

INTERVIEW

INTRACOM TELECOM GROUP NEWSLETTER | ISSUE 34



MWC™

IN PARTNERSHIP WITH
ctia™

September 28-30, 2022

MEET US AT STAND **W1.540**

**FIXED WIRELESS ACCESS DELIVERING GIGABIT SPEEDS
TO THE PREMISES**

> PAGE 8

**SIMPLE FWA TECHNOLOGY CAN PRESERVE SPECTRUM
ASSETS**

> PAGE 11

**BEYOND CONNECTIVITY: CSPs CHOICES, PLATFORMS
& MONETIZATIONS**

> PAGE 12



**INTRACOM
TELECOM**



INTERVIEW

INTRACOM TELECOM GROUP NEWSLETTER

ISSUE 34

FEBRUARY 2022 - MAY 2022

For any enquiries or register in the recipient list, you may contact us at newsletter@intracom-telecom.com

Intracom Telecom
19.7 km Markopoulou Ave.,
Peania, Athens, GR 19002
t: +30 2106671000
f: +30 2106671001
www.intracom-telecom.com

Marketing & Communications Dept.

Follow



Link



Like



Watch



All information contained in this document is subject to change without prior notice.

© 2022 Intracom S.A. Telecom Solutions



FWA NETWORK ENHANCEMENT IN SRI LANKA

Intracom Telecom announced the extension of supply of its 10.5 GHz Fixed Wireless Access (FWA) solution to Dialog Axiata PLC, Sri Lanka's largest telecommunications services provider. Intracom Telecom's WiBAS™ technology is being deployed in Dialog's network since 2015 and has been used to enhance the quality of Dialog's broadband services and network coverage.

Dialog has renewed its trust on the WiBAS™ Software Defined radio in order to immediately benefit from the technological and financial benefits of the solution that satisfied a long list of technical criteria during the evaluation stage. The solution is based on the company's Outdoor Software Defined Radio platform allowing the relevant products to operate in PtP and PtMP mode, subject to software configuration, and benefiting Dialog with a single stack of products and a unified method of service provisioning.

Intracom Telecom PtMP WiBAS™ radio perfectly meets Service Providers need to deploy high quality broadband infrastructure and connect homes & businesses rapidly while enabling the introduction of new services for optimum subscriber experience. Thanks to its very high reliability and lightweight design, WiBAS™ can be installed easily at the base station sites, as well as at homes or on rooftops, just like any conventional TV dish.

Pradeep De Almeida, Group Chief Technology Officer at Dialog Axiata PLC, commented, *"We are pleased to deploy Intracom Telecom's WiBAS™ technology to deliver state-of-the-art connectivity to Sri Lankans. This high capacity solution ensures the optimum utilization of network resources, while enabling us to satisfy the ever-increasing broadband access demand of end users."*



IOT SUPPLIER OF THE YEAR AWARD



At Intracom Telecom we take pride in our distinction as the "IoT Supplier of the Year", as well as the six more awards we were granted in major categories during the IoT Awards in Greece. More specifically, the company was distinguished with two gold awards for its development in Greek Public Power Corporation ("My Energy" platform) and for developing a unique Smart Waste Management solution. The company also received two silver awards for its Air Quality Monitoring project in the Municipality of Belgrade, Serbia, and for the Smart City deployment in the Municipality of Papagos-Holargos, Greece. Moreover, It was honored with two bronze awards for the Energy Monitoring project in the Municipality of Aspropyrgos, Greece, and the Sound Monitoring project in Belgrade, Serbia.

REVAMPING LINTASARTA'S WIRELESS NETWORK IN INDONESIA



Intracom Telecom's Fixed Wireless Access (FWA) field proven technologies were selected again to provide reliable broadband connectivity services to Lintasarta's growing number of enterprise subscribers in Indonesia. The Point-to-Multipoint (PtMP) WiBAS™-OSDR (hub) and WiBAS™-Connect (terminal) at the 10.5 GHz band, were delivered through Abhimata, an Indonesian system integrator and telecom solution provider.

Lintasarta's experience of WiBAS™ technology dates back to 2014. The operator, through this extension of supply, invests further in Intracom Telecom's solutions to connect enterprises rapidly while enabling the introduction of new services for optimum subscriber experience. Thanks to its very high reliability and lightweight design, WiBAS™ can be installed by non-telecom personnel easily at the base station sites or on rooftops. Completion of the project is expected by Q1 2023.

Herbudi Wibowo, General Manager Supply Chain Management Lintasarta, commented: *"We hope the support from Intracom Telecom can improve the quality of telecommunication services that we provide to customers and they get more optimal service from Lintasarta."*

John Tenidis, Marketing Director of Intracom Telecom's wireless solutions portfolio, noted: *"We are very pleased to supply Lintasarta with our flagship WiBAS™ FWA solution that provides the highest capacity in the market and contribute to their network expansion goals. Our system's reliability to operate under environmentally harsh (rainy) conditions, delivering broadband service uninterruptedly at extended range, played a key role during customer's vendor selection process."*

➤ <http://www.intracom-telecom.com/WiBAS>

➤ <http://www.intracom-telecom.com/WiBASConnect>

UNIFIED IOT ORCHESTRATION PLATFORM UPGRADE

The new release (3.0) of uiTOP™, Intracom Telecom's enhanced flagship Unified IoT Orchestration platform, is available. uiTOP™ is ideal for advanced management and control of Intelligent Things from different vertical domains, delivering comprehensive services for Smart Sustainable Cities & Enterprises in the digital era. New features have been added in order to empower UI/UX environment providing a more efficient and interactive user experience. The platform, that was displayed at the Company's stand, at the MWC Barcelona, 28 February - 03 March 2022, empowers the delivery of highly scalable, device-constrained and power-sensitive solutions, leveraging 5G core network capabilities.

AI-based solutions can be deployed easier and faster due to machine learning and big data capabilities that are complemented with specialized in-house data engineering technologies and partners' solutions. The latest uiTOP™ release also brings forward key enhancements to several pre-built Smart City and Utility domain applications, including an AI-based Air Quality forecasting module and a comprehensive, end-to-end Electrical Vehicle Charging (EVC) solution.



