

# WinWin

## Orange Maps Out Ambitious Digital Transformation Plan

# Orange

### HKT

Is Leveraging 5G and Emerging Technologies to Accelerate the Digital Economy

### Axiata

Sets New Benchmark for IT Transformation

### Oi

Is Making FTTR the Future for Brazil



# Driving development

## The impact of ICT investments on the digital economy

Produced by EI Studios,  
the custom division of Economist impact

- ◆ Investment in ICT infrastructure will drive the Fourth Industrial Revolution
- ◆ 5G is a major global trend and intergenerational evolution increases economic benefits by 15%
- ◆ Connectivity, computing and green ICT will vitalize the digital economy



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## Stimulate Business Prosperity in the 5G Era



It is four years since the commercial launch of 5G, and the digital industry is now driving the digitalization of other industries, while the digital economy is boosting the transformation of the real economy. Through ICT infrastructure innovation and upgrade, carriers can realize greater business value, while expanding the development and application of ICT technologies across more industries. The seamless flow of data across areas like governance, circulation, and integrated applications has allowed factors of production to efficiently combine, connect, and circulate throughout the real economy, inducing production, distribution, and consumption. The integration of the digital and real worlds has transitioned into a new period of intelligent digital economy. From 2G, 3G, and 4G to 5G, we have witnessed the enormous economic value of ICT innovation.

As 5G enters a new phase, digital application innovations driven by 5G, AI, and cloud computing present carriers with new strategic opportunities. Furthermore, emerging business models for new application scenarios will enable new growth across industries. Moving forward, industry players must cooperate more around new 5G scenarios, applications, and technologies to extend the boundaries of 5G services, shape a thriving 5G industry ecosystem, and realize 5G's potential.

·First, as 5G empowers myriad industries, many new 5G application scenarios emerge, such as rural live stream economy, digital high-speed rail, and 5G industry private lines. These expand the boundaries of 5G services and enlarge the prospects of 5G.

·Second, while tapping into new 5G scenarios, building and enriching new 5G applications is particularly important. New applications, such as HDR Vivid video, glasses-free 3D, and New Calling, are all building momentum, with related ecosystems rapidly growing. For example, Huawei's Go3D solution employs AI-based deep learning to make 2D-to-3D conversion 100 times more efficient. More 3D content, 3D devices with better experiences, and more capable networks mean the glasses-free 3D industry possesses enormous potential.

·Finally, huge demand for new 5G-network capabilities is emerging as we transition from connecting people to connecting things, from communications to integrated sensing and communications (ISAC), and from terrestrial to aerial and transoceanic. RedCap and passive IoT technologies will accelerate the connectivity of everything. RedCap is already mature in terms of chips, modules, and devices, and has been used in commercial 5G deployment in scenarios like power grids and industrial data collection. The number of commercial devices that natively support RedCap is expected to exceed 50 by the end of 2023. Passive IoT has inherent advantages such as passivity, wide coverage, low costs, and support for positioning. It can also be extensively used throughout the warehousing, logistics, and manufacturing industries, among many others, greatly improving production efficiency. ISAC technology expands 5G capabilities to enable sensing applications in the sea, on the ground, and in the air. By leveraging millimeter-wave radar and existing spectrum resources, ISAC is already capable of detection over a distance of 20 km, while its sensing accuracy has been steadily improving. This will greatly benefit the development of smart ocean, smart transportation, and the low-altitude space economy.

As a key novel infrastructure of the digital economy, 5G development is at a tipping point for continuing to stimulate business prosperity. It is vital to accelerate evolution towards the 5.5G era to meet requirements for deterministic experience of the Internet of People (IoP), Internet of Vehicles (IoV), and Internet of Things (IoT). This will support ongoing innovation across the industry value chain and the intelligent digital transformation of society at large. Huawei is committed to working alongside customers and industry partners to realize a prosperous 5G era, boost 5.5G commercialization, and stride towards an ultra-broadband, green, and intelligent future.

By Liu Kang,  
President, Global Carrier Marketing & Solution Sales  
Huawei



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# Orange Maps Out Ambitious Digital Transformation Plan



Orange wants to be the most preferred digital company in Africa by 2025. Under this ambition, Orange Middle East and Africa (OMEA) has embarked on what it calls a 'RUN OMEA' program, which adopts 'Mutualized services' where digital offerings can be delivered from a centralized location to multiple geographies. In this article, OMEA will share with you how it improves operations efficiency and saves on the cost of each African market developing its own digital services portfolio through this way.

Brelotte Ba, Deputy Chief Executive Officer and Chief Operations Officer (COO) at Orange Middle East and Africa (OMEA), does not lack ambition.

In line with the 4th pillar, dedicated to OMEA, of the new strategic plan Lead the Future, "Orange wants to be the most preferred digital company in Africa by 2025," Mr. Ba said in an in-depth interview with Dario Talmesio, research director for service provider strategy and regulation at analyst firm Omdia.

"Around 20% of interactions with our customers are digital today, but we aim to reach 80% by 2025," Mr. Ba asserted. "We're on track to achieve that."

The COO envisaged OMEA not only blazing a digital trail

in the delivery of traditional telecoms services, but as a 'multi-service operator'. Meeting the needs of a large, digital-savvy youth market with "app marketplaces," is one of the compelling drivers of OMEA's digital transformation push. Half of the continent's population, Mr. Ba pointed out, are aged under 18.

"Our customers have already seen we can provide attractive experiences in mobile financial services, through Orange Money, which has led us to stretch the range of services we're providing," he said.

Mr. Ba referenced energy – the operator offers Orange Energy solar kits in various African markets – and digital education initiatives (and helping start-ups to grow) through Orange Digital Centers, as among the areas



According to Mr. Ba, this mutualized services approach is delivering big time when it comes to boosting “net promoter scores”, and enhancing network performance.



OMEA is diversifying into. Digital inclusion, financial inclusion and energetic inclusion are indeed among the top priorities of OMEA, as announced by Orange Group CEO, Christel Heydemann in February.

## More agility and lower costs through shared services

The scale of Mr. Ba's digital ambition is huge. OMEA has a presence in 17 African countries, plus Jordan in the Middle East, and serves more than 140 million customers (over 80 million of which have opened an Orange Money account).

Offering multiple digital services with top-notch customer experiences, across such a vast footprint – and all without operational costs spiralling out of control – seems a tall order. Africa, after all, is a highly pre-paid continent with ARPUs firmly on the low side.

Mr. Ba, however, did not seem fazed. Working in tandem with Huawei, OMEA has embarked on what it calls a

'RUN OMEA' program, which adopts 'Mutualized services' where digital offerings can be delivered from a centralized location to multiple geographies. In this way, OMEA improves operations efficiency and saves on the cost of each African market developing its own digital services portfolio.

To this end, and in cooperation with Huawei, OMEA has established a unique Global Network Operations Center (GNOC), although it's based on two sites: Dakar (Senegal) and Abidjan (Côte d'Ivoire). The GNOC currently serves ten OMEA markets across the African continent. According to Mr. Ba, this mutualized services approach is delivering big time when it comes to boosting "net promoter scores", and enhancing network performance. It also perfectly illustrates the anchorage strategy the group is promoting on the continent.

"This GNOC Program (RUN OMEA) is all about putting automation in all the processes, enabled by Huawei AUTIN solution deployed over Orange Flexible Engine Cloud, both in Core and RAN networks supervision and operations," Mr. Ba said. "This is key because we are improving by using digital tools in all our processes,



whether it be network monitoring or to send people on-the-ground to fix issues. For customers this means less downtime and greater network availability. It has a big impact in terms of a customer satisfaction.”

A more centralized and mutualized approach, added Mr. Ba, also helps tackle the challenge of shortages in digital skills by focusing recruitment and training efforts at fewer sites rather than across multiple geographies.

Moreover, he’s firmly in favour of using online platforms for digital upskilling, either at training centers or for individuals working at home. “Covid has shown more and more how we can work remotely,” said Mr. Ba.

## Digital work in progress

Mr. Ba, throughout his conversation with Omdia’s Talmesio, stressed the importance of “simplicity” and an “end-to-end journey” when it came to customers’ digital experiences. He conceded that OMEA was not entirely there yet in delivering on those requirements.

For one thing, Mr. Ba said, pre-paid customers are often prevented from topping up their accounts digitally at OMEA’s some 750,000 points of sale because they are not equipped to do so. “Digitalizing our sales is a huge challenge, but, working with our partners, we’re tackling it,” said Mr. Ba.

Another challenge is Africa’s usage gap. According to OMEA, more than 500 million Africans remain unconnected to mobile networks despite being within reach of a cellular signal.

“One reason for that is there’s no ecosystem in place to provide applications that are relevant for them,” said Mr. Ba. “Going digital for us means addressing this issue and working with partners to provide affordable handsets.”

Regarding migrating OMEA’s digital transformation efforts to the cloud, “We’ve started on the journey of moving to the cloud,” he said, “but the first approach is more private cloud driven to have a step by step approach especially for some critical applications, and we want to master all these technologies.”

This may change in the coming months, Mr. Ba indicated, with a move to a more hybrid and resilient approach combining private and public cloud.

“At the end of the day what we are targeting is to have more scalable and efficient processes,” said Mr. Ba.



# HKT Is Leveraging 5G and Emerging Technologies to Accelerate the Digital Economy



Smart city, digital transformation and 5G are key factors driving Hong Kong's economic and technological development, and are contributing to maintaining its position as a leading city in Asia. As a fixed and 5G mobile network service provider, HKT plays a significant role in enabling new and innovative services and use cases that incorporate emerging technologies, which are capable of driving Hong Kong's growing economy. Steve Ng, Managing Director of HKT Commercial Group, talked to WinWin about the company's efforts to deliver new benefits to enterprises in Hong Kong.



