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Communications Africa Afrique

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Satellites

Inspiring a new industrial revolution

Broadcasting

Post-production – 20 years on

Mobile finance

Improving access across Africa

Smart cities

New options for IoT

AfricaCom 2019 arrives in Cape Town

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A note from the Editor

IN THIS ISSUE we look at evolution: evolution of mobile payments, of switching, of analytics and of post-production equipment. We also discuss IoT, how it could change Africa's industries and how it can be delivered. Africa, with a young population and growing demand for more and better telecommunications, will need to embrace many of these changes and evolving technologies and find ways to make them work for coming generations. No doubt the speakers and exhibitors at AfricaCom, previewed in this issue, will have some thoughts on how that might happen.

Geospatial data can aid the effective placement of towers

Mobile payment: a fast-moving industry

Will African TV viewers catch up on the digital revolution?

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MainOne lands submarine cable in Cote D'Ivoire

MAINONE HAS LANDED its submarine cable in Grand Bassam, Côte d'Ivoire, which is the final leg of the ongoing expansion to reach Senegal and Côte d'Ivoire.

The Grand Bassam landing, which follows the recent completion of the landing in Dakar Senegal will extend the reach of the cable into Côte d'Ivoire and neighbouring countries. The deployment is also notable because it is the first commercial cable in service to deploy spectrum sharing capabilities guaranteed to deepen infrastructure sharing and lower the cost of delivering broadband services to West Africa.

Following the landing at the Grand Bassam beach in Abidjan, the cable will be connected to an existing branching unit on the MainOne cable trunk already strategically located offshore.

Photo: MainOne

Funke Opeke, CEO of MainOne, meeting Nanan Amon Tanoe, King of Grand-Bassam and president of National Kings Chamber of CIV.

The upgrade of the electronics on the cable and the implementation of spectrum sharing functionality will now enable multiple operators to share optical spectrum on the submarine pair with up to 10 Terabits of capacity. The availability of such increments in capacity is expected to further accelerate the deployment of 4G services in addition to fixed broadband across the region.

The submarine cable will also be connected to the newly constructed MainOne data centre in Abidjan, purposely built alongside the cable landing station to house infrastructure to facilitate the growth of the digital economy in Côte d'Ivoire.

The facility built to Tier III standards will address the needs of internet service providers (ISPs), telecom operators and mobile network operators (MNOs), global content providers and enterprises in Côte d'Ivoire seeking world-class infrastructure at competitive costs for locally resident data.

The highly efficient and reliable facility will offer rack spaces for these businesses to collocate their IT infrastructure including servers and other equipment with ease while gaining access to fully redundant power, cooling, carrier-grade security, and fire – prevention. The carrier-neutral facility will also bring direct access to the MainOne Cable system as well as interconnection with major network operators in Côte d'Ivoire.

Fenix Mozambique opens Nampula branch

ENGIE FENIX MOÇAMBIQUE Lda. inaugurated its Nampula branch today in collaboration with the rural electrification body FUNAE and market-leading satellite and digital television provider DStv.

The decision to launch its Nampula branch is motivated by Fenix's commitment to delivering its solution to households most in need and in the hardest-to-reach corners of rural Mozambique.

Recently the company launched in Maputo and Gaza provinces with over 1000 households electrified in under three months. Fenix also recently announced a branding and distribution partnership with Vodacom and Vodafone M-Pesa SA.

Fenix has rapidly grown operations as a subsidiary of ENGIE.

Facebook's third-party fact-checking programme expands to 10 sub-Saharan Africa countries

JOINING THIRD-PARTY FACT-CHECKING programmes in Kenya, Nigeria, South Africa, Cameroon and Senegal, Facebook has announced the expansion of its Third-Party Fact-Checking programme to 10 additional African countries.

In partnership with Agence France-Presse (AFP), the France 24 Observers, Pesa Check and Dubawa, this programme forms part of its work in helping assess the accuracy and quality of news people find on Facebook, whilst reducing the spread of misinformation on its platform.

Working with a network of fact-checking organisations, certified by the non-partisan International Fact-Checking Network, third-party fact-checking will now be available in Ethiopia, Zambia, Somalia and Burkina Faso through AFP, Uganda and Tanzania through both Pesa Check and AFP, Democratic Republic of Congo and Cote d'Ivoire through the France 24 Observers and AFP, Guinea Conakry through the France 24 Observers, and Ghana through Dubawa.

Feedback from the Facebook community is one of many signals Facebook uses to raise potentially false stories to fact-checkers for review. Local articles will be fact-checked alongside the verification of photos and videos. If one of our fact-checking partners identifies a story as false, Facebook will show it lower in news feed.

When third-party fact-checkers fact-check a news story, Facebook will show these in related articles immediately below the story in the news feed. Page administrators and people on Facebook will receive notifications if they try to share a story or have shared one in the past that's been determined to be false, empowering people to decide for themselves what to read, trust, and share.

Thales partners with Paycode to support financial inclusion drive in Ghana

GHANA CONTINUES TO roll out initiatives that provide Ghanaians with secure and convenient digital financial services aimed at including the financially excluded.

Thales, through its Gemalto expertise, is working in partnership with Paycode to supply dual card technology to GhIPSS (Ghana Interbank Payment and Settlement Systems), supporting plans to enhance the functionality of the e-zwich biometric card, Ghana's first financial inclusion platform. The dual function cards will combine Gemalto's PURE EMV white label payment solution with Paycode's Universal Electronic Payment System (UEPS) application, offering Ghanaians the combined security of both the EMV and the biometric technology.

The dual-purpose card will offer cardholders a secure, convenient and affordable means of receiving and making payments. It will provide beneficiaries of Ghana's government social intervention programmes the opportunity to access both funds on their e-zwich cards and in their bank accounts simultaneously, creating financial productivity and empowerment.

The Biometric functionality of the card supports the government of Ghana's agenda of eliminating payroll duplications for all government payments. By using the card as a payment option, government payment beneficiaries have access to all banking services in Ghana. The dual functionality card is expected to be issued by banks, savings and loans companies in Ghana.

GhIPSS, a subsidiary of Ghana's central bank, already uses Gemalto's PURE white label payment application for its gh-link EMV domestic card scheme. Archie Hesse, CEO for GhIPSS, said, "We feel deeply privileged to be working with GhIPSS and Paycode on such an important project. Our dual-card technology is ideal for banks looking to simultaneously address the issues of unbanked citizens and provide accurate delivery of welfare programmes."

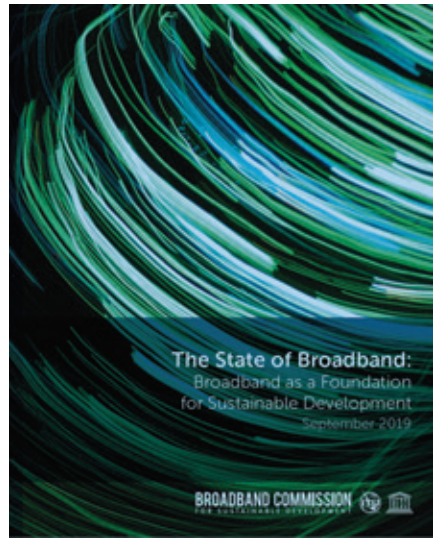
"Through our partnership we will enable over 100 million Airtel Africa customers make safe mobile money purchases online and in person."

- Raghunath Mandava
CEO of Airtel Africa

"We are actually the first who are doing manufacturing. We are making the motherboards, we are making the sub-boards during the entire process,"

- Mara Group CEO Ashish Thakkar on the first 'Made in Africa' smartphones

"Broadband connectivity does not merely transform individual human potential. It also underpins national efforts to develop knowledge economies, foster digital transformation in government services and digital transition across economic sectors, expand opportunities for enterprises, and provide greater value for citizens and consumers."



Broadband Commission for Sustainable Development report: The State of Broadband: Broadband as a Foundation for Sustainable Development

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"For hundreds of millions of people across the world, topping up is not something that they can physically do or afford to do when they run out of credit. Vodacom has taken a leading step to address that shortfall in South Africa."

- Kostas Kastanis
Head of Zero-D at Upstream on the free internet service powered by Upstream's Zero-D connectivity platform

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"Using the enormous potential of mobile technology, our partners in the target countries can reinforce their information systems and ensure broader access to healthcare services."

- Peter Sands
Executive Director of the Global Fund
The Global Fund and Orange have signed a partnership deal to develop innovative e-health solutions

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"Access to affordable, fast broadband is key for the country to revive economic growth."

- Khaya Dlanga
Rain's chief marketing officer after the data-only operator Rain launched what it calls the continent's first commercial 5G network

US Embassy hosts "election" challenge hackathon in Ethiopia

AS PART OF its 12-part series Ethiopia Hacks! programme, the US Embassy in Addis Ababa conducted the sixth hackathon titled "A digital solution for individuals to electronically verify their voter registration information."

Photo: US Embassy

The winning team developed a phone-based system that would avoid the use of physical registration cards.

Subject matter and technology experts met 11-14 October in the Colonel John C Robinson American Centre in Addis Ababa to brainstorm and generate an open-source, free, and easy-to-learn technology solution for the good of society.

The fifty participants were divided into teams. The winning team developed a phone-based system that would avoid the use of physical registration cards. Their solution envisioned a central database managed by the National Electoral Board of Election (NEBE) that would classify voters into one of two groups, rural and urban voters. Voters would register in their respective Woreda or Kebele (district or ward). The solution utilises several functionalities including the usage of individual PINs, and the ability to receive notification of voter registration status as verified or rejected.

Ethiopia Hacks! was conducted in partnership with the Google Developers Group (GDG-Addis) and the Centre for Accelerated Women's Economic Empowerment (CAWEE). Each hackathon challenges aspiring young tech developers to identify prototype solutions to community challenges in Ethiopia.

By supporting and developing an eco-system that promotes innovation and technology, the US Embassy is improving the capacity of Ethiopians to shape their future. In total, the Ethiopia Hacks! programme will invest in the capacity of 600 tech-savvy youth, who will have the opportunity to participate and generate solutions for their communities. Funding is provided jointly by the US Department of State and the US Agency for International Development (USAID).

UN's Radio Miraya goes live in Sudan

AT 101.5FM, ABOUT 75 per cent of the over 400,000 inhabitants of the Tonj area are now listening to Radio Miraya, run by the United Nations Mission in South Sudan (UNMISS).

Transmission via the 300-kilowatt equipment, which is part of Radio Miraya's expansion project in South Sudan, currently spans a radius of about 30km across the Tonj.

"This is a very good idea and it's coming at the right time because we are about to form a new government in South Sudan," said Peter Alor Gok, a local trader.

Thanking the UN Mission for extending its broadcasting services to Tonj, governor Matthew Mathian Mathiang Magordit said his citizens would now be able to listen to fair and balanced information about the peace process in the country.

Business Email Compromise attacks up 269 per cent

IN ITS QUARTERLY Email Security Risk Assessment (ESRA) report, email and data security company Mimecast has found a significant increase in Business Email Compromise (BEC) attacks, emails containing dangerous file types, malware attachments and spam being delivered to users' inboxes from incumbent email security systems.

The latest ESRA found a 269 per cent increase in these types of attacks, in comparison to the same findings in last quarter's report. BEC attacks, referred to as email-based impersonation fraud, is an issue that is not going away because these attacks can easily evade many traditional email security systems on a global scale. This trend was also reflected in recent research, the State of Email Security 2019 report, which found that 85 per cent of the 1,025 global respondents experienced an impersonation attack in 2018, with 73 per cent of those victims having experienced a direct business impact – like financial, data or customer loss. The rise in BEC attacks underscores the need for organisations to add protection against well-resourced attackers. A 2019 Osterman Research Report titled "Ten Questions to Ask About Your Office 365 Deployment", concluded Microsoft Office 365 alone, "will not fully meet many organisations' requirements." Today, close to half of Mimecast customers bolster the cyber resilience of their Microsoft Office 365 deployments with services including targeted threat protection to defend against bad actors and BEC attacks.

The ESRA report found 28,783,892 spam emails, 28,808 malware attachments and 28,726 dangerous files types were all missed by incumbent providers and delivered to users' inboxes, an overall false negative rate of 11 per cent of inspected emails.

"Cybercriminals will always look for new ways to bypass traditional defences and fool users. This means the industry must focus their efforts on investing in R&D, unified integrations and making it easier for users to be part of security defences, driving resilience against evolving attacks," said Joshua Douglas, vice-president of threat intelligence at Mimecast.

Kaspersky detects 100mn attacks on smart devices

KASPERSKY HONEYPOTS HAVE detected 105mn attacks on IoT devices coming from 276,000 unique IP addresses in the first six months of the year. This figure is around nine times more than the number found in H1 2018, when only around 12 million attacks were spotted originating from 69,000 IP addresses. Capitalising on weak security of IoT products, cybercriminals are intensifying their attempts to create and monetise IoT botnets. This and other findings are a part of the 'IoT: a malware story' report on honeypot activity in H1 2019.