Sotiris Bithas, Marketing Director of Telco and Enterprise Software solutions, commented: *"Intracom Telecom is continuing to evolve its IoT offering and strengthening its ecosystem of partners across several IoT domains, in order to broaden its ability to address market opportunities sustainably, while simplifying the digital transformation journey. With the latest release of the uiTOP™ platform, Intracom Telecom is reaffirming its commitment to exceed customer and market expectations, empowering customers to achieve their digital strategy and meet head-on current and future challenges."*

NEW CEO IN ETHER

Athanasios Antoulinakis is the new Managing Director of Ether Applications S.A. (ether.gr), a subsidiary company of the Intracom Telecom Group active in the energy sector. Having over 23 years of experience as a business executive in the Group, Mr. Antoulinakis has served in significant positions both in the parent company and in subsidiaries overseas. More specifically, before joining Ether he was the General Director of Intracom Svyaz, having significantly contributed to company's operations and expansion.

Kartlos Edilashvili, Acting CEO of the Intracom Telecom Group, stated: *"The Smart Metering systems, as well as the Photovoltaic and Net Metering solutions that Intracom Telecom is offering to the market through Ether, are gaining great importance at present. I expect that Mr. Antoulinaki's multi-year international experience and skills will contribute to Ether's future development."*



Athanasios Antoulinakis, stated: *"It is my privilege to become Ether's CEO. Together with the exceptional professional team of the Company we aim to address the new market requirements, developing further our existing activities. We perceive the developments in the energy market as the ultimate challenge in order to develop advanced offerings for the production & management of energy solutions that create a positive impact on the technological, economic and ecological sectors."*

RELIABILITY AND HIGH PERFORMANCE FOR THE COMPANY'S BASEBAND

TERAWAY, one of the 5G Long Term Evolution projects that Intracom Telecom participates in, aims to demonstrate mmWave and THz bands as ultra-broadband and low-latency connectivity enablers for B5G networks, leveraging optical concepts and hybrid photonic integration techniques. Intracom Telecom as a core partner, provides the required baseband units for the planned demonstrators. During the first week of May, Intracom Telecom in collaboration with ICCS/NTUA and Optagon Photonics, performed the first integration phase at National Technical University of Athens (NTUA) premises in the Photonics Communications Research Laboratory. The company's baseband unit was integrated with the photonic modules developed in the project, and was successfully tested within an optical network for the first time, demonstrating reliability and high performance.



🔗 <https://ict-teraway.eu/>

NEW PARTNERSHIP DEAL WITH CROSSOVER IN CANADA



The company announced a new partnership with Crossover, a North American telecommunication equipment distributor, for the supply of its innovative UltraLink™ E-Band radios which are designed to optimize network costs and provide the ultra-capacities demanded by 4G and 5G backhaul & fronthaul applications across Canada. Crossover's strategic plan is to promote the UltraLink™-GX80, a high-performance, ultra-high capacity E-Band (71-76 / 81-86 GHz) radio designed for use in demanding wireless transport use cases and been in compliance to the Canadian regulatory authority's (ISED) requirements. In 2+0 XPIC configuration UltraLink™-GX80 achieves throughputs of up to 20 Gbit/s full duplex, while in Dual Band configuration it can be combined with microwave radios - third party radios included - to enhance the capacity, up to 10 Gbit/s, of links up to 10 km and beyond. It is a uniquely versatile radio, ideally suited for 4G/4G+/5G RAN backhaul, midhaul and fronthaul, as well as, any transport application in Ethernet-based networks as a fiber substitute. At the same time, being a fully outdoor radio, UltraLink™-GX80 minimizes deployment footprint and cost.

Dharminder Chanana, CEO of Intracom Telecom's subsidiary in USA, Conklin-Intracom, stated: *"We are looking forward to partnering with Crossover for our expansion in Canada. Our UltraLink™ E-Band systems fit ideally into Crossover's product portfolio, allowing the distributor to offer ultra-fast connectivity speeds to enterprise customers."*

Darin Gibbons, Executive Vice President of Crossover, commented: *"We are delighted to be selected as Intracom Telecom's newest Canadian stocking distributor. Their industry leading UltraLink™ wireless broadband products will be a great addition to our portfolio as they will address our customer's needs as they continue to build out their 5G and Private LTE networks."*

GREEK-ALBANIAN JOB FAIR IN TIRANA

Syn+Ergasia, the special job fair, that took place at the Palace of Congresses on 23-24 of February 2022, was a cooperation between the Greek Embassy in Albania, the Municipality of Tirana and the Association of Hellenic Businesses in Albania. The fair aspired to address pressing issues of the Albanian economy and society, but first and foremost the country's skilled personnel, the so-called "brain drain" of young and talented Albanians leaving the country in hope for a better future abroad. The event also presented another opportunity to call attention to and strengthen the bilateral ties between the two countries, not only in economic, but also in social fields and thus further enhance the already strong cooperation between Greece and Albania. It also aimed to cover all aspects of current labor market in Albania, that is: Job vacancies; connections and discussions on the most sensitive issues between employers and jobseekers; skill building and most current discussions on employment; also focus on success stories, which today are seen as role models for young people. In its first year, the Forum, had a massive impact: 34 participating companies, 800 vacancies and 2,940 applications in employment booths.



EDUCATING YOUTH

Intracom Telecom, participated as a gold sponsor in the Conference of Students of Electrical & Computer Engineering - SFIMMY, taking place at the Conference and Cultural Center of the University of Patras, Greece, on April 15-17. Our colleagues, Dr. K. Stamatis, P. Tzoumanikas, N. Giouroukos, D. Georgiou & V. Angelopoulos, having many years of experience in the field of telecommunications, conducted the seminars "Wireless Network Systems" and "The path from Physical HW to Cloud Native in Telecoms", on April 15 and 16 respectively. More specifically, the innovative fixed wireless access systems have been presented and IP / MPLS Microwave Backhaul solutions for 5G have been discussed, as well as the evolution from the classic software platforms to 5G cloud.

