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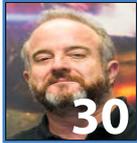www.newtec.eu
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Connections

The Internet in Africa is limited by a lower penetration rate when compared to the rest of the world. Measurable parameters such as the number of ISP subscriptions, overall number of hosts, IXP-traffic, and overall available bandwidth all indicate that Africa is way behind the "digital divide". Moreover, Africa itself exhibits an inner digital divide, with most Internet activity and infrastructure concentrated in South Africa, Morocco, Egypt as well as smaller economies like Mauritius and Seychelles

While the telecommunications market in Africa is still in its early stages of development, it is also one of the fastest-growing in the world. In the 2000s, mobile telephone service in Africa has been booming, and mobile telephone use is now substantially more widespread than fixed line telephony. Telecommunication companies in Africa are looking at Broadband Wireless Accesstechnologies as the key to make Internet available to the population at large. Projects are being completed that aim at the realization of Internet backbones that might help cut the cost of bandwidth in African countries.

Fredric J. Morris
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A continental shift in global internet access in Africa: Angola driving change in connectivity and the digital economy

by António Nunes, CEO, Angola Cables

Together with growing terrestrial fibre optic systems, mobile technologies and satellite services, such a direct connection between will also improve other countries' (in the Middle East and Asia, for example), access more parts of the world, either as sources of content or investment destinations for Africa-based data and communications services. Hubs for telecommunications innovation have blossomed on the continent, and with the completion of SACS and Monet, further expansion of data centres and Internet Exchanges Points (IXPs) in Africa is expected.

As the CEO of Angola Cables since the company was established in 2009, António is focused on transforming Angola into one of Africa's telecommunications hubs. An electrotechnical engineer by profession, António has over 13 years of experience in the telecommunications sector. He was previously with UNITEL, the largest mobile phone operator Angolan, where he had a number of leadership roles in developing the company's network, including access (2G and 3G), core (monolithicand softswitch) and transmission (microwave and fibre optics), as well as the infrastructure associated with them. He was also involved in the development of UNITEL's value-added services.

In 1994, there were more telephone lines in New York City than there were in the entire continent of Africa. Over the next two decades, digital transformation in Africa dramatically picked up speed. Today, the continent is teeming with pioneers building 'digital bridges' within and between villages, countries and continents, as well as connecting Africa to the global economy and research communities. Inasmuch as this may be true, many parts of Africa continue to play catch-up with the rest of the world in terms of the control and directness of subsea fibre optic connectivity.

This challenge appears to be a colonial artefact of the global growth of the Internet as the continent has arguably faced more geographic, political and economic barriers to its development than other regions. Fortunately, this is about to change; representing a symbolic 'Africa first' shift for the continent in terms of its self-determination and autonomy in the telecommunications arena. For countries in sub-Saharan Africa, it presents a massive opportunity to leapfrog other countries. For regions outside of the continent, it will also offer a more efficient, alternative route for burgeoning Internet traffic across the world's largest continent.

Currently, the West Africa Cable System (WACS) is the most important conduit for data for the West Coast of the continent. Managed by a 12-member consortium, it provides carrier-level services to operators in Sub-Saharan Africa across a dozen countries, including 12 landing points in Africa and three in Europe (Canary Islands, Portugal and England). Running more than 14,000 km – starting in Yzerfontein (South Africa) to London (UK) – WACS is an essential artery for the digital connectivity and economic development of countries connecting to the cable.

But in order for Internet traffic to travel between Africa and the Americas (the largest centre for the production and aggregation of digital content and services), it must first go through Europe, a rather inefficient route, and one might even say unnecessary if needing to cross the Atlantic ocean.

Three continents interconnected

With the South Atlantic Cable System (SACS) – expected to be completed in 2018 – the first direct link between Africa and South America will be created. A subsea cable extending more than 6,500 km between Brazil and Angola, SACS will be 100% owned and managed by an African company, Angola Cables. Combined with Monet*, a cable system to be completed this year and operated by Angola Cables, Algar Telecom, ANTEL and Google, SACS represents a paradigm shift for Africa and the Americas in terms of connectivity and collaboration.

Currently, the latency, or the time lag between a data packet being sent and received, on subsea fibre optic cables systems between Angola and Brazil is 350 milliseconds, due to the trafficking of Internet via Europe. With SACS, this will be reduced fivefold to approximately 63 milliseconds. In effect, this will create a 'continental shift' in terms of Internet access to and from Africa, bypassing Europe. Once operational, an African company will be fully responsible for the digital exchange between Africa and the Americas.

Together with growing terrestrial fibre optic systems, mobile technologies and satellite services, such a direct connection between will also improve other countries' (in the Middle East and Asia, for example), access more parts of the world, either as sources of content or investment destinations for Africa-based data and communications services. Hubs for telecommunications innovation have blossomed on the continent, and with the completion of SACS and Monet, further expansion of data centres and Internet Exchanges Points (IXPs) in Africa is expected.

Beyond Connectivity

Telecommunications and digitalisation are some of the most powerful tools for empowering countries and economies. If one looks at mobile telephony, it has spread further and faster in Africa than any other part of the world. According to GSMA, a global organisation representing nearly 800 mobile operators and hundreds of mobile technology companies, the doubling of mobile data usage increases annual growth in GDP per person by half a percentage point. Consider some of the following facts about the mobile market in Sub-Saharan Africa:

● 420 million unique mobile subscribers exist in the region, with an average penetration rate of 43% as of the end of 2016.

● By 2020, the number of mobile broadband connections will more than double to reach half a billion, nearly two-thirds of the region's total connections.

● Smartphone connections have doubled over the past two years to nearly 200 million, accounting for a quarter of mobile connections.

● Mobile data traffic is forecast to grow twelvefold across Africa as a whole over the next five years.

Sub-Saharan Africa now accounts for nearly a tenth of the global mobile subscriber base and is expected to grow faster than any other region over the next five years. With an improved connection between the Americas and Africa, complemented by a strong mobile industry on the continent, the social and economic development of the regions is expected to improve in line with such growth. Today, mobile connectivity has become the main platform for innovation and the driving force for greater inclusion, with about 270 million people in the region accessing the Internet through mobile devices. Last year, mobile technologies and services generated $110 billion of economic value in Sub-Saharan Africa, equivalent to 7.7% of GDP. As local and global connectivity continue to improve, mobile's contribution to GDP is expected to increase to $142 billion, equivalent to 8.6% of GDP, by 2020.

Research and Education

The telecoms / mobile ecosystem in the region is attracting talent and investment to African tech companies, as well as linking up academic institutions and research and education (R&E) organisations in other parts of the world. As trans-Atlantic connectivity improves with the completion of SACS and Monet, universities and other learning communities in African, North American and Latin American countries are increasingly collaborating to improve knowledge sharing and research. Examples include the Florida International University's Centre for Internet Augmented Research and Assessment (CIARA) that recently expanded its development of a next-generation Internet network to include Africa.

With a project called the AmLight Consortium – a multi-institutional project composed of NPOs, universities and regional R&E networks – CIARA promotes the development of advanced network applications, content, and services between the Americas and Africa. Over the next ten years, the Amlight Consortium will dramatically increase the use of Americas-Africa cable systems for research and education applications, including establishment of a high-performance network link between the AMPATH IXP in Miami, and Ango-nix, an IXP in Luanda, Angola (owned by Angola Cables). This infrastructure will connect with the Atlantic Wave-Software Defined Exchange in Sao Paulo, Miami, Boca Raton, and Atlanta. The collaboration aims to provide efficient peering between national R&E Networks and communities of interest through a distributed open software define exchange model.

The ongoing development of Africa depends on the degree to which it can globally integrate with the digital economy. With a growing appetite for data and mobile devices requiring broadband connectivity (supported by next-generation international networks), the continent requires investment in its telecommunications capacity in order to support socio-economic advancement. With the imminent launch of a trans-Atlantic cable system between Angola and Brazil, Sub-Saharan Africa is poised for a paradigm shift in connectivity. It will also be a profound and symbolic step toward the continent taking the driver's seat in expanding the region's economic opportunities and determining its digital destiny.

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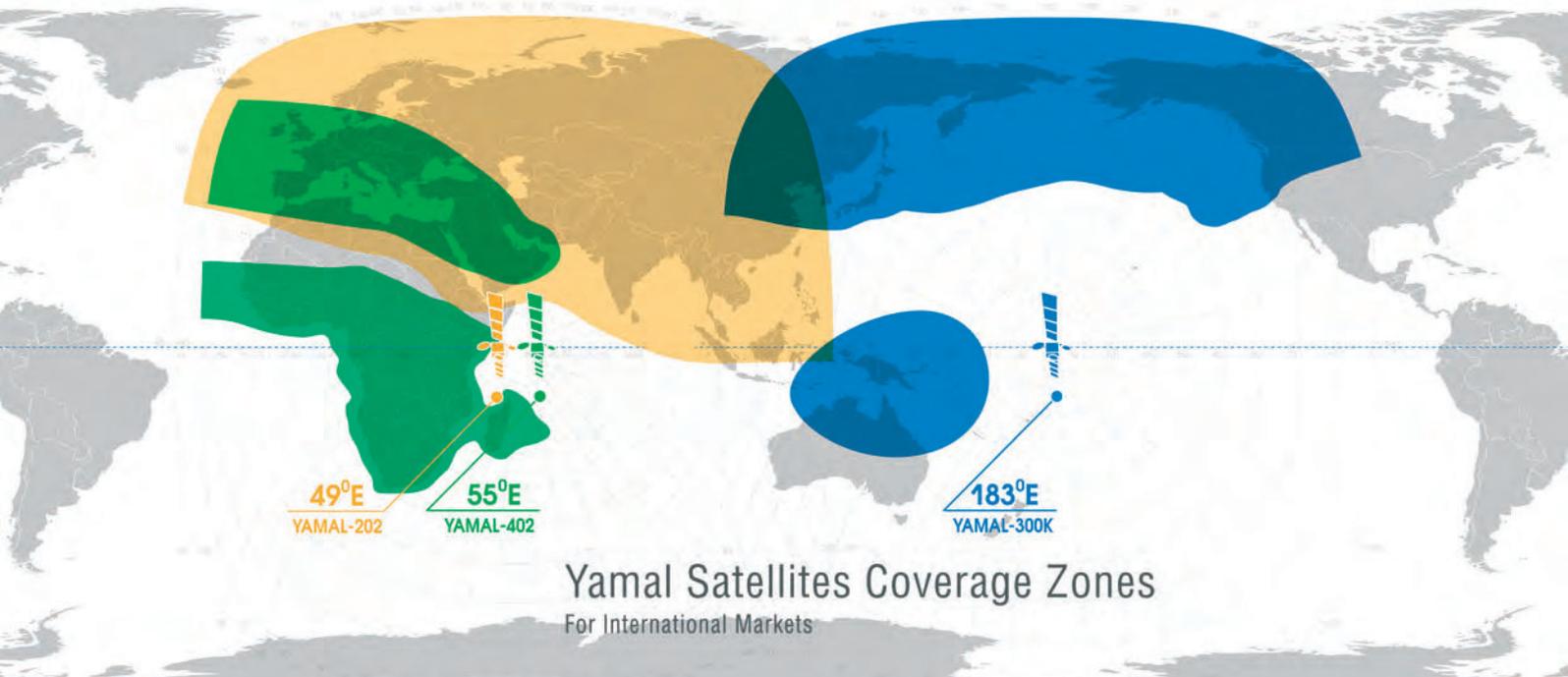
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Buffering, buffering, why Africa's Internet has the brakes on

by Chris Godfrey, Executive Director, Qwickfone

According to Internet World Stats, the internet penetration rate for Africa as of March 2017 was just 28% of the population. This compares poorly to the Rest of the World at 54% and is well below developed nations that score into the top twenty percentiles. African internet users make up only 9% of web surfers worldwide. There are many reasons for this large disparity, which include lack of local language content (slowly increasing) and the high price of subscription (slowly falling), but the main problem is the fact that mobile telephony in Africa is saddled with endemic problems that no company or government seems willing to fix.

Chris Godfrey is Executive Director of UK based Qwickfone – the telecom company that's connecting the unconnectable in the developing world. After starting his career in the advertising industry in the 1970's, he has been an independent marketing and communications consultant for more than 35 years. His work has been instrumental to launching consumer, technical and industrial brands, and the launch and growth of products and services that have gone on to become household names. He created Qwickfone in early 2016 to fulfill a desperate need to bridge the world of business and development. Access to healthcare, education and banking services will be revolutionised by giving people the use of a mobile phone. He is dedicated to the company's mission to connect the 'lost' billion.

Since its arrival on the continent in the late 1980's and then its roll-out to the masses through the 1990's, Africa's internet has been playing leapfrog – with systems growth in a permanent race against demand.