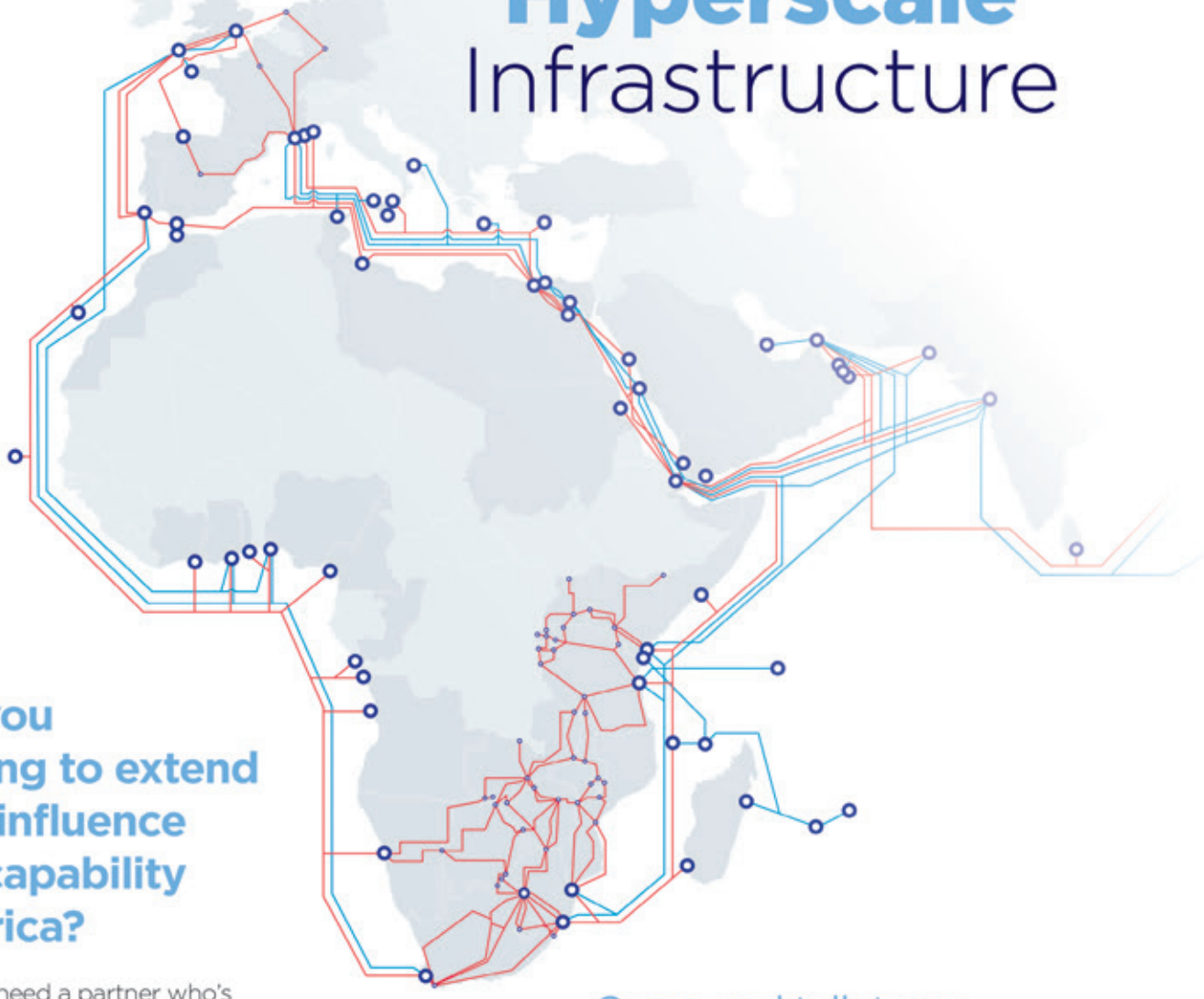
To learn more about how such attacks work and how to prevent them, Kaspersky experts have set up honeypots - decoy devices used to attract the attention of cybercriminals and analyse their activities.

Cyberattacks on IoT devices are booming, as even though more and more people and organisations are purchasing 'smart' (network-connected and interactive) devices, such as routers or DVR security cameras, not everybody considers them worth protecting. Cybercriminals, however, are seeing more and more financial opportunities in exploiting such gadgets. They use networks of infected smart devices to conduct DDoS attacks or as a proxy for other types of malicious actions.

Based on data analysis collected from honeypots, attacks on IoT devices are usually not sophisticated but stealth-like, as users might not even notice their devices are being exploited. The malware family behind 39 per cent of attacks – Mirai – is capable of using exploits, meaning that these botnets can slip through old, unpatched vulnerabilities to the device and control it.

Another technique is password brute-forcing, which is the chosen method of the second most widespread malware family in the list – Nyadrop. Nyadrop was seen in 38.57 per cent of attacks and often serves as a Mirai downloader. This family has been trending as one of the most active threats for a couple of years now. The third most common botnet threatening smart devices - Gafgyt with 2.12 per cent - uses brute-forcing.

Building Africa's **Hyperscale** Infrastructure



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Nokia tops telecom software business by market share

NOKIA HAS BEEN ranked as the top telecom software provider with market share valued at US$4.8bn in a market that grew about one per cent to US$66.1bn in 2018, according to a global study by analysts at Analysys Mason. According to research firm Analysys Mason's findings, Nokia is significantly improving its 5G-ready mobile network management offering by evolving it to be cloud-native and including value features that communication service providers (CSPs) find valuable and will pay for, while also expanding the capabilities and commercial customers for its leading platforms, such as CloudBand.

Photo: Adobe Stock

Nokia has re-oriented its software products onto a Common Software Foundation (CSF).

The research firm stated that over the past few years, Nokia has re-oriented its software products onto a Common Software Foundation (CSF) that is cloud-native, multi-network, multi-vendor, 5G-ready, and optimised for the leading public cloud platforms.

Nokia's CSF, the first in the telecom software market to be done at scale, makes the company's products easier to deploy, integrate, service and upgrade, and easier for Nokia to deliver new innovation faster to customers, the firm noted.

As part of executing its software strategy over the past few years, Nokia has also established a dedicated software go-to-market organisation and significantly transformed its R&D and delivery organisations.

Dana Cooperson, research director, Analysys Mason, said, "Nokia's performance was notably strong in high-growth areas such as network orchestration and automation, which are a big challenge for CSPs moving into the 5G era and where it has a wide range of products and professional service capabilities to help its customers make the NFV/SDN leap. Nokia's investment in its Common Software Foundation and its cloud-native product portfolio should help it further strengthen its market position in 2019 and beyond."

Bhaskar Gorti, president of Nokia Software, commented, "The move to 5G is going to be driven by cloud-native software and technologies compared to prior generations. The demands of digital services, 5G and industrial automation cannot be met by just modifying old applications – rather they must be rewritten for the cloud from the ground up. This is why our approach to building modern applications on top of our cloud-native Common Software Foundation is resonating in the market."

MTN Cameroon launches end-of-year promo

THE TELECOM COMPANY has announced the launch of its 2019 end-of-year promo, which gives its customers a chance to win a new car every week and 5,000 FCFA in cash every five minutes. The campaign will run for 11 weeks, from 15 October 2019 to 5 January 2020. The promo is open to any customer who subscribes to a voice or data bundle of at least 250 FCFA or does MTN MoMo transactions of at least 5,000 FCFA.

Hendrik Kasteel, CEO of MTN Cameroon, said, "MTN Cameroon pursues through this promo, its mission to make the lives of its customers ever brighter. We don't just do business; we bring value to those around us. This new campaign is proof of this, and above all, it enables us to thank the millions of subscribers who trust us in Cameroon."

Microsoft South Africa unleashes Python on Azure

MICROSOFT SOUTH AFRICA has introduced Python support in Azure Functions for South African developers.

Python Support will help developers with local production workloads. It will enable developers to build their server-less function using Python 3.6 based on open-source and cross-platform functions 2.0 run time, and to publish it to the Linux-based hosting platform in Azure. It will provide end-to-end experience for Python developers, without having to leave Microsoft cloud when using its language, libraries, and tools.

The launch of Python for Azure also follows the release of Azure SDK for Python in August, a package that helps access Microsoft Azure services.

Rory Preddy, audience developer at Microsoft, said, "We have built an open platform in Azure. Developers can work in whatever language they want, integrate into Azure and use the services that will benefit them. Importantly they can do all this in their own language. We are enabling developers who use Python to do a lot of different things within Azure - from development, to AI and serverless solutions and the cloud. We want to grow with developers in their cloud journey." With the newly launched Python Support in Azure, South African developers will be able to:

- Build a better Python web application faster in the cloud using Microsoft managed application and connect their apps to data through Azure services.
- Easily build, train, host and deploy models from any Python environment with Azure services for data science and machine learning or bring in pre-built AI solutions to deliver cutting-edge experiences to their Python apps.
- Build and debug their Python apps with Visual Studio Code, push their apps to the cloud with a few clicks, use the cloud-based Azure DevOps and adopt a full DevOps lifecycle for their Python apps.

"It is now easy to spin up a Python DevOps with a free Linux tier. The tooling for the Python Ecosystem is a natural complement to our Azure ecosystem and will give Python developers the same rich Microsoft tooling which has become the industry standard," concluded Preddy.

StarTimes to support agricultural transformation in Africa through satellite

STARTIMES MEDIA, A pay television company, has announced its plan to boost Africa's agricultural transformation through its digital media platform.

It will provide access to tailored digital terrestrial content targeting rural areas across the continent.

The company announced its plans at the 10th edition of the African Green Revolution Forum (AGRF) event held in Ghana.

The AGRF is an event that brings together stakeholders in the agricultural sector to share and exchange ideas, develop programmes, investments and policies that will drive sustainable agricultural transformation globally.

The project, known as Access to Satellite TV for 10,000 African Villages, is one of 10 major cooperation programmes designed to boost cooperation between China and Africa, enabling the broadcaster to extend television services in rural areas.

The aim is to connect a total of 10,112 villages through satellite television by the end of 2019.

Speaking during the AGRF event, StarTimes Vice General Manager for overseas business Zhang Junqi noted that although digitalisation is one of the main facilitating efforts for knowledge sharing, it is currently limited due to lack of infrastructure thereby contributing to low penetration of information communication resources in Africa.

"We intend to make it our social obligation to make our broadcast platforms available for relevant educational content targeting the rural population," he added.

"At StarTimes, we have initiated the broadcast of agriculture-related content from Bill & Melinda Gates Foundation (BMGF), Alliance for a Green Revolution in Africa (AGRA) and other relevant resources which have been localised in each country and broadcast in local dialects," noted Zhang.

ATLAS TOWER

Today's Towers for Tomorrow's Network

Atlas Tower is a rapidly growing, organic tower company with operations in the USA, South Africa, Kenya and Botswana. Atlas Tower owns and operates over 1200 communication towers worldwide. Currently, Atlas Tower is the fastest-growing tower company in South Africa and winner of the 2016 TowerXchange Industry Award for best Build-To-Suit Towerco and 2017 Infrastructure Company of the Year.

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Events/Événements 2019

NOVEMBER/NOVEMBRE

4-6	**Voice & Advanced Communications Summit**	Berlin, Germany	www.tmt.knect365.com/voice-advanced-communications-summit
12-14	**AfricaCom**	Cape Town, South Africa	www.tmt.knect365.com/africacom/
18-19	**VizAfrica**	Gaborone, Botswana	www.vizafrica.codata.org
30-1 Dec	**Networks, Mobile Communications & Telematics Conference**	Dubai, UAE	www.csty2019.org/nmoct/

DECEMBER/DECEMBRE

4-6	**World SD-WAN Summit**	Berlin, Germany	www.luxatiainternational.com/product/world-sd-wan-summit
6-8	**IEEE Conference on ICT**	IIT Allahabad, India	www.cict2019.iiita.ac.in
13-15	**Wireless Communications, Signal & Image Processing Conference**	Bangkok, Thailand	www.janconf.org/conference/WCSIP-BT2019/
20-23	**World Symposium on Communication Engineering**	Nagoya, Japan	www.wsce.org

JANUARY 2020/JANVIER 2020

3-5	**Frontiers of Computers & Communication Engineering Conference**	Singapore	www.fcce.org
6-8	**African Electronics, Computer and Communication Conference**	Rabat, Morocco	www.aeccc.org
7-11	**International Conference On Communication Systems & Networks**	Bengaluru, India	www.comsnets.org
18-20	**Signal Processing and Information Communications Conference**	Bali, Indonesia	www.icspic.com
19-22	**Electronics, Information, and Communication Conference**	Barcelona, Spain	www.theieie.org

Nigeria Com focuses on ways to boost the country's digital economy

THE 11TH EDITION of the annual Nigeria Com event presented strategic insights into the latest technology, media and telecom (TMT) trends to help organisations to identify new opportunities and stay ahead of the game.

Built around telecommunications networks and infrastructure, the event brought together C-suite operator executives and TMT leaders to define pathways to strengthen low-cost broadband connectivity and new digital services offerings for the people and businesses of Nigeria.

The two-day event, held from 11-12 September at the Oriental Hotel in Lagos, witnessed an in-depth discussion of topics that included the impacts of IoT, AI and blockchain on enterprise markets, streaming services and sustainable broadcasting, launching digital payment platforms, strengthening broadband networks, alternative energy sources, and more, featuring leaders from Pan African Towers, ALTON, LifeBank Nigeria and IHS Towers, among others.

One of the vital takeaways from the session Public and Private Collaboration for a Robust Broadband Plan in Nigeria was that network operators face multifaceted challenges, ranging from multiple taxes to insecurity and a harsh business environment.

The participants pointed out the need for government to immediately include telecommunication facilities across the country in what is called Critical National Infrastructure (CNI). The conference highlighted how infrastructure and software developments across the various sectors will strengthen economic development in Nigeria.

Photo: Adobe Stock

Industry leaders have discussed strategies for defining next steps for broadband development.

One of the sessions dealt with the economic potential of women in technology and how to enhance the profile of female role models in the sector. The AHUB Nigeria discussions, meanwhile, highlighted startups and innovators. Speakers included Folabi Esan, a partner with Adlevo Capital, Maya Horgan Famodu, founder of Ingressive Capital, Tony Onuk, founder of Roothub Accelerator Systems, and Ladi Daodu, CEO, Sierra Capital.

The AHUB Nigeria Breakfast Clinic provided dedicated time and expertise from industry experts to help entrepreneurs develop strategies to raise finance. A panel discussion on Tooling Start-ups to Drive Digital Transformation moderated by Thecla Mbongue, senior analyst at Ovum, underlined the need for collaborating, bartering, getting a great team, building a brilliant product and strategising to attract investors.

On the business front, YahClick and iSAT announced a partnership agreement; it aims to provide iSAT's customers in Nigeria with an integrated solution to accommodate the changing demands and trends of the market.

Overall then, the show gave industry leaders a chance to discuss strategies for defining next steps for broadband development and future-proofing business models across telecoms and the whole spectrum of enterprise verticals in Nigeria.

This year, the conference saw more than 650 industry professionals in attendance, as well as 45 speakers. The forum presented an opportunity for the attendees to gain deep insights on policy, strategies and technical expertise.