CONKLIN-INTRACOM AT CRESCO EXPOSITION



Conklin-Intracom participated in the 19th annual GRESCO Exposition. GRESCO meets the supply needs of hundreds of electric utilities serving four million electric customers in the Southeast region of the United States by providing products and services they need to build and maintain power and internet. Over the past few years both federal and state governments are investing over twenty billion dollars to improve internet access in rural areas of the US, with significant amounts being directed to elective utilities. As these elective utilities roll out high speed internet they will be competing with established internet providers. Adding an affordable TV service is a key way to gain and retain internet customers. Over 900 people attended the expo and Conklin-Intracom was the sole exhibitor with a TV solution among approximately 200 vendors.

NATIONAL PROJECT MESON IN IEEE ACCESS JOURNAL



Intracom Telecom's European Projects Unit of the CDN department led the publication of the article, entitled "MESON: A Platform for Optimized Cross-Slice Communication on Edge Computing Infrastructures", in the 10th Volume (May 2022) of IEEE Access journal. This multidisciplinary, open-access electronic journal publishes high-quality original research or development across all IEEE fields of interest, emphasizing applications-oriented and interdisciplinary articles. The article focuses on Edge Computing mechanisms in the dawn of the 6G era to support the emerging service ecosystems' need for well-managed and automated cross-service interactions at the network edge. This publication is a concluding dissemination activity of the national project MESON, presenting the complete solution and final experimental results of the project, in which Intracom Telecom had an excellent collaboration with National Technical University of Athens and University of Macedonia.

MWC BARCELONA 2022

Intracom Telecom participated in MWC Barcelona, 28 February- 03 March 2022. The venue attendees had the chance to experience the technological innovations that create opportunities and fulfill business objectives. The solutions on display included ones for Fixed Wireless Access FWA, microwave transmission and millimetre-wave 5G fronthaul, unique ML-powered solutions for optimizing the performance & energy footprint of the 5G virtualized networks, as well as a comprehensive services & solutions portfolio for Smart & Sustainable Cities.



Sotiris Bithas, Marketing Director of Telco and Enterprise Software solutions, talked to developingtelecoms.com about sustainability in 5G networks & Smart Connected Cities, while John Tenidis, Wireless Network Systems Marketing Director, highlighted the trends in the field of telecommunications.

WISPAMERICA

Conklin-Intracom, the Group's Atlanta based entity, participated as a Silver Sponsor, in WISPAMERICA 2022, a major Wireless Internet Service Providers conference and tradeshow in North America held last March in Louisiana. During the show, stand visitors had the opportunity to explore how companies around the globe are benefiting from the Intracom Telecom innovative MW and mmWave radios, including advanced 24 & 28 GHz PtMP Fixed Wireless Access (FWA) solution delivering ultra-fast speeds per residential / corporate subscriber, superior E-Band radio connecting up to 10 Gbps at long ranges, and Innovative V-Band Gigabit radio for 5G FWA & Small-Cell Backhaul exceeding 1.6 Gbps with full QoS.





FIXED WIRELESS ACCESS DELIVERING GIGABIT SPEEDS TO THE PREMISES

PANTELIS TRAKAS
Senior Product Manager, Wireless Network Systems

INTRODUCTION

Spending more than two years into the COVID-19 pandemic, we can clearly see now the aftermath & impact on the various sectors of the society. One of the evident consequences of COVID-19 is the increased demand for telecommunication services. Our behavior in internet bandwidth consumption have changed dramatically fueling the enormous demand for reliable ultra-fast broadband connectivity. Millions of employees are seeking to sustain and increase their productivity while working from home, boosting their needs for home broadband services even further. The exponential increase in data consumption was present even before the pandemic spiked urging countries to issue government funded initiatives for reaching Gigabit speeds to the end customers. Today this goal is not only feasible with fiber optic solutions. There are also purpose-built Fixed Wireless Access tech-

nologies using licensed mmW spectrum than can achieve Gigabit connectivity without the laborious and expensive process of digging and inserting cables into the ground.

GIGABIT SOCIETY TARGETS & CHALLENGES

In order to address the constant increase in broadband needs the European Commission proposed that by 2025 all schools, transport hubs and main providers of public services as well as digitally intensive enterprises should have access to internet connections with download/upload speeds of 1 Gigabit of data per second. In addition, all European households, rural or urban, should have access to networks offering a download speed of at least 100 Mbps, which can be upgraded to 1 Gigabit. The upgradability is the critical factor that should be met by telco

operators. The questions that all operators will face is which technology and at what cost.

It is evident that most of the Gigabit Society targets will be met by using fiber to the home technology mainly in the urban environment. Despite the fact that there is a huge push across the world to bridge the digital divide between urban and rural areas and increase the full-fiber coverage percentages, there is still a large portion of users that are not addressed by fiber-like speeds. There is a high number of barriers that contribute to why fiber deployments struggle to deliver for everyone especially in areas with low population density. The most significant barrier is the demanding and expensive process of digging and inserting cables into the ground where they are not already present. Operators cannot guarantee return on investment in rural terrains with fewer subscribers.

One could argue that 3GPP based solutions can overcome the above challenges and deliver Gigabit speeds at high distances with external CPEs that have Line Of Sight with the base station. This could be true but it is still in experimental phase and the CPE ecosystem has not matured when compared with the mobile handsets or indoor solutions. The reason is simple. The business model followed by 5G operators rely on mass market penetration with self-installable indoor CPEs or mobile handsets. This approach has the advantage of zero engagement with the end customer for installation works hence lower CAPEX costs. The downside is the reduced range of connectivity & speed especially in the mmW bands where LOS is required between the BS and CPE. 5G biased operators will not opt for this approach. They will not enter this arena of providing FWA to areas with low population density. It is just not cost efficient and will not have a good impact on their balance sheet. This glitch in the 5G FWA deployment model creates an opportunity for purpose built solutions that can offer ultra-broadband connectivity in rural and semi-rural areas following a simple end-to-end network topology thus keeping the CAPEX and OPEX costs low.

