![Microsoft]

# International ISP partners with Microsoft Airband to accelerate connectivity projects

## BLUETOWN deploys last-mile technologies to expand rural access to high-speed internet—and economic opportunity

Cynthia sells handcrafted jewelry at a local market in Aburi, Ghana. Like most independent artisans, she has worked hard and put in long hours at the market to support her family. Then, when her town got connected to high-speed internet, Cynthia began selling her jewelry via her mobile phone.

The entrepreneur uses WhatsApp to take orders from around the world, and her virtual sales grew to outnumber local purchases. In fact, the online venture has been so successful that she plans to pay for internet at her house so she can continue making and selling crafts after her kids go to sleep.

Access to reliable, affordable, high-speed internet has enabled Cynthia and many others to access opportunities that had been out of reach. "We want to connect the unconnected in rural areas globally because affordable and accessible internet connection brings economic growth," says Nick Pallesen, chief commercial officer at BLUETOWN, the internet service provider (ISP) that connected Aburi. "It also brings education, entertainment, and access to the world beyond these rural communities."

BLUETOWN has partnered with the Microsoft Airband Initiative to expand and accelerate these efforts. The Denmark-based ISP, which operates in developing countries, matches a variety of technological solutions to expand affordable internet access where conventional fiber connections cannot reach.

By taking a modular approach—choosing fiber, microwave, satellite, and TV white space (TVWS), depending on a community's needs and environment—this international ISP has covered 440,000 Ghanaians in the last year and a half, and will expand that coverage to 2 million once its latest project is completed, in 2021.

As Lene Schulze, BLUETOWN's head of U.S. operations and business development, says, "This partnership has helped us accelerate projects focused on creating impact within communities."

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# Deploying a mix of solutions

BLUETOWN stacks what Pallesen calls "building blocks" of technological solutions to customize deployments. The company tailors a solution according to a community's access to reliable power, proximity to a fiber connection, and geography such as hills or dense forest. It also takes into account an area's population and expected internet usage.

This modular approach allows the ISP to remain flexible as it picks options from an array of technologies to optimize costs. For example, one town may have only infrequent electricity and so need a large battery to power deployed solutions; another may need only a small battery. Similarly, one town may have a variety of schools, businesses, government offices, and the like and so need many access point locations, while another focuses on a village's central market.

The takeaway: Successful deployments aren't one-size-fits-all. They must adapt to meet the needs of the community and accommodate on-the-ground realities.

# Providing affordable access

Ghanaian internet customers are very price-sensitive, and it's no wonder, considering more than half the country's population lives on less than $5.50 a day.[1] BLUETOWN deploys several strategies to provide affordable internet—at roughly 40% less than the cost of cellular connectivity.

BLUETOWN seeks out "anchor customers" such as government offices, schools, and other public institutions to secure consistent income, which effectively subsidizes individuals and households, Pallesen says. "These base customers make our business case profitable, enabling us to provide affordable internet to the local community."

The ISP offers a wide variety of plans in hourly, daily, weekly, and monthly packages. The wide variety of price points ensures that just about everyone can afford to get online.

In addition, the ISP runs a local cloud where platforms such as e-learning, e-health, and entertainment are made available to allow anyone with a device (or who is able to borrow one) to tap into the resource for free.

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[1] World Bank data, https://www.worldbank.org/en/publication/macro-poverty-outlook/mpo_ssa

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# Democratizing information

BLUETOWN is aware that Ghanaians with limited income had to "budget" their internet usage, choosing between equally important tasks and information. The company built a local cloud to enable users to get vital content without relying on backhaul from satellite, microwave, or fiber—making access affordable for end users.

The local cloud also helped communities respond to the COVID-19 pandemic. BLUETOWN uploaded information from the World Health Organization and videos from the Ghanaian government on how to limit the spread of the virus. The cached health information is accessible and free to everyone.

# Generating customer demand

"We're very focused on making an impact and bringing value to local communities. Of course, we're a private company and need to make money, too," Pallesen says.

To make each deployment sustainable, BLUETOWN uses a "micro-operator concept" to secure a base of individual customers. The ISP hires local entrepreneurs who maintain equipment and educate other residents on how they might use the internet—for farmers to watch videos on efficient fertilizer application or artisans selling their wares virtually, for example.

Micro-operators already have credibility and connections in their communities, so they're better able to teach residents how the internet is relevant to their needs. The entrepreneur's benefit, too, as they earn an income by selling internet packages. As Benjamin, a micro-operator in Asumura, says, "Now I have my own business because of BLUETOWN."

**32.5%**
current internet
penetration in Ghana

**440K**
number of people under
coverage in rural areas

**Nearly 2M**
projected number of people
covered with internet access

**1/10**
the fraction of power usage
BLUETOWN projects uses,
compared to standard solutions

**30-40%**
savings for BLUETOWN
customers

Microsoft and Bluetown
together educated the
Ghanaian government
about how TVWS could
help bridge the digital
divide.

" *The Ghanaian government
was positive about getting new
technology, and Microsoft had a
lot to do with that,* Pallesen says.

" *We're working to deploy
affordable internet in Ghana—
together,"* Pallesen says. *"I definitely
see a long future with Airband and
Microsoft in Ghana and beyond.*

## Leveraging the Microsoft partnership

BLUETOWN first partnered with Microsoft in late 2018, and the collaboration continues to grow with the goal of creating even deeper impact. "Access to broadband is serving as a catalyst for rural digital transformation, improving the productivity and livelihoods of communities across Ghana," says Kevin Connolly, director of Airband International.

The Microsoft Airband Initiative has integrated BLUETOWN into a network of other ISPs all striving to reduce the connectivity gap in rural communities. This ecosystem of like-minded ISPs exchanges challenges and best practices.

Once the country allowed TVWS, BLUETOWN earned a license. It is now in the process of incorporating TVWS into its solutions, which will help the company expand wireless connectivity where line-of-sight obstacles like forests might otherwise prevent it.

"We want to bring the benefits of connectivity to rural communities, but we don't have all the resources to accelerate projects on our own," Pallesen explains. "Collaboration with Microsoft means we can take steps earlier than we'd imagined."

Working together to digitize a primary school curriculum and hosting it in the local clouds is one such example. That way, every child in these connected communities will have access to high quality materials and supports without needing to pay for expensive textbooks.

BLUETOWN is also working with Microsoft to develop a more robust version of the local cloud platform on Azure. The more secure platform will allow the ISP to deploy local clouds in other countries it serves, too.