After a miserable decade of bandwidth scarcity in 2000 to 2010, new optic-fibre undersea cable connections to replace slow and expensive satellite links brought spectacular growth during 2010 to 2015. This frenetic pace of construction has not slowed and by 2020, the World Economic Forum projects that bandwidth across the continent will have increased 20 times since 2010 and four times since 2016. Far from being the internet laggard in the pack of major economic areas, Africa is making rapid technological advancement and catching up fast. Which is all good news for the end-user, but it does pose a question: Why, with such aggressive infrastructural growth, has the take-up at the point of consumption been so slow?

According to Internet World Stats, the internet penetration rate for Africa as of March 2017 was just 28% of the population. This compares poorly to the Rest of the World at 54% and is well below developed nations that score into the top twenty percentiles. African internet users make up only 9% of web surfers worldwide.

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A 2015 study by the International Telecommunications Union, discovered that less than 1% of Africans access the internet via a fixed link, (desktop, laptop etc) and the rest of the user audience do so using their mobile phone. This statistic goes a long way towards explaining why connectivity on the continent remains so challenged: Even now, African mobile phone networks fail to cope with simple voice and text demand, so how can they possibly be expected to handle the load increase that data consumption brings to bear? In short, they cannot. Alternatively, if mobile networks are so burdened, why can't they be rapidly upgraded to tackle the surge in data demand? Whilst conducting research to establish Qwickfone's mesh cellular system in Africa's rural areas, we found deep rooted problems with the legacy mobile networks that are unlikely to go away soon and which keep mobile ownership low, resulting in only 46% of the population subscribing to a mobile service.

When the lights really go out

According to the World Bank, between the years 2006–2010, the average number of power outages during a typical month in Africa was 10.5, while the average length of an outage was 6.6 hours. That's a long time in the dark, but it also points to the reason why mobile phone penetration is sputtering at less than 50%: Cell-phone towers require power to operate but the mobile networks in Africa have grown so fast, they are now beyond the capability of grid electricity to keep them running. Dropped calls and long-lasting signal loss are all too common.

Are you covered?

The issue of cell-phone coverage is a particularly acute problem. Part of the problem is indicative of the erratic power supply, but much of the problem is systemic. In the mad scramble to establish cell-phone service in the metro areas of the continent, none of the Telecoms could secure ideal tower locations from one end of a city to another. Consequently, the fight for prime real estate for towers became a life and death struggle and the sharing of sites was blatantly ignored, the objective being to prevail in a monopoly battle and not to serve the greater good by providing ideal phone coverage in a metro setting.

Cell-phone coverage maps reveal the depth of this problem. They reveal that no urban network adequately covers an entire city anywhere on the continent. This leaves African mobile customers playing SIM card roulette, switching cards from competing competing companies in and out of their devices to obtain an adequate

signal as they move around the city. Carrying a portfolio of five or six SIM cards is now an essential tool for business in Africa, but the truth is, if you can barely get a signal, how can you access the internet?

Matters of money

Most of the countries in Europe and North America take their cellular phone systems for granted. If something needs repairing or upgrading, the companies buy the parts and install them. This works fine when your currency is regarded as trade-worthy by the nations that are supplying the technology, but what happens if you're an African nation and nobody outside your country wants your currency? How do you pay for technology that is not indigenous to your nation?

Few spare parts for mobile networks are manufactured in Africa. This means they must be purchased from abroad and paid for in scarce, convertible currency. The only source of such currency are the national banks, but typically, they will not release any of it until they can be sure it has not been earmarked for other transactions. It usually has. This means the needed parts cannot be obtained and the mobile operators are forced to cannibalise their own networks, stealing parts from less busy areas to keep the busiest and most profitable portions of the network running. As one might expect, signal loss, sometimes over large areas, can be the only outcome of such drastic measures.

The spectre of spectrum

Spectrum frequencies are a limited and precious resource, owned by the respective national governments in their own territory. Those governments allocate spectrum to various broadcast agencies, covering everything from radio and television to mobile and data transfer networks. In June of 2006 a radio communications conference was held in Geneva (GE06 Regional Agreement). A major decision was taken at the conference by the signatories to the International Telecommunications Treaty (every nation on the planet excepting the Cook Islands, Palau, and the state of Palestine). This decision declared that analogue television was to disappear by June 17, 2015 and be replaced by digital broadcasting. This would free up an immense amount of spectrum that could be re-allocated to mobile and data operators.

The nine-year window before the end of analogue occurred should have been plenty of time to get rid of the old technology and bring in the new. However, to date, 11 years after the conference, only 6 nations in Africa (Malawi, Mauritius, Morocco, Mozambique, Rwanda and Tanzania), have made the switch to digital broadcasting and an acute shortage of spectrum results in overloaded networks, slow signal and all too often, no signal at all.

When you add it all up

Despite rapturous comments elsewhere, key issues strongly indicate that the incredible growth of mobile telephony in Africa has hit the wall. Peak mobile and with it, peak internet connectivity, has been reached. Local infrastructure is at breaking point. Without efficient power supply and without sufficient hard currency to make repairs purchases, the cellular networks across sub-Saharan African are doomed to decay and failure – even as the estimated population is set to double by 2050, adding further strain to a broken system.

Who is to blame for this mess? The answer lies with governments and Telecoms alike. The technology that was brought to Africa was not the technology that was really needed. No one bothered to assess whether the local infrastructure could absorb the new. The providers told the elected officials that the technology would change the future, but not even twenty years have passed and the technology is already failing because the infrastructure that was supposed to support it is failing. No one worked out that what was really needed was a cheap, robust, and entirely self-sufficient network run on renewable energy.

So where does Africa go from here? Firstly, a cellular technology, such as a 'mesh' or WANET system, (as deployed by Qwickfone), could deliver a mobile phone network that does not require expensive, hard to maintain cell-phone towers and massive amounts of energy to function. Secondly, the deployment of solar or other renewable energy sources – on site at the point of consumption – to power the systems will eliminate the problems created by failing electrical grids. Thirdly, the open sharing of resources between mobile operators would remove coverage issues and prompt more consumers to invest in mobile telephony. Lastly, the rapid conversion of broadcast signals from analogue to digital would free massive amounts of spectrum to unjam overloaded networks.

Communications are vital in today's world. Having the right information can radically change lives for the better. With the current cellular networks failing and with growth at peak point, moving away from what has been done so far and towards what needs to be done next is the only way the massive expansion in the African population can be provided with mobile (and therefore internet) service in the future.

Creating a Witopia for Africa:
Connectivity everywhere, for everyone

by Riaan Graham, Sales Director, Ruckus Wireless, sub-Saharan Africa

The time for Wi-Fi in Africa has arrived. Traditionally, this was the exclusive domain of airport lounges, businesses, and a limited number of high-end restaurants. These institutions could afford to charge exorbitant rates for people wanting to access Wi-Fi connectivity. Even worse, this was often limited to either 30-minute increments or data usage of as low as 10MBs.

However, new technology has made it possible (and affordable) for the roll-out of wider Wi-Fi networks in cities and metros than before. This has seen wireless access being spread across airports, hotels, coffee shops, restaurants, universities, public parks, and more.
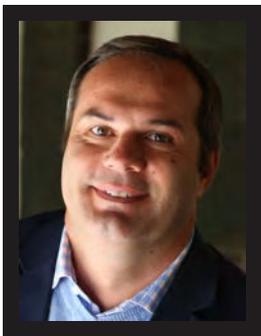
Riaan Graham is the Sales Director at Ruckus Wireless sub-Sahara Africa, a position he assumed in 2015. He has a strong focus on Broadband Wireless Access technologies as his field of speciality since 1999. He has worked in the telecommunications field in Africa for 17 years with in depth knowledge of the MNO and telco markets in East, West and Southern Africa.

He studied at Pretoria Technicon were he obtained his qualification in Industrial and Engineering. His passion for the telecommunications industry is evident through his wealth of knowledge and experience, as well as his commitment to driving African solutions that enhance our way of life.

Being online has become a way of life for many. One just needs to walk down the road or sit at a coffee shop to see the pervasiveness of mobile devices. But despite the growth of mobility, having cost-effective, reliable, and fast connectivity remains a challenge. In Africa, where a significant percentage of the population lives in rural areas, this is especially limiting. The ITU within its Connect 2020 Agenda has made it a goal to bring 60% of the world's population online by 2020. If we are to tackle the large offline populations, we need to find replicable solutions that can be scaled to connecting the large rural offline populations at minimal costs, and finding effective strategies for narrowing the usage gaps across all regions – and Wi-Fi could be that solution.

According to a GSM Association report published last year, there were more than 500 million unique mobile subscribers across Africa at the end of 2015 (equivalent to 46 percent of the continent's population). This makes it the second largest mobile market in the world. But with Egypt, Nigeria, and South Africa jointly accounting for a third of the total subscriber base, the continent is the least penetrated from a mobility perspective.

Overcoming obstacles

Clearly, there is room for growth. But getting devices into people's hands is just one part of a bigger problem. While the story of mobility is an empowering one, it is not without its own challenges. Being mobile means people have access to information wherever they find themselves. This also means that end users are less reliant on fixed infrastructure for their connectivity needs. For a continent that is well-known for its entrepreneurial drive, this mobility gives people the ability to manage their own businesses from the convenience of a handset.

However, the reality of being mobile comes at a price. One of the most problematic aspects around being connected in Africa remains firmly rooted in how much mobile data costs. While mobile operators have been making moves to reduce these expenses, it is taking far too long to be of significant benefit to the end user.

This has resulted in the telecommunications environment on the continent undergoing significant changes in recent years. One of the driving forces behind this is the investments being made in terrestrial fibreoptic infrastructure. Many African countries have installed fibre-optic backbones connecting to the myriad of undersea cables bringing bandwidth to the continent.

The ensuing evolving dynamics are forcing mobile operators to adapt or risk falling behind. In a digital landscape, consumers expect more from their carriers not only in terms of affordability, but also in the provisioning of value-added services such as Over-the-Top content. The knock-on effect is that data has overtaken voice in terms of revenues for many operators in Africa.

Enter Wi-Fi

All of this points to a changing of the guard in terms of data access. The time for Wi-Fi in Africa has arrived. Traditionally, this was the exclusive domain of airport lounges, businesses, and a limited number of high-end restaurants. These institutions could afford to charge exorbitant rates for people wanting to access Wi-Fi connectivity. Even worse, this was often limited to either 30-minute increments or data usage of as low as 10MBs.

However, new technology has made it possible (and affordable) for the roll-out of wider Wi-Fi networks in cities and metros than before. This has seen wireless access being spread across airports, hotels, coffee shops, restaurants, universities, public

parks, and more.

According to a global World Wi-Fi market report, the global wireless market is expected to grow to more than US$33 billion by 2020 and an estimated compound annual growth rate of 17.8% from 2015. The potential for Africa is significant.

Access to information has become a human right and Wi-Fi is the enabler to that. For example, in South Africa the government launched Project Isizwe – an initiative that works with local, provincial, and national government to provide Wi-Fi in low-income communities for education, economic development and social inclusion, enabling access to the internet as a catalyst for change. To date, it has officially deployed more than 800 free internet zones in Tshwane and connected close on two million unique users since November 2013.

Expanding access

In fact, the shift towards Wi-Fi has started to happen. Globally, Wi-Fi and mobile connected devices will generate 68% of all internet traffic this year. Furthermore, it is expected that there will be more than nine billion Wi-Fi enabled devices to be in use by the end of 2017.

In South Africa, one of the top African countries in terms of connectivity, there is only one wireless hotspot available for every 6 000 people. Compare that to the global average of one for every 150 people, then it makes for sobering reading. Fortunately, such has been the move towards embracing wireless, the expectations are such that by the end of 2018, South Africa will have one hotspot for every 122 people.

And other African countries are following suit. The opportunities that Wi-Fi presents are simply too significant to ignore. The likes of Kenya, Nigeria, Zambia, and even Zimbabwe to name a few have embarked on wireless initiatives designed to bring better connectivity to more citizens.

With the world pushing towards a digital transformation across corporate and consumer segments, Africa cannot risk falling too far behind. Wi-Fi is an integral aspect of aiding connectivity on the continent and is a means to enhance the adoption of fibre linking to the undersea cables.

Africa has started using ICT investment to power its economy to gain more benefits. Government and the private sector are working together to fast track this process. Ultimately, when connectivity is improved, all stakeholders start drawing advantage from it. We are already seeing significant foreign direct investment into

key ICT initiatives across the continent.

So, even though mobility has sparked the flame around access, it will be wireless that fuels it into the digital future. Africa is at the cusp of significant growth into the future. How it does so will be dependent on the effectiveness of wireless connectivity. Welcome to Witopia!