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Broadband
Happiness
Capped and
uncapped
plans
Angola
South Sudan
35Mbps
downloads
4Mbps
uploads
64
spot
beams
Capped and
uncapped plans
JOLA
Partner Portal
24/7 support centre
Rwanda
Guinea
Mali
iWayAfrica Distributor
Capped and
uncapped plans
Togo
Capped and
uncapped plans
Democratic Republic of the Congo
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Guinea
Gambia
Togo
Tanzania
JOLA
Ka-band
Niger
South Africa
Rwanda
Guinea
35Mbps
downloads:service
Fresh juicy service
4Mbps uploads
35Mbps
Fresh juicy
74cm antennas
Free Nights
Earth Stations
5 Ground
Fresh juicy service
iWayAfrica Distributor
Installation Accreditation
Namibia
4Mbps Mali
uploads
Ghana
Uganda
Senegal
Mali
35Mbps
down
loads
Lesotho
Malawi
VSAT
Free
Nights
Togo
Gabon
spot
beams
64
spot
beams
35Mbps
downloads

Connecting a continent

AfricaCom is back – and with it the largest ICT exhibition on the continent as well as a vast, multi-themed conference programme. Everything from rural communications to the Fourth Industrial Revolution and from fintech to 5G will be on show or under discussion at this years' event, as Vaughan O'Grady discovers.

ONE WAY TO gauge the progress of African telecommunications since the days when GSM began to excite strong interest in the potential of the market back in the 1990s would be to glance at the topics discussed at, and the type of companies attending, AfricaCom.

In fact the show, taking place from 12 - 14 November 2019, at the Cape Town International Convention Centre (CTICC) is actually two events: AfricaCom and AfricaTech.

AfricaCom describes itself as the home of connectivity and communications, and the largest ICT exhibition on the continent, covering topics like 5G, wholesale telecoms and digital video distribution.

AfricaTech is a zoned exhibition dedicated to AI, IoT, blockchain, fintech, cloud, data centres and security, cutting-edge content and a lot of networking opportunities, or, as the organisers put it, AfricaTech is about "accelerating enterprise digital transformation to elevate African economies".

The diversity of the themes driving this event would be hard to credit at the turn of this century, when 2G cellular alone, for example, had nowhere near the take-up in Africa that it has now. And of course 3G and 4G may be widespread in a few years, while 5G is being trialled in a number of countries.

Driven by technological innovation, customer demand and a variety of business models, ranging from prepaid, SIM subscription and mobile money to today's low-cost smartphones and advertising-driven internet connectivity (of the sort Vodacom and Upstream are now offering), a market that few would have assumed could break the ten per cent penetration level back in 2000 now has a user base of above half the population of many countries.

Photo: Adobe Stock

Mobile communications now has a user base of above half the population of many African countries.

The GSMA's The Mobile Economy Sub-Saharan Africa 2019* report sums up the continuing potential of this market, noting that sub-Saharan Africa will remain the fastest-growing region, with a CAGR of 4.6% and an additional 167 million subscribers over the period to 2025. That means a total subscriber base of just over 600 million – about half the population.

The GSMA adds that this year, thanks to better coverage and cheaper devices, 3G will overtake 2G to become the leading mobile technology in the region, while the continuing dominance of mobile will mean more mobile-enabled platforms disrupting traditional value chains.

On the other side of the Sahara, the GSMA's The Mobile Economy Middle East and North Africa 2018** predicts that between 2017 and 2025 the MENA region will see the fastest subscriber growth rate of any region except sub-Saharan Africa, growing above the global average at a CAGR of 2.5 per cent to reach 459 million. By this time, 69 per cent of the population will be mobile subscribers, only slightly behind the global average of 71 per cent.

The diversity of themes driving this year's AfricaCom reflects the technology advances made across the continent this century.

All these statistics, of course, apply to mobile communications, which was once the only game in town for Africa as a whole. Traditional cellular communication and what it can enable in terms of connectivity for more Africans is still a major theme at this event. However, there is no shortage of interest in newer applications of cellular – like IoT and 5G. Meanwhile, non-cellular-technology-driven themes that would once not have been mentioned, like AI, ML, fibre and data centres, are strongly featured.

The three-day conference programme is certainly aiming high with session headings like Building A Fully Connected, Intelligent Africa. But the conference overall also manages to emphasise the varied nature of the African market's demands.

Opening up a **new world** of digital connectivity

The South Atlantic Cable System (SACS) is bridging the digital divide between Africa, the Americas and Europe.

The South Atlantic Cable System (SACS) is open for commercial traffic.

This high capacity and ultra-low latency cable system connects Fortaleza (Brazil) to Luanda (Angola) in just 63 milliseconds.

SACS is 100% owned and managed by Angola Cables. With 4 fiber pairs it offers a total design capacity of 40 Tbps

angola cables

Offering the lowest latency between the Americas, Africa and Europe

New York to Cape Town (236 ms with SACS - 197 ms) • Miami to Cape Town (338 ms with SACS - 163 ms) • London to Luanda (128 ms)
Fortaleza to Luanda (350 ms with SACS - 63 ms) • Sao Paulo to Cape Town (377 ms with SACS - 163 ms) • Miami to Luanda (125 ms)

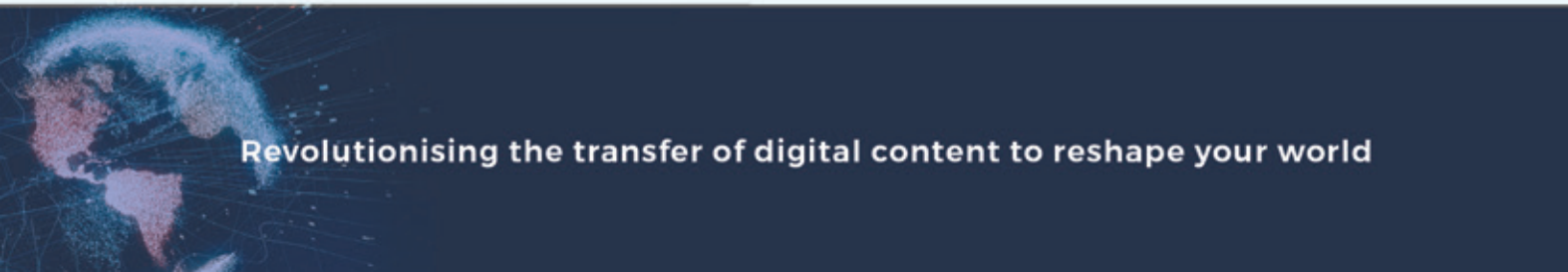
Angonap Fortaleza Tier 3 – Data centre Brazil

- Colocation
- IP Transit
- Angonix Peering
  Remote Peering
- Circuits (Transmission)
- Remote Hands
- Cross Connect

CONNECTING AFRICA TO THE WORLD

Angonap Luanda – Data centre Angola

- Colocation
- IP Transit
- Angonix Peering
  Remote Peering
- Circuits (Transmission)
- Remote Hands
- Cross Connect



Revolutionising the transfer of digital content to reshape your world

So if you're looking for variety in your conference streams, you'll certainly get what you want – with over a dozen streams focused on everything from fintech, data centres, AI, IoT and 5G to connecting Africa, women in tech and mission-critical technologies.

Many of the themes would not be out of place at any tech and communications conference anywhere. Building a smart city, implementing IoT-enabled low power wide area network bandwidth, AI in m-commerce, digital payment, blockchain, bitcoin, cryptocurrency and, of course, the role of 5G in the Fourth Industrial Revolution – they're all there.

However, many speakers explicitly relate these to Africa. Thus, some sessions examine ways in which artificial intelligence is transforming African business and what the Fourth Industrial Revolution means for Africa and African tech startups. Others look at the drive towards an IoT-led transportation revolution for public transit, the potential of the data centre market for Africa and the role of Africa as an incubator for innovation improving financial inclusion.

And although, as the GSMA report makes clear, this is still a continent closer to 4G than 5G, it pays to be ready. Thus visitors will be able to attend talks or sessions on laying the foundations for the 5G era in Africa, 5G killer applications in Africa, 5G RAN evolution and 5G's enablement of IoT for the transformation of the African enterprise.

Of course 5G has been launched in Africa, albeit in fixed wireless access (FWA) form, as South African operator Rain will explain, while visitors can also hear about Morocco's 5G trial experience and Econet Zimbabwe's 5G market expectations.

Among other discussion topics, while FWA is not as widespread as mobile in most African countries, it does get some coverage in a session on the relative economic use cases for FWA in Africa, as well as the Rain session. PMR too makes a modest showing, while satellites and to a lesser extent, submarine cables, are also discussed. However although they don't dominate the conference, both satellites and submarine cables make a strong showing on the exhibition floor.

Of course it would be a strange African telecommunications conference that didn't recognise that, among some incredible advances, there are still challenges, most obviously the challenge of rural connectivity. So if you'd like to know how emerging technologies are redefining African agriculture or whether TV white space technology can transform rural connectivity in Africa or how to effectively use spectrum to maximise connectivity in rural areas, you're in the right place. Of course, more familiar rural-related issues are discussed, among them infrastructure-sharing policy, tower infrastructure, business models for satellite communication, the role of affordable smartphones to overcome rural connectivity challenges, and regulatory and policy frameworks.

The encouraging trend in tech shows of including a focus on the role of women is also noticeable through a strand called Women in Tech and session titles like Breaking into the Industry: Challenges for Women, Why We Need Women in AI, and Expanding Female Tech Entrepreneurship in sub-Saharan Africa.

But perhaps the most important theme is the same one that is occupying much of the rest of the world: skills development for the job market of the future. Sub-Saharan Africa in particular, most readers will not need reminding, is the world's youngest region and by 2030, the continent's working-age population is set to increase by two-thirds, presenting great opportunity, but also great risk in the wake of AI and automation.

If the right policies are adopted, opportunity could win out. The African continent is attracting companies whose sheer diversity underlines the variety of opportunities Africa now offers – and many of them are exhibiting at this show. On the exhibition floor visitors will meet companies in satcoms like Avanti, Globalstar and ND SatCom, in payment technology like Comviva, in cable, like Angola Cables, in Wi-Fi like Z-Com, in test and measurement, like Rohde & Schwarz, in cloud like epsilon, in security like Gemalto, in IoT like SqwidNET and in infrastructure like Huawei.

Major operators like Vodacom, China Mobile and Orange will also have a presence.

In short, hundreds of companies are coming to this show – from Europe, Asia, the Americas and of course Africa, underlining the enormous and growing opportunity that connecting the African continent now offers to all areas of telecommunications provision. ✆

The African continent is attracting companies whose sheer diversity underlines the variety of opportunities the continent now offers to investors.

Photo: Adobe Stock

This year 3G will overtake 2G to become the leading mobile technology in the region.

**https://www.gsma.com/r/mobileeconomy/sub-saharan-africa/*
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Mobile payments get smarter

Mobile technology and devices are changing – and with them mobile money, its use and its delivery. Vaughan O'Grady asks Ruan Swanepoel, head of the GSMA's Mobile Money programme, how mobile finance is evolving in the continent that made it famous.

Mobile payment: a fast-moving industry

Photo: GSMA

THE MOBILE MONEY industry is now evolving quickly against a backdrop of increasing internet access and smartphone adoption, according to the GSMA, the trade body that represents the interests of mobile network operators worldwide. How fast will this transition be in Africa?

A recent GSMA State of the Industry report on mobile money* shows that in sub-Saharan Africa over 90 per cent of transactions are still conducted via the USSD channel. "However," says Ruan Swanepoel, head of the GSMA's Mobile Money programme, "smartphone adoption is quickly increasing and the GSMA estimates that, by 2025, 66 per cent of people in sub-Saharan Africa will have smartphones. The combination of smartphones and 'smeature' phones (smart feature phones) becoming more affordable, and the expansion of mobile data connectivity, will drive higher levels of adoption of app-based mobile financial services offerings."

"In mature markets we have seen agent networks scale to over a hundred thousand agents"

This will also, he suggests, enable mobile money providers to evolve to a 'payments as platform' model, offering richer content and information and a seamless customer experience – thus providing more advanced financial services to end users.

At the moment, large MNO groups still dominate Africa's mobile money ecosystem. There are in fact a number of factors that have provided a platform for mobile operators to successfully scale and offer financial services through mobile.

One key aspect has been the ability of mobile operators to deploy large-scale agent networks. As Swanepoel puts it: "These agent networks were able to reach beyond urban centres to those rural communities and areas previously underserved by traditional financial service providers. In mature markets we have seen agent networks scale to over a hundred thousand agents.

"Mobile operators have also benefited from strong brand loyalty, trust of existing consumers towards their mobile products and services, and

leveraged existing investment and infrastructure such as large-scale customer care operations."

Of course companies like Safaricom have the size and scale to overcome the problem of modest margins from lower-income end users. Is this changing? Swanepoel agrees that scale plays a critical role in the ability of service providers to offer affordable financial services. In Africa, the number of mobile operators with over one million active customers has increased significantly – from eight in 2013 to 33 in 2018, he points out.

However, other players are needed. "As the industry continues to focus on improving accessibility and affordability of services, it will be critical to expand the service offerings to wider verticals," he argues. "There are continuous opportunities for third parties, including enterprises and governments, to partner with operators, enabling more inclusive services and allowing further reduction of fees." Another important factor is the continuing benefit to service providers of the cashless society. "In time, we expect transactions to remain digital, further reducing the cost of these services as the need to move back to cash becomes less prevalent."

"As the industry continues to focus on improving accessibility and affordability of services, it will be critical to expand the service offerings to wider verticals"

Despite the heavily reported success of Kenya and other African countries in developing mobile financial services, the report notes that some of the biggest markets – Nigeria, Ethiopia and Egypt – have been slow adopters. Why is this?

"We believe these markets represent a great opportunity for future growth of mobile financial services," says Swanepoel. "However, traditionally they have taken a less mobile-centric approach, preferring to encourage a more traditional bank-led model. This has limited the level of participation and the role mobile operators can play in financial services."

It's also unlike the business models seen in a number of markets in East and West Africa, which developed more organically through enabling regulatory frameworks that allow wider participation. But things may change. "These three countries represent 110 million potential new mobile financial services users and the GSMA continues to work with regulators and policymakers as well as the mobile industry to identify ways to unlock the potential in these markets."

One dark cloud on the horizon could be regulation – or, rather, over-regulation. Not surprisingly the GSMA works with regulators and policymakers to encourage enabling regulations for the growth of mobile financial services. "We believe the economic development and

Operators still dominate Africa's mobile payment ecosystem

associated positive spill-overs that a more digital society will bring far outweigh the short-term benefits of sector-specific mobile money taxation," says Swanepoel, pointing out that mobile money taxation tends to impact the marginalised and most vulnerable people in society the most.