USING MMW SOLUTIONS FOR GIGABIT PER SUBSCRIBER

Backed up by a multi-decade experience in the design and manufacturing of leading edge telecommunications products, Intracom Telecom can offer Point-to-MultiPoint (PtMP) solutions operating in the 26/28 GHz “block-licensed spectrum” that are capable to address the Gigabit Society objectives. WiBAS™ G5 dual-BS is a MIMO 2x2 radio that can deliver fiber-like services to the end-users with aggregate capacity of 3.2 Gbps per base station sector and 1.75 Gbps downlink speed per end-user terminal station. Operators can efficiently “blanket” wide areas and serve multiple

end customers using a broad range of available wireless service terminals – up to 240 per sector – without worrying about scalability concerns. WiBAS™ G5 Connect+ which is the terminal station of this solution is a purpose built radio for residential areas with slim design and compact antenna. The zero-touch provisioning features make this product a perfect fit for operators that need to deploy their FWA networks fast and cost effectively without the need of specialized engineering teams.

COVERAGE STUDY: CREMONA PROVINCE, ITALY

This section presents a RF-planning study in the Cremona region (North Italy, Lombardy). This area was selected due to the relatively low population density (1,000/km²). The following figure shows the assumptions that were used for this study.

ASSUMPTIONS

- » Frequency: 28 GHz
- » Channel Bandwidth: 2 x 112 MHz
- » 4 Base Stations (16 x 90° sectors)
- » Coverage Maps satisfy Link Availability better than 99.95%
- » Line of Sight have been justified only based on terrain data
- » Cell Edge is considered at 6 km

It is the perfect example of an area that an operator could target with Intracom Telecom's WiBAS™ G5 mmW PtMP FWA product line and deliver gigabit speeds to customers that are located even at 6 km from the base station site. The result of the coverage analysis using 16 x WiBAS™ G5 dual-BS sectors are presented in the next figures. The first one is the downlink coverage map.



ARTICLE

The different colors refer to the different modulations that the respective terminal stations are operating. It is important to note that most of the target areas can be serviced with links of at least 64-QAM. This can be interpreted in connection speed.

Physical Mode (QAM)	Terminal Station Peak Throughput (Gbps)
1024 High	1.83
1024 Low	1.80
512	1.60
256	1.40
128	1.19
64	1.00

The terminal stations in this study can achieve even at the **6km** cell edge **1Gbps** peak downlink speeds. The table that presents the terminal capacities per modulation is also color coded and each color matches the ones that are used in the downlink coverage map.

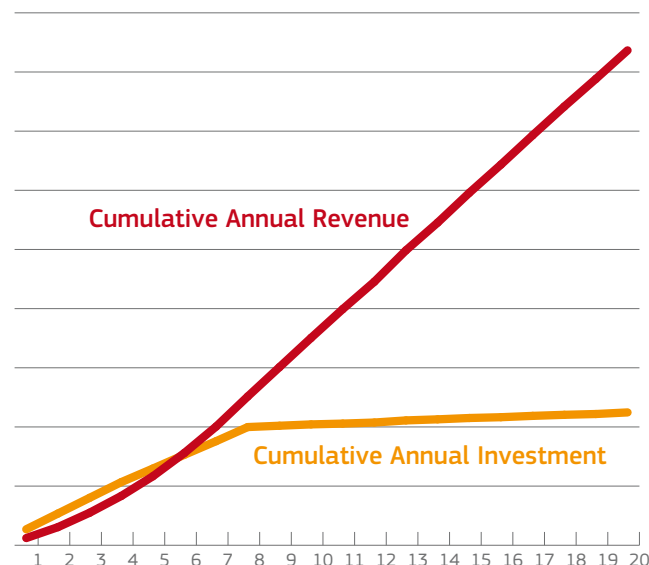
JUSTIFYING THE COSTS – IS IT WORTH IT?

Cost is one of the significant factors that can define the success or failure of a telecommunication project. Telecom providers are fully aware that there is still a large proportion of users that are unlikely to ever get access to fiber. Purpose built FWA offers an attractive alternative because the costs related are a fraction of the ones needed for fiber to the home or 3GPP network infrastructures.

Using the coverage study from the previous section we will prove that an operator can break-even in less than 18 months when deploying a PtMP WiBAS™ G5 network. The term “Average throughput per subscriber during busy hour” is going to be introduced at this point. It is a metric that operators are using when performing capacity dimensioning for their networks. This is the throughput that a connected and active user is consuming in a network during busy hour. A common figure that is acceptable by the telecom operators that are deploying ultra-broadband access networks is 15 Mbps with a peak of 1 Gbps in the downlink direction per customer. This throughput value is more than enough for delivering ultra-broadband services including OTT streaming applications. Using this value and taking into account the coverage study results we can assume that based on the downlink WiBAS™ G5 dual-BS 2 Gbps sector capacity, 134 subscribers can be registered in each base station sector. This gives us a total of 2,144 total users for the network that is presented in the previous section. Assuming an ARPU (Average Revenue Per User) of 25-35 Euro per month we

can conclude that the operator will break-even the CAPEX of the FWA network infrastructure in just below 6 quarters.

Breakeven point analysis (per quarter)



CONCLUSION

Access to future-proof, ultra-fast broadband has proven to be a very critical factor that influences the economic growth and prosperity for all nations. In order to address future broadband needs, the European Commission proposed that by 2025 all citizens and all socio-economic drivers should have access to Gigabit internet connectivity. The big challenge of this initiative is how the underserved rural areas are going to be efficiently addressed and by which wireless technology. 5G will bring ultra-broadband speeds but cannot achieve Gigabit connections in rural areas that require long range links. Intracom Telecom's WiBAS™ G5 ultra-broadband FWA solution operating in the mmW bands bridges perfectly the broadband gap between urban and rural areas and becomes an enabler for the Gigabit Society. WiBAS™ G5 PtMP solution can deliver **1Gbps speed per end user** even at distances of **6km from the base station**. It should be noted though, that the range of the system can extend to more than 11km addressing reliably both rural and semi-rural ultra-broadband access applications. With the most compact and lightweight radio in the market, the WiBAS™ G5 Connect+ terminal station offers the flexibility the operators need to provide a “fixed” style of ultra-fast broadband experience without the costs of building an expensive 5G or fixed fiber network. ■

➤ <http://www.intracom-telecom.com/WiBASG5-evoBS>

SIMPLE FWA TECHNOLOGY CAN PRESERVE SPECTRUM ASSETS

Dharminder Chanana, CEO, Conklin-Intracom (Intracom Telecom USA), talks about Intracom Telecom's high band FWA and how the WiBAS™ G5 platform can be a license save & monetization solution.