Pervasive connectivity still a pipe dream in Africa: Connecting the unconnected on the continent

by Mohamed Khamis Abdelrehim, Head of Market E2E Sales & Solutions, Middle East & Africa, Nokia

The African continent is still being marked by a lack of pervasive connectivity. This is largely because of outdated infrastructure such as copper and GSM networks, as well as delayed decisions around the introduction of 3G and 4G technologies. Many African countries are also going through geopolitical changes, prioritising areas other than ICT for investment to mobilise their countries. According to Mohamed Abdelrehim, Head of Solutions and Business Development for Nokia in the Middle East and Africa market, there has, however, been a shift towards providing 4G licenses without expecting substantial license fees.

Mohamed Khamis Abdelrehim is Head of Market E2E Sales & Solutions with Nokia Middle East & Africa

Mohamed Abdelrehim is an Egyptian National, A Senior Telecom executive with proven track record in developing a prioritized list of strategic opportunities for target organizations while identifying high value opportunities. Skilled in establishing opportunities through a consultative 'solution selling' approach by exclusively targeting executives (CEO, CTO and CMO). Accurate in establishing processes, systems, procedures and templates to standardize business functions and enhance efficiencies. Detail-driven in presenting and communicating a value proposition for managed telecommunications services to non-technical stakeholders. Well known for developing a highly professional and results-oriented sales force capable of exceeding sales targets, while leading development of new technologies and architecture framework standards. Result-oriented, creative and self-motivated professional displaying strong business and commercial acumen while delivering cost-effective solutions and contributing to business growth, both financially and operationally. Outstanding team player, skilled in utilizing collaborative approaches in work to translate vision into achievements while demonstrating strong analytical, problem-solving and decision-making skills, with a passion for service excellence, quality and productive partnerships across the ICT industry, he is a Visionary leader utilising logical and creative approaches to work while presenting specialist information to non-experts in an understandable form.

Mohamed have held multiple senior Mgmt. positions across Europe, Latin America and recently Middle East and Africa, interacting with Carrier service providers:

• Head of Market E2E Sales & Solutions with Nokia Middle East & Africa
• Lead Sales Director Deutsche Telekom Group with Nokia Europe
• Head of Fixed Broadband Business Unit in Middle East And Africa
• Head of Mobile Core & OSS Network Solutions in Latin America Brazil
• Senior Mobile Consultant for Mobile Core within Siemens HQ in Munich, Germany

Mohamed have developed several skills the fields of Business Development of Strategic Opportunities
• Business Development
• Strategic and Operational Technology Planning
• Business Process Improvement and Re-engineering
• Leadership and Senior Management Liaison and Communication.

The African continent is still being marked by a lack of pervasive connectivity. This is largely because of outdated infrastructure such as copper and GSM networks, as well as delayed decisions around the introduction of 3G and 4G technologies. Many African countries are also going through geopolitical changes, prioritising areas other than ICT for investment to mobilise their countries. According to Mohamed Abdelrehim, Head of Solutions and Business Development for Nokia in the Middle East and Africa market, there has, however, been a shift towards providing 4G licenses without expecting substantial license fees.

"Generating quick sales by overpricing the license fees has a short-term benefit for governments. Their mid to long term goals should be around driving connectivity and accelerating the telecommunications sector, as it drives job creation and has a much bigger impact," he says. "Once you establish a new network, you trigger different market sectors. So, accelerating the telecommunications sector automatically generates more jobs and this, in turn, drives innovation and the potential of extending connectivity nationwide including the rural areas, as the cost of MB will be reduced with the 4G compared to 2G/3G."

Abdelrehim says that if this is delayed, all the segments relating to telecommunica- tions will be held back from growing and generating jobs and the continent will lag behind the rest of the world in introducing new solutions, as there will not be enough connectivity, bandwidth or the required handsets to introduce those services. "Accordingly, it delays GDP growth, especially in the SME segment. If you look at Europe and Asia Pacific right now, the biggest economy segments which are benefiting from telecommunications infrastructure are basically the SMEs," he says.

Smart city solutions, including eHealth and eLearning, are also impacted. "These solutions are dependent on services that are provided via remote connectivity. So, if

you don't have the right telecommunications infrastructure you will not be able to introduce those services. This again has a direct impact on the SME segment, which ultimately will slow down GDP growth."

Abdelrehim says despite the relatively gloomy outlook, they are seeing some positive events unfolding on the continent. "Nokia has been selected as the strategic infrastructure provider to roll out a smart city in partnership with the Government of Rwanda. As part of the project rollout, the Government of Rwanda will invest in network connectivity and sensor deployment in different applications, which will serve the local citizens in public safety, waste management, utility applications and healthcare to name a few. "It is projects of this nature, supported and driven by government, that will make a real difference in enhancing people's lives, creating jobs and improving economies – in this case, the economy of Rwanda. The Ministry of Youth and ICT in Rwanda believes that through this project, they will not only improve people's day to day lives with better services and security, but they also anticipate long-term positive socio-economic benefits for the people in Rwanda. Furthermore, they also plan to share their experience with other countries in Africa."

He says this initiative clearly demonstrates that Rwanda has the political mandate to provide the latest and best services for citizens. "Once the political mandate is in place, the next step is to partner with the right entities such as the Smart African and key vendors that can implement innovative solutions that can ultimately be replicated in other African countries as well. This, in turn, will generate more jobs in different segments and accelerate the introduction of more services, especially when it comes to learning. The key here is to address those pain points that are specific to each country."

Abdelrehim says this lies at the heart of connecting the unconnected in Africa. "In many of the African countries, governments see it as their political mandate to connect all their citizens and a human right for every citizen on the continent to have access to broadband. Already there are several discussions underway with key entities such as UNESCO and vendors, such as Nokia to investigate the right solutions to connect the unconnected. That said, we do need the political blessing for us to bring our business models, solutions and success stories to make pervasive broadband a reality."

He adds that while organisations have a mandate to generate revenue, they also have a social responsibility to address the social needs of people on the continent. Nokia recently sponsored and participated in CodeBus Africa, a 100-day tour connecting Finnish and African innovators as part of Finland's official 100th anniversary celebrations. The CodeBus Africa journey spanned ten countries in total - Ethiopia, Ghana, Kenya, Mozambique, Namibia, Nigeria, South Africa, Tanzania, Uganda and Zambia.

The aim of the project was to boost grassroots level teaching of computer programming, particularly among girls, and to contribute to long-term efforts to promote quality education, youth empowerment and employment. "The project consisted of creative coding workshops, most of which were run in township communities. Learners paired up to produce their own song with the open-source programming platform Sonic Pi – a tried-and-true curriculum developed by a Finnish technology education company and project partner Mehackit," says Abdelrehim.

Nokia is also currently focusing on the non-carrier segment to drive acceleration of the ecosystem. "We are engaging with governments and universities and focusing very strongly on innovation and smart cities, to enable us to bring the latest use cases to Africa. At the same time, we would like to stimulate local markets through key discussions and by executing hackathons across the continent as these result in innovative solutions to local pain points that can make a real difference to people." He says that while there are generic use cases around innovation taking place in Europe, these might not necessarily meet the needs of the continent. "That is why we are taking a bottom up approach in trying to help people bring their ideas so that we can assist them in turning those ideas into commercial products and solutions. That way we are not only solving real problems on the African continent, but we are also making a meaningful contribution to people's lives and driving innovation to further stimulate economic growth."

Innovation will close the gap in Africa's connectivity challenge

by Sthe Shabangu (Ms.), Lead: Public Relations, Public Affairs and Corporate Citizenship, Samsung Africa Office

The answer to Africa's connectivity challenge lies with innovations uniquely adapted to the African context.

Sthe Shabangu is the PR Lead for Samsung Electronics Africa RHQ, a position she has held since June 2015. In this role, Sthe's responsibilities include the development and management of the public relations strategy for Samsung Regional Headquarters, as well as reputation management and media exposure.

Prior to taking up this position, Sthe has held several roles in the communications space. She began her career in agencies such as TBWA Hunt Lascaris and Ogilvy Johannesburg before spending time at KFC Southern Africa and Anglo American. She also has experience as a strategic communication consultant. Sthe has a BA in Industrial Psychology and Sociology from the University of the Witwatersrand, and is currently completing an MBA in Environmental Sustainability at Rhodes University.

Sthe's eight years of agency experience, coupled with extensive marketing experience make her an all-rounder. She counts career highlights as being the founder of the KFC Add Hope concept, which has just launched globally; managing the first black African going to space; and founding the EY Next Gen programme aimed at building Africa's future leaders.

Sthe believes the same way the youth of 1976 revolutionised South Africa against apartheid, the youth of today has huge potential to revolutionise brands worldwide. Brands that will succeed in the future are brands with a management strategy focused on companies creating measurable business value by identifying and addressing social problems that intersect with their business.

As Africa faces the dawning of the Fourth Industrial Revolution, we find ourselves in the midst of an era of significant disruption, but also great opportunity.

It's no secret that digitisation and connectivity will play a critical role in our ability to ride the wave of change which is heading our way. In 2013, McKinsey calculated that the internet was contributing to around 1.1% of Africa's GDP. At the time, projections were that this could rise to about 10% of the African economy by 2025.

But, while connectivity across Africa has been improving at a rapid pace, we still have a long way to go. According to the International Telecommunication Union, by the end of 2016, more than half the world's population was still not using the internet. And the split across the digital divide is far from even, with around 84% of households connected in Europe, compared with just 15.4% in Africa.

Africa is quite literally in a race to catch up. We need to find a way of ensuring we're digitally fit in order to capitalise off of the next industrial revolution and we need to do it quickly.

The glaring gaps in Africa's economic development were brought under the spotlight at the recent World Economic Forum Africa Summit, where it became obvious that the need for the private and public sectors to partner together in order to help close those gaps is greater than ever before.

With the resources to invest in both people and product, the private sector will play a critical role in ensuring Africa is ready to face the revolution and rise.

Access to electricity is holding us back

While the United Nations considers Internet access to be a basic human right, much of rural Africa is still battling with far more basic challenges such as poverty, health and employment.

Access to electricity acontinues to be a major stumbling block when it comes to progress around improved connectivity. In fact, President of the African Development Bank, Akinwumi Adesina was quoted by the Guardian as saying that access to electricity continues to be the "most critical issue holding back Africa's development."

According to World Energy Outlook, an estimated 1.2 billion people did not have access to electricity in 2016. More than 95% of these people live in countries in sub-Saharan Africa and developing Asia.

And as Adesina points out, electricity drives everything; without it Africa won't be able to drive industrial development.

Lack of reliable electricity naturally has a significant impact on connectivity. As do high operation and maintenance costs of infrastructure, poor security, and high spectrum and license fees.

Due to the aforementioned factors, broad band remains expensive, slow and in more rural areas, unavailable altogether. While international connectivity has helped to decrease the cost of Internet access in general, lack of infrastructure in rural areas has negated these price reductions in many instances.

With more than 70% of Africa's population living in rural areas, this remains a major problem. In fact, according to the Internet for Education in Africa report, half of the continent's population lives more than 25km from the nearest fibre connection. Is it, therefore, any wonder that around three quarters of the African population does not yet have access to the Internet?

A solar-powered solution

It would be easy to toss out the term 'innovation' as the silver bullet to the challenges we face in enabling greater connectivity across Africa.

But, until we find practical ways of introducing those ground-breaking innovations into the Africa context, we will still find ourselves grappling to truly progress.

We need to make sure we invest in the right kind of solutions to achieve our goals.

What do the right solutions look like?

If there is one thing of which there is no shortage in Africa, it would be sunshine. This is a good thing given that solar power provides us with a potential solution - both innovative and practical - to the electricity supply problems Africa faces.

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In fact, Samsung is able to power entire classrooms with all of the technological bells and whistles required for learners to excel in this brave new digital age, simply by using energy generated by the sun.

And we call these ground-breaking education hubs Solar-Powered Internet Schools.

Ideal for remote locations

Because these schools are solar-powered, mobile and completely independent, they are ideal for remote locations and limited access to electricity. Each Solar Powered Internet School is built in a 12 metre long shipping container, easily able to accommodate 21 learners.

The containers have several layers of insulation and a ventilation system to keep the room at a comfortable temperature, as well as 50-inch electronic boards and a variety of Samsung Notebooks and Netbooks. These are all optimised for use in a solar-powered environment. Uninterrupted power supply and the world's first Wi-Fi camera are amongst some of the other features of the school.

We are constantly growing the reach of these solar-powered solutions, now with Solar-Powered Internet schools spread widely across Africa, including Nigeria, Ghana, Uganda, Senegal, South Africa, Kenya and Zambia.

And it's not just education-related connectivity challenges which Samsung is solving through the use of solar power.

Solving a wide range of challenges

We have also introduced what we call Digital Villages to a number of communities across Africa.