But there are other regulatory issues, as well as taxation. "We have also noted a number of countries pushing for higher levels of data sovereignty," he says. However, the need for more interoperable and cloud-based infrastructure could significantly reduce operational and investment costs which will be critical to reach scale. "Therefore," he says, "we continue to engage in dialogue with key decision-makers to find cost-effective solutions for the industry while mitigating risks."

And speaking of risk mitigation, April 2018 saw the launch of the GSMA Mobile Money Certification, the result of years of collaboration between the GSMA and the mobile money industry to increase trust and transparency in the provision of mobile money services.

The thinking behind this was that by having consistent risk mitigation and consumer protection practices across key areas of the business, which the certification promotes, the industry would be better equipped to provide safer, transparent and resilient financial services to the millions of mobile money users around the world. "Today," says Swanepoel, "the certification is driving providers to the next level by improving quality of service and customer satisfaction, and building trust with regulators."

Finally, as sharp-eyed readers of this very issue will have noticed, areas like NFC and contactless payment are finding markets in Africa. The question then is whether these will be competitive with established mobile money services, complementary to them, or part of the overall evolution of such services.

Swanepoel welcomes such evolution. "We definitely see the opportunity for a more seamless retail/merchant payment experience, which is core to driving more digital transactions and key to reducing the need for cash," he says.

However, trends seem to indicate, at least for the near future, that QR will be the predominant use case for digital payments at the counter, as Swanepoel explains. "We have seen in Asia how widely adopted, cost-effective and seamless this method of payment has become. The introduction of a QR payment option by two of the largest international card schemes is indicative of a more collaborative landscape where payment instruments from traditional and non-traditional service providers will be widely accepted. This is encouraging, and, with increasing smartphone adoption and consumers become more digitally savvy in Africa, we can expect to see a proliferation of digital payments in the near future." ✆

www.gsma.com/mobilefordevelopment/resources/2018-state-of-the-industry-report-on-mobile-money/

Making the right connections

Lots of things change in mobile communications but SIP and SS7 have been around for a long time - which is why there are companies with decades of experience in delivering SIP and SS7 interconnection solutions. World Telecom Labs is one such and, as Phil Desmond finds out, its work is more important than ever.

IF YOU ARE a service provider, you'll know that SIP and SS7 interconnection is a complex and never-ending challenge. Each time you interconnect with another provider, there is testing to be done, there are requirements to be exchanged and there is stable service to be delivered.

That insight, from World Telecom Labs, a specialist in signalling gateways, VoIP and rural telephony with deployments in 30 countries across Africa, refers to an interesting and often underreported area of telecommunications, and one that WTL has made one of its specialisations. Leigh Smith, the MD of WTL, begins with a look at the functions that SIP and SS7 interconnection perform.

"SS7 signalling has a fairly narrow purpose – to control the set-up and teardown of voice calls between elements of the public telephone network," he explains. "SIP was broadly the same, but for the VoIP world."

You could be forgiven for feeling that both terms are familiar. Indeed, they have been around for a very long time. As for why, there are two answers, according to Smith: "There's a lot installed and they do the job – so there's no real incentive to change."

Photo: Adobe Stock

SIP has taken on more and more features as IP-based communication has developed

Of course, different carriers have different interconnection requirements. How much can they differ? "Scale is the biggest variable. We deliver massive central site workhorse switches handling millions of calls per day, but we also cater for the network fringes – for example giving voice compression to allow the maximum number of calls to be carried over skinny satellite links."

WTL has noted that changing interconnection profiles is essential in order to capitalise on new routes and the best available prices. How quickly and efficiently can interconnection profiles be changed?

It's true, says Smith that "in the old days SS7 links between operators were a big deal, often entailing laying cables for the physical interconnect. This meant you were pretty much stuck with a small choice of partners." Not anymore. "SIP interconnect changed all of that."

It's certainly made for a more competitive market. "One effect has been that operators are very ready to switch allegiance if pricing or quality do not meet their expectation." However, it's also a market that isn't always honest. "Sadly, it means that fraud has leapt because you do not always know exactly who you are dealing with."

SS7 may have a long and useful history but will SS7 signalling be superseded as 4G and 5G roll out in Africa?

"Yes," Smith says. "That process is already underway. 4G and 5G networks focus on an IP data model, not on voice calls, so diameter signalling [a protocol that enables communication among internet protocol network elements] takes over." And that's where WTL comes in. "Since we don't start afresh with a clean sheet of paper for each new generation of network, solutions from companies like ours are needed to mediate between the different worlds."

So will SIP evolve too? In fact, says Smith, "it has taken on more and more features as IP-based communication has developed. HD voice, video and instant messaging have all been added, for example. SIP is a much more evolving creature than SS7 ever was." ✆

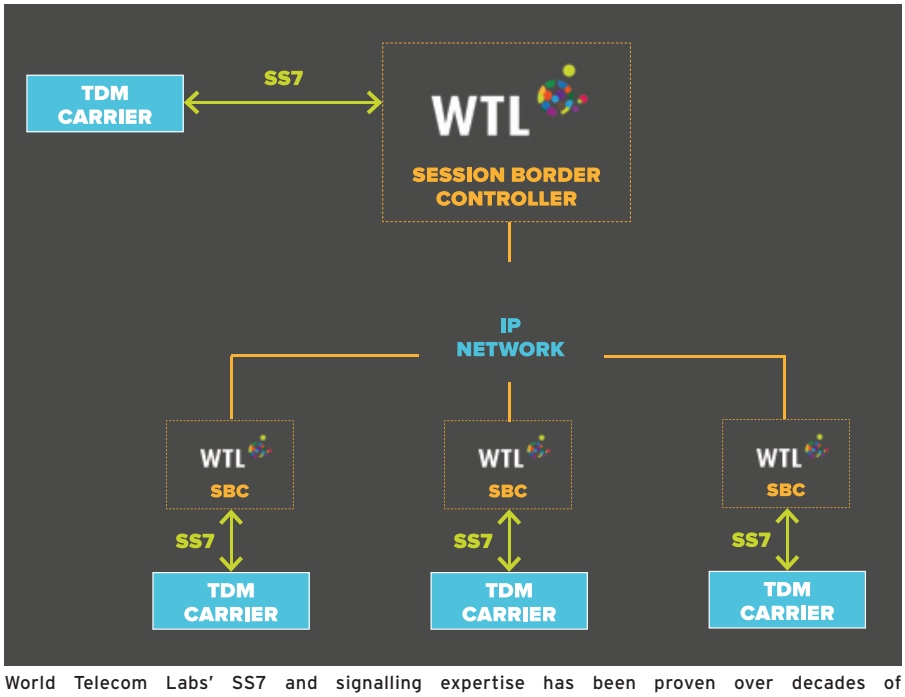


Photo: World Telecom Labs

World Telecom Labs' SS7 and signalling expertise has been proven over decades of successful deployments

Photo: Adobe Stock

Driver behaviour was among the first applications proposed for the SqwidNET IoT solution

How IoT drives innovation

The Internet of Things (IoT) is an important part of the smart city concept. Phathizwe Malinga, managing director of SqwidNET, whose network offers low-cost access to IoT solutions in South Africa, tells Ron Murphy what IoT can offer.

SQWIDNET LAUNCHED IN November 2016 as the licensed Sigfox operator in South Africa. Sigfox is a global network operator founded in 2009 that builds wireless networks to connect low-power objects – enabling the Internet of Things (IoT).

Phathizwe Malinga, managing director of SqwidNET, explains: "SqwidNET was attracted to Sigfox from a business partnership and business model point of view. SqwidNet values being open access. We wanted to be able to create an IoT ecosystem in South Africa that is able to scale up to the demand that we are seeing in the market," he says, adding: "Africa Analysis predicts 106 million devices by 2028."

Another attraction is that Sigfox is a global network. "Sigfox signs up one operator per country, and we are South Africa's operator. Sigfox is in 65 countries; any IoT solution built on Sigfox can work in a growing number of countries worldwide."

With IoT, and especially with Sigfox, it is easy for anyone to put together a working IoT prototype. "But," Malinga continues, "because it's so simple, people neglect to think about how hard it is to scale that solution to produce ten thousand of those devices – every month, forever.

"IoT is as simple as ABCD: you need an Application, a Backend Platform, Connectivity and a Device. Each of these requires significant capital outlay in order for your IoT solution to be of high quality and reliable." This problem is solved by being part of the SqwidNET ecosystem. "You get to move from competitive to collaborative."

> **"Long term, our goal is to ensure South Africa is a safer place, through IoT"**

This also means a number of real-world opportunities. "We are seeing a big take-up in water metering. We have ensured that our network covers all of South Africa and can penetrate indoors. This is important because of how most water meters are installed in the country – in boxes. We are also seeing a big take-up in home alarms, and in vehicle tracking; we have ensured that we cover all the roads in South Africa."

In fact driver behaviour and manhole tampering solutions were among the first applications proposed, and, as Malinga notes: "Our partners were initially trying to just track vehicles, but the ultra-low-cost devices they used could sense much more than just location. So from this, a few decided to offer driver behaviour tracking to their customers."

As for manholes, in South Africa in 2017 there were 104 manhole-related deaths. "DFA [the premier open-access fibre connectivity provider of which SqwidNET is a subsidiary] realised that with IoT, they could put in a solution that didn't require driving around, and alerts them in real time." This solution could potentially also apply to municipal manholes for water and sewerage.

He summarises: "Long term, our goal is to ensure South Africa is a safer place, through IoT."

But IoT offers more. "Each piece of IoT data is relevant data. It is event-driven, meaning something of significance happened to our asset in the field." Thus, beginning with knowing whether an asset is working condition or not (perhaps the electricity supply has been cut off) other questions can be answered – questions like: Is it being used optimally? Is it fit for purpose? Is it efficient?

"This means," Malinga explains, "when it comes to looking for efficiencies, we can look at all the relevant event-driven big data using algorithms, and we can look for patterns that allow us to make better decisions about our assets and our business. This actionable insight is what we then use to innovate our products and services. This is IoT driving innovation." ✆

A gigantic leap forward

How Angola Cables is connecting Africa to the global digital and data-driven economy.

WHEN THE SOUTH Atlantic Cable System (SACS) went into commercial service in September last year, telecoms in Africa took a gigantic leap forward. Besides being the first direct Trans-Atlantic, ultra-low-latency fibre optic link between Fortaleza (Brazil) and Luanda (Angola), it has opened a door for Africa to meaningfully engage in the growing global digital economy.

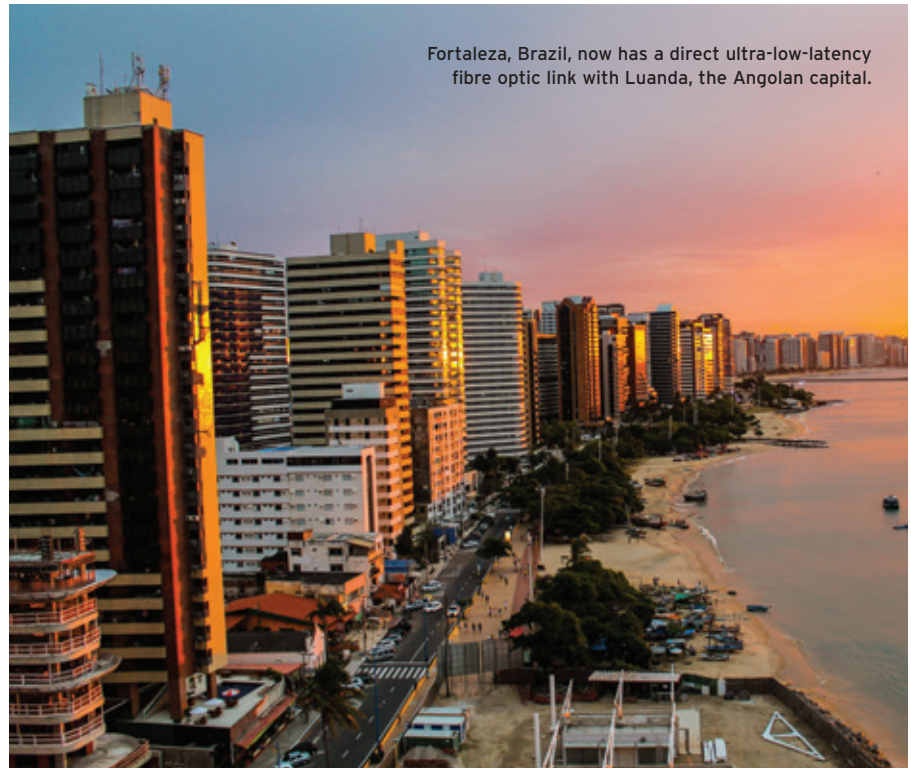
This new digital information highway between Africa and the Americas has resulted in a more direct routing for internet traffic in the Southern Hemisphere. "SACS, together with the onward connections to the Monet and WACS cables and the rapidly expanding data centre ecosystems, presents Africa with a real and tangible opportunity for the continent to reconfigure its telecoms and digital infrastructure and become integrally connected to the global digital economy," says Antônio Nunes, Chief Executive of Angola Cables.

Just recently, TM GLOBAL, the global and wholesale arm of Telekom Malaysia Berhad (TM), and Angola Cables announced that they have been exploring a new express route that would connect Asia directly to South America via the extended subsea cable network.

To this end, a Proof of Concept (PoC) testing study is currently underway leveraging two cable systems: the South Africa Far East cable system (SAFE), connecting Malaysia to Angola, and South Atlantic Cable System (SACS) connecting Angola to Brazil, owned by both parties respectively. The potential of such a direct connection in the future holds immense promise and opportunity – not just for telecommunications in the hemisphere but for businesses across geographies and markets in both the East and the West.

Through its subsea cable network and extended partnerships, Angola Cables is establishing a more data-efficient network with low latency for ICT players and users in the Southern Hemisphere.

Says Nunes, "Improved latency paths will benefit providers across the telecoms spectrum – from internet service providers (ISPs) and content delivery networks (CDNs) and others with a more direct, secure path across the Southern Hemisphere – without having to pass through Europe and the traditionally congested, high-volume Northern Hemisphere data traffic routings."



Fortaleza, Brazil, now has a direct ultra-low-latency fibre optic link with Luanda, the Angolan capital.

Photo: Adobe Stock

And there will be more opportunities for data centres in Africa. At present there are approximately 63 colocation data centres in Africa – 21 in South Africa, 10 in Nigeria, nine in Mauritius and six in Kenya. These facilities currently make up the bulk of data centre infrastructure on the continent. Future investments that are on the cards show a promising trend that will see many new data facilities opening up across Africa.

