



How 3 stars are making life better around the world

If you live in one of Africa's 54 countries, there's a 65 percent chance you're not online, especially if you live in a rural or remote area. If you're a business owner in Bangkok, high buildings and narrow streets might be keeping your business offline and cutting foot traffic to your store by up to 20 percent. If you're an operator for whom site acquisition and low average revenue per user (ARPU) are constant headaches, you need the right tools to make connections in tough scenarios.

By Gary Maidment

A site for sore eyes

Huawei's wireless trinity – RuralStar, PoleStar, and TubeStar – offer different mobile connectivity features and application scenarios, but have one crucial concept in common: a Site-On-Demand model that can provide communications sites where and when they're needed. In cities, PoleStar and TubeStar combat expensive and complex site

acquisition and lengthy planning processes. In rural areas, RuralStar offers an alternative to impractical fixed-line solutions that can mean decade-long ROI for operators.

Designed mainly for emerging markets, each Star is now in its 2.0 incarnation: operators are boosting bottom lines, the unconnected are getting connected, businesses are growing, and Huawei's wireless tech is proving its sustainability credentials.

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Applying innovations like all-in-one design, wireless backhaul, clean energy, and intelligent site planning, Huawei's 3-Star solution saves E2E TCO and opens the door to meaningful network investment for operators. The new sites integrate infrastructure and network equipment, allowing for zero-site deployment, self-backhaul, and adaptive power supply. These features can reduce TCO by approximately 30 percent in urban areas, 50 percent in suburban scenarios, and up to 70 percent in rural communities.

RuralStar 2.0: Sustainable rural coverage

Africa's average Internet penetration sits at almost 20 percent lower than the world average of 54.4 percent. Some of the continent's nations barely register in the connected context, including Eritrea at 1.4 percent, Chad at 5 percent, and Burundi at 5.5 percent. In Ghana, coverage is around average for Africa, with 34.3 percent of the nation enjoying Internet access. However, it's mainly Ghana's rural population that misses out, a common problem the world over.

Ghana: Digital Inclusivity

For local teacher Afryea, returning to a village of 2,500 after studying in one of Ghana's bigger cities was a return to a world without Instagram, Snapchat, and WhatsApp. A lack of existing infrastructure, power

supply, and transmission networks meant that villagers like school teacher Afryea had to travel several kilometers to a nearby base station to get online.

Deploying a base station in the village wasn't viable for operators: an ARPU of just US\$1 to US\$1.50 would mean an ROI of ten years due to an average installation CAPEX of US\$100,000 and OPEX at US\$9,000 per year.

In one of its first deployment cases in 2017, Huawei changed all this with RuralStar. Equipped with RRN non-line-of-site (NLOS) backhaul technology, the solution enables up to three relay hops of wireless signals to distances of up to 60 km from the donor base station. NLOS technology means that barriers like buildings, mountains, and trees no longer present an obstacle for signal transmission, which in turn eliminates the infrastructure cost of high towers. It's also much cheaper than satellite and microwave tech. Supporting remote O&M and simultaneous access to GSM, UMTS, and LTE, the solution offers a simple and versatile way out for operators.

It cuts ROI from ten years to three and, powered by six solar panels, offers a clean solution that lowers TCO.

In Ghana, RuralStar isn't just connecting Afryea and other villagers to the outside world through social

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apps – it helps bridge the digital divide. Connectivity enables potentially life-changing applications, including connected farming, eGovernment, eHealth and mHealth, smart energy, and mobile money.

Since its first outing in Ghana, RuralStar 2.0 has landed in more than 20 other countries, including Nigeria in partnership with MTN and Kenya in partnership with Safaricom.

Contribution to the UN's Sustainable Development Goals

By building more inclusive economies and improving rural access to information and services, the solar-powered RuralStar helps reduce inequalities and is good for the environment. At Mobile World Congress 2018, GSMA awarded the solution **Best Mobile Innovation for Emerging Markets**.

PoleStar 2.0: Sustainable urban connectivity

We estimate that MBB will cause global site numbers to double over the next five years, exacerbating three major issues with macro base stations: difficult site acquisition, lengthy site approval processes, and high site construction costs.