■ By Steve Ng,  
Managing Director of Commercial Group, HKT

The Hong Kong government has published Smart City Blueprint 2.0, which provides a roadmap for smart city development based on six pillars: Smart Mobility, Smart Living, Smart Environment, Smart People, Smart Government and Smart Economy. All these pillars are crucial for the citizens and the development of Hong Kong. The Hong Kong government established the Digital Economy Development Committee to accelerate progress to-

wards these goals and the digital economy.

Meanwhile, Hong Kong's enterprises have embarked on an era of digital transformation, using digital technologies to revolutionize their business operations. During the COVID-19 pandemic, enterprises needed to find new ways to engage with their customers and employees, highlighting the importance of digital transformation. Therefore, HKT leverage 5G and integrate various technologies such as cloud computing, robotics and artificial intelligence (AI), to assist enterprises accelerating digital transformation in order to meet the constantly evolving market challenges. In addition to Hong Kong enterprises, many multinational and regional enterprises choose HKT's diverse range of solutions for its high-quality, reliable services, including MPLS, premium internet, SD-WAN and enterprise managed services (EMS) to support their expansion in mainland China.

## HKT is leveraging 5G and emerging technologies to drive digital transformation

With the 5G technology, HKT is well-positioned to offer enterprises innovative solutions for achieving digital transformation. 5G is a super enabler for innovation, that

provides high bandwidth, low latency and massive connectivity, which can help enterprises make breakthroughs in their operation. In Hong Kong, many enterprises are exploring ways to leverage the integration of different technologies, including 5G, AI and cloud computing to drive digital transformation.

HKT has years of experience in system integration, and increasingly providing integrated solutions for enterprises embarking on digital transformation. HKT understands the importance of integrating all the pieces to form a complete solution, as enterprises and customers are not just buying technologies, but solutions. Over the years, HKT has seen a growing demand for our unique integrated fixed-mobile solutions across different industries that incorporate 5G connectivity with smart city and various digital solutions.

The highly competent team at HKT provides comprehensive support to enterprises throughout the digital transformation process, from consultancy to implementation and service delivery. In the smart healthcare industry, we help healthcare organizations transform the way they deliver their services to citizens. For instance, HKT deploys 5G connectivity antennas in hospital operating theaters to transmit high fidelity 4K video that can integrate with medical equipment such as an endoscope, or smart glasses worn by the surgeon. We then transmit all this

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video from the 5G network to a senior medical specialist who can help by giving advice to the doctor conducting the surgery. This enables us to provide a more higher-quality healthcare service to citizens.

Another example is how HKT can help enterprises achieve digital transformation in the construction industry. With many construction sites in Hong Kong, engineers need to use their tablet computers and their digital devices to access digital resources such as video and drawings when they are on the site. However, poor connectivity on those construction sites can be a major problem. With 5G, HKT can provide reliable connectivity to enable instant access to these resources. Additionally, 5G allows us to provide new capabilities such as surveillance using 5G cameras and IoT solutions, which can help to improve the safety of workers on construction sites. These capabilities would not be easily available without new technologies like 5G. As a result, 5G is becoming increasingly important for construction sites to achieve digital transformation and improve their operations.

HKT is also enabling digital transformation in the areas of smart campus and smart buildings. By building 5G connectivity in campus buildings, HKT can provide tenants with reliable access to 5G connectivity. Additionally, HKT can enable innovative solutions within the buildings themselves, such as optimizing energy savings. With HKT advanced AI-based energy-saving algorithms, we can help buildings minimize energy use, which can benefit both building tenants and owners.

## **HKT differs from other traditional system integrators in driving enterprise digital transformation**

There are many innovations in driving digital transformation across various industries. HKT is committed to delivering cutting-edge solutions, leveraging emerging technologies to help enterprises achieve breakthroughs in their operations and unlock new opportunities for growth.

HKT differs from traditional system integrators in several ways. For instance, we have a professional technical consulting team in our organization that visits custom-

ers, understands their requirements, and develop integrated solutions tailored to their needs. In this way, we can identify customers' pain points and deliver customized solutions, fostering a deeper understanding of the latest technologies.

In addition to designing and implementing digital transformation solutions, HKT recognizes the importance of ongoing support services for customers. With talent shortages being a challenge in Hong Kong and worldwide, we understand the burden that customers may face in maintaining their operations. To address this, we offer managed services for our customers to ensure the smooth operation of the integrated solutions. By providing ongoing support, we enable our customers to enjoy hassle-free IT operations and focus on their core business.

At HKT, we believe that this ecosystem that supports enterprises is crucial for success. And at the same time, we also offer managed services for the government in order to accelerate the development of smart city in Hong Kong.

## **HKT partners with Huawei to leverage its technological strengths and ICT expertise**

HKT has been partnering with Huawei for over 20 years and we recognize Huawei's exceptional R&D capabilities and rich portfolio of solutions. We collaborate with Huawei in various areas including fiber networks, 4G and 5G networks, as well as solutions like cloud storage and Wi-Fi, and Huawei is a very strong partner of HKT in terms of delivering solutions to enterprises.

HKT also collaborates with Huawei on joint innovation initiatives. For example, we are currently developing an integrated connectivity platform based on 5G, Wi-Fi, Bluetooth and IoT to be at the forefront of ICT development. Looking to the future, we look forward to continuing our collaboration with Huawei, bringing new innovative solutions to benefit Hong Kong and the world.



# Axiata Sets New Benchmark for IT Transformation

At MWC Barcelona 2023, Anthony Rodrigo, GCIO of Axiata, sat down with Huawei's WinWin Live to exchange thoughts about Axiata's Transformation journey from telco to techco. He explains their current progress and elaborates on their best practices and some of the most important technologies for this transformation. Anthony also sheds some light on the significant changes needed for an open digital IT architecture and culture, and to change in ways of working internally as well as with partners.

- The following article is an adapted version of Mr. Anthony Rodrigo's interview.



**WinWin: Axiata is a leading carrier in Asia Pacific, and has many best practices in IT transformation. What do you think are the core elements for Axiata's IT transformation? What progress have you made?**

It all began around 10 years ago when we started our developer application programming interface (API) marketplace. The developer API marketplace influenced internal IT culture and innovation. The learnings boiled down to three core elements of our transformation process: The first was an API driven open digital architecture



(ODA); the second is an open source software digital telco stack to bring ODA to life; and the third element was on IT way of working to take back control of DevOps.

When it comes to ODA, Axiata embraced the TM Forum ODA blueprint as a canvas and used that to build a stack that could work with new digital solutions as well as our telco legacy assets. Over time, we learned to bring ODA to life through an open source software stack. It includes things like end-to-end fully automated CI-CD pipeline, cloud orchestration, API management at scale, microservice orchestration, and an API/software marketplace to search before build. During this process, we ran in excess of 400 projects on our Digital Telco Enabler (DTE) stack. The latest edition of that stack was building an AI factory into the DTE.

The third element was to change our way of working (WoW). We had outsourced most of our IT to vendors, but that was getting slow and too expensive. For this reason, we decided to take back control of DevOps. This was done through a company called Axiata Digital Labs that could run the DevOps for us.

The overall impact of this has been significant. We've seen a ten-fold increase in GTM speed, over 40% savings on IT capital expenditure (CAPEX), and business support systems (BSS) change requests brought close to zero. The benefits that we uncovered on our journey to digital transformation are significant.

## **WinWin: IT is developing rapidly. What does Axiata think are the most important technologies for IT transformation?**

Telcos are currently at a crossroads in their evolution, with some choosing to take the journey of transforming from telco to techco. In the techco journey, IT stacks and WoW will play a major role in this techco transformation.

There are some key ingredients that telcos will need for this cloud transformation journey to be successful, including having an open architecture, owning their DevOps or taking back control of their DevOps, running AI at scale, adopting cloud native software, and most importantly, collaborating with partners via APIs to co-innovate with the ecosystem.

In terms of tech stack, key pieces of the puzzle include running APIs at scale, microservice engines, AI-driven architecture, high velocity CI-CD operations, and cloud orchestration. In addition to this, it is also very important to have the infrastructure and the setup to work with external developers and partners; as a techco, you are not only building for yourself, you are building with the ecosystem.

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## WinWin: What do you think is the best IT reference architecture during IT transformation. How is it used in Axiata?

When it comes to the IT reference architecture during IT transformation, we at Axiata embraced an open architecture, which refers the TM Forum's ODA on a very large scale. It provides a great canvas to building a digital telco on top of legacy assets and enables the techco transformation with many readily available APIs. Obviously, you should not throw your legacy assets away as they should be used for as long as possible; as I often say, "sweat the BSS assets." And we do this through an API overlay of the legacy assets.

It is also important for IT to get their hands dirty. You cannot outsource everything to different vendors — you've got to own the DevOps engine.

Digital stack is required to power the creation of ODA and bring it to life. There are a few elements that one should have: An API gateway that is tuned to run on telcos and governance that go along with that; telco adapters towards the network and the BSS and operations support systems (OSS); a microservices platform to run telco at scale; and the telco business templates to create services like building with Lego. We are also running fully automated DevOps and CI-CD to achieve production velocity.



## WinWin: You mentioned the multi-cloud strategy. How do you select cloud transformation partners? What are your major considerations?

Axiata has a full complement of on-premises and public cloud infrastructure providers, and our cloud strategy involves looking at total cost of ownership (TCO), latency, edge requirements, overall data architecture, and GTM speed.

When it comes to selecting a cloud service provider (CSP) as our cloud transformation partners, there are some major considerations. In this process, we do not only consider technology. Rather, you've got to consider the specific skills that you need on the ground and then look at the local support provided by CSPs — every country and situation has its own unique needs. The second requirement focuses on their telco domain knowledge. Our cloud partner has got to fully understand the problems that we are trying to solve, so that they can help us solve them faster. The third consideration is their ability to complete joint R&D so that we can co-innovate. We are already doing much work in this space with CSPs. For example, we are building an AI factory to run some GTM use cases very tuned to our market requirements. Finally, you need to be able to reap the benefits of cloud computing in terms of GTM speed and agility.

