



Coverage as a Service for Rural Markets

WANU

Profitable coverage is challenging in many rural areas

- **Revenue per site is lower**

- In low population areas, a carrier's revenue per site is not enough to pay the monthly operating costs of the site
- Rural Average Revenue per Subscriber (ARPU) is lower

- **Operation Cost per site is higher**

- Most rural sites are off grid and have to run on diesel
- Energy costs can be higher than site revenue

- **Terrain challenges**

- In hilly terrain traditional high sites do not have reduced coverage range, and signals run right across the top of valleys

- **Operating costs, not capital costs, are the challenge**

- Even if the network capital is subsidized, it cannot operate if it loses money



Coverage as a Service Key Differentiators



1. Solar Powered

- Base station power consumption: 50W
- Total site requires only 90W

2. Wholesale Network

- Network has no subscribers
- Network supports multiple carriers in rural areas, improving network economics

3. Small-Cell

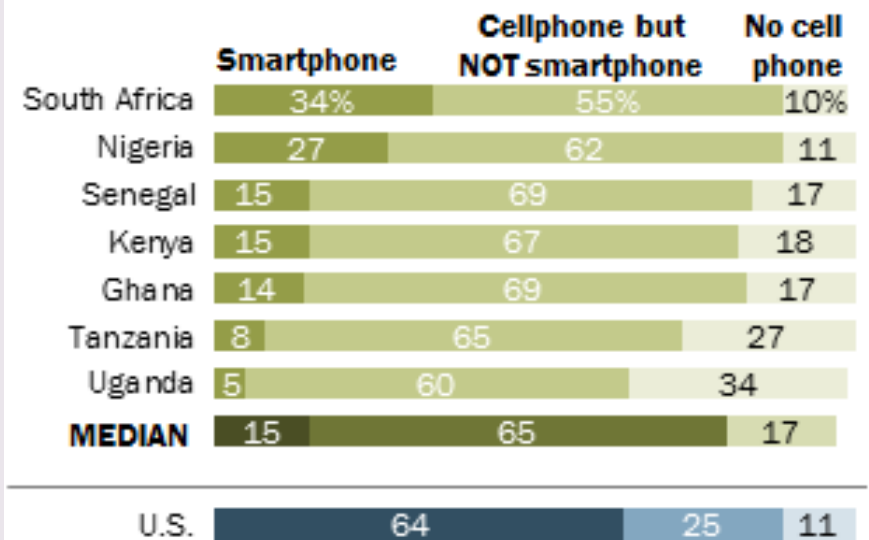
- Focus coverage where people live, work and commute
- Over 90% of people in rural areas live and work within a few km of a road
- Outdoor small cell architecture reduces network cost

Market & Devices

- 10% of the world's 7.2 billion people lack voice connectivity
- 3.4 billion people lack Internet connectivity
 - The majority of these uncovered populations live in the rural regions of Asia and Sub-Saharan Africa

Few Own Smartphones in Africa, But Cell Phones Common

Do you own a cell phone? Is it a smartphone?