Nunes' maintains that as more colocation facilities come online, so connectivity for businesses and communities across the continent will improve – on the proviso that governments and regulatory bodies step up, support and promote the development of such ecosystems.

In addition, the rapid expansion in cloud-based solutions and increased access to international and domestic bandwidth are propelling Africa forward to a point where it can make a meaningful contribution to the digital revolution and play a greater role in the global data economy. For the citizens of Africa, participation and inclusion in the gig economy will be critical for job creation and enterprise development in the future and key to the social and economic integration and uplift of the continent in the rapidly evolving global digital economy. ✆

Routing	Ms (RTD)
Miami, USA - Johannesburg	~180
São Paulo, Brazil – Lagos, Nigeria	~159
São Paulo, Brazil – Douala, Cameroon	~141
Fortaleza, Brazil – Cape Town, South Africa	~96
Fortaleza, Brazil – Lisbon, Portugal	~163
São Paulo, Brazil – London, England	~209
Fortaleza, Brazil – London, England	~166
Lisbon, Portugal – São Paulo, Brazil	~205
New York City, USA – Lagos, Nigeria	~210
New York City, Johannesburg, South Africa	~210

Case study: the South Atlantic Cable System (SACS)

THE SOUTH ATLANTIC Cable System (SACS) went into commercial operation in September 2018. It was the first, high volume, ultra-low-latency fibre optic cable to connect the continent of Africa to South America.

SACS is 100 per cent owned and managed by Angola Cables and has been designed with 100Gbps coherent WDM technology on an end-to-end solution. With four fibre pairs it offers a total design capacity of 40 Tbit/s between Fortaleza (Brazil) and Luanda (Angola).

Manufactured and powered by NEC Corporation, the SACS cable is one of the most advanced submarine telecommunications systems to go into commercial operation in the Southern Hemisphere.

Where IoT meets LEO

Satellite communications can help organisations in remote areas to embrace the Fourth Industrial Revolution (4IR) and thus improve productivity, drive down costs and enhance operations, as Kathryn-Leigh Storm, regional sales manager of Globalstar Africa, explains to Phil Desmond.

Photo: Adobe Stock

Leveraging LEO technology has the potential to transform disaster relief.

SATELLITE TECHNOLOGY IS one of the key drivers of the Fourth Industrial Revolution (4IR). That's the claim of Kathryn-Leigh Storm, regional sales manager of Globalstar Africa, in a recent analysis published by Globalstar, whose satellite network supplies mobile and data communications when and where many cellular services cannot.

But what does she understand by 4IR in the satcoms context? She points out that 4IR encompasses various disruptive technologies and trends, including, not too surprisingly, the Internet of Things (IoT), robotics, virtual reality (VR) and artificial intelligence (AI).

She continues: "The role of satellite communications in this is that it makes it possible for organisations in remote areas, not covered by existing IoT or mobile networks, to also embrace 4IR and use these technologies to improve productivity, drive down costs and enhance operations."

She is surely right to suggest that the connectivity of devices, individuals and systems is set to change the world in ways that few can imagine today. As she puts it: "If done with the right tools, this connectivity can free up hours of work as the technology undertakes tasks that humans once did. It will allow for more entrenched and efficient automation, will boost productivity, and it will allow for the collection of data in more intelligent and relevant ways."

Assuming that satellite does have an important role, what type of satellites are we talking about? What, specifically, are the advantages of LEO (low-earth orbit) systems, like the one Globalstar operates, to IoT and other 4IR applications?

Cost is one. "LEO satellites are much smaller, and they orbit much closer to earth," says Storm. "Therefore the rockets used to launch them are also smaller and cheaper. LEO is also very well suited for connecting mobile devices. Our devices can see and communicate with multiple satellites at the same time, resulting in more robust communication. That is why LEO is the technology of choice for applications that require global mobile, real-time communication, such as disaster relief or maritime operations. The lower altitude of the satellites also means that there is lower latency, because the signal takes less time to travel to the satellite."

LEO is the technology of choice for applications that require global mobile, real-time communication, such as disaster relief or maritime operations.

It's true to say – as the Globalstar analysis does – that, essentially, anything can be monitored with the right sensors and systems in place, and that the sensors and systems used will be determined by the actual requirement.

There are, for example, already solutions available for asset management, personnel safety and communication, embedded solutions and data automation, with several use cases in oil and gas, maritime and emergency services. Storm explains: "Globalstar provides solutions in each of these areas, through our SmartOne, SPOT, STX3 and STNGR products. SPOT My Globalstar brings all this data together in a customizable platform to provide real-time access to data, insights, and advanced reporting features in order to make

Continued on Page 24

Film and TV's very own industrial revolution

Thanks to international fibre connectivity, a post-production house in Africa can now compete with similar businesses anywhere in the world. But that's not the only radical change African post-production has undergone in recent years, as Matthys Pretorius, Director of Cape Town's AfterDark Post Production, explains.

Communications Africa: You've been working in post-production for nearly 20 years. What changes have you noticed in the hardware and software you use?

Matthys Pretorius, Director, AfterDark Post Production: Twenty years ago we were still predominantly shooting on 35mm and 16mm film, so the whole post-production process was a lot more expensive. We needed large film labs to process the film and then, once that was done, would move over to telecine [transferring motion picture film to video] for grade [colour grading: improving the appearance of an image for presentation in different environments on different devices] and then transfer over to tape for the editors to digitize so that they could start the offline process.

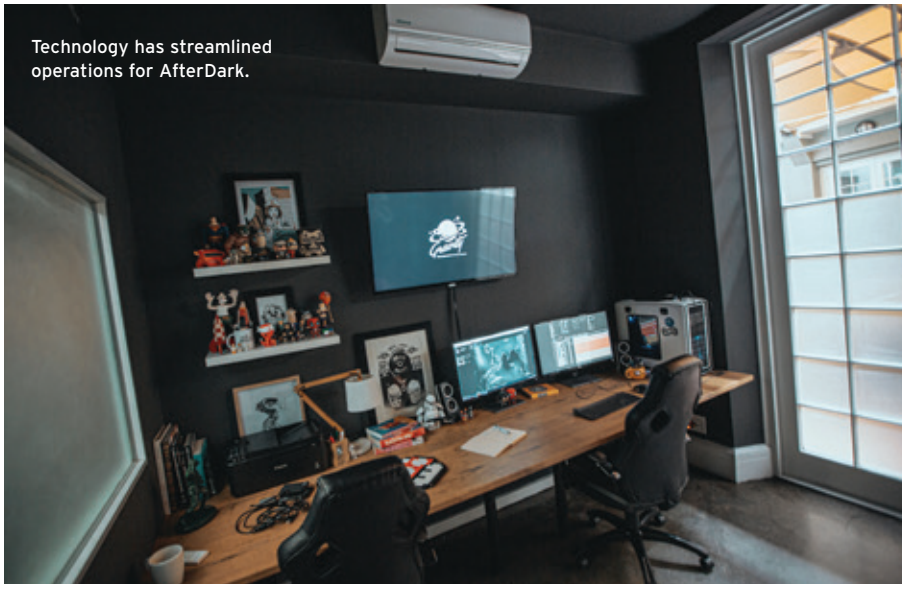
Software has moved post-production work forward.

Photo: AfterDark Post Production

> **"In the age of digitisation it only takes a select few professionals to get the job done."**

Back then we were already on Avid Film Composer, but there were a few other non-linear editing machines available. The machines, however, were bulky and very expensive.

Today, with everything moving to digital, the process of dailies is a lot faster. You can have a digital imaging technician on set and copy the rushes over to a drive and after a quick transcode [conversion of one format to another], have the footage available almost immediately for the offline editor to start cutting. We don't need bulky machines anymore. Most offline editors sit on set with a laptop and can start the cut while the shoot is going, rather than having to wait till the next day after film processing and telecine.



Technology has streamlined operations for AfterDark.

Photo: AfterDark Post Production

On the grading side we have gone completely Digital Intermediate [a motion picture finishing process which involves digitizing a motion picture and manipulating the colour and other image characteristics], so today we need machines with a lot more processing power to process the raw data which the cameras now shoot. Monitoring these 4K and 6K frame size images has become rather expensive.

The industrial revolution automated a lot of jobs that would once have been done by humans. The film and television industry has gone through a similar revolution. It once took a bigger team of individuals in post-production to work on a production. In the age of digitisation it only takes a select few professionals to get the job done.

Communications Africa: How about in Africa in general?

Matthys Pretorius: There have been a lot of changes over the last few years. Avid has always been a leader in long-form post-production and most of the feature films and series are still being offlined on Avid Media Composer, which has also dropped in price. You can even rent the software, where once you had to buy an Avid system as a turnkey solution

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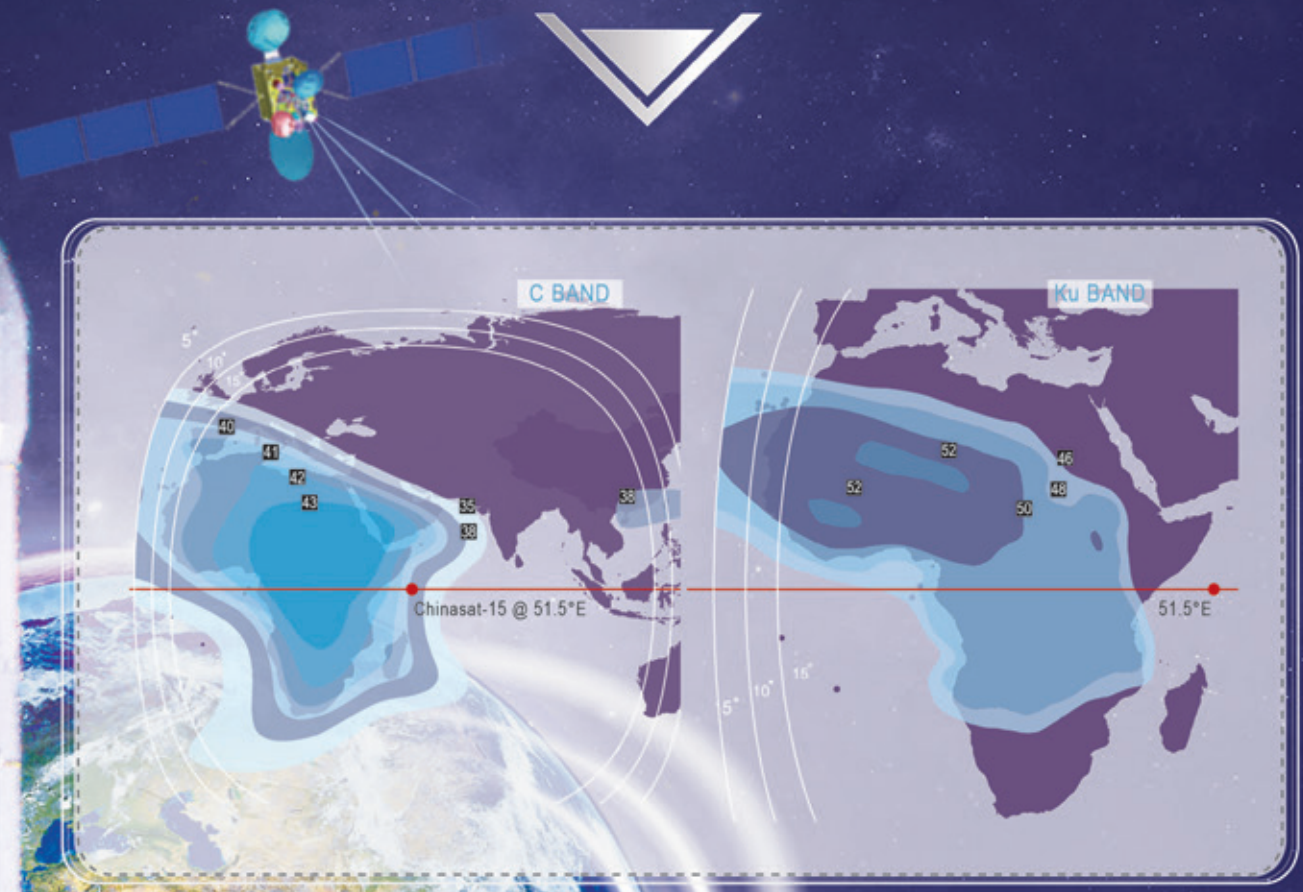

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with very specific hardware to make it work. There has been a shift to Final Cut Pro X [a professional non-linear video editing application published by Apple] here as well, with more editors looking for a quick turnaround offline package. FCP X has become really popular among the offline editors and, with the tools evolving in the package, we also see a lot more online and finishing happening in FCP X.

"We have been working with local broadcasters as they fight against the OTTs, which threaten to make linear television obsolete."

Communications Africa: The entertainment content market has expanded – but has time to market shortened?
Matthys Pretorius: With the steady growth of OTT channels like Netflix, HBO etc, advertising is having to move from TV to social media which still requires post-production. Therefore one could say that this puts more pressure on post-production facilities as there is a whole new set of deliverables to get used to and master, with ever-changing technical requirements. But having a lot more work to go around is a nice problem to have!

Communications Africa: Do you work for broadcasters and production companies serving other African countries? What sort of work do they offer?
Matthys Pretorius: Over the last few years we have been doing a lot more local content and working with local broadcasters as they fight against the OTTs, which threaten to make linear television obsolete. Local television normally covers most formats, from feature films to series, telenovelas, soap operas and documentaries.

Communications Africa: What are the advantages of being a post-production house in Cape Town as opposed to, say, San Francisco or London?
Matthys Pretorius: The prices we charge for our services are a lot lower than what one would pay in San Francisco or London. However, the quality of our work is still of a high standard and can match that of post partners elsewhere. Today, because of fibre and digitization it has become much more about the artists who are working on the job rather than where the post-production is taking place.

Communications Africa: Are there any advances you're looking forward to that would help you to enhance efficiencies even more?
Matthys Pretorius: AfterDark Post Production has been fortunate enough to always be at the cutting edge of post-production since its inception in 2016. We recently became the official reseller of Lumaforge in Africa, which offers shared storage solutions to post-production facilities to handle the ever-growing demand for 8k and higher-resolution deliveries. We are also excited about Apple's release of the new modular Mac Pro which will bring back customization to the Mac, creating more powerful machines that are also more mobile – meaning that post production is not confined to facilities anymore; it can even take place on set. ✆

Continued from Page 21

more informed operational decisions that can save time, money and lives. We also partner with product developers, dealers and value-added resellers (VARs)."