## WinWin: Can you tell us about your relationship with Huawei? What are the main areas of cooperation?

Today, one of the key areas of cooperation with Huawei is in Axiata Digital Labs (ADL), Axiata Group's very own innovative software services and platform provider. A core platform of ADL, Axonect Digital Telco Enabler (DTE) is already pre-integrated with Huawei CBS. We are also looking to deepen the cooperation between Huawei and ADL by making Axonect DTE part of Huawei CBS offerings.



# Oi Is Making FTTR the Future for Brazil

Oi, one of the largest home broadband service providers in Brazil, has released an all-new Oi Fibrax all-optical strategy in Latin America to meet rising requirements and improve digital home service experience. By bringing Huawei's fiber to the room (FTTR) networking service into the mix, Oi is making whole-house gigabit networks ready for every home and SME, lighting up our digital lives and smart office experiences.

■ By Rogerio Takayanagi,  
Chief Strategy and Transformation Officer, Oi



Over the past few years, it has been no surprise that more and more people are moving online for work and for fun, and Brazil has been no exception. Internet and smart home applications have taken off in our home country during this time. However, the networks that serve Brazil's 214 million residents have struggled to keep up with the technical requirements these new applications have, particularly in terms of bandwidth and latency. This trend is especially true in the field of home Wi-Fi.

## Bringing fiber to the room and quality to the customer

Currently, only 50% of Brazil's broadband users have access to 200-400 Mbps connections, and only 10% have 500-900 Mbps connections. At Oi, we plan our business around how best to meet customer requirements. And so, we created our Fibrax strategy to bring premium



fiber connections, reliable service delivery, and digital transformation support to customers.

The Oi Fibra X strategy is based on FTTR services that extend optical fiber to rooms instead of just to the edge of your home or campus. This improves user experience in multiple ways, from providing faster rates and expanding coverage, to improving roaming and concurrency.

## The strengths, and opportunities, of FTTR

Fiber technology, and FTTR in particular, has developed rapidly in recent years, specifically because of these new digital home requirements. 451 carriers around the world already offer gigabit broadband practices to an estimated 120 million users, but lagging Wi-Fi capabilities prevent these users from enjoying the full experience of this bandwidth. 60% of broadband complaints are currently linked to Wi-Fi, and 55% of households report poor Wi-Fi performance.

By enabling over 1000 Mbps Wi-Fi to every room in a house, FTTR is able to support a wide array of increasingly mainstream applications, like online education, remote work, immersive extended reality (XR), and whole-house intelligence. FTTR solutions extend fiber to all terminals in a home, helping carriers smoothly transition from fiber to the home (FTTH) to FTTR, increasing both user stickiness and average revenue per user (ARPU). This has made it exceedingly attractive to carriers.

## Choosing the right partner at the right time

There are currently more than 100 carriers around the

world who have put FTTR into commercial use, and most of them are provincial carriers in China. And so, when Oi began our own FTTR journey, we decided to turn to a clear leader in this field: Huawei.

Huawei's FTTR solution helps carriers build gigabit Wi-Fi home networks that offer 100% home coverage, 2 Gbps uplink and downlink rates, and a roaming handover time of less than 20 ms. It also enables simultaneous intelligent connection of up to 128 devices.

Oi has since worked with Huawei to develop new innovative technologies and push FTTR research forward. Together, we have worked on a number of projects to provide premium FTTR networks for our customers and overcome the indoor Wi-Fi challenges that are holding the industry back. We are building FTTR joint showcases, benchmarking customer service centers, and carrying out joint marketing activities to this end.

With their FTTR solution and other enablement tools like the NCE digital operations platform, we aim to convert 10,000 high-value FTTR users this year.

## Where will we go next?

While we are exceedingly proud of these achievements, we are also already making moves to build on this momentum.

First, we need to continue marketing and publicizing these new services to improve the perceptions of potential users and develop our user base through multiple channels. A new experience center is already in the works to help with this.

Second, we will continue to deepen our connections with Huawei and enhance our planning, construction, acceptance, and maintenance capabilities to provide users with premium end-to-end experiences. Huawei's technologies have already proven extremely useful by intelligently improving Wi-Fi visibility and management, and enabling us to identify problems and optimize performance remotely, without home visits.

Third, we need to build a channel ecosystem and work with partners to accelerate large-scale commercial use of FTTR. This technology is ideal for all carriers seeking to enter the smart home field. By working together, we can

explore a host of new smart home services. We already have our eye on some services such as smart home security, smart home storage, and service acceleration.

By focusing on innovation, cooperation, and win-win solutions, we can all succeed. I for one am excited to see just how much our industry changes as carriers

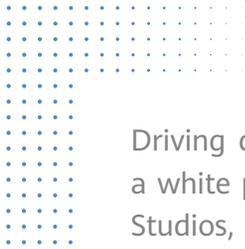
grow in the digital home service market and shift from bandwidth monetization to experience monetization.



FTTR solutions extend fiber to all terminals in a home, helping carriers smoothly transition from fiber to the home (FTTH) to FTTR, increasing both user stickiness and average revenue per user (ARPU). This has made it exceedingly attractive to carriers.



# Driving development: the impact of ICT investments on the digital economy



Driving development: the impact of ICT investments on the digital economy is a white paper supported by GSMA Intelligence and Huawei, and produced by EI Studios, a custom division of Economist Impact. This paper explores the impact of information and communications technology (ICT) investments on the global digital economy.

For well over two decades, studies have been produced that highlight the linkages between ICT investments and a number of key indicators, such as economic growth, employment, productivity, and even social indicators such as income levels. An illustrative example is the *Mobile technology: two decades driving economic growth* report by GSMA Intelligence, which shows that the adoption of mobile technology — and its advances — directly result in GDP growth.

The white paper draws on a global survey of 500 individuals, conducted in December 2022, of which 400 are company executives, 50 are policy makers and another 50 are institutional investors. Also included are insights gleaned from in-depth interviews and desk research.

■ By EI Studios and GSMAi

## **Investment in ICT infrastructure and resulting digitalization will drive the fourth industrial revolution.**

Much as steam power and the mechanization of production drove the industrial revolution three centuries ago, ICT infrastructure will drive the fourth industrial revolution through gains from digitalization. A 10% increase in mobile adoption, for example, can result in a GDP increase of 1%, while 5G alone is expected to result in an additional global GDP value-add of US\$960 billion, or about 0.7% of global GDP. Investment in ICT infrastructure must be a priority for all governments for the socioeconomic development of their peoples.

## **Telcos are at a tipping point.**

Telcos have a pivotal role to play as enablers of the digital economy. They have been instrumental in providing necessary connectivity infrastructure and improvements in connectivity. So far, they've borne the burden of ICT infrastructure investment — partly in keeping with their role as public utilities. However, this is not sustainable, given the pace at which infrastructure requirements are changing and the ultimately limited re-

sources telcos have. If ICT infrastructure is a “public good”, others in the ecosystem — such as other enterprises and the public sector — must play a bigger role in financing ICT infrastructure development.

## **Advanced 5G connectivity is the undercurrent enabling technology adoption and its benefits.**

There is a sharp focus on technology adoption and implementation, such as the greater use of AI, machine learning, and cloud and edge computing. However, the base requirement for all of this is the availability of and advancements in high-speed, reliable 5G network connectivity to 5.5G and eventually 6G. Without investment in networks, the gains from technological developments will be stunted.

## **Public and private sector collaboration are “crucial levers for growth”.**

Policy makers and governments play an important role in facilitating investment in ICT infrastructure and in facilitating the digital economy. Doing this effectively requires col-

**Much as steam power and the mechanisation of production drove the industrial revolution three centuries ago, ICT infrastructure will drive the fourth industrial revolution through gains from digitalisation.**



With a new wave of digitization — which includes artificial intelligence, cybersecurity solutions, IoT and cloud computing — a reassessment of the importance of ICT investments to the global digital economy is now necessary.

GSMA Intelligence



laboration and dialogue with the private sector to put in place supportive regulatory frameworks and incentivize innovation in ICT, both of which are essential to boost the digital economy of the future.

## **Investment in ICT unlocks value for the planet and communities.**

New and emerging ICT technologies are proving to be instrumental in energy use management, reduction in carbon emissions, improvements in SDG benchmarks, and contributing to community resilience. Traditional investment in ICT mainly focuses on connectivity and computing. Green technologies will be the third new dimension to maintain long-term vitality of the whole digital economy, improving sustainability and resilience, while unlocking value for communities and the planet.



**Policy makers and governments play an important role in facilitating investment in ICT infrastructure and in facilitating the digital economy.**

# Digital Transformation and New Service Opportunities for 5G

■ By Richard Webb,  
Director of Network Infrastructure, CCS Insight

With a rising number of 5G networks now deployed and evolving, MWC Barcelona 2023 saw the emphasis shift from 5G rollout to profitability.

The improved performance characteristics of 5G — speed, latency and so on — compared with 4G means that the creation of new services is central to generating revenue from 5G. 5G network capabilities enable tiered pricing plans based on levels of connectivity, as well as network-as-a-service models or, with support from partners, custom offerings based on emerging technologies like artificial intelligence, edge computing or data analytics.

So, what are some of these new 5G service opportunities?