Enter PoleStar 2.0, where everywhere is potentially a

site. Integrating wireless devices such as Easy Macro and Book RRU, PoleStar can reuse ubiquitous urban resources like poles and billboards. The solution supports RRN wireless backhaul, a key technology for addressing signal transmission obstruction.

PoleStar supports various types of power supply, including direct mains and blade power modules, thus minimizing power costs.

In addition to wireless signal services, the solution can provide other revenue-generating functions with hardware add-ons. These include data collection from the environment, a panel for advertising, camera surveillance, LED lights with motion-detection capabilities, emergency calls, and a charging port for electric vehicles.

Ukraine: Boosting traffic by up to 25 percent

Last year, Ukraine's leading operator LifeCell teamed up with Huawei to overcome site acquisition issues and meet connectivity requirements in Lviv, a historical town that attracts up to 200,000 visitors per day. After partnering up with a local energy company for deployment, LifeCell selected PoleStar. The solution has boosted network coverage by 9 percent in the areas it was deployed, with voice traffic increasing by 25 percent and data traffic by 22 percent – big gains for the operator.

Thailand: A boon for business

As well as benefiting operators, PoleStar's coverage capabilities are also felt by businesses that suffer spotty signals due to unforgiving local geography, like narrow streets and tall buildings. For local restaurateurs, this can mean less visibility when tourists search for nearby restaurants online, fewer food snaps shared on diners' social media accounts, and zero possibility of mobile payments.

Such a situation was affecting Bangkok restaurant owner Natthapat, keeping his business behind the tech curve through no fault of his own. From the carrier point of view, however, site deployment in crowded urban areas of this type wasn't viable. There simply wasn't the space. Until early 2018, that is. Early one morning, Natthapat saw an engineering crew deploying a Huawei base station on an electric power pole.

After two days of testing, it went live. What has this meant for Natthapat? A "mobile payments accepted" sign on his door and around 20 percent more customers.

Contribution to the UN's Sustainable Development Goals

At Mobile World Congress Shanghai 2018, GSMA awarded PoleStar the prize for Outstanding Mobile Contribution to the UN SDGs in Asia. Breaking barriers for using urban public resources, PoleStar promotes equal mobile broadband in urban areas and helps achieve three SDGs.

TubeStar 2.0: Zero-footprint urban macro

TubeStar shines in what it can do for the footprint of physical macro sites, realizing a staggering 96 percent reduction. On the ground this means shrinking a typical macro site from 50 square meters, which is

equivalent to safe standing room for 12,500 people, into just 2 meters, standing room for just 20 people.

A single site supports five to seven bands for multiple RATs, including GSM, UMTS, and LTE. The tube integrates the BBU, RRU, battery, transmission equipment rooms, cabinets, and power supply module. Energy efficiency is 30 percent higher than traditional sites and air conditioners aren't required, greatly cutting the carbon – as well as physical – footprint.

Bolivia: Let the games begin

Earlier this year, Huawei completed the deployment of TubeStar for the Bolivian carrier Entel to overcome high site TCO and, in a nation where site acquisition can take six months, pressing time issues.

Because Huawei pre-installs the equipment and cables in the tube segments, Entel only had to ship the tube segments to the site, shortening deployment time from 30 days to 11 and ensuring that the operator could increase capacity in time for XI Juegos Suramericanos Cochabamba 2018 – the 11th South American Games – on 26 May 2018.

Contribution to the UN's Sustainable Development Goals

TubeStar makes ICT infrastructure more sustainable and efficient and lowers the industry's carbon footprint, mainly contributing to two SDGs. At Mobile World Congress 2018, TubeStar won the **Green Mobile Award** from GSMA.

With increasing numbers of deployment cases and proven benefits for individuals, businesses, operators, and the environment, Huawei's 3-Star Site-On-Demand model overcomes geographical, cost, and time barriers for macro sites, moving us several steps closer to bringing digital technology to every person, home, and organization for a fully connected, intelligent world. 