These villages are comprised of a Samsung Solar-Powered Internet School, a Samsung Solar-Powered Health Centre, a Solar-Powered Tele-Medicine Centre and a Solar-Powered generator.

While the Health Centre provides a variety of eye, ear, blood, dental and pre- and post-natal screening and treatments, the Tele-Medicine Centre, provides prescription and expert healthcare assistance through the use of tele-conferencing made possible by the Internet and Samsung Tablets, ultimately enabling greater access to qualified medical assistance where before there was none.

Not only are these Villages instrumental to the improvement of healthcare and education in the region, but they also help local traders to develop their businesses through the aid of an alternative, low-cost energy source.

Exactly as we've done with the Internet School solutions, we continue to roll out our Digital Villages across various locations in Africa such as Ghana where Samsung launched its first Village in Volo, and Tanzania where a Digital Village was launched in the Maasai community in Ololosokwan, Ngorongoro just last year.

While the challenges in enabling greater connectivity across the more rural areas in Africa appear to be many, I believe that through the combined efforts of both the public and private sectors, these issues can be overcome.

By linking innovative technologies with an integral understanding of the unique challenges faced in a rural African context, we can accelerate Africa's growth in connectivity exponentially.

And if we can get this right, the Fourth Industrial Revolution will be ours for the taking.

Africa's telecom industry moving swiftly to integrate more countries into the digital economy

by Byron Clatterbuck, CEO, SEACOM

User-generated content and collaboration, especially video, are growing as people flock to Facebook, YouTube, Skype and so on, to share and communicate. As the end-user experience on the web improves, local content proliferates and people become creators rather than mere consumers.

We're also seeing a heavy emphasis on the enterprise market from hosting and cloud companies in Africa, all looking to host locally. African enterprises tend to want cloud services hosted in their own countries because laws and regulations in many countries demand that sensitive corporate data be stored within the nation's borders rather than offshore and because they want the best possible performance and lowest latency.

Byron J. Clatterbuck has been the Chief Executive Officer of SEACOM Ltd. since March 2015. Mr. Clatterbuck is responsible for driving revenue growth from SEACOM's African and global service provider customers and key partners. He served as Chief Commercial Officer of SEACOM Ltd.

He has more than 15 years experience managing and developing telecommunication businesses with revenue in the hundreds of millions of dollars. His career in the telecommunications industry has seen him drive large acquisitions, investment projects, and manage global sales and marketing for a range of leading global telecoms operators, including BT, Level 3 Communications, REACH Network Services and Tata Communications.

He Byron Clatterbuck holds a Masters of Business Administration from the University of Hong Kong.

Since 2009, the African telecoms industry has come a long way in connecting people and businesses to reliable, affordable and fast Internet services. The new submarine cables that started to land off the continent's east and west coasts from 2009 onwards brought with them more affordable and plentiful international bandwidth. They now circle the continent, offering a reliable and resilient ring of connectivity.

Meanwhile, the telecoms industry has also invested in connecting metropolitan areas in most major economies with fibre as well as in building national and regional fibre backbones to connect towns and cities to the Internet. We're also seeing the industry make investments in fibre to the home and business as well as LTE/4G in many of the larger cities. This offers telecoms users seamless and fast connectivity, as well as consistent quality of service.

The effect on African economies and people has been nothing short of transformative. In many countries, connectivity costs have fallen by a factor of ten and the quality of the Internet experience has dramatically improved for people across the continent. The result is that organisations and consumers have been able to put the Internet to work in powerful ways.

Cloud computing explosion

African organisations in the public and private sector are now able to accelerate their migration to cloud-based business solutions, giving them access to world-class IT services and applications as a service. They're able to enjoy the agility, cost-savings and rapid deployment of cloud-based business solutions as they modernise their IT.

More and more African companies are taking advantage of services such as offsite backup and infrastructure as a service, enabling them to reduce their IT capital and operating costs. Spin-offs from this include freeing up capital to invest in other elements of the business as well as the ability to integrate more closely with the global digital economy.

In addition, businesses can now collaborate via high-quality voice-over-IP connections and even start making more use of videoconferencing and telepresence. This opens up new business models, for example, making offshore outsourcing a viable business or allowing multinationals to rapidly roll out IT to new branches and offices as they expand into new African countries.

Consumers are also benefiting, gaining access to new economic opportunities, information sources and entertainment services. We're seeing growing demand for services such as social media, e-learning, e-health, entertainment, and more in the years to come, much of it video-based and all of it driving more demand for local and international bandwidth.

Two focuses for the future

Against that backdrop, we at SEACOM believe that there should be two major focuses for the telecoms industry for the next few years: improving links to predominantly landlocked countries that don't yet have access to affordable international bandwidth and facilitating the hosting and creation of content within African countries.

When it comes to the first point, we'll need to see innovative partnerships between governments, the private sector and multilateral financing institutions to help the small and landlocked countries that risk

falling behind the rest of the continent. According to the World Bank, there are a number of countries in Sub-Saharan Africa, with less than 2.5 Internet users per 100 people.

By contrast, Kenya has 43 Internet users per 100 people and South Africa has 49 per 100. Thus, the digital divide is no longer just between Africa and the wealthier economies off-continent, but also between the leading and lagging countries in terms of their access to quality connectivity.

Building terrestrial fibre networks to connect towns and cities with each other, as well as to neighbouring countries and undersea cables, is challenging because of the sheer cost and long payback period involved. The road forward is for governments to work with neighbouring countries, the telecoms industry, and multilateral financing institutions to pool resources.

For our part, we continue to extend the geographical reach of our network with the launch of new Points of Presence in Rwanda and Botswana through partnerships with strong local providers. This means that these countries are also now seeing the benefit of undersea cables flow to their Internet users.

From consumers to creators

As for bringing hosting more content in Africa, the growing choice of reliable, carrier-neutral, data centres, open peering exchanges, content data networks and cloud ICT infrastructure are quickly changing market dynamics. More and more multinational telcos and Internet companies are now providing their content from within Africa's borders.

User-generated content and collaboration, especially video, are growing as people flock to Facebook, YouTube, Skype and so on, to share and communicate. As the end-user experience on the web improves, local content proliferates and people become creators rather than mere consumers.

We're also seeing a heavy emphasis on the enterprise market from hosting and cloud companies in Africa, all looking to host locally. African enterprises tend to want cloud services hosted in their own countries because laws and regulations in many countries demand that sensitive corporate data be stored within the nation's borders rather than offshore and because they want the best possible performance and lowest latency.

The future comes to fruition

We've been talking about the cloud, video-on-demand and many other concepts for years, but Africa didn't have the infrastructure to support these services. Now it's finally coming to fruition because market deregulation, growing competition and end-user demand in most parts of Africa have forced content, application and infrastructure providers to speed up the deployment of new offerings.

We can expect significant social and economic benefits to follow in the wake of closer digital integration across Africa, improving the flow of information and commerce between countries and give consumers and business users more choice. Businesses will be able to become more efficient and more integrated with the rest of the world, thanks to the cloud. Governments will be able to deliver richer electronic services – for example, health and education – to their citizens. And for consumers, social media, video streaming, and other rich media services will quickly become a part of everyday life.

Developing IXPs in Africa: Why it's important and how it offers potential for growth

by Delphine Masciopinto, Chief Commercial Officer, France-IX

In Africa, the absence of connectivity between ISPs often results local traffic being routed over expensive international links simply to reach destinations within the country of origin. These links must be paid for in foreign currency so in effect, ISPs are paying international 'shipping' rates for a local delivery.

The good news is that there is an internationally recognized solution to this inefficiency, which is an Internet Exchange Point, or IXP and there are currently 37 active IXPs located in 34 cities in 28 African countries.

Delphine Masciopinto is Chief Commercial Officer at France-IX, the premier Internet Peering Service Provider in France, enhancing the affordability and the latency of the Internet traffic exchanged in France. She is an experienced telecom professional, who has lived and worked in six different countries in the past two decades, focusing on marketing and commercial development for service providers.

Prior to joining France-IX, she led the pricing and bid-support for North America for all the data services running on the Reliance Globalcom/FLAG Telecom network from 2007 to 2013. In the early 2000s, she contributed to the marketing and business development of Level 3 Communications in Europe. Prior to Level 3, she managed the launch of data and IP services for Orange's subsidiaries in Denmark, Spain and Jordan.

Delphine holds a Master's degree in Marketing from Telecom Business School in France.

Second only to Asia in landmass and population size, Africa is currently home to 1.216 billion people. That massive population is also young as 40 percent is less than 14 years old. UNICEF predicts that by 2050, 25 percent of all the people in the world (and 40 percent of the world's youth) will be African . These young people are, like Millennials in Europe or the US, the online generation, which has helped increase the number of subscriptions to mobile services in Africa over the last few years. According to the GSMA[2], 46 percent of the African population subscribed to mobile services at the end of 2015 and it is predicted that an additional 168 million people across Africa will be connected by mobile services by 2020, taking the total to around 725 million unique subscribers.

It sounds like a connectivity success story but a reality-check from Internet World Stats 2017 shows that only 27 percent (circa 346 million people) of Africa's population used the Internet in March 2017 - significantly less than the 54 percent internet penetration figure for the rest of the world. The real picture is of a continent with potentially huge opportunities for carriers, OTTs, Content Delivery Networks and Internet Service Providers (ISPs) and so it is no surprise that wholesale carriers serving Africa are anticipating new customers as these players explore how to maximise new

Challenges to meeting capacity demand in Africa

The African market is fragmented with three dominant countries – South Africa, Egypt and Nigeria – accounting for one third of the continent's mobile Internet subscriber-base. With geography, politics and economics potentially challenging the scaling of infrastructure and implementing new services whilst delivering on performance SLAs, especially in remote locations, the question has been asked: "Is mobile the answer and might Africa become a 'mobile first' continent?". It has certainly been demonstrated that developing countries, which have not followed a traditional infrastructure-building path, can 'leapfrog' earlier technology stages such as landlines or bricks and mortar branch banking and go direct to mobile telephony, Internet broadcasting and mobile money – but, and it's an important caveat, only if they have the bandwidth capacity to do so.

There is unquestionably an increase in capacity demand and it is being driven in part by global OTT players and content providers including Google, Microsoft, Facebook and Netflix. Traditionally, these companies have used other organization's networks to run their own data-intensive applications. However, by locating their content closer to local Africa

markets they can improve the performance of their services and user experience and therefore increase the adoption of their services. In general, players follow a two-pronged network deployment strategy: localizing their content directly into the local markets within Africa when feasible and/or go to gateway locations, such as Marseille. The gateway model is a good one, offering reasonable network latency and a perfect network environment that combines availability and affordability of both network supply to reach all continents and international datacentres to host the content, in a fully-deregulated market.

Keeping it local – the role of the IXP in Pan-African connectivity

The Internet Society explains the role of the IXP thus : "to send a package from London to Paris and to route it via San Francisco would be foolish, unnecessarily expensive and inefficient". Yet this is what is being done every day with Internet traffic between local Internet Service Providers (ISPs), destined for local customers. In Africa, the absence of connectivity between ISPs often results local traffic being routed over expensive international links simply to reach destinations within the country of origin. These links must be paid for in foreign currency so in effect, ISPs are paying international

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'shipping' rates for a local delivery.

The good news is that there is an internationally recognized solution to this inefficiency, which is an Internet Exchange Point, or IXP and there are currently 37 active IXPs located in 34 cities in 28 African countries . As illustrated above, the primary role of an IXP is to avoid expensive international transit costs by keeping local Internet traffic within local infrastructure. The costs associated with traffic exchange between ISPs are reduced, because IXPs allow for the free exchange, or peering, of domestic Internet traffic. Furthermore, IXPs improve the quality of local Internet services by reducing the latency associated with unnecessary traffic routing and they can also serve as a convenient hub for hosting value-added and critical infrastructure within a country. Overall, IXPs are a crucial part of building a sustainable domestic Internet ecosystem/mobile connectivity and their creation is a positive marker of economic and social improvement.

Keeping it local and relevant

From a purely technical point of view, building an IXP is not too difficult. However, building the required level of trust and collaboration between the stakeholders is the challenge and being able to speak the same language is a good starting point. Along with English and Arabic, French is one of the principle languages in Africa with 54.7 percent of the population speaking French compared to 36.4 percent speaking it in Europe . 13 African countries have French as first official language and 16 have it as their "co-official" language . In these countries it should go without saying that it is important, from a commercial, educational and development point of view, that French language content is delivered to French speaking populations. African IXPs operating in countries with a high to medium usage of the French language currently include CASIX in Morocco, SENIX in Senegal, DjIX in Djibouti, BENINIX in Benin, KINIX in the Democratic Republic of Congo, CIVIX in Ivory Coast, TunIXP in Tunisia, BFIX in Burkina Faso, GAB-IX in Gabon, RINIX in Rwanda and MIXP in Mauritius.