Data gathered from CCS Insight's survey of 20 firms pro-

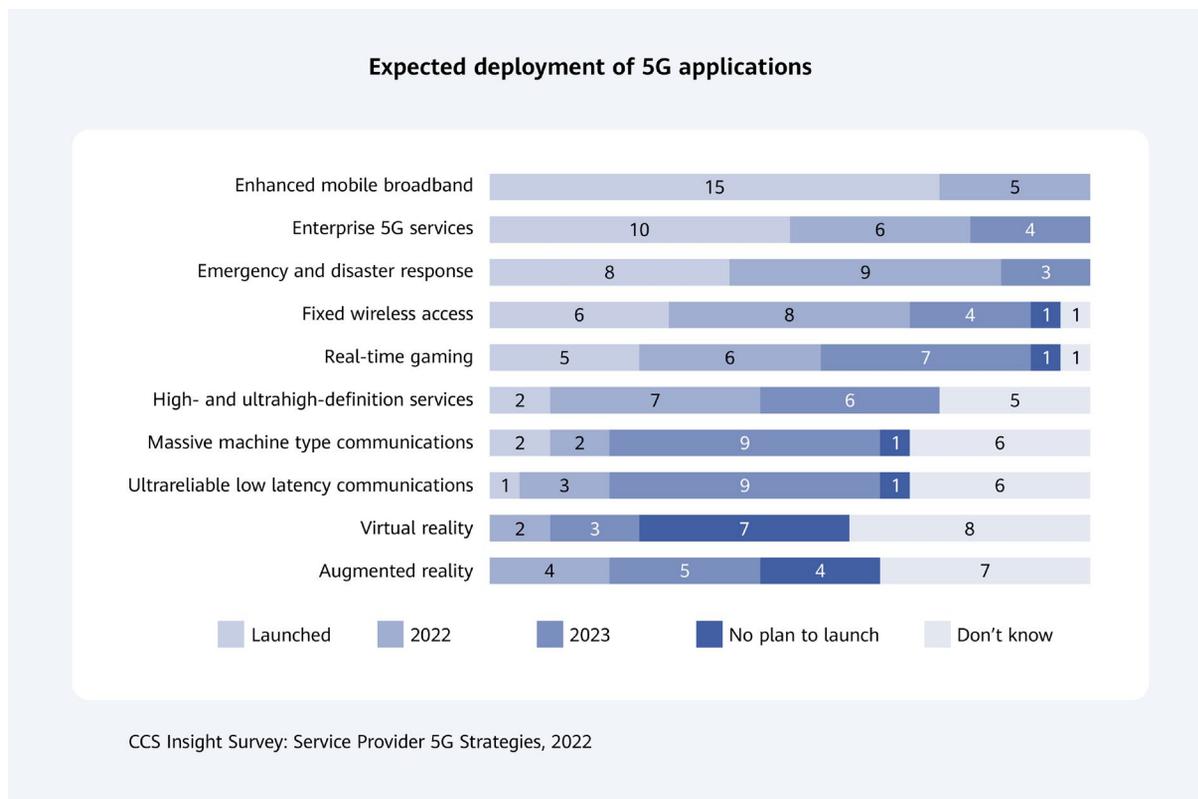
viding 5G networks, shown in the chart below, shows that the vast majority had already launched a range of 5G services or had plans to do so in the next couple of years. Unsurprisingly, enhanced mobile broadband was the most-launched service in late 2021, but there are clear intentions to diversify 5G services in 2023 and beyond by adding services such as real-time gaming and ultra-reliable and low-latency communications.

We've also heard many service providers talk positively about various 5G service opportunities in enterprise and consumer market segments. One of these is the burgeoning private mobile network market, which several providers have acknowledged as a potentially high-value opportunity to serve various industries with custom network services to support their technology transformation.

The rise of private mobile networks is driven by the increasing digitization of industry sectors and the adoption of emerging technologies such as edge computing, cloud services, artificial intelligence and data analytics, as well as 5G itself. Innovations in 5G open new possibilities for industry based on its connectivity characteristics, such as high capacity, low latency, mobility, reliability. These combine with the security improvements inherent in a

private network to enable enterprises to process data locally without transmitting it over the public Internet.

Private 5G can play a vital role in pushing digital transformation strategies in enterprises and addressing new customer segments. For example, Deutsche Telekom launched a private 5G network solution earlier in 2023, with Hagen Rickmann, its managing director for busi-



ness customers stating: "Our new 5G campus network solution comes with low entry barriers regarding costs and effort. Therefore, we can address customers in the small- and medium-sized business segment. They can adopt 5G technology easily and push their digitalization further — while maintaining flexibility."

This indicates that service providers are increasingly positioning for this emerging segment, which is already starting to accelerate. As a market data provider on behalf of the Global mobile Suppliers Association (GSA), CCS Insight tracks live commercial contracts in the private mobile network market.

The number of enterprises with private mobile network

deployments has grown rapidly over the past three years. According to data from GSA, the number of customers with 4G or 5G private networks rose from 224 in 2019 to a staggering 1,077 in 2022. The majority are based on 4G, but CCS Insight expects this to transition to a 5G-led market in the near future.

Among service providers, there's a growing awareness of private mobile networks as transformational for operational processes, services, new revenue streams and customer experiences.

In an interview, David del Val, CEO of Telefonica's research and development department, said: "5G and edge are bringing a new wave of transformation in

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5G drives profound change, not just in the network but in the provider's portfolio. New performance capabilities enable operators to create attractive offers and novel experiences for consumers as well as the largely untapped enterprise market.

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the same way as mobile broadband and the cloud did some years ago. By using cloud-native principles we have transformed how the services are delivered to generate turnkey services. Now we can spin up private networks connected to apps on the cloud edge in hours or days, not weeks or months. This will enable us to reach more client segments and industries in the coming years."

But it isn't just the enterprise market that's optimistic about the opportunities presented by 5G. At an event for the media and analysts in Paris in April 2023, the global head of extended reality and metaverse for Orange, Morgan Bouchet, talked about the operator's vision of using 5G networks to capture opportunities in immersive technologies and services, saying that "VR is an impacting machine" and customers are "just crazy about the power of the technology and the emotion created by it."

5G will play a major role in supporting metaverse-ready connectivity as part of services that include adjusted tariffs based on speed and latency, as well as bundled content and devices such as augmented reality glasses or virtual reality headsets and controllers.

The concept of differentiated experiences and services is particularly interesting, as it nods to an aspect of 5G that's only now beginning to be exploited by providers but presents a significant opportunity, especially as mobile operators transition to standalone 5G networks. Upgrading to a cloud-native 5G core provides an enhanced range of capabilities, most notably network slicing.

Network slicing allows multiple virtual networks to be created on shared physical infrastructure — "slicing" the network to enable different services to run across it. This could be transformative, offering a cost-effective method to deliver differentiated connectivity, customized to the needs of customers, applications or service environments, maximizing the network's operational efficiency.

This could include applications in a smart factory, a drone system or real-time video streaming — a multitude of new service requirements based on performance characteristics like speed, latency, prioritization, security and cost, or even the location to which traffic is routed to suit different traffic or application types.

For example, network slices for voice would be engineered to minimize latency, video stream slices would

accommodate larger packets and allow buffering, and so on. These services could be offered in pricing tiers based on different levels of guaranteed service. Cayetano Carbajo, director of core and transport and global chief technology and information officer at Telefonica, said that "network slicing is a key part of our 5G monetization strategy, and we plan to bring the technology soon to our live networks."

5G drives profound change, not just in the network but in the provider's portfolio. New performance capabilities enable operators to create attractive offers and novel experiences for consumers as well as the largely untapped enterprise market. This also drives a change in the strategies of network-based providers in terms of market positioning, customer relationships, internal skill profiles and, of course, revenue streams. This technology evolution must bring about a commercial evolution in the firm — a transformation of the process by which the business plans, markets and executes new services.



# Reimagine, Reinforce, Reinvent: Accelerating 5G Prosperity



During the session "FWA: The Real 5G Success Story" held at MWC Barcelona 2023, Li Peng, Corporate SVP, President of the Carrier BG, Huawei, gave a presentation entitled "Accelerating 5G Prosperity". He set out the three steps that the industry needs to take in order to fully tap into the benefits of 5G, and turn 5G from good to great. He outlines not only Huawei's vision for the future of 5G, but also the innovations that Huawei continues to make in the field, and that are already delivering remarkable results.

■ By Li Peng,  
Corporate SVP, President of the Carrier BG, Huawei

5G has progressed rapidly since its commercial rollout three years ago, and made a lot of exciting advancements in 2022. Today, over 1 billion people use 5G to watch sports events in high-definition. And millions of households worldwide use 5G broadband for communication and experience-based entertainment.

## 5G is already good, but it can be great

Today, 5G adoption is picking up speed: in three years, 5G has achieved the level of rollout that 4G took 5

years to achieve. Clearly, 5G is already good. However, 5G coverage is still unbalanced among different regions and countries. Consumers expect a better 5G experience, while industry digitalization requires more from 5G. The question is: how can we turn 5G from good to great?

We need to take three big steps:

- Reimagine 5G business
- Reinforce 5G coverage
- Reinvent 5G products and technologies

Let's take a closer look at each of these 3 steps.

**Reimagine  
Reinforce  
Reinvent**

**5G**reat



## **Reimagine: innovative metrics for 5G monetization**

In the 5G era, leading carriers monetize 5G based on experience-centric metrics. China Mobile, for example, is exploring how to monetize traffic in new ways. By working with popular apps such as Douyin — the Chinese version for TikTok — China Mobile precisely optimized the 5G network coverage to improve user experience.

In addition, one European carrier successfully launched 5G pricing plans based on speed tiers. Bundling services with 5G plans is also a promising direction for monetization, with AIS Thailand having increased their revenue from such plans.

## **Reimagine: capitalizing on the natural desire for better experience**

A recent survey found that, when watching a three-minute HD video, the human brain produces the same amount of dopamine as during a 30-minute run. Evidently, high-quality short videos are the experience consumers want.