INTERVIEW » We acknowledge that there are some investment considerations regarding the mmW bands. In your opinion, which are the spectrum bands that attract more the investors' interest and why?

D. Chanana » Spectrum is a rare and therefore valuable asset. For a spectrum license owner it is equally reasonable to proceed immediately upon acquiring the license to deploying a network, and to cautiously abstain from sizeable investment in network assets until a better technical option becomes available. The millimeter wave spectrum became very early the center of attention attracting investments worth billions of US dollars. The motive behind the sudden increase of interest is the operation of Fixed Wireless Access (FWA) networks, raking high ARPU for its owners.

INTERVIEW » FCC is preventing waste of valuable spectrum, since it sets up strict rules for the license owners. What requirements should be met by the licensees?

D. Chanana » Due to the exponential growth of demand for spectrum resources the regulators find ways to ensure that these resources are not wasted by being kept "idle" and underutilized by their owners. A particular example, as you mentioned, is that of FCC setting up strict rules for the spectrum owners that did not make use of their asset at the 28 GHz band. More specifically, the licensees have the obligation to show that they provide Point-to-Point or Point-to-Multipoint signal coverage to at least 25% of the geographic area of the license. Failure to satisfy these requirements by the 1st of June 2024 will result in automatic cancellation of the license.

Therefore operators need to decide on their next steps and actions in order to keep their valuable spectrum asset. The question is about choosing the wireless technology which besides helping to save the license, it also enables the higher monetization value of all. Operators have to decide for the wireless technology which helps generate more dollars per Hertz, costs less dollars to plan and deploy, and has a long life span and prospects for evolution.

INTERVIEW » Intracom Telecom has been a pioneer of FWA solutions worldwide. How can the WiBAS™ G5 platform help operators preserve spectrum assets and in which way is it better than other options?

D. Chanana » Intracom Telecom can aid the operators save their spectrum assets with the new WiBAS™ G5 Point-to-MultiPoint Fixed Wireless Access platform operating in the mmW licensed spectrum of 24.25-29.50 GHz. The platform consists of WiBAS™ G5 evo-BS, which is the base station hub and WiBAS™ G5 Connect+, which is the terminal station that is deployed at the customer premises.

WiBAS™ G5 system can be used to deliver connectivity at speeds of several hundreds of Mbps, to residential and to business subscribers. Communication Service Providers can deploy it safely for Ultra-Fast Fixed Wireless Networks quickly and cost efficiently.

In case that an operator selects the option of deploying PtP links for saving their spectrum, WiBAS G5 can give a solution by its operational flexibility. The system can also operate in PtP mode by combining the base station hardware and the WiBAS G5 Connect+ terminal equipped with a parabolic narrow beam antenna, satisfying FCC's high power requirements for "fixed point-to-point link" radio transmission between point-to-point stations in the UMFUS (Upper Microwave Flexible Use Service).

Having in mind that the 28 GHz spectrum is also licensed for use by 5G networks, we can say that one of the great advantages of WiBAS™ G5 platform is that it can operate side by side with 3GPP 5G systems operating in adjacent channels, thanks to its intelligent software and compliance to established regulations for spectrum use. ■

BEYOND CONNECTIVITY

CSPs CHOICES, PLATFORMS & MONETIZATION

MARIA BAKALOULI

Product Marketing Engineer, Digital Transformation, Telco & Enterprise Software

IN THE DAWN OF A NEW ERA

Until recently, connectivity – that is voice, SMS and data communication services – was the main commodity offered by telcos. The disruption in CSPs market that started by the OTTs and content providers, seems to be softened with their partial entry into the CSPs' value chain. The rise of Cloud and IoT brought new solutions both for the B2C and B2B market, however, no killer application has emerged.

5G is opening a new chapter in the telecommunications industry, unlocking a huge potential for growth. Numerous use cases spring up, in all industries, for services *beyond connectivity*, offering new experiences and allowing for efficiencies through automation and cost reduction.

Some CSPs may remain faithful to connectivity, advancing it to best-in-class or adding value on it, with network security, for example. However, most large operators are developing their strategies on becoming platform or end-to-end solutions providers. The big revenue will come from applications.

FROM TELCO TO TECH-CO

In order for CSPs to take advantage of this new potential at its full, they need to abandon the connectivity-provider mentality. They need to dig deep into enterprise sector, understand their needs, and create solutions that best serve their business. In order to do so, they need to acquire new skills and build new mindsets. They need to transform.

Many operators are on their way to transformation, following the strategy most fitting their vision. For example, Vodafone is creating a pan-European R&D unit, called Vodafone Technology, "as a key strand in" their "strategic goal of becoming a digital enabler, offering products and services, built on and around core connectivity offer", according to Johan Wibergh, Vodafone Group CTO¹.

On the other hand, Telia, have focused on building values and skills as part of a purpose driven strategy. This strategy includes a customer-centric approach, inspiring customers *beyond connectivity*. It also includes a culture of creating trust for them, through multiple digital initiatives, such as a secure network, quality services to government and municipalities, help for the elderly and keeping the children safe on-line².

Why transform?

5G will drive up to €2.0 trillion in new economic gross output (sales) over the period from 2021 to 2025, felt by every major industry³.