Mobile can make a difference, but Internet penetration must grow

Although the Internet in Africa is growing fast there are major disparities: mobile broadband access accounts for more than 90 percent of Internet subscriptions, but the majority of countries have an Internet penetration below ten percent (lower than the 20 percent found to be critical for countries to reap the economic benefits) and users in Africa pay up to 30 or 40 times more for Internet access than their peers in developed countries .

Recognising the importance of IXPs in facilitating Internet-based economic growth, The Internet Society has an ambitious continent-wide programme for interconnection and traffic exchange (ITE) for Africa, with a goal to support 80 percent of local and 20 percent of international Internet traffic by 2020.

Many people and organizations are working to help make this happen as they understand and believe in the value of peering and interconnection in a domestic or at least, gateway, IXP. Out of the 37 African IXPs that are currently active, 21 were established within the past ten years, often with thanks to individuals and organizations who contributed to providing the equipment, training, valuable experience and more.

Achieving sustainable growth in Africa through digital transformation

by Kevin Taylor, President, Asia, Middle East and Africa, BT

Globally, traditional views on technology have evolved over the past several years, thanks in part to its consumerisation. Increasingly, technology delivers on more than just products. Instead the disruptive technology trends today – including cloud computing, mobility and collaboration, and data – focus on offering solutions that span the corporate and consumer spheres. And, digital transformation continues to play a pivotal role in assisting multinationals like ourselves, GE and Maersk, for example, to continue expanding in the region, as well as enabling early adopter local companies to grow internationally. However, adapting to digital transformation still needs to be engrossed higher on the boardroom agenda for all businesses across Africa.

Kevin was appointed as president, BT in AMEA in January 2013. He reports to the CEO, Global Services.

Kevin is responsible for BT's business and operations across the Asia-Pacific, Middle East, Africa, Turkey and Eastern Mediterranean region. In these regions, we serve major brands like Air China, Wipro, Emirates Airline, Etihad Airways, Anglo American and HTC.

Kevin joined us as VP, Global Solutions in December 2003. In that role, he was responsible for the delivery and management of the portfolio of IP infrastructure/WAN, mobility, CRM, conferencing, security, outsourcing and other products, services and solutions we offered customers across the Asia Pacific region.

The wealth of experience Kevin gained through years of building businesses and architecting outsourcing deals has proved invaluable in his current role at BT. Kevin was appointed Managing Director of BT Asia Pacific in May 2009.

Before joining BT, he was regional VP and general manager – Asia Pacific at the Canadian logistics company, Descartes Systems.

Earlier in his career, he worked with Data Sciences Corporation (now part of IBM), CFM (part of ICL) and Capita Group. At each of these companies, securing and managing large outsourcing projects formed a major part of his responsibilities. Kevin also spent six years with global consulting company, James Martin & Co., where he held a variety of positions including president and COO International – Europe and Asia Pacific, global head of sales and head of offshore development.

Based in Hong Kong, Kevin plays an active role in the local community. He is a board member of Hong Kong Rugby Union, Chairman of HKFC Youth Rugby and a voting member of the Hong Kong Jockey Club. Between 2010 and 2012, he was also Chairman of the Hong Kong British Chamber of Commerce. Kevin is also an independent non-executive director of publicly listed company - Transmode, a Swedish technology group and Hyder Consulting, a UK based engineering consulting company.

Africa is a diverse continent with unique market conditions. As home to seven of the world's megacities, and with millions of young people entering the labour force each year, Africa is fertile ground for investment in areas such as infrastructure and manufacturing. However, divergence in Africa's economies also means the region faces additional challenges to embracing the Fourth Industrial Revolution that is dawning on the world economy – including growing youth unemployment, low commodity prices, climate change and a lack of critical infrastructure among others. Added to this, customers and employees are demanding the best value and most responsive service, ecosystems are evolving, and the established rules of business economics and decision making are shifting.

Faced with this myriad of challenges and increasing complexities, many organisations across Africa need to turn their attention to digital and disruptive technologies, to harness the transformative influence and benefits these bring to the business.

Globally, traditional views on technology have evolved over the past several years, thanks in part to its consumerisation. Increasingly, technology delivers on more than just products. Instead the disruptive technology trends today – including cloud computing, mobility and collaboration, and data – focus on offering solutions that span the corporate and consumer spheres. And, digital transformation continues to play a pivotal role in assisting multinationals like ourselves, GE and Maersk, for example, to continue expanding in the region, as well as enabling early adopter local companies to grow internationally. However, adapting to digital transformation still needs to be engrossed higher on the boardroom agenda for all businesses across Africa.

To put this into perspective; our CIO report 2016 – the digital CIO highlighted that organisations the world over either have already or plan to adopt a 'multi-speed' approach to technology-led initiatives. Currently, however, this sentiment is not as pervasively mirrored across Africa. Instead disruptive technology trends are all contributing towards new eco-systems that are putting pressure on IT departments and businesses who may still be very traditionally-minded. What these businesses need to realise is that adapting to technology-led initiatives creates access to a new era of digital, bringing with it incredible opportunities for innovation and new ways of doing business. From creating new possibilities and opportunities, to improving customer experiences, driving improved operational efficiencies and tra-

nsforming costs, or indeed creating whole new business models. Such elements are critical to success in tougher economic times, or volatile markets, to avoid being 'left behind'. Digital transformation is certainly empowering people – customers, businesses and employees, alike – to do amazing things. We call this the Digital Possible.

Becoming a digital business
While phrases like the sharing economy, digitalisation, and collaboration may make adapting to a digital-led approach daunting; it doesn't have to be. Achieving sustainable growth means increasing business agility and innovation to keep pace with emerging technologies and trends.

It is true that with the immense opportunities that digital technology opens up, also comes increased layers of complexity and choices; that no industry is immune to. However, a digital-led approach essentially means putting digital transformation at the core of the business. It's advisable to conduct an audit-like assessment of all the business' activities to better understand the aspects and elements of the business that best stand to benefit from the use of digital technology.

For example, digital explosions in the mining industry. By letting software control the explosion instead of doing it manually, chemical and mining companies are getting the best possible yield out of the explosion. In times of low commodity prices, this is helping them stay competitive, as well as improving the safety of miners.

On the other hand, embracing a complete digital transformation enables to business to reinvent its processes and systems, in some cases even create new products/services to grow its market offering – which involves more creativity, flexibility and a more dynamic operating model.

Furthermore, according to the World Bank, 34% of adults across sub-Saharan Africa have a bank account - where financial empowerment can make a real difference to their lives. In recognition of this, in recent years we have seen a flurry of start-ups and banks operating in Africa adapting digital approaches to bring sophisticated fintech solutions to the continent. With internet connectivity, mobile and cloud computing, providers are now able to offer banking and other financial services to consumers across divergent and dispersed regions, who previously would have been excluded from formal financial markets.

A keen example of this is WIZZIT International, who embraced cloud technology to extend the reach of its mobile banking platform. WIZZIT enables real time person-to-person payments and transfers, supported by cards that let consumers access ATMs and point of sale terminals.

The company has extended their global reach using a cloud-based platform to accelerate deployment and reduce the cost of the service to reach a broader market. Established in South Africa in 2005, WIZZIT now provides services through partner banks to over six million customers in 11 countries across three continents.

The digital businesses of the future

With many people in Africa paying ten times as much of their salary for broadband as most of those living in the rest of the world, providing internet access for all is also key to building a sustainable future.

Whether it's access to free WiFi on Coca-Cola machines to give entrepreneurs and small business owners in the community the opportunity to manage some of their business aspects online, or providing free broadband connectivity in village communities through Connecting Africa.

From providing skills, training and access to education, these schemes also open up opportunities for small businesses to begin to grow.

Trust in a digital world

In a digital economy, trust attracts customers. However, digital risk and digital opportunity are two sides of the same coin. So, while a digital business offers lots of opportunity, it also opens up even more security risks, through everything from greater collaboration to the greater use of data. Where digital security can no longer be viewed as a technical issue, alone. It has to become an integral part of doing business in our networked world and needs to be part of a wider strategic planning process.

We know the world is changing - and fast! Every day, the world is discovering more incredible things that can be done with technology. The digital world is not only making fundamental changes to how we live - but it is also having a profound impact on how we conduct business – and rightly so. And this digital future will be the future of technology in Africa.

In Africa in particular, the incredible potential of digital to help not just businesses, but also communities, become sustainable for the future, is something that simply has to be embraced!

Connecting Africa: Satellite Connectivity leads the way

by Clementine Fournier, Regional Vice President, Africa, BICS

Satellite has emerged as the preferred backup solution for Africa, as its capacity solutions provide reliable back-up to operators who may be concerned about issues such as disaster recovery and the stability of current backhaul infrastructure. With the boom in data, IP over Satellite (IPoSat) in particular can be quickly deployed to cover any problems with existing backhaul solutions, whilst offering high speeds to support the end-user, whether it is a business or someone trying to get medical advice. The flexibility and reliability of satellite solutions mean that even when primary infrastructure is compromised or facing outages, the solution can prioritise high value traffic, increasing bandwidth efficiency by blocking less critical and high bandwidth services like online gaming and video streaming.

Clementine Fournier, has been the Regional Vice President, Africa at BICS since 2011. As such, she is responsible for managing the Africa Sales Team and dealing with 45 Sub Saharan African countries, with a focus on international voice and roaming services. Clementine has been instrumental in strengthening BICS role as leading provider for international wholesale services in the Africa region.

Prior to holding this position, Clementine oversaw France, the UK and Scandinavia as the International Account Manager at BICS for five years. Clementine has studied in France, the US and England and has garnered several qualifications, most notably her MA in Management in Telecommunications from Université Paris Dauphine.

There has been a rapid uptake of smartphones in Africa in recent years. An increase of data usage has led to an exponential demand for high quality voice services and data provision across the continent's market. We're even seeing operators leaping directly from 2G to 4G in certain areas, bypassing the 3G step completely. With a market that is as large as the African one, made up of countless local, macro, and micro trends, service providers need to address specific markets within markets. As such, fully continent-wide connectivity has never been as important as it is now.

However, there is an issue hampering the efforts of many operators, particularly those who need full connectivity across the country. A lack of infrastructure is severely limiting growth and therefore full service provision to end-users; end-users who are hungry for mobile connectivity. Whilst the continent is becoming more and more connected on the outer borders due to an increasing number of submarine cables, there are more restrictions than just infrastructure in providing connectivity to inner land-locked countries on the continent. Geographic limitations, such as severe weather patterns, and social problems such as human intervention have resulted in fibre or submarine cabling failing in some areas. Because of this, the most important step to driving a fully formed communications market in Africa has been to install a cost-effective back-up solution to enable the continuous connectivity necessary to support further growth.

Things to consider

Whilst 3G has now launched in all countries across Africa, 4G/LTE is also picking up steam. New entrants are gaining 4G licences and are taking advantage of them by becoming Internet Service Providers. They are offering high speed internet connectivity to compensate for the lack of xSDL lines within the continent. Whilst there may be a lack of fixed line connectivity, wireless and data could be the answer to the question of how to further develop business, commerce, and the economy at large.

What does this mean for businesses and communities? Simply put, it means the ability to connect with a wider market is now within grasp, demonstrating that connectivity in our new digital world is more important to development than ever before. Africa is one example of this, and there are undoubtedly many more. One aspect of the African market that also cannot be forgotten is the multi-SIM nature of the marketplace. Roaming capability must not be forgotten. Increased numbers of transit routes and also the pure availability of low latency services for voice and data roaming traffic must also be considered. Multi operator agreements are the norm, and should be treated as such.

Basic services that we take for granted, such as banking or telemedicine are also delivered via smartphone on the continent. Whilst to us we may have these services at our fingertips on our phones, we also have them on computers and on the high street. As a whole, our Average Revenue Per User (ARPU) is much higher in more developed economies leading to computer ownership. Alongside this, our infrastructure has meant that buildings are far more ubiquitous and better connected. For many in Africa, basic smartphone connectivity is a lifeline to services that are greatly important. In a market where a phone is so much more than just a commodity, connectivity takes on far greater meaning than we could hope to imagine.

Satellite: the answer

Satellite has emerged as the preferred backup solution for Africa, as its capacity solutions provide reliable back-up to operators who may be concerned about issues such as disaster recovery and the stability of current backhaul infrastructure. With the boom in data, IP over Satellite (IPoSat) in particular can be quickly deplo-

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yed to cover any problems with existing backhaul solutions, whilst offering high speeds to support the end-user, whether it is a business or someone trying to get medical advice.

The flexibility and reliability of satellite solutions mean that even when primary infrastructure is compromised or facing outages, the solution can prioritise high value traffic, increasing bandwidth efficiency by blocking less critical and high bandwidth services like online gaming and video streaming.