Meanwhile, free-viewpoint videos, where viewers can

watch a video from any point of view, is also gaining traction in sectors like sports and entertainment.

## **Reimagine: new business models based on new experiences**

In addition to experience-centric metrics, we also need experience-based business models. According to a third-party survey, 70% of consumers are willing to pay for better 5G experiences.

In the next three to five years, the market growth rate of Network as a Service (NaaS) for carriers will double. We're glad to see that GSMA has made substantial progress in this market, such as with the open source project CAMARA. Moving forward, carriers will continue to improve their network capabilities, to provide more guaranteed experiences.

## **Reimagine: monetizing premium 5G home with "1+1+X"**

5G home broadband is another great way to monetize the 5G experience. In Northern Europe and the Middle

East, carriers bring users upgraded experiences by adopting a "1+1+X" model, which means "1" high-quality 5G mobile network, "1" home Wi-Fi network, and QoS guarantee for "X" video and gaming apps.

One leading Finnish carrier improved its average revenue per user (ARPU) by over 60% with this model, with 90% of users saying that they would recommend the service to others.

## Reimagine: more capabilities means more opportunities

More business opportunities emerge as carriers expand their network capabilities. Today, more than 50% of carriers have deployed 5G fixed wireless access (FWA) services, while only 30% deployed 4G FWA, showing that new players without any 4G FWA experience are also able to profit from 5G FWA.

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Today, 5G adoption is picking up speed: in three years, 5G has achieved the level of rollout that 4G took 5 years to achieve. Clearly, 5G is already good. However, 5G coverage is still unbalanced among different regions and countries. Consumers expect a better 5G experience, while industry digitalization requires more from 5G.

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5G

In the home market, there are still 200 million copper broadband lines in urgent need of upgrade. And 5G FWA, with up to 250 Mbps speeds, offers a faster, better alternative to xDSL.

In addition to the home market, small- and medium-sized enterprises (SMEs) are also a huge market for 5G FWA. We expect to see up to 60 million leased lines deployed in places like campuses, stadiums, and gas stations.

## Reinforce 5G coverage: "more for more"

Deep 5G coverage helps carriers win in their markets. This principle was recently confirmed by GSMA after looking at the top-20 carriers in terms of 5G coverage. The 20 carriers with the most 5G sites enjoyed 10% ARPU growth, compared to the industry average of only 1%. There are two things carriers can do to deepen their 5G coverage.

First, carriers can improve their indoor coverage — over 80% of user complaints are related to poor indoor experience. Improved site solutions, like Huawei's MetaAAU, can penetrate more walls inside buildings to improve user experience. Huawei's Indoor solution, Lampsite, can also be used to provide excellent indoor experiences.

Second, carriers can improve the coverage in suburban and rural areas. By focusing on wide-scale 5G deployments, carriers will increase the total user base and unlock new revenue growth.

## Reinvent: new 5G AAUs for new traffic surges

To support the growing demand for 4G and 5G services, Huawei is working continuously to reinvent our solutions, focusing on new breakthroughs to improve 5G coverage and reduce energy consumption.

Last year, we launched MetaAAU — our third-generation 5G AAU. It has twice as many antenna elements as our previous models, allowing it to provide 30% more capacity and deeper coverage, or the same coverage with 30% less power. MetaAAU is already a top choice for global

carriers seeking to increase their 5G coverage.

This year, we are launching our Meta BladeAAU. It combines the larger antenna array from MetaAAU with our Blade concept, allowing for simple deployment of 2G, 3G, 4G and 5G on a single pole. This is an ideal solution for markets like Europe where space in mobile base stations is limited.

## From 5G to 5.5G: 10x capabilities for 100x opportunities

Leading carriers are now working closely with 3GPP to advance the 5G standard and make the leap to 5.5G. 5.5G will expand on 5G, but will be faster, more automated, and more intelligent. It will support more frequency bands, and deliver 10 times higher network throughput. It will be 10 times more energy efficient, and provide 10 times greater operation efficiency than 5G.

5.5G will also open up new possibilities. For example, it will introduce new capabilities like Passive-IoT to replace the legacy RFID technologies with expanded range and more capabilities, as well as provide integrated sensing capabilities.

Indeed, there is much more potential to be unleashed from 5G in order to accelerate 5G prosperity. But achieving all of this will no doubt take the concerted efforts of the whole industry. As Huawei continues to work closely with global carriers and develop innovations to accelerate 5G prosperity, I look forward to seeing what we can create together.



# Green & Development, Choosing Not to Choose



At the Huawei Green ICT Summit held at MWC 2023, Peng Song, President of ICT Strategy & Marketing, Huawei, delivered a keynote speech entitled "Green & Development, Choosing Not to Choose". Peng points out that an "AI big bang" is underway, and that AI is set to bring new benefits and opportunities to carriers. He also notes that it requires better ICT infrastructure, due to higher bandwidth and increased computing power leading to a rapid increase in network energy consumption.

■ By Peng Song,  
President, ICT Strategy & Marketing, Huawei

Today, the industry pursues advanced ICT technologies for efficient and prosperous society development, in the hope that everyone can live happier, healthier and safer in a green world. In this article, I focus on the relationship between Green and Development. I will detail Huawei's perspective on the relationship between green and development in the ICT industry. In particular, should we choose to prioritize one over another? Let me give you Huawei's answer before I start: We should not choose one or the other. Rather, we should choose not to choose; let me explain how.

## AI big bang: a new intelligent era

There is no doubt that we are witnessing explosive growth of a new influx of AI applications. It's safe to say that the interaction model between these AI apps and users will rapidly expand from text to voice, images, and videos. In addition, AI training will evolve from a centralized model to a distributed one. A new intelligent era is fast approaching. This will bring three major opportuni-

ties and benefits to carriers:

- First, carriers will have new sources of revenue; for example, they can provide new toC and toB AI services.
- Second, carriers will be able to provide even better customer service experience; for example, improving the quality of customer service calls.
- Third, carriers' network operations and maintenance (O&M) services will become much more automated and intelligent.

All of this will supercharge the development of ICT in-

frastructure. We estimate that by 2030, the computing power of AI will increase 500-fold, and the demand for AI interactive data will increase 100-fold. In addition, changes to AI training models will pose higher requirements on network architecture.

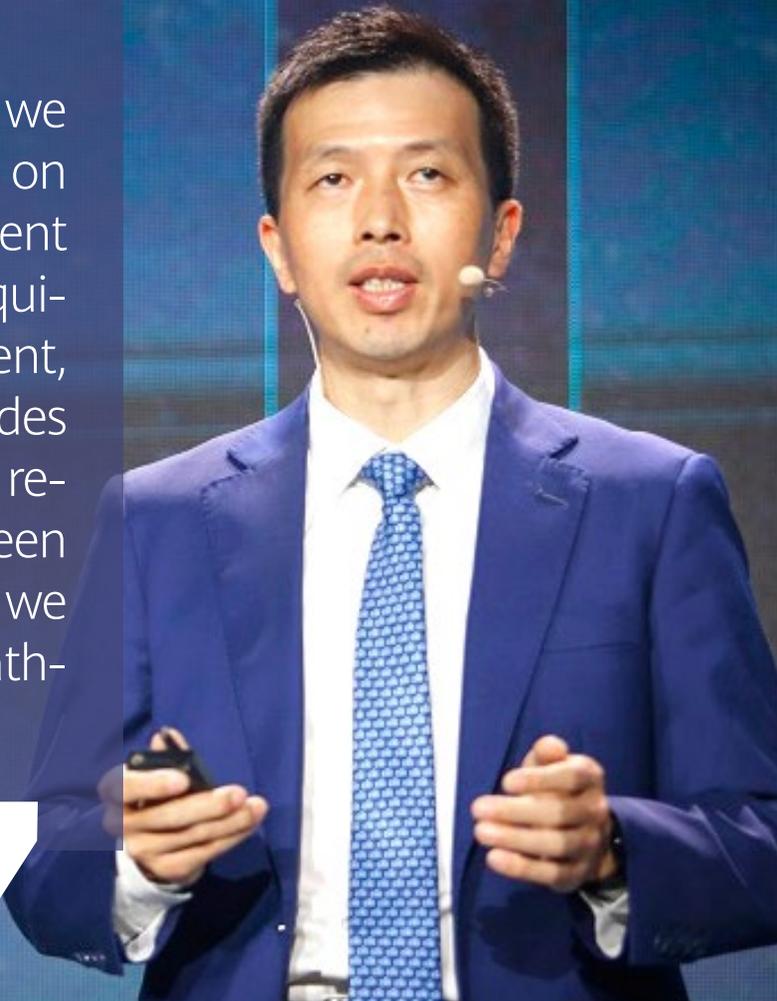
However, such massive AI growth and great development opportunities will naturally drive up network energy consumption, which is estimated to grow 25-fold by 2030 if we fail to innovate or take action. This presents a huge challenge for our green initiatives.

So, which one should we prioritize: "green" or "development"?

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In the ICT industry, I believe we should sharpen our focus on both green and development together. Green is the prerequisite for achieving development, while development provides the means to make green a reality. As for the choice between green and development, we choose not to choose, but rather to take them both.

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## Green & development, choosing not to choose

As the famous legal scholar Cass Robert Sunstein once noted: "Choice can be an extraordinary benefit or an immense burden. In some contexts, people choose not to choose."

In the ICT industry, I believe we should sharpen our focus on both green and development together. Green is the prerequisite for achieving development, while development provides the means to make green a reality. As for the choice between green and development, we choose not to choose, but rather to take them both.

## Three advancements accelerating green & development

When we work with carriers around the world on green and development initiatives, we often find ourselves in situations where choices need to be made in those three areas. In these situations, we also choose not to choose.