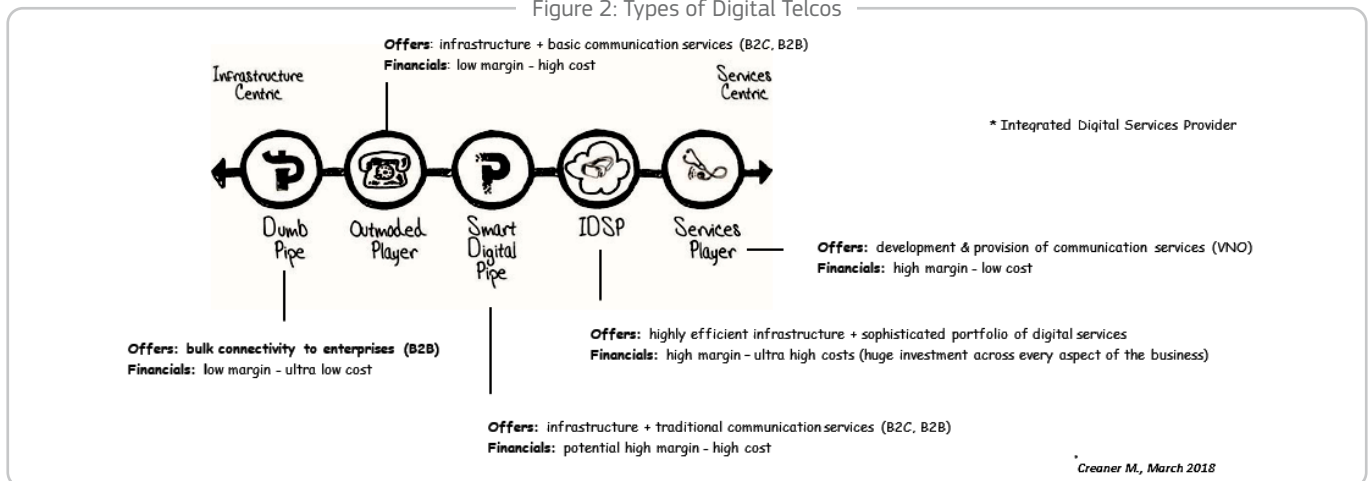
Figure 1: 5G impact over the period from 2021 to 2025



The automation enabled by technologies as such, is of paramount importance in delivering attractive use cases both for consumers and enterprises. Autonomous driving, remote surgery, virtual reality sporting events and cloud gaming are only some of the exceptional experiences to be created. Costs can be optimized, from the network level – by using software defined applications, to the customer level – with advanced self-service applications, and from logistics – by building intelligent inventories to production facilities – with the help of robots and connected workers.

In majority, CSPs lack the innovation and speed required, in order to take advantage of the potentials above⁴. The traditional Telco model is based mostly on Core and Access network technology, skills and mentality. The *beyond connectivity* model requires specialized SW skills and use case oriented mentality, capitalizing on modern technologies like cloud, AI, ML and IoT. On the other hand, most enterprises would consider purchasing additional services, in the form of end-to-end solutions from their CSPs, in order NOT having to do with multiple partners, themselves⁵.

Figure 2: Types of Digital Telcos



How to transform?

The transformation may take place in the business layer, the operational and the technology layer.

Business-wise, there are multiple models that CSPs may choose to operate⁶ (Figure 2). These models constitute CSPs' choices from pure connectivity provider to end-to-end solution provider. CSPs may offer value added connectivity, e.g. network slicing. They may select to address the needs of individuals, enriching their offers with third-party solutions e.g. OTTs, or act as wholesalers focusing on specific industry vertical(s) e.g. insurance. They may target specific customer segments, and offer end-to-end business solutions in cooperation with their partners. CSPs have a broad range of thinking regarding opportunities per industry also, according to a TM Forum survey⁷. And while for most of them, the path to revenue *beyond connectivity* lies in the enterprise sector, particularly as 5G and IoT mature⁸, some CSPs, will still find the consumer market attractive, allowing for an ARPU increase of 20%⁹.

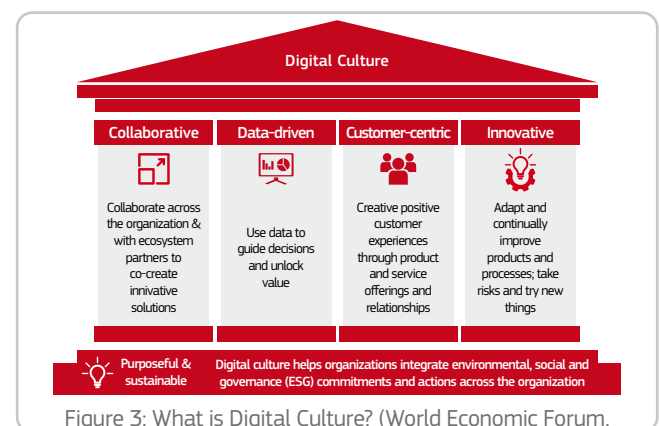
A few operators have already gone through stunning transformations. However, it seems that in majority, CSPs are focusing on building agile infrastructures capable of managing the multiple of use cases to come up. Like in the case of Vodafone, who "aims at developing a true platform business", believing that "growth beyond connectivity will come from developing new business and revenue models with partners", according to Coleman Deegen, CEO of Vodafone Spain¹⁰.

Nonetheless, there are remarkable cases of CSPs advancing in specific verticals, like in the case of KDDI. With the help of smart glasses, real-time video transmission systems and digital ledgers, they remotely collect information from sensors and analyze them in order to send the appropriate instructions back, building the Smart Factory¹¹ of today. On the consumers' side, BT has merited their sports

fans, with unique experiences, based on augmented reality, through the Matchday Experience¹² before getting into a joint venture with Warner Bros. Discovery¹³.

Operational-wise, many CSPs have formed brand new departments to offer the new 'digital' services, both product-wise and experience-wise. New roles such as CIOs have been assigned, strengthening the importance of 'soft' technologies in the new structure. Agile and responsive teams, with clearly defined roles have already started experimenting with flexible and modular infrastructures and architectures e.g. cloud and microservices, delivering new digital solutions e.g. smart IoT. CSPs need to think like a SW company¹⁴, in order to handle, efficiently, the experience expectations of their customers - B2C or B2B - as well as the innovative, quality and secure solutions they are planning to offer.