An interesting application cited by Globalstar is monitoring run time on mining pumps. What equipment might be involved – and how might the information might be used?

"Globalstar's value-added reseller Titan Telemetry uses the SmartOne C to monitor run-time of mining pumps," Storm says. "The SmartOne C has an accelerometer that, combined with its telematics, can tell the run-time start and stop from the vibrations. They use Globalstar's coverage, because most of the mines they provide the solution to are based in isolated areas with no available GSM coverage."

Of course data, if collected and analysed properly, can enhance predictive maintenance that will increase productivity and cost savings. SPOT My Globalstar provides location-based enterprise solutions with a tailored array of Globalstar GPS tracking devices, such as SmartOne Solar and SPOT X. Managers can interact with all devices and operators from a single, centralized, cloud-based platform that provides live or historical tracking of personnel, vehicles, and assets on-demand.

As Storm puts it: "Our platform allows customisation capabilities that accommodate the needs of businesses of all sizes, with fleets ranging from dozens to thousands. SPOT My Globalstar is ideal for managers that need real-time access to data, insights, and advanced reporting features in order to make more informed operational decisions that can save time, money and lives."

The oil and gas industry is making the most of cloud technology, especially on remote offshore operations.

Photo: Adobe Stock

Globalstar, meanwhile, is looking forward to future innovations to enhance its IoT/4IR offering. "Technology is constantly evolving, and new challenges are continuously emerging," says Storm. "Many of these challenges can be solved by adapting existing IoT and 4IR solutions. We believe that the industry is limited only by its imagination.

Many challenges can be solved by adapting existing IoT and 4IR solutions...The industry is limited only by its imagination.

"Last year, Globalstar launched an automotive division, for example, to support connectivity solutions for the next generation of connected and autonomous vehicles and intelligent transport. With Globalstar's two-way global and broadcast-capable network, automakers will be able to comply with the newest safety regulations, deliver over-the-air (OTA) software updates, increase location accuracy and improve reliability for autonomous vehicle operation."

It seems clear that, even in a world where billions of people own mobile phones, satellite communication is continuing to find new roles and enhance existing ones. ✆

Getting to grips with cyber threats

Maher Jadallah, regional director – Middle East at Tenable, discusses what can be done to mitigate cyber threats across multiple industries, including taking a holistic approach, involving technology, people and processes.

How do you view the cyber security threat landscape in the Industrial sector – what are the main threats organisations face today and the factors that contribute to them?

As with many industries, digital transformation programmes are being rolled out with the introduction of new technological tools to benefit the bottom line through enhanced efficiency and output. This has led to the convergence of the data side of the business, traditionally the realm of IT, and the operational technology (OT) side, used to manage industrial control systems (ICS).This issue is that OT environments remain plagued by the same basic cyber hygiene issues that have impacted IT infrastructure for years – the convergence of both is only compounding the issue. Furthermore, by connecting OT to the internet, organisations are exposing their once air-gapped systems to a wider range of threats, many of which they remain ill-equipped to protect against.

Unfortunately, the security tools and processes of yesterday aren't up to the job of solving today's problems – built and designed when the attack surface was a static laptop, desktop or on-premises server. As a result, organisations struggle at every step – seeing their assets, detecting weaknesses, prioritising issues for remediation, measuring risk, and comparing to peers. The digital era requires a new approach.

> "Unfortunately, the security tools and processes of yesterday aren't up to the job of solving today's problems."

What strategies and measures should organisations take to protect themselves against cyber threats? Should a holistic approach be adopted – ie technology, people and processes?

The majority of modern breaches are a direct consequence of ineffective vulnerability management. In fact, thirty-four per cent of organisations that have been breached state they were aware of the vulnerability that led to the attack before it happened. The problem is we have too much information and not enough intelligence.

In 2018, 16,500 new vulnerabilities were disclosed and CVSS categorised the majority as high or critical. With vulnerabilities on the rise, organisations need to be able to identify those that pose a real rather than theoretical risk to the business so they can zero in on remediating the vulnerabilities that matter most.

Staff responsible for OT security cannot afford to be blinkered and focused only on OT vulnerabilities. The convergence of IT and OT means both ICS and IT vulnerabilities can be exploited to attack critical infrastructure. Therefore, viewing both systems together through a single pane of glass is the only way to view risks holistically.

Photo: Adobe Stock

Modernising is essential, even in a relatively new sector such as cyber security, if businesses and organisations are to stay safe.

To what extent do you think companies are aware of data security threats and of the need to implement measures to protect their information assets?

The threat is all too real, as borne out by a number of high-profile cyber attacks against the sector. In addition, governments around the world caution that the threat to infrastructure will worsen rather than lessen, with the oil and gas sector particularly at risk to targeted attacks.

Finding a solution to any problem begins with acceptance. It is essential that IT and OT professionals understand the increased attack surface if their organisation is to moderate their business risk.

Photo: Tenable

Maher Jadallah urges companies to take a broad-based approach to mitigating cyber security threats.

How is your company helping to tackle cyber threats?

Tenable's Cyber Exposure platform is the industry's first solution to holistically assess, manage and measure cyber risk across the entire modern attack surface. Our platform uniquely provides the breadth of visibility into cyber risk across IT, Cloud, IoT and OT environments and the depth of analytics to measure and communicate cyber risk in business terms to make better strategic decisions. We enable customers to not only automatically detect every asset across their computing environments, but also assess them for vulnerabilities and misconfigurations. Our ground-breaking Predictive Prioritization innovation analyses Tenable vulnerability data combined with third-party vulnerability data, threat intelligence and vendor security advisories using data science to predict the likelihood a vulnerability will be exploited in the near future. The resulting Vulnerability Priority Rating (VPR) scores are dynamic and change with the threat landscape, arming security teams with actionable insight into their true level of business risk. ✆

TV – anywhere, anytime

Will African TV viewers catch up on the digital revolution?

Photo: Adobe Stock

Has digital TV passed Africa by? Or is it just delayed? Phil Desmond talks to Digital TV Research principal analyst Simon Murray about the future of sub-Saharan African TV and video.

DIGITAL TV IS the norm in many countries – and even continents. By contrast Africa is some way behind. Why is this?

Simon Murray, principal analyst with Digital TV Research, which provides business intelligence for the television industry, agrees that the economic and social factors that could drive greater take-up of DTV in Africa include a young population, improving earnings and greater awareness.

A more practical observation, however, is, as Murray says, that "African countries signed an agreement with the ITU to convert to DTT by certain dates."

Most countries have missed the deadlines in the past, although a major incentive could be that freeing up spectrum from analogue terrestrial (used by TV stations) will give extra capacity to mobile broadband. "A further driver is when companies such as StarTimes agree to build the DTT infrastructure in a country in return for a license to begin pay DTT operations," he adds.

StarTimes is a Chinese electronics and media company with a strong presence in Africa. It offers digital terrestrial television and satellite television services to consumers, and provides technologies to countries and broadcasters that are switching from analogue to digital television.

To make mobile TV attractive, TV platforms have to persuade the mobile operators to reduce – or even drop – data charges.

This is a model that seems to be working: StarTimes has established subsidiaries in 30 African countries and serves an estimated 29 million users. However, there are challenges in spreading DTV, the most basic being budgets. "Several countries plan to cover a certain percentage of their population with their DTT [Digital terrestrial television] networks. Remoter regions will be served with free-to-air satellite TV," says Murray.

Which brings us to mobile. As Murray points out: "Mobile take-up is much higher than fixed broadband in nearly every country. Mobile will continue to dominate but some of the wealthier countries have plans to extend their fixed broadband networks."

With that in mind, could TV drive opportunities for low-cost smartphone producers (like Tecno and its Kaios phone)?

"To make mobile TV attractive, TV platforms have to persuade the mobile operators to reduce – or even drop – data charges. Consumers don't want to receive a TV subscription bill and then a hefty mobile data bill."

So could it also be an opportunity for operators, SVOD suppliers and programme-makers? In fact it is already, just not necessarily in Africa. "Mobile SVOD is already popular in Asia. In India, Netflix offers mobile subs a lower fee than their fixed counterparts. India is a key target market for Netflix."

It's worth mentioning, however, that Indian mobile markets are exceptionally competitive on price.

Of course there's always satellite TV. Is satellite a threat to DTV and OTT, complementary to these, or just part of an evolving TV marketplace?

"In several countries, Multichoice (a South African company) provides both satellite TV (DStv – more expensive than DTT) and DTT (GOtv)," says Murray.

However, he adds: "Multichoice is losing premium subscribers as choice widens. Multichoice has put some previously premium content such as live soccer on lower-priced tiers to retain subscribers."

And content is always going to be a consideration. In fact, while many channels will build viewer numbers on music, sport or films, there is still going to be an opportunity for genuinely local or regional content. Murray mentions iROKOtv.com in Nigeria, which offers what it calls "the best of Nollywood" and "thousands of movies and series". More importantly perhaps for the future of television in Africa, the promotional material adds: "Watch on all your devices." ✆

Delivering broadband happiness

From farmers and micro-finance institutions to meat distributors and the hospitality sector, there are many use cases for satellite-delivered broadband across Africa. This is transforming lives and economies across the continent.

GLOBALLY, SATELLITE SERVICES are being driven by the demand for high-resolution imaging services and managed network services in developed markets, especially from the aviation sector. Allied Market Research projects a 2.2 per cent CAGR in its 2016-2019 forecasts as growth sectors are offset by rapid decline in satellite television services in developing markets. In those same developing markets – including Africa – satellite broadband is the key growth area.

In a separate research announcement, Stats South Africa revealed in its latest annual General Household Survey that close to 90 per cent of South African households still do not have access to a fixed broadband internet connection at home. For rural areas, this means broadband penetration is almost non-existent. Despite the proliferation of fibre and wireless access networks to reach high-density areas, satellite remains a key form of access for bridging the digital divide in rural and remote areas to deliver high-speed broadband services and community Wi-Fi.

From internet and Wi-Fi calling for seed farmers in South Africa's Klein Karoo, to branch connectivity for micro-finance institutions in Burkina Faso, to the largest safari lodge chain in Namibia, to CCTV access for abattoir and meat distributors in Zambia, JOLA is delivering broadband happiness across the continent. Each use case differs, but the customer requirements are the same. Speed. Reliability. Value.

"Even outside the remotest areas, we have been deploying JOLA as a back-up service to enterprises in urban areas or to manage the risk of internet shutdowns in some markets, or as primary links for bank ATMs to ensure maximum uptime" says Michèle Scanlon, Managing Director of iWayAfrica, which deploys its JOLA brand across Africa.

Photo: Adone Stock

Farmers are among the many people across Africa who benefit from access to high-speed broadband and community Wi-Fi.

JOLA's latest service plans are based on Avanti's HYLAS 4 satellite footprint. Customers experience download speeds of up to 35Mbps. The hospitality sector in particular is enjoying the high uplink speeds of 4Mbps for its guests who return after a day out or from a game drive to upload all their photos to social networks, as well as the reliability the service offers for maintaining online reservation booking systems. "VSAT continues to be the most reliable solution for any location in Africa," says Scanlon.

"In Africa we know the demand for broadband exists. Satellite capacity volumes are driving competitive pricing and customer expectations on speed are being met. So," she adds, "let's challenge the industry to tackle one of the last remaining challenges in lowering the entry access cost for VSAT setup."

High-throughput satellite (HTS) delivers broadband services at lower pricing than other legacy satellite services, partly driven by volume of available capacity and spectral efficiencies – but device costs remain largely unchanged over this same period when satellite capacity pricing has declined. Antennas are smaller, and thus provide some cost saving on logistics and installation, but the overall initial set-up costs for a single VSAT site remain a hindrance to wider market take-up. Thus, service providers are leveraging single-site installations to reach more than a handful of users to provide community Wi-Fi to multi-tenanted scenarios and villages.

JOLA has successfully deployed community Wi-Fi services to various communities in Benin, Kenya, Uganda and Tanzania, amongst others. By overcoming the initial set-up cost and enabling a single site to service multiple users, and by offering small MB denominations, JOLA has extended broadband happiness to small communities utilizing entry-level devices for internet access.

Satellite has been a cornerstone of African internet access for many years, and the sector is continuing to be innovative in serving new customers. ✆

"In Africa, we know the demand for broadband exists. Satellite capacity volumes are driving competitive pricing and expectations on speed are being met."

The right investments in the right places

A new report on the mobile market in sub-Saharan Africa is supported by geospatial data. But what is geospatial data, and why is it useful? Ben Leo, CEO at geospatial data specialist Fraym, explains.

UNLOCKING VALUE IN the Sub-Saharan Africa Mobile Market is a new report by global management consultancy, Bain & Company. It uses geospatial data from Fraym, a specialist in the field. Communications Africa asked Fraym how such data is used and why.

Communications Africa: What is the role of Fraym's geospatial work in this report? What sort of information can it supply?
Ben Leo, CEO at Fraym: Geospatial analysis has long been a part of the telecommunications industry. The placement of towers requires careful understanding of elevation, line of sight, and other geospatial features. In this report, Fraym adds the geographic concentrations of likely consumers to these typical considerations. The telecommunications industry can now know where towers are likely to be overloaded, creating unreliable coverage.

Communications Africa: How have geospatial tools and their applications advanced in recent years? How do you expect them to advance over, say, the next five years?
Ben Leo: The integration of artificial intelligence, and more specifically machine learning, has brought a level of precision and granularity that was not even imaginable a few years ago. Over the next few years, these innovations will create unprecedented insights for those innovative enough to embrace them.

Communications Africa: What data do you work with at the moment to deliver precise information about people? What opportunities could technology offer to permit even more granular data collection in future years?
Ben Leo: Fraym uses machine learning to weave together high-quality household survey data and satellite imagery. We are always exploring additional data streams to create even more granular and precise data.

Communications Africa: Why are such tools useful in places like Africa?
Ben Leo: Data is vital in making decisions that drive positive impact for businesses and governments. Because of the paucity of data, especially granular data on consumers and populations; these decisions have been made for too long on gut instincts. The tools that Fraym employs create data that can be used to set strategy, plan execution, and monitor progress. This allows decision-makers to move beyond gut instincts and make truly data-driven decisions.

