA is uniquely positioned to provide our customers with the greatest choice of diversity and availability across our five transatlantic routes," EXA Infrastructure, Vice President Network Investments, Steve Roberts said. "The addition of the Dunant cable to our portfolio, which is 400G and spectrum ready accelerates our mission to become the undisputed pan-European and transatlantic data center to data center connectivity provider."

EXA continues to invest and expand its network to meet the increasing connectivity demands of today and forecasted for the future. According to Telegeography, global internet bandwidth has grown by 23% in 2023 with the total internet bandwidth now standing at 1,217 Tbps, which represents a 4-year CAGR of 28%. While, international internet traffic has increased in line with internet bandwidth, both peaking at around 30% between 2019-2023.

EXA has been a leading independent subsea cable operator for more than 20 years, with its roots dating back to Hibernia Networks, Interoute Communications and KPN International. Its footprint today extends to 18,000 kilometres of owned subsea cable plant and 20 owned cable landing stations.

Consolidated Communications to Go Private in $3.1 Billion Transaction

Consolidated Communications, a top 10 fiber provider in the United States, has entered into a definitive agreement to be acquired by affiliates of Searchlight Capital Partners and British Columbia Investment Management Corporation (BCI) in an all-cash transaction with an enterprise value of approximately $3.1 billion.

Searchlight, in the aggregate, is currently the beneficial owner of approximately 34% of Consolidated Communications' outstanding shares of common stock, as well as the holder of 100% of the company's outstanding Series A perpetual preferred stock.

Following a thorough review, "the Special Committee determined this transaction is the best path forward for Consolidated Communications and its shareholders. This transaction reflects the value of our business, taking into account both the growth opportunities of the company's fiber build-out, as well as the potential risks associated with the company's ongoing strategic transformation, including impacts from liquidity and leverage limitations within which the company must operate, the dynamic competitive pressures of a sector-wide fiber conversion and the imperative to continue our fiber build-out," explained Robert J. Currey, Chairman of the Consolidated Communications Board and the Special Committee Chair.

The proposed transaction will result in Consolidated Communications becoming a private company and is expected to close by the first quarter of 2025, subject to customary closing conditions.

Mobile Internet Growth Lags Even as Smartphone Ownership Surpasses 50%

According to the industry body, GSMA, more than half (54%) of the world's population now owns a smartphone. However, the rate of new mobile internet users has slowed down. The GSMA's annual State of Mobile Internet Connectivity Report 2023 reveals that 4.3 billion people currently own a smartphone. These smartphone users are skilled at finding mobile internet services to assist them with various tasks.

Out of the 4.6 billion people using mobile internet, 4 billion access it through a smartphone, accounting for 49% of the total population. Additionally, 600 million people (8% of the population) use the internet through a feature phone. In mature markets like North America, East Asia and the Pacific, over two-thirds (69%) of smartphone owners use mobile broadband through 4G-enabled devices, thanks to widespread 4G and 5G deployments.

In sub-Saharan Africa, 69% of smartphone users access mobile internet, while in the Middle East and North Africa, the figure is 33%, but on 3G-enabled devices. This indicates that 2G and 3G networks are still crucial for millions of people in low- and middle-income countries. Despite the availability of mobile broadband networks, around 3.4 billion people remain unconnected to the internet. The majority of these unconnected individuals live in areas covered by mobile broadband networks, highlighting a persistent usage gap.

However, this gap has decreased from 40% in 2021 to 38% in 2022, representing a significant improvement. In comparison, only 5% of those not using mobile internet live in areas with no coverage. Sub-Saharan Africa and South Asia have the lowest connected populations, with usage gaps of 59% and 52%, respectively. Adults in rural areas of lower middle-income nations are 29% less likely to use mobile internet than those in urban areas, while women are 19% less likely than men to use mobile internet.

CelcomDigi and Time Join to Enhance Fiber Accessibility in Malaysia

CelcomDigi Berhad (CelcomDigi) has partnered with Time dotCom (Time) to advance its goal of providing additional residential fiber connectivity alternatives in Malaysia, allowing convergence for Celcom and Digi users.

Under the cooperation, CelcomDigi will use Time's fiber internet infrastructure to reach more Malaysians, especially those living in condominiums and apartments. CelcomDigi clients get 1Gbps bandwidth, excellent upload speeds with Time's symmetric downlink and uplink rates, and faster fiber installation.

This agreement allows CelcomDigi to provide fiber options that enhance the customer experience as a one-stop shop for connection needs by using existing infrastructure and enabling the network to swiftly and cost-effectively roll out internet services to meet the country's digital goals.

Albern Murty, CelcomDigi's deputy CEO, noted the importance of the partnership, which is a good start to expanding its connection footprint to give more Malaysians a smooth and consistent internet experience at home and abroad.

"Our customers can now have affordable convergence solutions for their Internet and lifestyle needs. There will be more future initiatives that will benefit Malaysians from our strategic partnership with Time," offered Mr. Murty.

Canada's Ongoing Commitment: Empowering the Youth's Digital Skills

Investing in the youth is an essential part of the Government of Canada's efforts to support an increasingly digital economy and prepare workers for new jobs in emerging industries.