From an operator perspective, 'high value' incorporates voice related traffic, as this is still a high source of revenue for operators across the continent. As with other regions, and as mentioned previously, the adoption of smartphones is rising and has encouraged consumers and businesses to use alternative apps to access similar voice services. This has resulted in some regulators blocking certain communications applications, whilst in other countries it has been left to the operators to face this challenge. It remains however, in both the operator's and the carrier's best interests to protect such high value traffic, such as voice, due to it being a lucrative source of income.

Satellite will also mean a greater experience when it comes to roaming. Smartphone penetration across Africa hasn't just led to increased competition for traditional communications services. It has also led to an increase in domestic data usage. In fact, Africa is following a similar trajectory to other regions such as Europe, and this also correlates to an increase in roaming usage. In some of Africa's more developed markets we are already seeing this, specifically where operators are focused on providing enterprise and higher-tier customers with high-speed data connectivity and international roaming services, both in neighbouring countries, and to other business destinations globally. Satellite will enable a secure and reliable backup to those who are reliant on connectivity for business needs, meaning seamless continuity, less loss of revenue, and better communications capabilities for a market that only looks to grow in the coming years.

Development through connectivity

Continuous development is driving the African telecoms market forward and moving it from strength to strength. Firstly, legacy services are being enforced by satellite back-up in challenging areas, and then next-generation services are being introduced to encourage high value customer acquisition and retention. The ability to provide customers with low latency services for voice and data roaming traffic both within Africa and abroad has become key to guaranteeing consistently high quality customer experience.

Africa has great potential to build on the impressive growth it has already seen, with their data-hungry subscribers, and an appetite from operators to launch new revenue streams to take advantage of customer demands. With a secure solution for back-up in the case of service outage due to infrastructure failure, great things can be expected across the African and Middle Eastern regions in the future.

Connecting the unconnected: Satellite has the Solution #Banking #WiFiHotspots #HTS

by Jo De Loor, Market Director, HTS and Enterprise, Newtec

Finding an access solution that can provide mass satellite connectivity for remote and sparsely populated areas is a major concern for network operators, but the cost of equipment – not to mention the logistical costs, national duties and taxes – puts traditional VSAT solutions out of reach for many. Similarly, mobile broadband connections provided over a terrestrial backhauled 3G/4G networks can offer Internet access, but can come at a prohibitive cost to reach these areas. Mobile operators also deploy remote 3G/4G cells combined with satellite backhaul, but will only do so in places where they expect demand and revenues will return sufficient profits to overcome the initial investment.

Jo De Loor, Market Director for HTS and Enterprise at Newtec.

Currently Jo holds the position of Market Director for HTS and Enterprise at Newtec. Next to developing the HTS and enterprise markets and assisting to large project sales, he shares his expertise in broadband and VSAT within the Newtec organization.

In his previous role as Product Manager, he was responsible for the product definition and market launch of Newtec Dialog, Newtec's scalable, flexible and bandwidth efficient multiservice platform. It gives operators the power to offer a variety of services on a single platform while assuring the most optimal modulation and bandwidth allocation.

Jo has almost 20 years of experience in the industry. He began his career at Newtec in 1996 with different assignments within the Newtec organization. In 2005 he became systems architect for Newtec's DVB-RCS system and further evolved to product manager and later Product Line Director of the Sat3Play Broadband Platform. Jo holds a bachelor degree in electronics from HTISA-Gent, Belgium.

In a world where Internet access is coming to be regarded as an essential utility, not having access to broadband connectivity can restrict development and severely affect quality of life. Many industries are experiencing a digital revolution, with enterprises now having the potential to do business on a global scale with the click of a mouse or a tap on a screen. However, large parts of the globe can find themselves cut off from these developments due to a lack of connectivity, stifling their potential for growth.

An ongoing lack of terrestrial infrastructure is one of the main reasons for this and creates an opportunity for satellite to become the connectivity solution that brings these areas into the digital fold. Because of this demand, High Throughput Satellite (HTS) technology is becoming increasingly relevant for markets such as Africa, where more than half of the continent's 1.2 billion population has little-to-no broadband Internet access.

The next generation of satellites

When combined with the right technology in the ground segment, HTS can provide significantly upgraded satellite capacity, unlocking the potential for many of the applications that are driving the growth of the digital economy. While HTS technology isn't the only satellite solution to meet the needs of this type of market, it is already delivering change. In Sub-Saharan Africa, for example, the Every Child Online (ECO) project – a partnership between the European Space Agency and Avanti which uses the Newtec Dialog platform as its ground segment technology – is using HTS technology to provide affordable and reliable satellite broadband connectivity to 1,400 schools and community sites across the region.

Having access to this kind of connectivity is a game-changer for all, enabling users to keep pace with technological developments and access next-generation services such as online education and e-banking.

The key to all of this is having the right access solution for the market in question. 400 million people in Africa lack even the most basic levels of connectivity, but while these numbers are daunting, they illustrate a great potential for growth and a great opportunity if suitable access solutions can be found.

Unlocking potential: the right access technology

Finding an access solution that can provide mass satellite connectivity for remote and sparsely populated areas is a major concern for network operators, but the cost of equipment – not to mention the logistical costs, national duties and taxes – puts traditional VSAT solutions out of reach for many. Similarly, mobile broadband connections provided over a terrestrial backhauled 3G/4G networks can offer Internet access, but can come at a prohibitive cost to reach these areas. Mobile operators also deploy remote 3G/4G cells combined with satellite backhaul, but will only do so in places where they expect demand and revenues will return sufficient profits to overcome the initial investment.

In this situation, what is required is a combination of the overarching connectivity that satellite can provide with the affordability, ease of installation and reliability that is craved by operators, service providers and end-users alike.

One solution is to create Wi-Fi hotspots that are reliable, easy to install and – above all – the services provided via them affordable to the local people. Although the satellite Wi-Fi Hotspot solution is slightly more expensive from an initial investment perspective, the fact that the investment is generating revenues from a large number of end-users means the total cost of ownership per user represents just a fraction of the cost when compared to a traditional-single user VSAT terminal.

This type of solution can also give rise to enterprise opportunities for local businesses. One low entry-barrier business model would be to provide Internet access on an access voucher basis, where hotspot owners such as private shop owners invest in a satellite Wi-Fi hotspot terminal and sell voucher-based access to consumers. After the initial low investment, they do not have any recurring costs, but receive commission from the network operator on the revenues generated from access vouchers sold. Another model could see rural shops or service stations provide Internet access as a service to their customers within their normal local spending. This is attractive for businesses as there is an additional provided service element, a method that has already proved effective in rural areas where shops provide electricity-as-a-service to those who don't have it in their own homes.

With figures from IDC suggesting that there are now more than 200 million mobile devices in Africa with the ability to connect to the Internet through Wi-Fi, the potential for these solutions is massive. Those in rural areas would be able to use both cellular networks – backhauled over satellite – and Wi-Fi Hotspot services to achieve this connectivity in a setting that is accessible to the wider community.

Banking for all

An area where this kind of connectivity could make a real difference is in helping the unbanked. There are still large parts of the world population that don't have access to a bank account, with the 2014 World Bank Global Findex putting that figure for African adults at only 34%. However, internet connectivity has the potential to vastly expand financial inclusion, and by using smartphones as a tool to reach the unbanked, mobile payments and banking apps can increase penetration of banking services.

However, it isn't just the end-use that benefits from this connectivity, with these developments enabling financial institutions in these areas to think outside the box. As a result, the industry is stepping away from the traditional model of investments in ATM infrastructure and focusing more on combining them with solutions to deliver connectivity to these areas by making use of the Wi-Fi Hotspot technology. Not only is this investment significantly more future-proof, modern satellite technology can serve public and private applications securely and cost-effectively using a single satellite link, fully isolating the corporate and payment traffic from the Wi-Fi Hotspot traffic to ensure of the corporate data and payment transactions.

With financial institutions now depending on solutions that provide always-on, reliable connectivity to meet the client's needs, ensure customer satisfaction and optimize operational cost, satellite connectivity forms an essential building block in completing the corporate connectivity mix to enable reliable services in remote locations.

Bridge the divide

As the number of end-user devices requiring Internet connectivity increases, suitable and economical technology solutions need to be found to bridge the digital divide and ensure that the benefits of the next generation of technologies is felt by all.

When combined with the right access solution to deliver connectivity to the end user, satellite technology can be the bridge that enables people and enterprises in underserved areas to fulfil their development potential and enable growth in the region as a whole.

Satellite innovations make connecting the unconnected easier in Africa

by Brian Jakins, Managing Director, Africa Sales, Intelsat

With recent technological advances, including the first high throughput satellites (HTS) serving Africa, the satellite sector has significantly increased the throughput delivered. Working with our in-region partners, and are poised to meet the growing demand for broadband connectivity – anytime and anywhere.

Brian Jakins leads Intelsat's sales activities in Africa, overseeing a sales team with offices in Sandton, South Africa, and Dakar, Senegal. Mr. Jakins supports the growth of Intelsat's broadband, mobility and media customers in the region and is also responsible for the design and implementation of the company's sales strategy and business development across the continent.

Mr. Jakins has more than two decades of experience in the technology sector, including services to enterprises and mobile operators. Prior to joining Intelsat, he served as the Vice President of Sales and Services Africa at Aviat Networks, a leading global provider of microwave networking solutions. Before that, Mr. Jakins held senior sales management positions of increasing responsibility at companies such as Alcatel-Lucent, Siemens Telecommunications and Wireless Data Services South Africa.

Mr. Jakins holds a Master of Business Administration degree and a post-graduate diploma in Business Administration from Heriot-Watt University, Edinburgh, U.K.

I recently travelled to an East African country where due to various safety and regulatory concerns, the internet (or access to it) was temporarily suspended over several days – by which I mean, no data, no email and no internet. I felt very isolated and anxious to reconnect. This situation reminded me of when GSM was first introduced in Africa. Though only cellular calls and SMS was available, it felt so empowering, just like having access to data and the internet is today. It's hard to imagine a world without this access and empowerment that satellite provides today.

The expansion of broadband connectivity continues to have a broad impact on economic growth for million around the world. Studies have shown that a ten percent increase in telecommunications infrastructure generates a 2.8 percent increase in GDP. Businesses are using it to expand their operations and introduce new products and services. Mobile Network Operators (MNOs) are taking advantage of fast, reliable broadband connectivity to improve the performance of their networks and satisfy the needs of end users. But while it may seem like everyone has broadband connectivity available 24 hours a day, seven days a week, this is far from reality. There are still an estimated four billion persons around the globe who remain unconnected or are limited by an unreliable or non-existent infrastructure, and according to the International Telecommunications Union (ITU), the majority of the unconnected are located in Africa and Asia Pacific.

Countries throughout Africa are working to solve this problem by expanding their telecoms infrastructure. This will benefit a variety of business segments, such as energy, banking, mining, and government networks, as well as individuals who will have the access needed to fully participate in the growing economy. But even with focused, government-funded expansion efforts, there are still tremendous gaps in coverage and large parts of the population that still need to be connected.

For example, the government of Angola has included the expansion of mobile networks in rural regions as a top priority in its ICT agenda. Thousands of kilometers of fiber have been installed in the last five years, but in a country of 20 million people, the internet penetration rate remains just 13 percent in 2016, according to the International Telecommunications Union (ITU). The situation in Angola mirrors what we see in many countries: there is a massive effort to expand connectivity, but focusing on terrestrial technology has produced limited results.

As the largest provider of commercial satellite services in Africa, with five decades of experience connecting business and people, we believe satellite is an essential element of the technology solutions that will allow reliable, efficient and cost-effective connectivity for communities and businesses without broadband. With its inherent advantages in providing services to regions where geography or population density makes it challenging for other technologies, satellite is uniquely positioned to help countries throughout Africa meet their broadband goals.

Yes, I've just admitted that the technologies to connect the unconnected have, in many respects, been available for some time. It is the economic model that is wanting in many cases. To meet the growing needs of users and help make Africa a full partner in the global internet economy, innovators will combine the most cost-efficient technologies with a new business approach. And that evolution is already underway in the satellite sector. With recent technological advances, including the first high throughput satellites (HTS) serving Africa, the satellite sector has significantly increased the throughput delivered. Working with our in-region partners, and are poised to meet the growing demand for broadband connectivity – anytime and anywhere. This new breed of satellites is more capable, delivering more data volume with the same bandwidth, blanketing the continent such that all citizens could have access. We are combining this with new access technologies such as solar-powered ground hardware and introducing new managed services that will make it easier for service providers and MNOs in Africa to access this advanced connectivity. All of this brings us closer to bridging the digital divide in Africa and bringing the full benefits of global economic growth to the people of Africa.