Geospatial data can aid the effective placement of towers

Photo: Adobe Stock

Operators need to know where to expand coverage and which areas have the greatest concentrations of likely users of 4G and 5G technologies.

Communications Africa: The Bain report is about the mobile market but, I assume, geospatial analysis can be useful in many contexts. Could you list a few?
Ben Leo: Geospatial analysis valuable for almost every decision that has to do with consumers – specifically:

- Retail
- Distribution and logistics
- Marketing
- Strategy and planning
- Monitoring

Communications Africa: Do you see a growing role for geospatial data and analysis in the telecommunications sphere? I'm thinking about coverage guidance for 4G and 5G cell placement, but you may have other examples.
Ben Leo: The telecommunications industry is becoming increasingly competitive. To win, MNOs will need to be more data-driven than they have been in the past. Operators need to know where to expand coverage and which areas have the greatest concentrations of likely users of 4G and 5G technologies – or geospatial analysis can indicate locations for strengthening the network, identifying areas where existing users are experiencing unreliable coverage. Geospatial analysis empowers executives to make the right investments in the right places to create the greatest return. ✆

To find out more about the report and Bain, go to bain.com/industry expertise/telecommunications. To find out more about Fraym and geospatial geospatial data, go to fraym.io

Africa: Internet for all comes with a US$100bn price tag

Connecting the 100mn people in rural and remote areas will require strong private sector involvement, innovative business models, and alternative technologies, such as satellite and Wi-Fi based technical solutions, says a new World Bank report.

ACROSS AFRICA, WHERE less than a third of the population has access to broadband connectivity, achieving universal, affordable, and good quality internet access by 2030 will require an investment of US$100bn. This is according to a report launched at the Annual Meetings of the World Bank Group, which calls for urgent action to close the internet access gap while providing a roadmap to reach this ambitious goal.

The report from The Broadband for All Working Group led by World Bank gives practical insights and suggestions of what is needed to attain this objective, including an action plan for universal broadband connectivity in Africa. To achieve universal broadband access, African countries will need to bring about 1.1bn more people online. This will require exceptional and coordinated efforts from governments, the private sector, development partners, and civil society, the report says, but the investment is worth it.

"The digital agenda is first and foremost a growth and jobs agenda," says Makhtar Diop, the World Bank's vice-president for Infrastructure. "The working-age population in Africa is expected to increase by some 450 mn people between 2015 and 2035. If current trends continue, less than one quarter will find stable jobs. Broadening internet access means creating millions of job opportunities."

While the number of broadband connections in Africa crossed the 400mn mark in 2018 (nearly twenty times 2010 levels), the regional average broadband penetration including 3G and 4G connections is 25 per cent in 2018. Mobile broadband coverage in Africa is still at 70 per cent of the population. Even in North Africa, there is ample room for growth with 4G networks covering only about 60 per cent of the population. Additional challenges, such as the lack of access to reliable and affordable electricity, make accelerating Africa's digital transformation journey even more difficult.

According to the report, nearly 80 per cent of all required investments are directly related to the need to roll out and maintain broadband networks. However, connecting the unconnected is about more than just infrastructure: about 20 per cent of required investments consists in building the user skills and local content foundations, and another 2-4 per cent should be allocated to setting up the appropriate regulatory framework, the report notes. While the private sector has driven most successful broadband initiatives, public agencies play a crucial role by implementing effective sector regulation, addressing potential market failures, and creating the conditions for an open, competitive broadband sector.

Nearly 80 per cent of all required investments in Africa are directly related to the need to roll out and maintain broadband networks.

Photo: Adobe Stock

To achieve universal broadband access, African countries will need to bring about 1.1bn more people online.

"In large parts of Africa, we are witnessing a lack of progress in extending access and network coverage. Affordability is also declining in many nations. Promoting greater digital inclusion is going to require more effective and innovative collaboration," said Doreen Bogdan-Martin, executive director of the Broadband Commission for Sustainable Development and director of ITU's Telecommunication Development Bureau. "We need to leverage our strengths and expertise. Governments can help with policies enabling new technologies, new business models and investment. The right policies will, in turn, provide the private sector with the incentives to build out infrastructure and explore new technologies and applications that will drive demand."

Connecting the 100mn people in rural and remote areas that live out of reach of traditional cellular mobile networks will require strong private sector involvement, innovative business models, and alternative technologies, such as satellite and Wi-Fi based technical solutions, the report notes.

"Let us be clear: no single actor will be able to meet Africa's 2030 target and carry the burden of a US$100bn investment funding requirement alone. All stakeholders must work together to make sure that every African has affordable and reliable access to the internet," says Hafez Ghanem, the World Bank's vice-president for the Africa Region.

This includes: the African Union and regional economic communities; African governments and respective public investment agencies; sector regulators; multilateral development banks and regional development banks; the United Nations and other development agencies; the private sector; and civil society groups and non-governmental organisations. ✆

Yet another way to pay

Much of Africa is now used to the concept of mobile payments. This might be a good time, you would think, to build a strong NFC payments ecosystem in Africa. Ron Murphy asks Srinivas Nidugondi of mobility solutions company Comviva how far NFC has gone in Africa - and how far it can go.

THERE ARE CLEARLY opportunities for NFC in Africa – and many phones are now NFC-ready. But is take-up widespread enough? That's the first of a number of questions we asked Srinivas Nidugondi, EVP and COO, Mobile Financial Solutions, Comviva.

Comviva, a mobility solutions company, is a subsidiary of Tech Mahindra and a part of the $21 billion Mahindra Group. Its extensive portfolio of solutions includes digital financial services.

NFC smartphones are steadily growing in Africa, Nidugondi points out, citing GSMA Intelligence, which provides coverage of all operators and MVNOs across more than 4,400 networks, 65 groups and 237 countries and territories worldwide from 1979 to the present. GSMA Intelligence suggests that approximately 45 per cent of mobile connections in Africa are using smartphones.

According to the Mobile Overview Report from Scientiamobile (which provides mobile device intelligence and image optimization solutions), 56 per cent of smartphones in Africa support NFC.

"Taking these two statistics into consideration, we can say about one fourth of mobile connections on the continent are on NFC-supported phones," says Nidugondi. Thus, it seems, NFC smartphones will take some time to become widespread. "However," Nidugondi says, "that doesn't mean NFC payments are not flourishing in Africa. We have NFC solutions in Africa that are device-agnostic and work through NFC cards or stickers. As NFC phone penetration grows, there will be solutions that will allow consumers to tap their NFC phone on NFC POS (points of sale) to make payments."

In which case, what sorts of businesses and institutions are bringing NFC to Africa? As you might expect, Nidugondi cites mobile money providers and banks as leading the effort of promoting NFC payments in Africa.

"Most of the prominent mobile money providers, like Orange Money, Airtel Money, EcoCash, MTN Mobile Money and M-Pesa, have launched closed-loop NFC payments in at least one of their operations," he says. He continues: "Primarily, these operators provide a low-cost, small-sized, portable NFC POS to the merchants linked to their mobile money account. The POS are affordable compared to conventional POS machines and specifically designed keeping in mind the merchants of emerging regions like Africa. The operators also provide NFC cards or stickers/tags to consumers, which can be pasted on the back of mobile phones. The NFC card or sticker is linked to the customer's mobile money account. The customer has to tap the NFC card or sticker on the NFC POS and enter a secret mobile money PIN in the POS to make the payment."

Photo: Comviva

Srinivas Nidugondi, Comviva

> **"Most of the prominent mobile money providers have launched closed-loop NFC payments in at least one of their operations"**

This isn't the only way forward. "On the other hand," says Nidugondi, "major banks in key African economies like South Africa, Nigeria and Kenya have launched contactless NFC cards which can be tapped on NFC POS machines to make payments. Also OEM-based payment services – like Samsung Pay – have been launched in South Africa."

Specific infrastructure and connectivity are usually required for NFC by stores or shops – and there is evidence that this is being rolled out. Nidugondi explains: "Merchants need an NFC POS to facilitate contactless payments. Banks in major economies are replacing old POS with new contactless POS devices. For example, In South Africa, key banks like ABSA, FNB and Nedbank have 80 per cent of their POS systems NFC-enabled."

As for the mobile industry, "mobile money operators have provided specially designed low-cost NFC POS to merchants. These POS are wireless with a GSM SIM fitted into them and work on a mobile operator's network. Some operators also allow merchants with NFC smartphones to download an app and use their smartphone as a POS device."

Which brings us to the NFC solutions offered by Comviva in Africa. Comviva offers a comprehensive set of NFC solutions through its mobiquity platform and Digital Banking Experience Platform (DBXP). Nidugondi explains: "mobiquity is the world's largest mobile money platform by deployments, powering services like EcoCash, Airtel Money and Orange Money." Referring back to his earlier definitions, he says: "mobiquity enables mobile money providers to offer a closed-loop or open NFC service."

In fact Comviva was one of the first companies in Africa to offer a closed-loop NFC solution. In 2015, it enabled Airtel Money in Tanzania to offer the 'Tap Tap' NFC service. Nidugondi explains: "Tap Tap equips merchants with an affordable and portable NFC POS, a mini-calculator-sized GSM device, which is linked to a merchant's Airtel Money account.

"It also provides consumers with an NFC card linked to their Airtel Money account. The merchant enters the payment amount in the NFC POS." What about the customer? "The customer simply taps the NFC card on the POS and enters the secret PIN to pay."

And other countries are following suit. "EcoCash Zimbabwe and Orange Money Cameroon offer similar services with the brand names 'EcoCash Ta' and 'Flash Pay' respectively. The closed-loop NFC system can

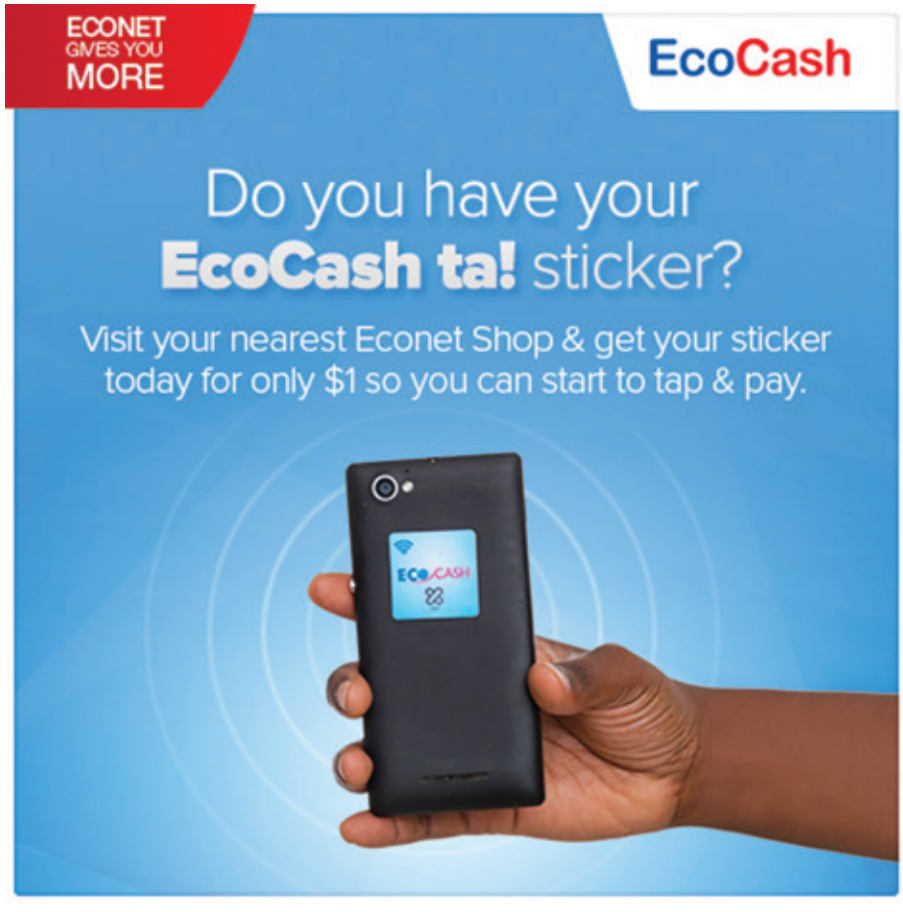
also be extended to mobile money agents, allowing them to do cash-in, cash-out or airtime recharge for customers with just a tap."

In fact it was Comviva that introduced open NFC payments with EcoCash in Zimbabwe. Nidugondi explains: "EcoCash provides its customers with an Express Debit Card, a Mastercard NFC companion card linked to customers' EcoCash wallet. The card can be tapped at all Mastercard-verified POS in Zimbabwe and abroad. As the card is a Mastercard companion card, it can be used globally at all Mastercard merchants – and not just registered EcoCash merchants – making it an open service."

NFC is faster – the transaction process is reduced from eight-to-10 steps to three-to-five steps and transaction time to 15-20 seconds.

Comviva currently offers these services where mobiquity is deployed, but, importantly, it can also deploy an NFC solution as a module in mobile money services with another vendor platform.

For banks, Comviva, through its DBXP product, provides an HCE (host card emulation)-based contactless payment solution, including tokenization, VTS (Visa Token Service) and MDES (MasterCard Digital Enablement Service) support. It creates a virtual representation of a physical Visa or Mastercard card that can be accessed through a mobile phone and can be used to make 'tap and go' payments (Comviva is a qualified VISA Token Service Provider (TSP) vendor and also listed on the Mastercard Engage Directory for Digital Wallets). Comviva has launched HCE-based payments for banks in India and the Middle East and is now seeing interest in the concept from some banks in Africa.



So is NFC better for customers? And if so, how? "NFC offers an enhanced consumer experience," says Nidugondi. "Compared to USSD mobile transactions, NFC is faster – the transaction process reduces from eight-to-10 steps to three-to-five steps and transaction time reduces from over a minute to 15 to 20 seconds.

NFC payments also help in digitizing micro-payments. In some deployments, small-value NFC transactions (say $5) do not require a customer to enter the secret PIN, making these transactions faster and more convenient than cash payments, motivating consumers to shift from cash to digital."

And that's important – African consumers, like consumers everywhere, don't want to waste time in queues or looking for cash if there's another way to pay. "For merchants, NFC payments help in queue busting and serving customers faster. NFC is a win-win for all." ✆

SSTL, Leonardo pair up to develop low-cost infrared detectors

LEONARDO AND SURREY Satellite Technology have been awarded funding from the UK's Centre for Earth Observation Instrumentation (CEOI) to develop a new detector assembly for a low cost, world-leading Mid-Wave Infra-Red (MWIR) imager.

