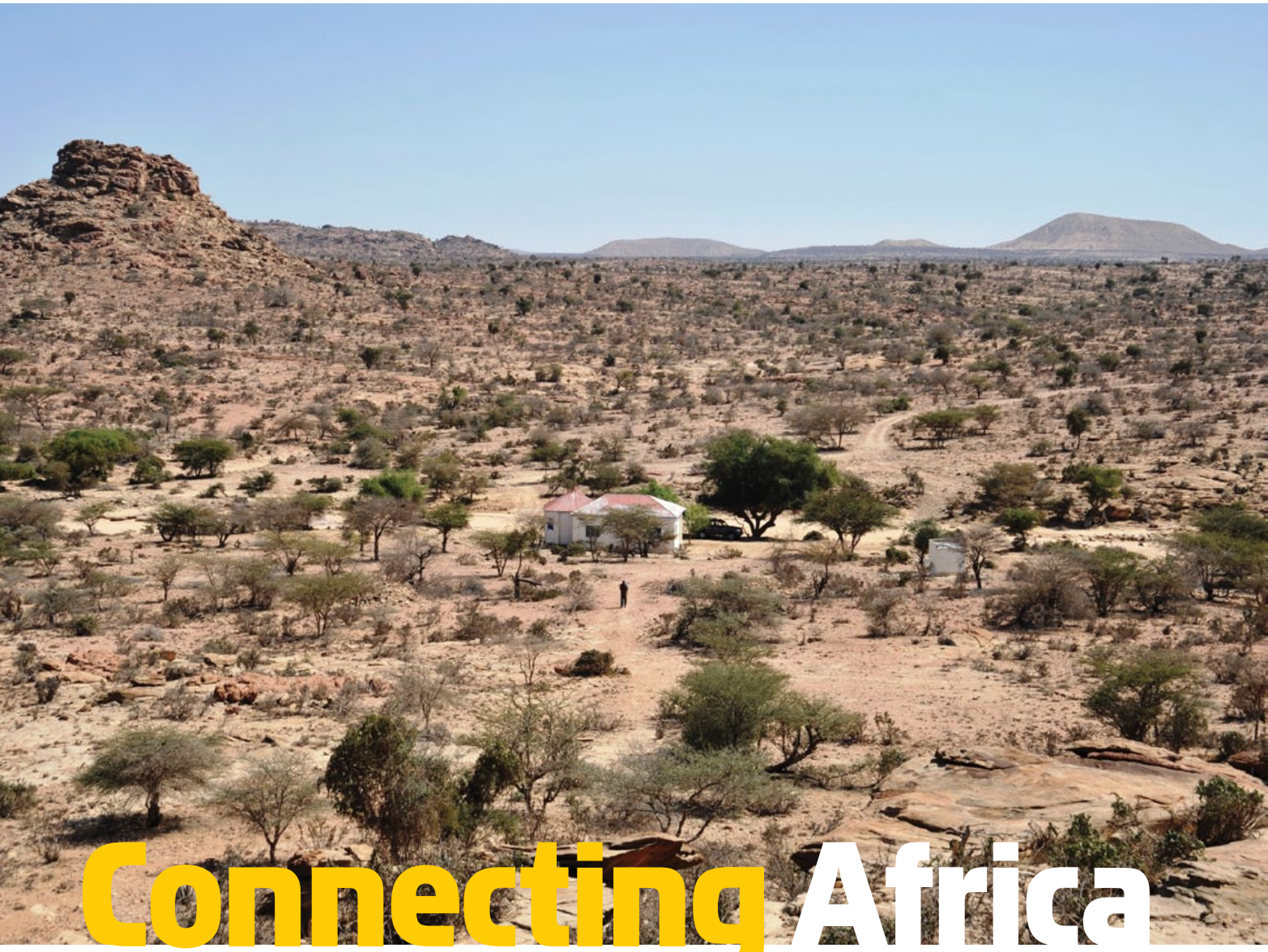


Connecting Africa

Somaliland is a sparsely populated and predominantly rural, independent region of Northern Somalia that has virtually no broadband infrastructure. Last year, three entities closely collaborated to enable Somcable, Somaliland's largest integrated communications solutions provider, to give the region with triple-play connectivity, offering infrastructure to wirelessly deliver data, voice and video access

Easy broadband access has been shown to have a massive impact on global economies, stimulating markets, improving the daily lives of millions of inhabitants, and paving the way to sustained growth. While this is widely accepted, implementing this connectivity is fraught with challenges and complexity — from new infrastructure requirements to deployment investment and operating costs.