"The digital economy is the economy of the future, and it's essential that young Canadians have the best possible tools to thrive and make Canada a world leader in tomorrow's economy. That's why our government is dedicated to supporting young people, including recent graduates, as they navigate their entry into the job market, equipping them with the needed expertise and capabilities to begin prosperous careers in the ever-evolving digital sectors. This valuable professional experience will empower young individuals with the means to adjust and excel in the economy of tomorrow," commented Honorable François-Philippe Champagne, Minister of Innovation, Science and Industry.

In line with this, nine not-for-profit organizations in communities across the country will receive $10.68 million in funding as part of the third phase of the Digital Skills for Youth (DS4Y) program.

This investment will support BioTalent, Communautique, ECO Canada, Independent Media Arts Alliance, Lighthouse Labs, Make a Change Canada, Memorial University of Newfoundland, PEI Cultural Human Resources Sector Council and Pinnguaq Association in creating employment opportunities that help equip youth with the skills needed to thrive in the ever-evolving digital economy.

Trends in 5G and Digital Transformation

Telecom Review will host a virtual panel session with the experts to unravel the multi-faceted digital journey in the 5G era.

Place: Virtual

16 NOVEMBER

Telecom Review Leaders' Summit 2023

The 17th edition of the leading ICT gathering will convene industry leaders and partners to tackle the latest industry trends.

Place: Great Ballroom at Le Meridien Dubai Hotel & Conference Centre, UAE

06 - 07 DECEMBER

MWC Barcelona 2024

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

Place: Fira Gran Via, Barcelona, Spain

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26 - 29 FEBRUARY

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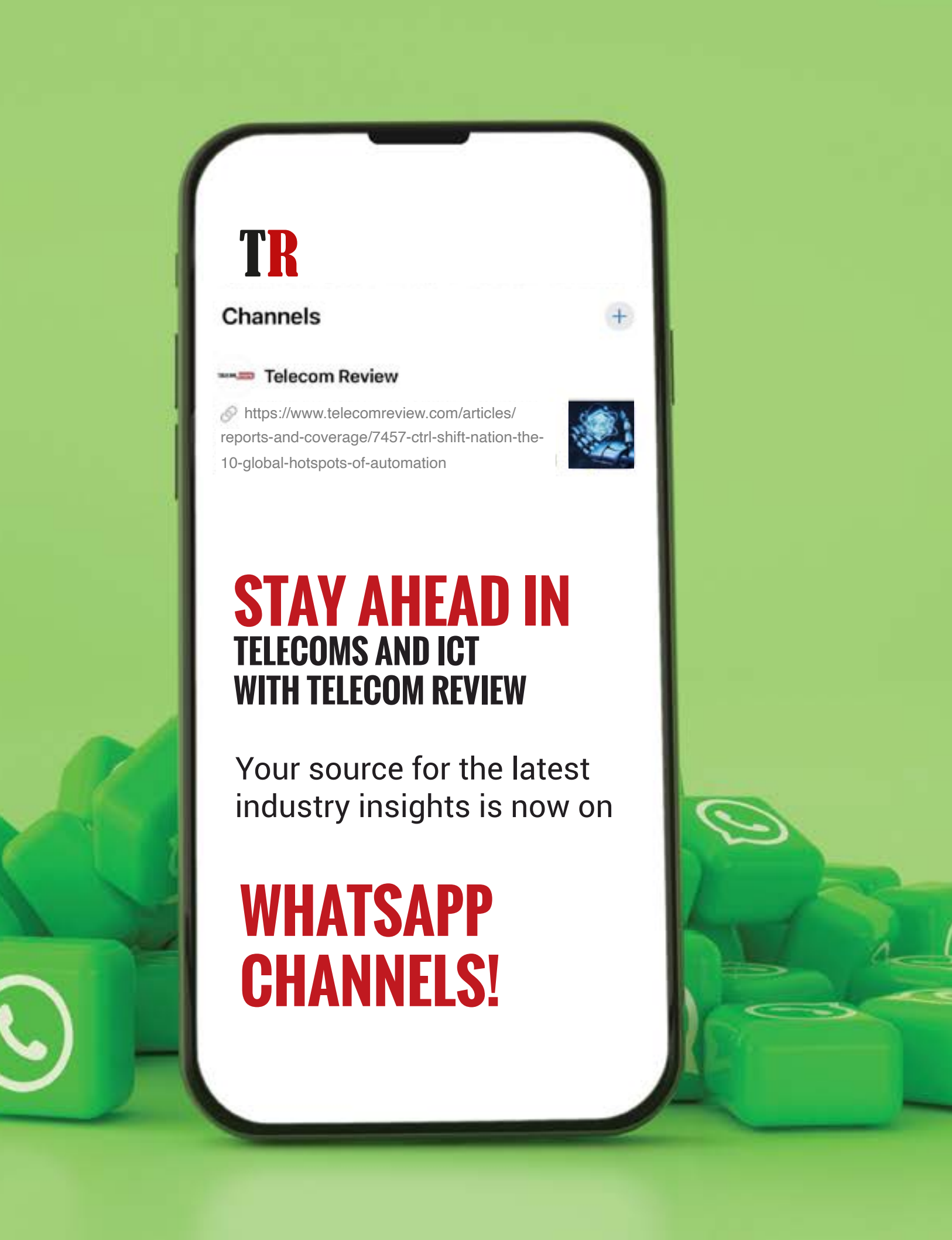
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