A project that Intelsat completed with Vodacom illustrates the challenge of connecting rural African communities and

how satellite is the best answer to connect the unconnected. Vodacom, based in South Africa, was licensed to provide service in the Democratic Republic of the Congo, a nation of 81 million where widespread rural villages dotted throughout rugged mountain terrain made a terrestrial network cost prohibitive. A lack of paved roads and power grids also made access difficult for building and maintaining large base stations that could provide rural coverage.

Vodacom decided that the best means of rapid deployment of a network was building small, solar powered terminals connected by satellite. Vodacom partnered with Intelsat to design, manage and install a network of 800 rural sites connected by satellite. By using small, portable solar powered base stations and antennas, Vodacom minimized its capital expenditures and dramatically reduced the site work required to build out the network. More importantly, the effort led to Congolese who had never had a communication device--or even electricity--suddenly having mobile phone service.

Other service providers and MNOs in Africa also are embracing the use of satellite, including HTS, to expand networks into areas where there are simply no other cost-efficient options:

• Dalkom Somalia, a privately owned operator, will incorporate Ku-band satellite services to extend services that it currently delivers via a fiber network. This includes expanding broadband enterprise networks into countries such as South Sudan and Democratic Republic of the Congo.

• Pan-African telecoms group Liquid Telecom, a subsidiary of Econet Global, will integrate HTS services into its network, delivering more bandwidth with greater efficiency to meet the growing needs of businesses across Africa. The satellite services, paired with more capable VSAT equipment, will expand Liquid Telecom's coverage and network capabilities across the Democratic Republic of Congo, Kenya, Malawi, South Africa, Tanzania, Uganda, Zambia and Zimbabwe, where demand has grown for VSAT technology to deliver connectivity to underserved remote or rural areas.

While delivering connectivity to rural areas is a strength of satellite, this new HTS technology is also dispelling the point of view of some terrestrial players that satellite can only serve at the edge of the network or is for use solely in remote regions of the world.

• eProcess International SA, an affiliate of pan-African banking conglomerate Ecobank Group, will expand its corporate banking network, extending services across even more of Africa, using HTS connectivity. eProcess International connects head offices and affiliates across 27 countries in Africa, enabling banking transactions and corporate data exchanges through its network. Given the growth in commerce across the African continent, eProcess sought to enhance its network to address increasing transaction volumes for its customers. The HTS solution complements the existing eProcess network, which is based on wide beam C-band connectivity.

• Quantis Global, one of the leading broadband service providers in Europe and Northern Africa, signed an agreement to enhance and expand its network using HTS services integrated with teleports and a fiber network that will include managed services to deliver a high-quality, global, enterprise-grade, wholesale Mbps service. The network will serve NGOs, enterprise, embassies, the oil & gas sector, and maritime customers in Europe, the Middle East and Africa.

And as HTS delivers major performance breakthroughs in an open, scalable, all digital platform, a key industry analyst sees satellite being regarded as "a key enabler for broadband networks," with increased roles in providing network resiliency, traffic offload and network densification.

But even with these advancements, no single technology or company can reach all possible geographies or meet the needs of these many vertical sectors. Satisfying this demand requires hybrid communications solutions combining wireline, wireless networks and satellite. Satellite operators are embracing their role as an integral part of the hybrid networks of today and in the future. This integration of satellite and terrestrial solutions is the only way to bring more value to customers who seek seamless solutions, new business models and increased technical support to serve traditional sectors such as wireless and enterprise networking as well as in fast-growing mobility, Internet of Things (IoT) and machine-to-machine (M2M) sectors.

We are the leader in global HTS experience, and our efforts and investments in technology and services already are bringing the benefits of expanded broadband connectivity to our customers and their end users. Over time, we will continue to add to our technology, with advancements such as software-definable payloads and our interoperable LEO/-GEO services, and continue to expand service models. As we are successful in marrying innovation in technology with innovation in service offerings, we will unlock access to larger and faster growing applications. By following this roadmap to the future, satellite will help achieve the vision of a truly connected world – where broadband connectivity is accessible anywhere, anytime and to any device across Africa.

Connecting the unconnected: Revolutionising entertainment for the forgotten masses

by Andre de Wet, Regional Head, iflix Africa

In Nigeria alone, it's estimated that roughly one million pirated DVD's are purchased daily. Piracy has become so prevalent in fact, that it is cannibalising the local film industry (Nollywood). It is estimated that the Nigerian film industry currently loses approximately $2 billion dollars each year to piracy. Nigeria has desperately tried to tackle this looming issue and has passed a suite of legislation in an effort to curtail piracy, but unfortunately it remains a thriving business partly due to poor enforcement of copyright laws and the overwhelming failure to punish the offenders. The number of 'criminals' is growing rapidly. Each week new salesmen emerge to fill the sales-man gap.
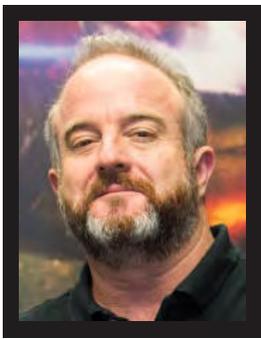
Andre de Wet is the Regional Head, of iflix Africa.

Andre de Wet is an experienced mobile commerce and digital executive focusing on emerging markets. Mr. de Wet went from med school drop-out to winning best international mobile app of the year and MTN Business app of the year. Andre sold his first company at 27 and created the first commercial MMS enterprise. Prior to heading iflix Africa, Andre de Wet was CEO of Price Check, one of Africa's leading e-commerce sites.

Mr. de Wet holds a Master of Science (MSc) in Global Management from The University of Salford.

Over the next 15 years, we will see more than three billion people globally entering the middle class. Collectively they will purchase 1 billion new smartphones. The bulk of these will come from emerging markets. Smartphone penetration and video consumption are growing at breakneck speed. As the fastest-growing mobile market on earth, Africa is without question one of the world's most dynamic regions with an astronomical growth in population. It's estimated that by 2020, Africa will have 720 million smartphone users. We aim to meet the entertainment needs of those growingly connected viewers.

In Africa, vast infrastructure inconsistencies, device constraints and limited payment options, have effectively limited access to high quality entertainment content to those who can afford to pay premium prices. Some large global VoD players, catering to that affluent top 5% consumer group, are under the mistaken belief that they have monopolised the market, when in actual fact, they are neglecting the majority of the region's population. For example, African incumbent DStv (Multichoice) charges +-$90/month for a premium subscription. This price point puts access to great content far out of reach of the average African citizen. As such, this enormous overlooked consumer segment has until now had little alternatives than piracy to fulfil their entertainment demands.

In Nigeria alone, it's estimated that roughly one million pirated DVD's are purchased daily. Piracy has become so prevalent in fact, that it is cannibalising the local film industry (Nollywood). It is estimated that the Nigerian film industry currently loses approximately US$2 billion dollars each year to piracy. Nigeria has desperately tried to tackle this looming issue and has passed a suite of legislation in an effort to curtail piracy, but unfortunately it remains a thriving business partly due to poor enforcement of copyright laws and the overwhelming failure to punish the offenders. The number of 'criminals' is growing rapidly. Each week new salesmen emerge to fill the sales-man gap.

Piracy is not an ethical question in most emerging markets. It is very much a matter of convenience and accessibility. People don't actively want to steal – they just want to watch the latest television shows and movies. So, for us, the question was obvious. 'What if we could provide a legal service that was better than piracy?' Instead of purchasing a single movie, what if people could get unlimited access to thousands of hours of the world's best content, with hundreds of first run exclusive titles, current hit and iconic award winning TV series, blockbuster movies, popular local and regional content, children's programs, and more…- for the same price as a pirated DVD?

When it came to pricing, instead of asking how much people would pay for this service, we chose instead to calculate what was the lowest we could feasibly charge and still build a viable business. Coming to emerging markets with this proposition and mentality, we realized we can offer an extraordinary product at extraordinary value.

It is with this revolutionary idea that iflix was born.

iflix aims to be a contributing, supportive partner in the entertainment industry and ecosystem. To offer our members the broadest and most comprehensive selection of content available, we acquire shows and movies from leading content creators from all over the world, from top Hollywood studios to local producers and distributors.

Founded in a partnership between disruptive entrepreneurs with expertise in emerging markets and Hollywood entertainment heavyweights, iflix has a single ambition, to change the way we consume entertainment.

iflix was built on the principle of turning challenges into opportunities. In this

instance, creating a service that was culturally faithful and responsible in each market of operation, whilst solving infrastructure, payment and distribution challenges with the view of democratising entertainment for everyone.

Around the world, there is a band of countries that have a number of things in common: paid television penetration is low and internet connectivity is leapfrogging ahead in some instances going from no connection at all, straight to 4G. Myanmar for example, has gone from 3 million mobile users in 2014 to 45 million this year, and almost all are using 3G or 4G. Unlike markets such as India, there is no incumbent base of old technology that needs to be upgraded here—everyone can and does immediately move to the latest technology available. Our footprint is a global set of markets which all meet these criteria, including Iran, Egypt, Morocco, Nigeria, Kenya, and Ghana. These countries are culturally diverse, but they all share similar levels of infrastructure development and market dynamics. The first phone that many people in these markets have access to is a smartphone, which additionally has the capabilities of a supercomputer, and is used as a remote control for in their daily lives. The world has moved to a stage where people watch what they want, when they want and in emerging markets, people watch it in the palm of their hands—that is where we position iflix.

Initially we set out to understand the unique challenges faced by both prospective and incumbent OTT players in each market. One of the key issues we faced in going to market was inconsistency of infrastructure. How can we reach people with little or no access to consistent, reliable internet? Unlike in developed markets, many people do not have personal access to internet, given the cost of mobile data, with many relying on public wifi. To further address internet connectivity issues, we additionally offer users the ability to download and watch offline.

Another key issue we addressed when creating our service was the need to optimise the mobile experience. The majority of users in our markets utilise connected mobile devices. Every TV show and movie can be downloaded in three file size options: low (250kb/s) medium (500kb/s) and high (1mb/s).

We additionally utilise adaptive bitrate technology and advanced compression technology to ensure the user has an exceptional experience regardless of whether they have a high-quality or low-quality connection. Our video stream automatically adapts image resolution in accordance with the strength of the connection to allow a seamless viewing experience without buffering.

Expensive data costs are another significant factor to consider when launching an emerging market focused SVoD service created to cater to the mass population. Compared to western countries, the price of data in Africa is prohibitively expensive. We have established deep strategic partnerships with leading mobile operators in nearly every territory we have entered to mitigate the data costs for consumers who are data sensitive. Through these collaborations, we are able to offer consumers subsidised subscriptions, and enable users to enjoy our service through data bundles and off-peak complimentary access. The telecommunications landscape is going through an enormous shift with providers across the board prioritizing data and entertainment services to enrich their customer offering. It has become increasingly important to build this emotional connection between the brand and the client beyond just selling them sim cards.

There is something incredibly exciting about operating in emerging regions such as Africa, where innovation can leapfrog traditional development. Within the next two years we aim to reach the next billion people worldwide with a smartphone and provide them access to a legal, world-class entertainment service. Our challenge will be to educate people about the benefits and advantages of Internet TV in regions where piracy is the norm. This is a collective effort by us, our studio partners, telecommunications companies, and governments. Whilst, acquiring one billion users may seem farfetched, in a world where more people own a mobile phone than a toothbrush, it is an ambition that we believe will come to fruition.

The extended internet: Creating connections without the internet in Africa

by Fabien Delanaud, General Manager, Myriad Connect

Unstructured Supplementary Services Data or as it's more commonly known USSD, is a Global System for Mobile (GSM) communication technology that is used to transfer data between mobile devices and a network in a safe, secure and temporary manner. It has the potential to revolutionise communications, commerce and mobile in developing markets, reaching subscribers that don't have access to the internet.

USSD is set to provide an extension to the internet by providing enterprises and mobile network operators with access to all of their users. Although this technology has been in use for nearly 20 years, with modern technology through a platform-as-a-service offering, USSD has the potential to transform communications.

Fabien Delanaud is general manager of Myriad Connect, responsible for the overall direction of Myriad's mobile business unit. Fabien has 20 years of experience supporting tier one mobile operators worldwide.
Fabien started his career at British Telecom, and has led operations at a number of telecommunications companies in Europe and North America.
Fabien Delanaud has a degree in Signal Processing and Telecoms.

3.9 billion people globally do not have access to the internet, according to recent research from the United Nations telecommunications agency, International Telecommunication Union (ITU). The report reveals that 75% of Africans are offline, compared to only 50% globally; a startling figure given the explosive growth of mobile across the continent. The challenge for Africa, and for South Africa in particular, is lack of access to data and, or internet-enabled smartphones.

However, technology already extensively used throughout Africa today, could be the answer to helping drive digital transformation in Africa. Unstructured Supplementary Services Data or as it's more commonly known USSD, is a Global System for Mobile (GSM) communication technology that is used to transfer data between mobile devices and a network in a safe, secure and temporary manner. It has the potential to revolutionise communications, commerce and mobile in developing markets, reaching subscribers that don't have access to the internet.