These challenges are not limited to Africa. Across the globe, service and content providers must spend vast amounts of money to upgrade legacy systems, transforming existing infrastructure and maximising existing investment. Africa and other emerging economies have the unique opportunity to learn from the strategies and experiences of those who have already invested time and resources in technology upgrades. In many cases, these markets have the

opportunity to start anew, designing and implementing networks to deliver voice, data and video connectivity that make the most of new technologies. Regions starting "from scratch" can deploy future-proof networks that leverage today's IT-based communications landscape. By embracing and deploying advanced new technologies, they can leapfrog developed nations in terms of capabilities and efficiencies.

In fact, the continent has recently overtaken Latin America as the second largest mobile market in the world — after Asia — with more than 620 million mobile connections recorded in September 2013. Over the past decade, mobile connections in Africa have increased 30% per year on average, with future growth forecast to grow exponentially, more rapidly. The next phase of Africa's information and communications evolution will undoubtedly involve creating far more widespread broadband access, establishing the backbone networks that underpin economic and social development. Satellite communications technology and new terrestrial fibre networks have the potential to radically enhance broadband services across the continent.

African operators have been hindered by the operational costs of deploying broadband in hard-to-reach areas. Physical geography, including rocky terrain, hills, valleys and atmospheric conditions, can all pose problems. Low density rural areas also pose a challenge, as they do not justify a sufficient and rapid return on investment, because, unfortunately, internet access, PCs and mobile devices remain out of reach for many who live in these remote areas.

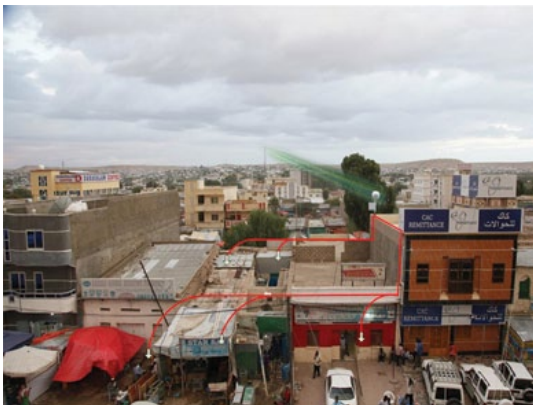
In the meantime, the proliferation of new submarine cables around the African coastline has been fundamental to enabling large-scale investment into the development of overland fibre infrastructures. This new international internet bandwidth has stimulated cross-border terrestrial networks, connecting landlocked countries to international networks as well as to domestic backbone networks and regional internet exchange points (IXPs). In order for this international internet bandwidth to become accessible, however, these terrestrial networks must be capable of generating sufficient traffic through the take-up of next-generation applications. Otherwise, this source of bandwidth will remain largely untapped.

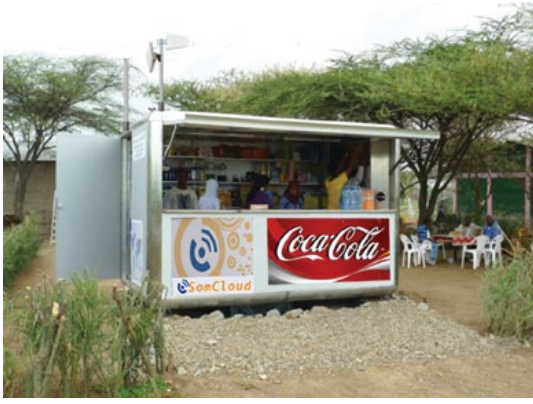
A creative solution to common challenges

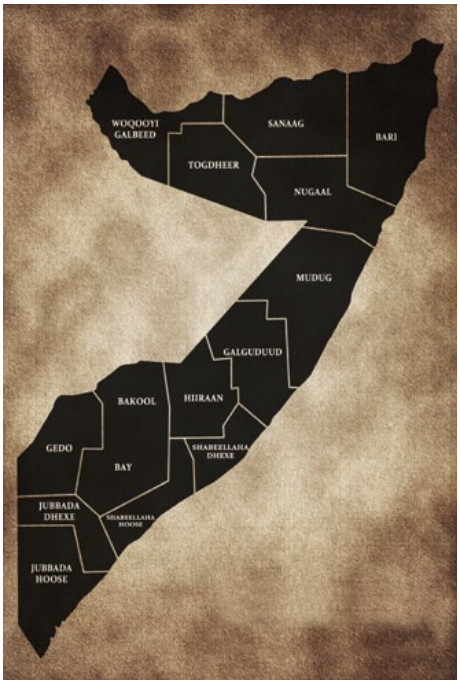
Somaliland, a sparsely populated and predominantly rural, independent region of Northern Somalia, is an example of a region with virtually no broadband infrastructure. In late 2011, three entities closely collaborated to enable Somcable, Somaliland's largest integrated communications solutions provider, to give the region with triple-play connectivity, offering infrastructure to wirelessly deliver data, voice and video access.