First, for energy efficiency, we focus on both improving network energy efficiency and reducing absolute energy consumption, especially during idle time. We choose not to choose and take them both.

Second, for the use of renewable energy, we focus on both deployment scale of renewable energy and intelligent scheduling of green power. We choose not to

choose and take them both.

Third, for user experience, we focus on energy saving that does not impact network key performance indicators (KPIs) or user experience. We choose not to choose and take them both.

Next, I will explain how Huawei has managed to choose both in these three areas.

## Energy efficiency up, energy consumption down

Last year, we proposed the concept of "More Bits, Less Watts" to improve the energy efficiency of networks in active mode. This year, we have extended this by introducing a new concept to reduce the absolute energy consumption of networks in idle mode: "Zero Bits, Zero Watts".

When traffic load is low, intelligent shutdown can help save energy based on frequency domain, time domain, spatial domain, and power domain.

In particular, when mobile traffic load is extremely low, we can put active antenna units (AAUs) into deeper dormancy. Only the power supply units remain on standby. AAU hardware shutdown can be realized without any issues thanks to our material and technology innovations. This can reduce AAUs' power consumption from 300 watts to less than 10 watts when their traffic load is extremely low.

## Deployment scaling and intelligent scheduling

Now, let's move to renewable energy. In the past, we paid more attention to the scale of green power deployment. Now, we also focus on intelligent scheduling of renewable energy.

From the site perspective, we take a "One Site, One Policy" approach for renewable energy planning to increase planning and deployment accuracy.

From the agility perspective, intelligent scheduling reduces the time needed from days to minutes. This helps to maximize the power generation, conversion, and utilization efficiency of renewable energy, thereby creating greater economic and green benefits.

To implement intelligent scheduling, Huawei has introduced site awareness capabilities to obtain multi-dimensional information about a site. Such information includes the weather, electricity price, battery status, and traffic volume. Intelligent dynamic scheduling algorithms are then used to optimize load-based power availability, power generation efficiency, and overall power consumption costs.

## Guaranteed KPIs and guaranteed UX

Finally, but certainly our natural goal, is user experience. Traditionally, we used to focus more on network energy saving and network KPI assurance. Now, we also focus on ensuring user experience. Our optimal energy-saving policies are tailored to different network scenarios. In low-traffic scenarios, such as ski resorts in summer or beaches in winter, we maximize energy saving while ensuring that basic network KPIs are met. However, in higher-value scenarios like those for fixed wireless access (FWA) or VIP users, we aim to ensure optimal user experience in addition to energy saving.

This means we have to shift from relying on human experience to relying on data to develop and implement energy-saving policies. With this data-driven approach, energy-saving policies that meet customers' network performance and energy-saving targets are generated within

minutes based on data collected from live networks. And the policies can be implemented within milliseconds.

## Standardized indicators and visible management system

To achieve these three advancements, we should have a set of standardized indicators, based on which we can create a visible and manageable O&M system for green operations.

Over the past year, Huawei has worked with multiple carriers and standards organizations worldwide to promote the standardization of green indicators. Going forward, we will work with our carrier customers to build tools for these green indicators to be visually manageable and also optimizable during the journey of network operation.

To conclude, in the ICT industry, we should choose not to choose between green and development. Without doubt, we can pursue both of them together. In productizing these three advancements, Huawei has developed the Green 1-2-3 solution. Within this solution, "1" refers to one index for green network construction; "2" refers to the focus on two scenarios: high energy efficiency and ultra-low energy consumption; and "3" refers to a systematic three-layer solution that covers sites, networks, and operations. Peng closed his speech by highlighting Huawei's willingness to work with operators worldwide to strike a balance between going green and development, in order to accelerate green ICT development.



# Harnessing 5G for a Faster and More Reliable Future for du and Our Customers

Add life to life. As an early player in 5G technologies, du has transformed its business model to become one of the leading players in the United Arab Emirates (UAE) by offering its retail and commercial customers an inexpensive, reliable and world-class mobile and broadband network based on 5G. Karim Benkirane, Chief Commercial Officer (CCO) of du, spoke to WinWin Live at MWC 2023 about how du uses innovative thinking and technologies to establish deep roots in new markets such as smart offices, government, and the digitalization of industry.

■ By Karim Benkirane,  
CCO, du



In 2019, du cemented itself firmly in the history books by becoming the first to roll out 5G services in the UAE market. As one of the top regional mobile players, we've been developing a wide array of services that include home broadband, fixed services, IPTV and much more. In the third quarter of 2022, we increased our mobile and fixed service revenue by 10.5% and 22.2%, respectively, and our net profit grew by 12.7%. And with more than AED 2 billion in service revenue generated over the past five consecutive quarters, our profitability continues to improve year-on-year.

## High expectations from a savvy market

Operating in such a highly sophisticated and competitive



“ Without a shadow of a doubt, 5G is unequivocally the way forward for all telcos. The decision that du made three years ago to invest heavily in this technology is paying dividends today, and this is just the beginning of our success story. ”

market, du needs to stay firmly in the saddle when it comes to understanding what our customers want and expect from us. To offer our readers a better context and perspective of where we are coming from, let's consider what modern Dubai has achieved since the founding of the UAE. Whether it's the world's first seven-star hotel, tallest building, or the biggest shopping mall, we've built it and projected this image of innovation and scale to offer visitors an experience they'll never forget. The same applies if you come across one of our stores or when you interact with our services — it must be the best or nothing. The customer is at the center of everything we do, and whenever someone thinks about 5G, they should think of du.

## Forward-thinking mindset

Back in 2015, du opted for a corporate strategy that focused on investing heavily in 5G network infrastructure development, and in 2019 we officially brought this to market. By adopting 5G early on, we were able to identify a new segment of the market, and added further val-

ue by addressing connectivity issues for homes that lack fixed broadband. The majority of the UAE is highly saturated when it comes to fiber, yet two years ago approximately 70% of households were utilizing fiber-based services. The reason for the difference was mostly attributed to different lifestyles and needs. Through the development of our Home Wireless product, fixed wireless access (FWA) 5G has enabled wider audiences to be connected at higher speeds, and it has also helped us grow our mobile business and significantly shortened the time to market (TTM).

One unexpected result from our pursuit of home broadband services was the creation of an environment where both fiber and 5G Home Wireless can coexist and even complement each other. In addition to this, we have developed Office Wireless to address the needs of small enterprises who can also use FWA 5G. This meets the basic need of fixed broadband so that commercial customers can have access to high speeds and low latency. To date, our 5G network has reached 95% coverage for populated areas.

## Global vision

Without a shadow of a doubt, 5G is unequivocally the way forward for all telcos. The decision that du made three years ago to invest heavily in this technology is paying dividends today, and this is just the beginning of our success story.

du is relying on the adoption of devices and is already witnessing more and more users moving from 4G to 5G devices, which is helping us increase traffic. On the fixed side, CPEs such as routers are becoming more affordable, which in turn is allowing du to gravitate towards FWA and increase the movement of traffic to 5G, delivering a better experience for the customer. When it comes to 5GtoB, we are exploring more proof of concepts (POCs) and use-cases in the transportation, energy, manufacturing sectors, aiming to be a key enabler for those verticals to ensure we help our customers establish an ecosystem in the B2B and B2G segments.

The migration of 2G to 3G to 4G and to 5G has been gradually gaining momentum over the last few years, and only recently has skyrocketed, placing us in a very favorable position. We believe that this will continue at even higher rates as the cost of 5G is lowered and more users experience a paradigm shift in terms of the benefits and experience that they are exposed to.

## 5GtoB

With the advent of the 5G leased lines, not only will this complement fiber in terms of high speed and low latency, but it will also act as an excellent foundation for businesses and industries to build on. At present, du is exploring multiple use-cases with local companies in the UAE such as DEWA, as well as smart warehousing in which we aim to provide fully integrated solutions like automation, optimization and other innovative features.

## Words of advice from our viewpoint and experience

There is no doubt that both the government and regulators have been remarkably ambitious and supportive in creating an ideal incubation environment for the early

development of 5G in the UAE. Creating an ultimate experience for both B2B and B2C customers will not only reduce the churn rate, but will also help us expand into new markets and strengthen our balance sheet in the long term, raising du's global profile and customer base.

Compared to other developed countries, the UAE is quite a unique environment where the government takes the lead in innovation, and then the private sector follows. Here at du, we wholeheartedly encourage other players to take the plunge and not only become a key driver for innovation in the telco sector, but an industry leader, and further continue the commitment for improving the lives of the customers we all serve.



# etisalat by e& Pledges to Continue Network Innovation with a Strong Focus on Sustainability and Customer Experience



As one of the most advanced telecom operators globally, etisalat by e& promotes network evolution and service transformation with advanced technologies, improving user experience and creating more value for society while building strong competitiveness. According to its latest earnings report, its net profit rose by a record 7.4% to 10 billion dirhams (US\$2.7 billion) in 2022. And driven by value capture of high-value growth, etisalat by e& achieved revenue growth of 3.2% in 2022, accelerated by connectivity and digital lines.

Khalid Murshed, Chief Technology & Information Officer (CTIO) of etisalat by e&, spoke to WinWin Live at MWC 2023 about the operator's commitment to sustainability, customer experience, 5G evolution and the changing telecoms industry landscape.



**WinWin: Sustainability is a major topic at this year's MWC and has also been a major focus for the UAE, which is the first country in the Middle East to announce a plan to reach Net Zero carbon emissions by 2030. As the largest operator in the UAE, can you tell us about etisalat by e&'s sustainability initiatives so far and the key role your company is playing in this journey?**



**Khalid Murshed:** We are very proud of this key sustainability initiative and as an organization have already started working in this strategic direction. Our commitment is to achieve the Net Zero target through network evolution and network transformation by adopting solutions and products that are more environmentally friendly, with low carbon emissions and greater efficiency in terms of power and water usage, and waste management.