USSD is set to provide an extension to the internet by providing enterprises and mobile network operators with access to all of their users. Although this technolo-gy has been in use for nearly 20 years, with modern technology through a platform-as-a-service offering, USSD has the potential to transform communications.

Most mobile network providers in Africa, for example Vodacom and MTN, use USSD in some form. According to a study conducted by Pew Research only 37% of people aged over 18 in South Africa own a smartphone, which means that for organisations to reach a mass audience, the use of USSD alongside SMS will continue to go from strength to strength.

The core benefit of USSD is that it doesn't rely on data to operate. The technology's limited data connection creates the possibility of an 'extended internet' that can reach the billions of people in areas where network coverage is at its most basic, and 3G and 4G is non-existent. Mostly used in the developing world, where there is limited telecom infrastructure, USSD is already improving engagement by enabling enterprise access to end users through a reliable cost effective means - being out of credit or without internet access needs to no longer limit engagement.

With continued enterprise use, I'm expecting USSD to become even more commonplace in the enterprise, particu-larly in cases requiring simple, highly secure peer-to-peer connections. USSD is also free for a client and rather inexpensive for businesses to set up and run, making the technology a simple and cost effective way of communicating with customers.

A key benefit for the enterprise is security. The technology creates a safe and instant way to verify customer details and allow access to their accounts. Unlike SMS and mobile apps, USSD notifications and menus are not stored on the device, making it safer for transmitting passwords or other sensitive information.

USSD presents a viable and secure alternative to SMS and the internet, particularly for connecting to financial services. SMS has been proven insecure for authentication by a number of cybersecurity experts, including NSS Labs who claim it has been "thoroughly compromised". In addition, those connecting to services over the internet via wifi could also be exposed. According to Kaspersky, approximately 24.7% of open access wifi networks in the world do not use any encryption at all. This means that any individual located near an access point can easily intercept and store all user traffic and then browse it for data they are interested in. USSD connections cannot be compromised in this way as they maintain a secure direct link from GSM

network server to the device, preventing interception.

Some large enterprises have already explored how USSD can be leveraged to improve connectivity. In some areas for example, users can access Facebook over USSD. By providing a secure means to login, USSD users can view snippets of their newsfeed, update their status, post comments and send messages. The simple connection provides a means for data to be transferred from Facebook to mobile devices in areas without internet connections or to devices that don't have internet capabilities - extending the internet. There are also services available to do the same with Wikipedia and other popular websites.

This same functionality has the potential to transform the way businesses engage with remote workforces. According to data from The Economist, 62% of employees said that easy access to company info on the move makes them more productive and hence improves job satisfaction. Particularly in Africa, where distances between business hubs are big, being able to keep in regular contact with remote workers could bring significant value. In Europe, remote workers keep in touch via apps that run over 4G, communicating their status and location regularly. However, because it is effectively made up of relatively simple functions - location and status data, this information could in-fact be communicated through USSD. Even in areas where 3G and 4G are available - USSD presents a much more cost effective solution - enabling widescale transformation of workforces.

USSD's simplicity and low cost in fact helps both customers and organisations equally. Firstly it provides a cheap platform for keeping customers and workers informed, and secondly customers can benefit from a simple, quick and free communication channel directly to an organisation. The technology works on virtually all mobile devices, from the brand new smart phones to the older feature phones. USSD does not discriminate, as the interactive menu system utilised by the technology is not built into the mobile devices or sims themselves. Menus can be updated via a platform-as-a-service web server and will operate on any device - smartphone or feature phone.

As a result, I'm expecting USSD to transform engagement across markets in Africa - emerging (or re-emerging) as the extension to the internet that the developing world needs to improve connectivity. Enterprises who can leverage the technology through platform-as-a-service offerings will be able to dramatically improve engagement and the way in which they communicate with customers without access to smartphone connectivity.

Looking back and moving forward: Private wireless networks in Africa

by Chris Mason, VP, Business Development, EMEA, Rajant Corporation

With ongoing communication and development work to implement the latest networking infrastructures in multiple countries in Africa, more and more markets are successfully deploying and reaping the benefits of kinetic mesh networks – providing fully mobile wireless broadband connectivity that is easier to deploy, adaptable and with no single point of failure.

Chris Mason joined Rajant in June with responsibility for sales in Europe, Middle East and Africa. Working with distributors, resellers and end-users, Chris will seek to achieve further penetration of Rajant's Kinetic Mesh technology into these key geographies.

With over 30 years ICT sales experience, Chris has worked for both small companies and in some of the largest global organisations finding IT solutions to business challenges. Over 16 years of this time was spent with British Telecom plc in a variety of sales, business development and management roles, across geographies and industry sectors. Radio solution have been an integral part of Chris' background, given his involvement with the UK's TETRA network for the Emergency Services and the UK Ministry of Defence. Prior to working for BT, Chris was responsible for worldwide 3rd party distribution for a leading Business Information organisation and has held various senior positions in the IT Industry, including some years working for Burroughs /Unisys.

Chris holds a BA (Hons) in English Literature followed by an MSc from University College London in Telecommunications Business and is a Member of the Institute of Directors.

Like other regions, African users are increasingly requiring highly reliable, resilient wireless networks. It can't be under-estimated how mission-critical applications are becoming more and more essential to the management and survival of industrial organisations. The dash for mobile broadband and the growth in the use of data from operations to drive efficiencies, prevent down-time and derive insights into business processes needs both high-bandwidth and low-latency.

Today, many of us can enjoy reliable access to communication and network systems, however many developing countries lack the established systems to have fully functional connectivity within applications such as mining, oil and gas, and security.

Africa's 12 month challenges are a sub-set of its long-term challenges – a growing population and the need to feed, house, educate and find work for that population. Added to the escalating population growth is the need to ensure appropriate stewardship of natural resources and to assure the economy can develop and utilise those resources responsibly for future generations as well as to generate non-natural resource opportunities. Urbanisation of the population and the expanding middle-class are two additional drivers creating unprecedented demand to manage transport, infrastructure and government services ever more efficiently.

Kinetic mesh in the African wireless broadband market

With ongoing communication and development work to implement the latest networking infrastructures in multiple countries in Africa, more and more markets are successfully deploying and reaping the benefits of kinetic mesh networks – providing fully mobile wireless broadband connectivity that is easier to deploy, adaptable and with no single point of failure.

Kinetic mesh networks – a type of wireless network battle-tested in military, mining and disaster recovery operations – now helps various other industry sectors address growing safety, regulatory and economic hurdles. A kinetic mesh network enables the nodes – or wireless computers – on that network to mitigate interference and reduce network capacity constraints – important considerations for organisations seeking timely and informed decision-making.

Whereas many countries even within the developing world have some pre-existing, albeit outdated, communications infrastructure; many countries in Africa have no pre-existing infrastructure upon which modern technology can be integrated. Many countries in Africa also are hit by increasingly frequent power outages, causing aftershocks in critical industries and affecting the ability for businesses to run efficiently.

Despite these obstacles, companies are already revolutionising the way in which they utilise communication technology through kinetic mesh, which creates its own highly resilient network and does not rely on any pre-existing infrastructure, allowing it to be deployed to provide reliable and efficient communication immediately. For example, a recent and particularly notable deployment of kinetic mesh involved the ability to deploy an autonomous drilling rig in a mine in South Africa, solely controlled and monitored across the private wireless network, supporting high-bandwidth and low-latency to guarantee the safety and accuracy of operations.

Today's mission critical environments

When network devices and those utilizing those assets have unreliable connectivity, or no connectivity at all, potentially disastrous things can happen. Mission critical networks require redundancy so that if nodes fail to connect in one part of the network, it does not intitiate a chain reaction within the network and adversely affect critical network applications. Data analytics and sensor technology are some of the tools necessary for keeping operations streamlined and performing optimally, especially when safety and lives are at stake.

The oil and gas industry is ripe for kinetic mesh networks resulting from the increasing operational and regulatory pressures they face. Companies in this market are being exposed to more and more regula-

tion at the state, federal and international levels. As regulatory requirements increase, it becomes imperative to gather more information about the performance of pumps and valves, to have the knowledge of whether something is leaking into the ground or in the atmosphere. Again, critical communications play a vitally important role in these situations.

Global organisations face many challenges in seeking to implement consistent solutions, not least of which is a legacy of multiple systems in different locations and the number of personnel required for support. This can become a problem when the drive for efficiencies seeks to centralise and standardise wireless networks. We have seen an increasing requirement across businesses for a single wireless standard technology – one that when upgrade or expansion is required, doesn't require the disposal of previous generation equipment. Kinetic mesh technology can seamlessly integrate with Wi-Fi, Satellite, Microwave, LTE or any other Ethernet connected service to extend or enhance communications. This integration is becoming more important as network operators look to add more functionality and mobility to their existing infrastructures, whilst ensuring tools to keep their networks secure.

How IoT is impacting Africa

According to a survey conducted by the International Telecommunication Union, 74.9% of Africans do not use or even have access to the Internet, contrasted with just 21% without access in Europe. These statistics demonstrate the gulf that can be bridged by the creation of an established and modern communication system, to modernise networking and automate industrial capabilities.

The potential for significant growth of technology adoption across the continent is immense. The exploitation of data from operations is extending from consumer and enterprise into industrial environments. The Industrial Internet of Things (IIoT) is extending into every industry and further underlining the requirement for all assets, devices and people to be constantly and reliably connected. OVUM recently found that across Africa, the number of cellular-based M2M connections increased by 22% to 19.8 million in the two years to 2015, and will more than double to reach 45.2 million by 2020.

Organisations that fail to make use of their own data are wasting an asset they already own and which can directly contribute to making them a more efficient and therefore resilient business. IoT has the potential to transform businesses around the continent, changing the way they operate to keep up with growing competition. However, IoT cannot be brought to life without a robust infrastructure surrounding it.

Kinetic mesh enables companies and organisations to build private wireless networks that support IIoT. We refer to those very networks as "Living Networks" because they thrive in dynamic network environments where everything in the network can move and evolve as connectivity demands change. In today's demanding business environments and economical restrictions, network infrastructures in Africa must be built with ruggedness, mobility and autonomous applications in order for networks to grow, which is made possible via kinetic mesh technology.

Looking forward

Automation and associated video imagery are requiring increasing amounts of wireless bandwidth, adaptable to the demand and locations of operational use. This automation trend is evident across numerous industries and is essential to improve worker safety, and to drive efficient operations. Alongside this increased bandwidth requirement is a critical consideration for such automation – the ability to stop a function immediately as a key safety function. Operators need to be able to issue a critical stop instruction that will terminate operations immediately should the occasion arise. This requires single-figure millisecond network latency, which has a typically similar performance to hard-wired fibre networks.

It is somewhat counter-productive to move towards automation capabilities that remove humans from operational processes, since it may actually result in a corresponding increase in highly trained IT personnel required to install, configure, monitor and support the network technology.

Kinetic mesh allows for operators in Africa to maintain and utilise the new infrastructures reliably and without the need for expensive and time consuming training. IT systems always combine three components – Technology, Process and People. One of the design considerations of kinetic mesh has been the level of intervention and expertise to allow the networks largely to be self-organising and be integrated seamlessly into operational environments.

The establishment of such modern infrastructures provides the potential for further development and integration of newer technologies as they are created, allowing for a future-proofed and constantly updated system. This potential for further development relates back to IIoT which is already making its presence known in Africa, affecting issues such as water and energy resilience and security, public safety and city management, utilising standardised and flexible technologies, and enabling the adoption of feature rich applications and services, all of which rely upon dependable communications.

There are challenges indeed in infrastructure, investment and not least commodity pricing, but with increasing political stability, national and international collaboration, Africa's growth potential should not be underestimated.

Africa is at a key point in its technological revolution. By exploiting its lack of pre-existing infrastructure, it has a great opportunity to take advantage and connect its people and devices in critical surroundings. The quicker this happens, the sooner businesses can build on competitive advantage and appear on the global stage as a force to be reckoned with. This means that both rural communities and mission critical environments will reap from the environmental and economic benefits that pervasive wireless connectivity will enable for Africa.

We are Connecting Companies to the Future

At Angola Cables, we believe that connections will make everything possible in the future. As one of the latest generation of major communications carriers in Africa, Angola Cables will connect millions of people to a new world with the SACS, the South Atlantic Cable System, a fibre-optic submarine cable with a capacity of 40 Tbps which will soon connect Africa and South America. Angola Cables will enable companies, corporations and governments to communicate and work together better in the future, and millions of people on both continents will see their hopes and dreams come true with faster and more efficient networks. We are playing our part in connecting the world to the future. We are connecting the Business World to the Future.

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