A digital culture¹⁵ needs to be built in order to align organizational, leadership and individual goals. Silos have to be broken down, employees need to be encouraged and trust has to be developed. New organizational values are required, so that daily operations, behaviors and mindsets are integrated with the company's ESG¹⁶ commitments and actions.



Technology-wise, the tools as well as the synergies that will make this change happen, may be selected.

Network and business platforms are moved to the cloud in order to cover the engaging experiences required by the consumers of the future, either they are individuals or enterprises. In order to deliver a cloud game onto the users' screen, multiple partners cooperate, including for example, the cloud game provider, the device provider, the application provider and the 5G network provider. The cloud game provider may use a dedicated network slice, which will configure themselves, through on-line self-service tools. Partners' on-boarding, on-line enterprise product catalogues, and real-time configuration, quoting and pricing will be used to deliver the services created (Figure 4).

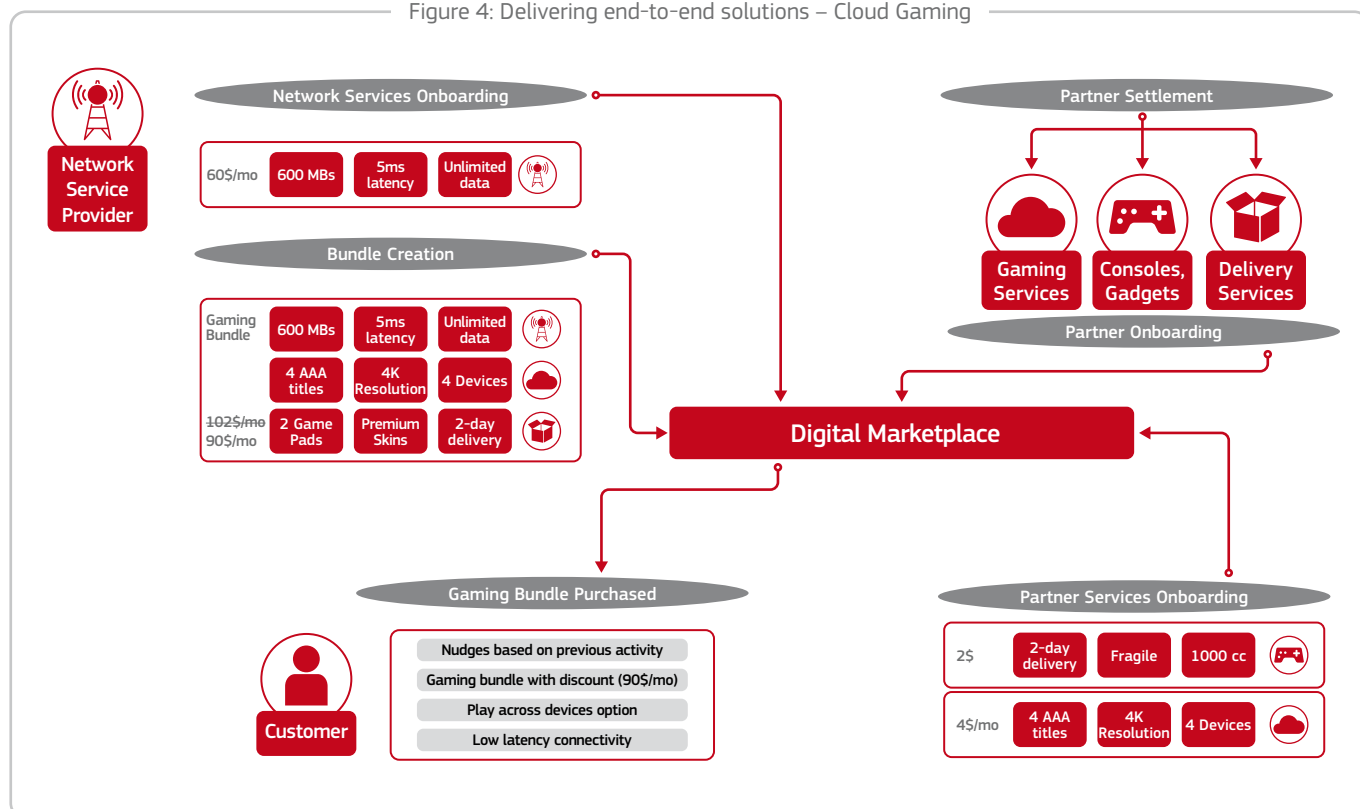
Some CSPs have already partnered with the hyperscalers of their choice, either to build their network services in the cloud - as in the case of AWS and DISH¹⁷, or even to operate their network through the hyperscalers - as in the case of AT&T and Microsoft¹⁸, even if hyperscalers themselves are building their strategies towards specific verticals as in the case of Microsoft and Tampnet¹⁹.

Likewise, CSPs have made their choices towards their business platforms, e.g. BSS, using local or global transformation strategies, e.g. Telefonica²⁰.

AI has a leading role in driving efficiency, competitiveness, and customer value, helping enterprises transform their operations, customer relationships and business models. Combined with cloud or edge, IoT and 5G, it can enable numerous applications that can supercharge all business sectors, achieving faster, more reliable and cost effective operations. For example, the committed performance of the game quality or the network slice, will be achieved through real-time optimization of the network, using machine learning, preferably at the edge. Similarly, in a smart power plant, where analysis of data sets becomes extremely demanding, the edge offers the convenience required, for analysis and decision-making near the sensors.

With regard to all cases above, as well as many more, pricing becomes extremely important for monetizing the services set, and ultimately releasing the revenue expected. New charging models and settlement capabilities will be used for the ecosystem of partners. For example, charging for the cloud gaming company, per game or for the amount of time spent playing may be used. Network slicing charging may be based on spectrum and energy efficiencies. The billions of devices of the smart power plant, that may carry different ARPU, must be efficiently handled with differentiated and value-based charging. Low latency charging, distributed on the edge, will minimize IoT network traffic and reduce related costs.