Within the organization the Environmental Management System (EMS) is in place to encourage internal collaboration between all teams, and to create initiatives that promote environmental protection in practical terms. In 2021 etisalat by e& was re-certified for ISO 14001.

Also in 2021, diesel generators were replaced across several wireless sites with renewable energy sources from solar power. etisalat by e& also collaborates internally to develop programs that tackle climate change and energy conservation, and which we aim to begin rolling out next year.

**WinWin: etisalat by e& has recorded some great results recently with both its 5G and fixed broadband networks. Can you tell us more about how you ensure the best user experience for these customers?**

**Khalid Murshed:** etisalat by e& is very proud of its record of new technology adoption, especially if it can bring value and an improved user experience. We were among the first operators globally to adopt 5G and currently we are ranked No.1 in the OKLA speed index for fixed broadband and for fiber to the home (FTTH). Our fiber penetration rate is more than 95%. Our technology direction always focuses on the best user experience and making the network and infrastructure ready to deliver premium class services.

We believe in building infrastructure as a backbone to adopting new technologies and providing new mobile and fixed services. We have adopted key technologies in our networks such as massive MIMO 64x64, 50G-PON technology, fiber to the room (FTTR) and Wi-Fi 6 tech-

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Connectivity, efficiency and experience are always among the key considerations for any operator. The demand from consumers and enterprises in the future digital and connected world are forecast to increase by up to 10 fold. 5.5G will address the future network requirements and before long networks should be ready for this unprecedented flux in demand.

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nology for an end-to-end, best-in-class user experience. Also, we have invested heavily in our backhaul infrastructure to ensure the minimum latency for the carrier network. So all these factors combined enable us to provide the best user experience.

**WinWin: Let's talk about 5G, which is rapidly advancing towards the next step in its evolution: 5.5G. This is going to be a significant upgrade in capabilities for both consumers and enterprise customers. What are your thoughts on the development of 5.5G so far?**

**Khalid Murshed:** Connectivity, efficiency and experience are always among the key considerations for any operator. The demand from consumers and enterprises in the future digital and connected world are forecast to increase by up to 10 fold. 5.5G will address the future network requirements and before long networks should be ready for this unprecedented flux in demand.

Next generation 5.5G technology will deliver ultra experience, larger bandwidth, higher spectrum efficiency and higher-order modulation. Speeds reaching up to 10 gigabits per second will deliver an unmatched experi-

ence. etisalat by e& is deeply engaged in state-of-the-art proof of concepts (POCs) and trials around the 6 Ghz and mmWave spectrum which will help spectrum harmonization, resulting in more bandwidth and improved network performance.

In summary, operators can expect to see a 10-fold increase in network capacity, along with energy saving and OPEX reduction. etisalat by e& will collaborate and work very closely with key players, associated standard bodies and industry partners to achieve the vision of 5.5G.

**WinWin: The telecoms industry is changing rapidly in 2023. Here at MWC we're seeing new technologies, new business models, and changing customer behaviors. What does this changing environment mean for your overall strategy and your plans for continued growth in the future?**

**Khalid Murshed:** Our overall vision and strategy is to prioritize and focus on key strategic initiatives, such as:

- Driving the digital future to empower societies.
- Accelerating value generation through innovation and digitization.

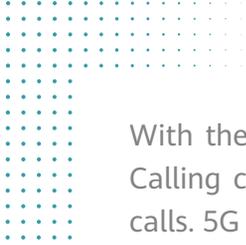


- Raising capabilities and developing talent for the future.
- Growing our B2B/digital offerings across the footprint.
- Expanding our portfolio in Middle East and North Africa (MENA) region and around the world.
- Continuing to transform in order to reach the level of excellence that we aspire to for our customers and the enterprise market.

Since its founding in 1976, etisalat by e& has always been the pioneer, and will continue to be into the future, driving the digital future to empower societies. With the limitless possibilities of future innovation, etisalat by e& will never stop striving to bring digitalization to all of us. Driven by digital transformation alongside green and low carbon, the ICT industry has arrived at a moment of innovation and change, marking the start of a new journey of exploration. etisalat by e& focuses on innovative digital technologies, user experience, and sustainable development, as well as strategic planning in the 5.5G era. With the joint efforts of leading technology partners, the UAE and entire MENA region will lay the foundation for 5.5G and build on the success of 5G for even greater prosperity.



# 5G New Calling: New Experiences and Capabilities for a Brighter Future



With the addition of ultra-HD, intelligent, and interactive capabilities, 5G New Calling can provide more multimedia content and real-time interactions during calls. 5G New Calling is one of China Mobile's key strategic products, and features new experiences and capabilities, along with a new ecosystem. Alongside industry partners like Huawei, China Mobile has launched innovative services such as visualized voice calling, fun calling, and real-time translation to enhance user experience and increase the value of the dialpad on native terminals. This is breathing new life into the industry and expanding the horizons of calling services.

■ By Sun Shiwei,  
Deputy General Manager of Marketing  
Operations, China Mobile



Operators have been actively innovating voice calling services. However, these innovations have not fundamentally transformed calls to make them visible, as well as audible. The current advancement of technologies is allowing operators to develop the future-oriented 5G New Calling service that offers new experiences and capabilities, alongside a new ecosystem. This is finally upgrading calling services from being only audible to also visible.

A thriving 5G New Calling business requires the active exploration and continued promotion of different industry players. As the first operator to launch the 5G New Calling service, China Mobile has a clear strategy for 5G New Calling, and its achievements in this regard have already proven fruitful. China Mobile's carefully-considered

roadmap for the future development of 5G New Calling has set a fantastic example for the industry.

## Review: 5G New Calling, accelerating a year after launch

Voice call has long been a basic service of operators, offering unique and fundamental business and social value. Voice services are a key way for carriers to gain consumers. Voice services that offer better experiences are critical to both operators' reputation and customer retention. At the same time, voice services act as a bridge for communication with consumers.

In the 5G era, we expect significant changes in terms of both networks and services. Voice and video calls will continue to evolve in order to deliver more immersive experiences, make calls more HD, intelligent, and interactive, and constantly improve user experience. China Mobile has been exploring how to breathe new life into calling services and took the lead in proposing 5G New Calling in the industry. By providing a range of innovative and en-

hanced calling services, alongside innovative application experiences, 5G New Calling is expected to become an iconic 5G application. 5G New Calling also represents an upgrade to the traditional voice and video calls, providing more multimedia content and real-time interactions during calls, and offering users a new calling experience.

5G New Calling comes equipped with three new features that are superior to those offered by traditional calling services. The first feature is new experience. The calling experience is upgraded from being only based on voice and video to an experience that is ultra-HD, intelligent, and interactive. The second is new capabilities. In addition to voice and video, 5G New Calling integrates multi-media and data interaction capabilities to enable abundant applications beyond just calls. The third feature is a new ecosystem. Operators will be committed to building an open 5G New Calling ecosystem to provide users with a wealth of new calling services.

In April 2022, China Mobile held a product launch themed "5G New Calling for a New Future", marking the official launch of 5G New Calling products. As a result of joint new calling service innovation with partners like Huawei and iFlytek, the operator also launched some pilot 5G



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China Mobile took the lead in proposing 5G New Calling in the industry, fostering a new platform and ecosystem, and offering users a new calling experience that is ultra-HD, intelligent, and interactive. We call on the entire industry to work together to develop high-quality applications, optimize service experiences, and facilitate a prosperous New Calling ecosystem.

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New Calling services, such as barrier-free smart communications, visual service menus, and remote assistance. These services make calls more intelligent, visual, and interactive, break traditional communication boundaries, improve communication efficiency, and continuously enhance user experience. This launch made China Mobile the world's first telecom operator to provide a pre-commercial trial for 5G New Calling, marking the beginning of the era of 5G ultra-HD video calls.

Take the visualized voice calling as an example. When a voice call is made between two users, if one user has chosen to use an animated avatar, then the other user can see this avatar on their mobile phone screen. Enterprise users can even set corporate avatars, which will be presented on the other user's phone screen during calls. This transforms mobile phone screens into a new mobile medium, and with the average call lasting 90 seconds,

and users paying for the service, there is huge potential for content monetization.

Another example is the real-time translation service, which embeds intelligent technology into video calls to enable real-time speech recognition and speech-to-text conversion. This allows users to see what is being said by the person they are calling in the form of subtitles. If the callers speak different languages, the service can interpret their speech in real time to help overcome communication barriers.

In January 2023, China Mobile started recruiting the first batch of friendly users at scale in Guangdong, Zhejiang, and Jiangsu provinces, marking a key step in the operator's journey towards commercializing 5G New Calling.

During MWC Barcelona 2023, China Mobile, together with

Global TD-LTE Initiative (GTI) and Huawei, successfully held the 5G New Calling Industry Development Forum. At the forum, global operators, standards organizations, equipment suppliers, and device manufacturers all presented their innovations and practices regarding 5G New Calling. These offerings gave the entire industry a peek into the thriving 5G New Calling ecosystem.

## Industry perspective: Collaborating with industry peers to drive 5G New Calling

Many players in the industry have been actively involved in the development of 5G New Calling, creating value in their own respective ways. China Mobile has worked with various industry players to promote the development of the service.

In August 2021, China Mobile joined hands with a number of partners, such as UNISOC, TD Tech, and Huawei, to establish the 5GDNA VoNR+ (New Calling) Working Group as a way to promote the development of the VoNR+ (New Calling) industry and standards, and expand the industry ecosystem.

In July 2022, China Mobile released the 5G New Calling Technical White Paper, which is the first in the industry to detail the core concepts and typical application scenarios of 5G New Calling. This white paper also specifies the key platform and device capabilities required to achieve 5G New Calling.