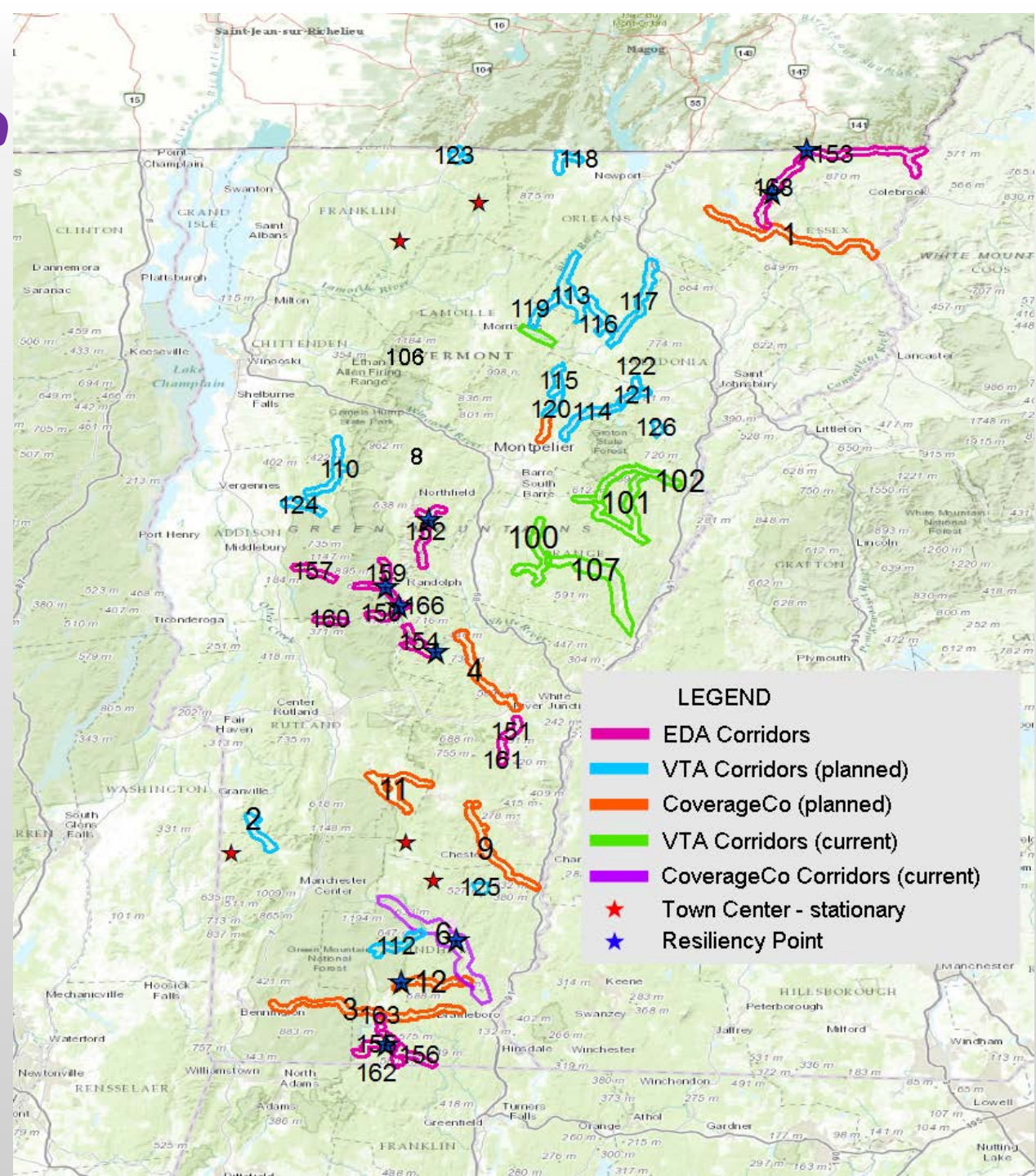
Note: Percentages based on total sample. U.S. data from December 2014 Pew Research Center surveys. Median percentage excludes the U.S.

Source: Spring 2014 Global Attitudes survey. Q68 & Q69.

PEW RESEARCH CENTER

Vermont Wholesale Network

- 39 percent of rural Americans, 23 million people, lack access to broadband
- 41 percent of schools, representing 47 percent of the nation's students, lack the connectivity to meet the FCC's short-term goal of 100 Mbps per 1,000 students/staff. SOURCE: 2016 FCC Broadband Report
- Carrier Partners
 - US: Sprint, T-Mobile, Verizon, US Cellular
 - Canadian: Telus, Bell Canada, Viaero, Videotron, Rogers



Rwanda Network



- Wholesale network to give Rwanda the greatest rural voice and data coverage of any African nation
- 3 operators in Rwanda: MTN, Tigo, Airtel
- Total population 13.5M
- Initially 2.75G with future upgrade to WiFi/4G
- Network:
 - 376 small-cell sites to cover 1 million people in rural Rwanda



Summary

- Coverage as a Service is a combination of technical and business model innovation to make rural coverage **profitable**
- Coverage as a Service overcomes the OPEX challenges in rural areas
 - Service low ARPU areas
 - Provides coverage for all operators, bringing competition to rural
 - Brings voice, text and data services
- Addressable Global market: 3.4 billion people with no broadband and poor or non-existent cellular coverage today
- Examining potential expansion in India, Sierra Leone, Ghana, Uganda, Tanzania, and Kenya
 - Identified 2.3 million uncovered POPS in Ghana and 1 million in Sierra Leone
 - Indian government has identified 40,000 villages with no connectivity at all.