Figure 4: Delivering end-to-end solutions – Cloud Gaming



INTRACOM TELECOM OFFERING

Intracom Telecom is a trustworthy partner of many telcos, utilities and enterprises around the globe, working with them side-by-side, understanding their needs, and offering solutions to their problems. Intracom Telecom portfolio is based on state-of-the art products and solutions using tools and methodologies, providing the automation, flexibility and agility required by modern organizations.

Selective offerings, designed to support services *beyond connectivity* include:

» **uiTOP™**: Intracom Telecom's Unified IoT Orchestration Platform enables a horizontal IoT layer, allowing for advanced management and control of Intelligent Things from different verticals. The platform enables Massive IoT and Smart City applications, including Smart Lighting, Smart Parking and Smart Waste Management, Noise, Traffic, Transport and Environmental Monitoring, as well as Energy and Water Management.

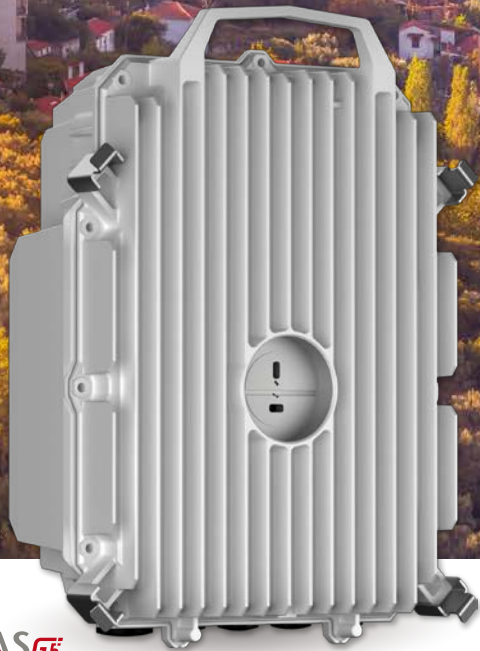
» **NGINius-Charging™**: a fully convergent monetization engine, architected to quickly respond to the dynamic environment of 5G, ready to charge new generation services, being agile enough to continue supporting current technologies and existing business models. It supports all types of Service Providers employing B2C, B2B and B2B2X models and help them increase their responsiveness, adaptability and performance in the 5G era.

» **Cognitiva™**: a comprehensive service proposition that adds value at every step of an AI/ML related project, and provides solid end-results for multiple verticals and use cases including, predictive maintenance for network upgrades or energy & water consumption, root cause analysis, customer journey optimization, sentiment analysis, environmental monitoring, personal finance and operational forecasting. ■

References

- ¹ Anie Turner, Mobile Europe, 21 October 2021
- ² Telia, during TM Forum, Digital Transformation World Series, 2021
- ³ The Impact of 5G on the European Economy, Feb 2021, Accenture Strategy
- ⁴ Bearing Point/Beyond: Mind the gaps - six reasons why CSPs could miss out on the multi-trillion dollar enterprise IT opportunity
- ⁵ Analysis Mason: Large enterprise demand for comms and IT services (Survey results 2021)
- ⁶ M.Creaner, Centernode Limited CEO, Author & Digital Transformation Strategy <https://www.linkedin.com/pulse/does-your-telco-really-know-what-wants-when-grows-up-martin-creaner/>
- ⁷ TM Forum: Enterprise Verticals – Placing the right bets
- ⁸ TMForum 2021: Take charge! Using real time charging to tap revenue beyond connectivity
- ⁹ McKinsey & Co: Unlocking the value of 5G in the B2C marketplace, November 5, 2021
- ¹⁰ TMForum 2021: Take charge! Using real time charging to tap revenue beyond connectivity
- ¹¹ <https://global.kddi.com/solution/smart-factory.html>
- ¹² <https://www.bt.com/sport/features/matchday-experience-bt-sport-app-augmented-reality-watch-together>
- ¹³ <https://newsroom.bt.com/bt-group-and-warner-bros-discovery-agree-to-form-new-premium-sports-joint-venture-for-the-uk-and-ireland/>
- ¹⁴ Danielle Royston, Telecom's Leading Public Cloud Evangelist, TelcoDR
- ¹⁵ TM Forum: Digital Organization Transformation <https://www.tmforum.org/digital-organizational-transformation/>
- ¹⁶ Environmental, Social and Governance
- ¹⁷ <https://press.aboutamazon.com/news-releases/news-release-details/dish-and-aws-form-strategic-collaboration-reinvent-5g>
- ¹⁸ <https://news.microsoft.com/2021/06/30/att-to-run-its-mobility-network-on-microsofts-azure-for-operators-cloud-delivering-cost-efficient-5g-services-at-scale/>
- ¹⁹ <https://www.tampnet.com/blog/microsoft-ceo-satya-nadella-about-tampnet-delivering-reliable-and-secure-connectivity>
- ²⁰ The Telefonica way: Next generation BSS, Mark Newman, Chief Analyst, TM Forum, November, 2021

DEPLOY ULTRA-BROADBAND LONG RANGE FWA NETWORKS



WiBAS^{G5}
dual-BS



3.2
Gbps
capacity



240
subscribers
density



WiBAS^{G5}
smart-BS



11
kilometers
coverage

Intracom Telecom has developed new techniques to enhance the density of subscribers and the speed of connection. The technological innovations are being introduced on the 28 GHz FDD hub radio WiBAS™ G5 dual-BS and on the 24 / 26 / 27 / 28 GHz TDD hub radio WiBAS™ G5 smart-BS. The subscriber density reaches 240 per hub and the available capacity goes up to 3.2 Gbps using wide channels of 100 MHz and 112 MHz. The signature feature of the WiBAS™ portfolio has always been the extended range, and this is reconfirmed for the new products WiBAS™ G5 dual-BS as well as for the WiBAS™ G5 smart-BS, reaching connections of up to 11 km.



www.intracom-telecom.com



INTRACOM
TELECOM