At the 5G New Calling Industry Development Forum, held during MWC Barcelona 2023, China Mobile proposed the 5G New Calling Industry Cooperation Initiative together with companies such as Tencent, Huawei, iFlytek, Vivo, and Xiaomi. This initiative calls on global operators, network equipment suppliers, device and chip manufacturers, audio, video, and AI technology providers, and industry partners to participate in the New Calling industry, explore New Calling services and related business model innovations, contribute to the development of globally unified standards, and work to ensure interoperability. These efforts will give rise to a mature New Calling industry and prosperous ecosystem. The GSMA also launched the New Calling Foundry project, which has helped reach an in-

dustry consensus and develop a unified global ecosystem regarding new calling.

5G New Calling is now one of China Mobile's strategic products. China Mobile will continue exploring application scenarios for 5G New Calling, advance the commercialization of relevant services, and drive the launch of devices that natively support 5G New Calling, in order to foster a prosperous 5G New Calling ecosystem. We believe that operators should advance the construction of VoLTE network infrastructure, increase the penetration of VoLTE users, and enhance the interoperability of VoLTE networks. These actions will result in a solid network foundation for the phased realization of 5G New Calling.

In the first phase, new capabilities like AI and AR can be introduced to networks to enable intelligent applications that are based on video calls without the need for device upgrades. Operators can develop services like visualized voice calling, real-time translation, fun calling, and intelligent video calling, which can be used on any device that supports video calls, also without the need for device upgrades. This will improve users' calling experience, increase the number of new calling users, and cultivate user habits.

In December 2022, China Mobile held a New Calling service demonstration for HD video calls, and VoNR+-based Chinese-English interpretation and fun calling services based on a scenario where a China Mobile user in Seoul, South Korea, uses roaming to call another China Mobile user in Beijing, China. This demonstration laid a foundation for the interoperability of New Calling services worldwide.

In the second phase, data communications can be added to voice and video communications to deliver intelligent calling services that support real-time interactions. It is critical that networks and devices are upgraded to support IP Multimedia Subsystem (IMS) data channels. Operators can develop interactive calls, promote devices' native support for data channels, and develop more universally-applicable New Calling services based on data channels, such as remote sharing, AR annotation, and file transfer, thus improving communication efficiency. Interactive calls are suitable for some industry scenarios, such as interactive menus for bank customer services and remote vehicle damage assessments for the insurance industry. Such services can simplify transaction

processes and enable operators to develop a wider range of applications for individuals and enterprises.

In March 2023, China Mobile Zhejiang, alongside China Mobile Research Institute, China Mobile Terminal, and ecosystem partners like Huawei, completed the world's first live-network call through 5G New Calling based on IMS data channels in Hangzhou. This was the first ever end-to-end call made with 5G New Calling based on a commercial IMS network, native baseband chips, and a native upper-layer application SDK. It marked the next step of 5G New Calling in terms of both networks and devices.

## Prospects: A promising future despite the bumpy road

5G New Calling has shown operators the tremendous potential of voice call services, but the road to business success will not be an easy one. The industry should be fully aware of the challenges facing the development of 5G New Calling services.

First, devices are key to promoting New Calling. Devices need chip and software upgrades before they can natively support New Calling, meaning support is required from chip and device industry partners. China Mobile is set to provide a native New Calling feature pack for devices, and is currently working with chip and device manufacturers to debug New Calling prototypes. China Mobile will also increase industry cooperation to boost the development of the New Calling ecosystem.

Second, rapidly and iteratively upgrading applications while ensuring network stability for calls is very challenging. In particular, quickly launching smart applications while ensuring basic call quality represents a major challenge for the development of 5G New Calling. China Mobile will simplify the network architecture and decouple basic call functions from smart application capabilities, in order to support rapid service rollout and upgrade.

Third, New Calling service experience must be polished, while the application ecosystem needs to be enriched. China Mobile continuously enhances New Calling capabilities and optimizes user experience to attract more developers to develop high-quality 5G New Calling applications.

In the past, innovations in VoLTE and video ring back

tone (VRBT) services supported operator business growth. Take the video RBT service as an example. According to data released by the 5G+ Video RBT Industry Alliance in March this year, the annual output value of video RBT now exceeds CNY10 billion, and there are more than 14,000 ecosystem partners. To date, the number of video RBT users exceeds 360 million, the number of users reached is over 900 million, and video RBTs have been played 200 billion times per year.

When looking at trends regarding 5G New Calling, this service has brought users innovative applications like visualized voice calling and real-time translation. In the future, IMS data channel technology will extend 5G New Calling's application scenarios to remote damage assessment and remote home broadband maintenance to empower numerous industries, improve the communication experiences of both individual and industry users, and enhance communication efficiency and user satisfaction.

5G New Calling not only improves consumer experience, but enhances operators' service capabilities and competitiveness against OTT solutions. For example, China Mobile launched the 5G-based video customer service function, which provides multiple services, such as basic service query or handling and remote operation guidance, thereby allowing users to enjoy one-stop services.

There is an old Chinese saying that goes, no matter how bumpy the road ahead may be, we will stay the course. Despite the various challenges facing 5G New Calling, operators can promote the construction of VoLTE network infrastructure to lay a solid foundation for the service. Operators can also actively explore new services and application scenarios for New Calling through the promotion of services like visualized voice calling, real-time translation, fun calling, and intelligent video calling, as well as the development of interactive call applications like remote sharing, AR annotation, and file transfer.

Looking to the future, we believe that through the concerted efforts of operators, chip and device manufacturers, and standards and industry organizations, 5G New Calling will experience rapid development and enjoy a promising future.



# Data Driven ToC and ToH Experience Improvement and High Quality Development

In the WinWin Live studio at MWC 2023, we talked with Miguel Fernandez, CTO of Telecom Argentina, about the carrier's digital transformation journey. Thanks to the latest technologies and strong partnerships, Telecom Argentina's clients are now enjoying increasingly better and more customized experiences.

■ By Miguel Fernandez,  
CTO, Telecom Argentina



In recent years, Telecom Argentina has implemented various strategies to enhance user experience. As a leading technology company providing connectivity, entertainment, and technological solutions across the country, we are committed to delivering top-notch services to our customers. To achieve this, we have leveraged cutting-edge technologies that enable faster, better, and higher-quality experiences.

## Understanding customer needs

Over the last five years, we have practically doubled the

number of sites for our mobile network. We have also introduced modern technologies to increase both the coverage and capacity of our LTE network.

But customers are not interested in how the mobile network works. What they want is to use their applications and access a good experience.

As customer demands continue to evolve, we recognize that their requirements are becoming increasingly sophisticated. For instance, video streamers prioritize higher video quality and faster download speeds, gamers are focused on reducing latency, and users of smart home applications require reliable service availability for devices such as security cameras. At Telecom Argentina, we are dedicated to understanding these evolving customer needs and providing them with the best possible service. As a digital service provider, we need to adapt our services to these various needs.

However, the challenge lies in measuring the experience of different types of users and ensuring that we are providing the appropriate suite of services for their unique applications and usage patterns. Even after measuring the experience, the crucial next step is to translate this knowledge into actionable improvements that enhance the overall customer experience.

## Automation and technologies for better user experiences

Telecom Argentina has taken a proactive approach to enhancing customer satisfaction by deploying a sophisticated Customer Experience Index (CEI) that analyzes our users' satisfaction levels. This platform, built on Huawei's SmartCare solution, autonomously monitors and measures CEI, helping us tailor our services to meet users' specific needs.

One important measure of customer satisfaction when it comes to networks is the Net Promoter Score (NPS). By asking customers whether they would recommend our services and calculating the percentage of satisfied customers, we can better understand their overall satisfaction levels. Our CEI platform accurately predicts 90% of NPS results, enabling us to raise our mobile broadband NPS score by 10 points. Additionally, targeted campaigns based on the platform analysis results have reduced the

number of detractors (people who wouldn't recommend the service) by 35%.

As a result of these efforts, we've also improved the user experience for Flow, our entertainment streaming service platform. By leveraging our CEI platform, we've been able to identify and address areas where improvements were needed, leading to a more seamless and enjoyable user experience for our customers.

## Huawei, a key partner in this journey

Huawei has played a relevant role as our strategic partner in this transformation journey. With its extensive global experience as an industry leader and a team of highly skilled professionals, Huawei has been instrumental in the setup of our service operations center. Moreover, it has contributed to our team with skills and knowledge to make this transformation a reality. We believe that our partnership with Huawei will continue to drive innovation and enable us to provide cutting-edge services to our customers.

## Improving our FTTH experience

Regarding our success in mobile networks, we are plan-





Our CEI platform accurately predicts 90% of NPS results, enabling us to raise our mobile broadband NPS score by 10 points.



ning to continue working with Huawei on improving our fiber to the home (FTTH) experience.

This year, we have taken a significant step forward in improving our customers' experience with the introduction of Huawei's cutting-edge Agile Digital Operations (ADO) platform. ADO will allow us to take a closer look at how our customers interact with our FTTH connectivity services and gain invaluable insights into their experiences. By integrating ADO with our CEI suite, we will be able to launch four specific use cases this year, including network insight, user journey, VIP care, and upselling.

The benefits of ADO are already becoming clear. During the proof of concept (POC) phase, the platform was able

to predict our FTTH Net Promoter Score (NPS) customer claim survey results with a remarkable 85% accuracy. This means that we can address any issues before customers report them, thereby improving our NPS, reducing churn, and increasing customer loyalty. With ADO, we have a powerful tool that will enable us to better understand our customers and provide them with the highest quality of service possible.

We are expecting fruitful results from our partnership with Huawei and we are confident that our collaboration will yield substantial benefits for our customers. We firmly believe that we will be able to set new standards of excellence and innovation that will transform the way we do business and deliver services to our customers.





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