DarkCarb technology demonstration mission flying low-cost MWIR detector, targeted for 2021 launch.

The MWIR imager will be designed to achieve 3.5m GSD and to fit into a small and low cost agile platform with a launch mass of approximately 130kg to address the future demands of the evolving Earth Observation constellations market. The collaboration will exploit Leonardo's world-leading material growth and hybridisation techniques already employed in other space programmes and SSTL's extensive experience in the use of Commercial-Off-The-Shelf-Technologies for commercial space missions.

The detector assembly will make use of Leonardo's MWIR detector, a high performance integrated detector cooler assembly with an array of pixels on an 8um pitch – the smallest thermal mid-wave infrared pixels commercially available in the world. The detector will be reconfigured with a longer life, lower vibration COTS split linear stirling engine cooler and new electronics to provide the interface between the detector and the imager. Successful completion of the detector assembly will enable it to be flown on a future demonstration mission from SSTL, targeted for a 2021 launch.

Andrew Cawthorne, director of business development and sales at SSTL, said, "This new technology is a game-changer for Earth Observation applications. Whereas previously the market has been focussed on a fairly small range of wavebands, there is now increasing demand for mixed sensors and complimentary data sets. Building on our successful Carbonite range of spacecraft this new technology will enable us to do the same for thermal imagery as we have done for visible imagery – driving down the cost of entry."

The Earth Observation applications sector has grown in recent years, with an increasing demand for high-resolution and temporal imagery. However the majority of currently available satellite imagery is in the visible waveband and is captured at mid-morning or mid-afternoon local time due to reliance on good illumination conditions. MWIR imagery overcomes this limitation as the detectable signal depends on temperature at the scene, enabling imaging at any local time.

Focus Softnet unveils its AI platform

FOCUS SOFTNET HAS announced the launch of its artificial intelligence (AI) platform, AIFA (Artificially Intelligent Futuristic Applications). AIFA is an advanced, automated platform meant to enhance business, increase productivity, and reduce investment in human training.

"Businesses in the region are now ready to leverage digital technologies to improve efficiencies. Focus Softnet has developed AIFA that can be used by organisations to automate all types of functions," explained Ali Hyder, CEO of Focus Softnet.

With CIOs and IT managers under pressure to do more with less funds, AIFA as a workforce assistant can be used across multiple departments and across multiple roles, he said.

Eseye solutions aim to bring down IoT device development time by 75 per cent

UK-BASED CELLULAR IOT connectivity specialist Eseye has developed the new HERA300 modular IoT hardware platform that can reduce device prototyping time from an average of 12 months down to three months or less.

HERA300 modular IoT device

The modular HERA300 IoT device and rapid development platform fast-tracks the process from initial idea to a working prototype in a matter of weeks, ultimately ensuring momentum is maintained and businesses see a quicker return on investment.

When combined with Eseye's rapid prototyping methodology, HERA300 allows IoT theories to be tested in their native environments, where real data can be gathered to support operational planning and investment business case requirements. Once the required data is captured, it can be seamlessly delivered to hyper-scale cloud providers, such as AWS, through preferred System Integrator partners, to maximise a wide range of additional IoT services and functionality.

Alongside HERA300, Eseye has developed an eight-step rapid prototyping methodology that enables the rapid build and deployment of IoT devices from building the initial model, to carrying out iterative test and development stages, resulting in a prototype that can be confidently and successfully deployed immediately into the field.

Eseye's award-winning AnyNet Secure managed IoT connectivity service is built into any HERA300 solution and provides unified, transparent and centralised management control to support rapid IoT deployment. Customers receive real-time IoT device and estate performance insights through automated data transfer registered, secured, monitored and analysed on their chosen cloud platform, enabling them to focus on business performance.

Future looks promising with disruptive new technology and fixed wireless growth

A RAFT OF new satellite launches have been scheduled for the next 2.5 years, starting with Eutelsat Konnect in December, will see the sector move to a completely different dimension of satellite broadband technology with a proposition more like fibre from the sky. Expect to see truly unlimited data allowances and 100 Mb product speeds by the middle of 2020, with 200 Mb and 300 Mb to follow in 2021 and 2022. This is due to exponential improvements in satellite bandwidth economics.

These more dynamic products catapult satellite broadband into a much wider addressable market where, instead of being considered a "last resort" technology just for rural areas, satellite offers a compelling alternative for urban locations with poor Asymmetric Digital Subscriber Line (ADSL) or Fibre to the Cabinet (FTTC).

It is well documented that demand for OTT services continues to growth apace, something like 70 per cent to 80 per cent of internet traffic is now streaming video, and satellite has proven its ability to support the heavy lifting of video very well in the satellite TV space.

"We've seen our organic sales of satellite broadband surge in the last 8 months with the arrival of the pan-European 50 Mb unlimited product, we're confident the gear change to 100 Mb speeds and beyond will further expand our markets and bring satellite into focus for a much wider audience," said Simon Clifton, chief technology officer, Bigblu Broadband PLC.

"Fixed Wireless Access (FWA) is a very different model as here we are the true network operator and the infrastructure cost of building and maintaining the network is down to us. However, the high margin levels, very low churn, and higher customer lifetime value make the FWA model very appealing to us, particularly if we can partner with other organisations to offset all or part of the capital cost of that infrastructure," explained Clifton.

Tenable extends Lumin to all platforms

TENABLE, THE CYBER exposure company, has announced an extension of the Tenable platform to bring Tenable Lumin to Tenable.sc, for vulnerability management on-premises.

This is in direct response to growing demand for Tenable Lumin from Tenable.io platform customers, the company's cloud-based vulnerability management platform. For the first time, all Tenable platform customers will be able to leverage the power of the cloud and machine learning to accurately score, trend and benchmark their organisation's cyber exposure.

"Tenable Lumin is a game-changer for cybersecurity," said Ofer Ben-David, chief product officer, Tenable. "In an industry first, we're giving Security and the Business the visibility and data they need to translate technical jargon into business insights that drive strategic decision making."

Eutelsat launches ELO nanosatellite constellation project for IoT market

EUTELSAT COMMUNICATIONS HAS unveiled its ELO constellation project targeting the Internet of Things (IoT) market, which consists of sectors as diverse as transport, oil and gas, and agriculture. This means that tens of millions of objects will need to send information from areas unserved by terrestrial infrastructure. Eutelsat's ELO constellation will offer global IoT coverage enabling objects to transmit data, irrespective of their location.

The construction of this nanosatellite constellation will begin with a first series of four satellites from Loft Orbital (ELO 1 and 2) and Clyde Space (ELO 3 and 4). With expected launch dates between 2020 and 2021, these four satellites will enter commercial service as soon as they are delivered into orbit. If this new initiative proves successful, other satellites will be added to the constellation, to reach a total of 25 satellites operational by 2022. The investment required for the constellation is included in Eutelsat's existing Capex outlook. The cost associated with each satellite will not exceed US$1.1mn (1 million euros).

This constellation project follows on from an initial nanosatellite ordered by Eutelsat from Tyvak International last year. Planned for launch early next year, the objective of this test satellite will be to confirm the technical performance of various waveforms between a satellite in low Earth orbit and objects on the ground.

Low Earth orbit is particularly suited for processing signals emitted by connected objects as it offers a ubiquitous satellite link, complementing terrestrial IoT networks, without increasing the cost or energy consumption of these objects.

ELO constellation will offer global IoT coverage.
Photo: Eutelsat

Combining satellite technology with terrestrial IoT will be vital to accessing the economies of scale required to deploy satellite IoT. Through ELO, Eutelsat's aim is to position itself as the partner of choice for IT integrators and terrestrial operators seeking to offer their customers worldwide coverage.

Strategic partnership with Sigfox

Eutelsat has signed a strategic partnership with leading IoT player Sigfox, which runs a global narrowband network dedicated to this segment across 65 countries. Based on hybrid connected objects, whose data can be captured by both terrestrial networks and satellite, Sigfox will integrate the global coverage provided by the ELO constellation into its existing range of IoT connectivity services.

Radwin's TVWS solution to drive broadband to remote communities

RADWIN, THE GLOBAL wireless broadband provider, has announced its new TV White Space (TVWS) solution that utilises unused TV channels in the 470-698MHz band to connect unserved rural customers to the digital world.

Photo: Adobe Stock
TVWS help Wireless Internet Service Providers.

Leveraging upon RADWIN's broadband wireless access innovative technologies, the new TVWS solution operates in non-line-of-sight scenarios and penetrates trees and foliage over extensive distances. The new TVWS solution complements RADWIN's existing carrier-grade sub 6GHz portfolio and is supported by RADWIN's OSS tools to address all operational aspects of the network lifecycle.

Sharon Sher, RADWIN's president and CEO, said, "There are entire populations across the globe that live in remote areas who have no connection to the Internet. Fixed wireless is one way to deliver broadband, however in many rural areas there are obstacles to direct line-of-sight connectivity. With our newly-launched TVWS solution, service providers can connect unserved remote communities to the information age, help bridge the digital gap and generate new revenue streams."

Paul Garnett, senior director of Microsoft Airband Initiative, said, "Through our partnership with RADWIN to develop a new TV White Space solution, we intend to empower internet service providers in the US and around the globe to extend their networks and reach unserved communities more rapidly and cost-effectively."

RADWIN's TVWS Solution will be GA in Q1/2020.

HISPASAT presents its new satellite video services in IBC 2019

HISPASAT, THE SPANISH satellite communications operator, presented its latest technological services for the multimedia market at its stand in the International Broadcasting Convention (IBC) 2019 in Amsterdam.

Each year this fair brings together professionals and companies related to the multimedia telecommunications sector from more than 120 countries to exhibit their most innovative services and products.

During the fair, visitors to HISPASAT's stand witnessed the technological solutions that the operator offers for the mobility multimedia market by unveiling an on-demand satellite video service known as "Push VoD" for maritime environments. This solution allows telecommunications providers to offer their clients an appealing selection of multimedia contents on their mobile device which can be saved on the user's set-top box. A small satellite antenna and user equipment are all that is needed to receive this signal on the vessel. HISPASAT collaborated with Quadrille, Vodomedia and Noovo as part of this demo at IBC 2019.

HISPASAT will provide a live broadcast of its Ultra High Definition TV channel "HISPASAT 4K", which is freely available in Europe through the HISPASAT 30W-5. Over the last few months, HISPASAT has included several short films on this channel which have selected from the finalists and winners from different years of the HISPASAT 4K International Short Film Festival. This way the Spanish operator is aiming to strengthen its position by distributing Ultra HD content.

HISPASAT provides satellite broadband and connectivity services, which include broadband access, mobility and the backhaul networks, in addition to other added value solutions for governments, companies and telecommunication operators in America, Europe and North Africa.

Iridium Certus transceiver for faster satellite IoT, data is now in live testing

IRIDIUM COMMUNICATIONS HAS announced the first 10 approved beta partners developing new products based on the Iridium Certus 9770 transceiver. Each partner has received operational beta units, which have been undergoing extensive testing designed to fine-tune both the new transceiver and the first new solutions they will enable in preparation for service activation.

Small and highly mobile, like previous Iridium devices, the Iridium Certus 9770 transfers IP data over 35 times faster than its predecessors, while also supporting high quality voice connections. This new midband device, with L-band speeds ranging from 22 Kbps to 88 Kbps, will expand the reach of satellite services to new markets, ranging from unmanned and autonomous drones to new personal communicators and remotely deployed IoT devices, all connected through Iridium's unique L-band network.

The 10 companies currently testing a new generation of small-form factor satellite-enabled devices for maritime, aviation, land-mobile, Internet of Things (IoT) and government applications include: Beam Communications, Blue Sky Network, Cobham, Lars Thrane, Marine Instruments SA, McQ, NAL Research Corporation, SkyTrac Systems, Telespazio and Wireless Innovation.

Upon completion of testing, the Iridium Certus 9770 transceiver will be made available to additional Iridium licensed technology and distribution partners, expected in the first quarter of 2020.

"This new breed of device is the start of a shift in what defines small-form-factor satellite communications technology," said Matt Desch, CEO of Iridium. "These are highly mobile, lower-cost solutions that feature native IP technology at speeds capable of delivering a true internet, email, high-quality voice, photo and even some video capabilities. When you combine that with our truly global coverage, we're creating a cost-effective and reliable ecosystem of new products in a new L-band speed class, midband, that is unlike anything that exists from the satellite community today."

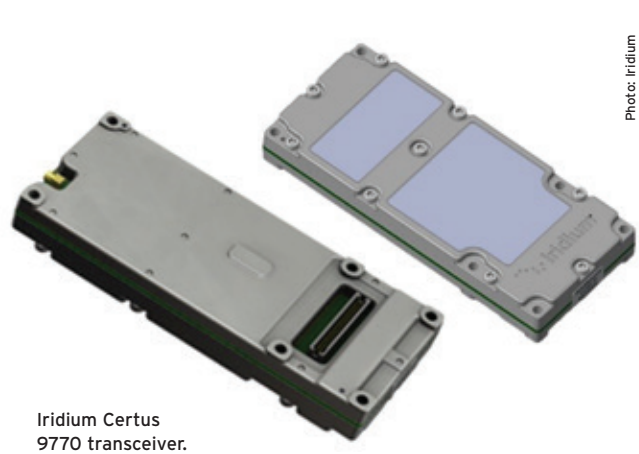


Photo: Iridium

Iridium Certus 9770 transceiver.

Markets requiring richer data transfers, pictures, low-resolution streaming, and enhanced telemetry will particularly benefit from Iridium Certus 9770 transceiver technology.

i.safe MOBILE presents industrial smartphone

i.safe MOBILE GMBH, developer of mobile communication devices for safe use in hazardous areas, has presented IS530.1, an industrial smartphone with Android 9.0 Pie.

In addition to the ATEX and IECEx standards for explosion protection, this device also enables high performance and communication requirements for use in networked industries. The IS530.1 is equipped with Android 9.0 pie, multifunctional ISM interface, Bluetooth 5.0, 64 GB internal memory and high-resolution camera.

It enables users to deploy it in critical environments without any difficulties. The new smartphone is ATEX and IECEx certified for zone 1/21 and can be used in potentially explosive areas. The device is now directly available from i.safe MOBILE. The device shall be available as IS530.2 for zone 2/22 from the end of the year.

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