To help design and implement a solution that would meet the requirements of creating an easily deployable, low cost, but highly accessible solution, Somcable turned to Globecomm, an integrated communications provider based in USA. As a provider of communication systems across all network types — satellite, wireless, IP and hybrid — Globecomm approached the project with an open mind, carefully considering the physical and economic environment, Somcable's existing operations in region, and deployment and operating costs. After reviewing several technology options, Globecomm and Somcable chose Bluwan SA, a wireless technology company headquartered in Paris, to provide the underlying technology. Their innovative fibre-through-the-air (FTTA) solution known as Broadfusion proved to be superior in terms of capital and operating expenses, the ability to rollout across the harsh terrain, high bandwidth, and scalability to grow with increasing customer adoption and network needs. Once deployed, it was also easily accessible to Somaliland's population.

As Somcable CEO Michael Cothill explains: "I had worked with Globecomm before and knew they had the know-how and the ability







FROM TOP: Shared use of resources enables cost-effective, highly accessible voice, data and video access in Somaliland; Somcable's mobile access kiosk provides pay-per-use broadband access.
LEFT: Map of Somalia.

"African operators have been hindered by the operational costs of deploying broadband in hard-to-reach areas. Physical geography, including rocky terrain, hills, valleys and atmospheric conditions, can all pose problems"

African operators have been hindered by the operational costs of deploying broadband in hard-to-reach areas.

to think creatively about challenges and opportunities. We were looking at a range of solutions, including Wimax, that might have worked, but nothing really fit the bill. When we learned of Bluwan's solution, we knew we had found our answer."

Bluwan's fibre-through-the-air Broadfusion solution provides very rapid and cost-effective fibre optic broadband access at speeds up to 100 Mbps to any site. This fast, ultra-high bandwidth delivery enables network operators to offer other valuable services, from content delivered through over-the-top applications as well as newer HD broadcast systems such as HDTV. Most importantly, the content is delivered reliably. While Bluwan provided the terrestrial, line-of-sight wireless transmission, Globecomm delivered the LTE (long term evolution) wireless components, core networking capabilities and complete integration.

Fibre-through-the-air: How does it work?

The solution comprises small outdoor antennas that receive wireless broadband transmissions from a central transmission hub. Each hub is able to provide eight Gbps capacity in a 360-degree, five-kilometre radius, thereby delivering uncontended two Mbps — minimum bandwidth for advanced broadband applications such as HDTV — and up to 100 Mbps peak performance to thousands of customers. The solution provides easy rollout in "slow-spot" areas, allowing operators to extend fibre reach while avoiding expensive trenching, while meeting customer demand and enabling a fast return on investment. This is especially pertinent for areas where geographical landscape poses a significant obstacle. Rocky terrain, hills and valleys, and atmospheric conditions, all play a part in how broadband is deployed.

Final connectivity to the consumer is provided with compact indoor customer premises equipment, known as a "Broadfusion Box." The return path is integrated using Bluwan software for seamless IP connectivity, regardless of existing infrastructure and on-premise hardware. A standard satellite set-top-box can be used to receive native satellite signals terrestrially sent from the central transmission hub for SD and HD television content. This maximises the efficient use of IP bandwidth for other types of services, such as VoIP, OTT services, video on demand, and broadband connectivity at 100 Mbps.

For Globecomm, the installation is a prime example of applying ingenuity and smart use of resources.

"In Somcable, we were fortunate to have a customer that was truly a partner," says Steve Yablonksi, Sr. Vice President and CTO at Globecomm.

"They were completely open, and we had the freedom to thoroughly explore the best possible option to achieve their goals. And when we worked with Bluwan, they were an instant collaborator, willing and able to do whatever it took to tailor their solution to our needs."

The system enables service and network providers to deliver service bundles over and above basic broadband access with minimal deployment costs, thereby attracting more customers, cementing loyalty, and increasing revenues. For Somcable, the solution also paved the way for reduced operational, connection and deployment costs, including per megabyte carriage fees associated with submarine cable connectivity, fibre network trenching costs, and last mile connectivity to businesses and consumers. As data consumption increases, the system will scale for profitable business models and reduced operational costs.

In time, the network is expected to expand across the border to Djibouti, which is connected to the sub-sea fibre-optic cables, and then throughout Somalia. From there it's possible that the network will extend to Ethiopia, Rwanda, Uganda and South Sudan.

"We're proud of what we've accomplished in the region," says Shayan Sanyal, Bluwan's Chief Commercial Officer.

"Through resource sharing and making access available on a broad scale, we've shown what's possible even in areas that are remote, sparsely populated and economically disadvantaged."

The goal is one million subscribers by 2015. How quickly services are adopted and exactly how the network will affect the lives of those in Somaliland remains to be known. But advanced technologies such as FTTA and a creative approach to best serving service and network providers and the people who use their services, are real benefits that can change lives. PRO

"Through resource sharing and making access available on a broad scale, we've shown what's possible even in areas that are remote, sparsely populated and economically disadvantaged"

Shayan Sanyal, Chief Commercial Officer, Bluwan