Television White Space and Community Networks: Alternatives to Bridge the Digital Divide in Tanzania

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Communication Statistics in Tanzania

- According to the recent statistics from Tanzania Communications Regulatory Authority (TCRA, 2021):

Mobile and Fixed Telephone
- 52.9 Million of subscribers

Internet Users
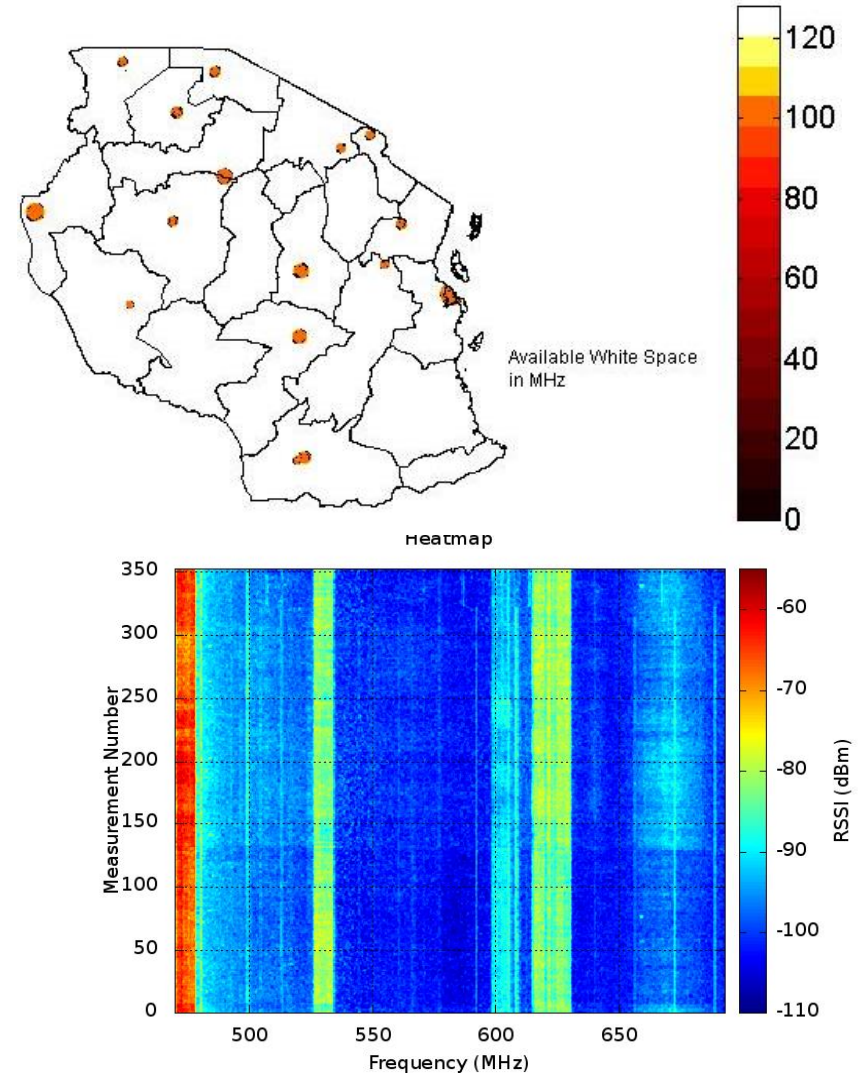- 29.1 Million

Why Broadband Matters?

- Broadband Internet is Key:
  - For ICT based economic development .
  - Bridge the rural and urban divide.
  - Access to modern services including education, health, jobs, agriculture, etc
  - Work from anywhere
  - Home entertainment and connectivity
- A study by World Bank concluded that a 10 percentage point increase in fixed broadband penetration would increase GDP growth by 1.21% in developed economies and 1.38% in developing ones.

What is TV White Space

- Portions of the radio spectrum that are assigned to a particular use but are unused or unoccupied at specific locations and times are defined as white space (Mancuso, Probasco, & Patil, 2013)

- The study concentrated on Ultr-High Frequency, specifically that allocated for digital terrestrial television ranging from 470 – 694 MHz.

- In the literature, it is reported that under-utilization of spectrum resources is partly due to static spectrum allocation policy.

Quantitative Assessment of TV White Space in Tanzania

- In Tanzania, about 120 MHz is available as white space in TV band.

- Almost 82.1% of TV UHF spectrum is unused in most of the urban areas of Dodoma Region and 100% of the DTT spectrum band is not used in most of rural areas in Tanzania.

Available White Space in MHz

Heatmap

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Towards Affordable Broadband Communication: A Quantitative Assessment of TV White Space in Tanzania

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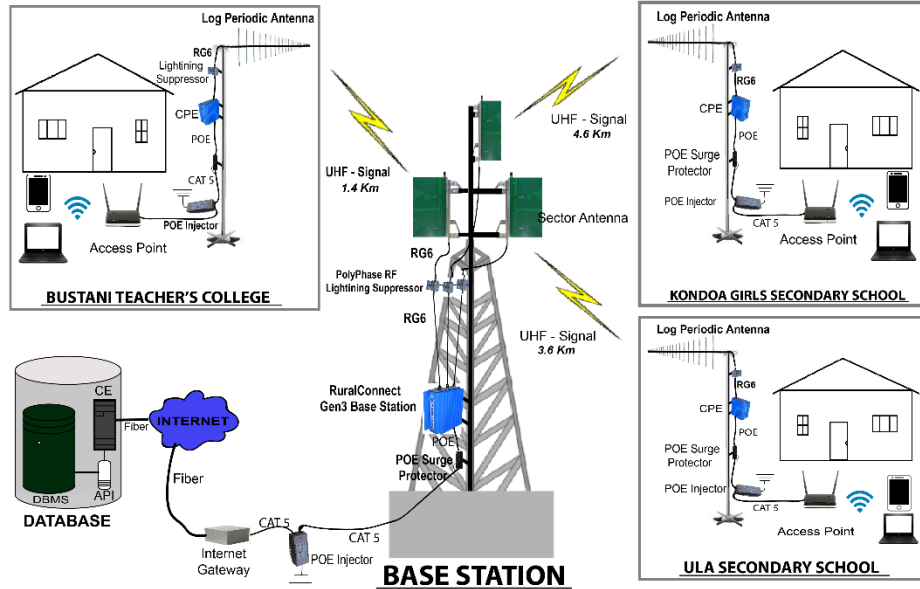
Community Network

- Community Network is a bottom-up approach and feasible alternative to connect the unconnected.

- It is an approach to empower the community in addressing their own local challenges related to connectivity.

- Community members are empowered to own the network and are responsible in deciding the pricing of Internet access and hence create business viability in rural area.

Community Network in Tanzania

- Connected education institutions, health facilities and community.

- The maximum bandwidth capacity: 4.70 Mbps for download and 4.75 Mbps for upload.

- Used the television white space technology

- Trained more than 123 community members

- Hosted the 4th summit on community networks in Africa

TVWS RuralConnect Basic Installation Diagram

Cooperative Society Approach

- Cooperative societies promotes the economic and social interests of its members by means of common undertaking, based upon mutual aid and which conforms to the cooperative principles of a society.

- Community Networks Cooperative Societies is a bottom-up approach and feasible to connect unconnected.
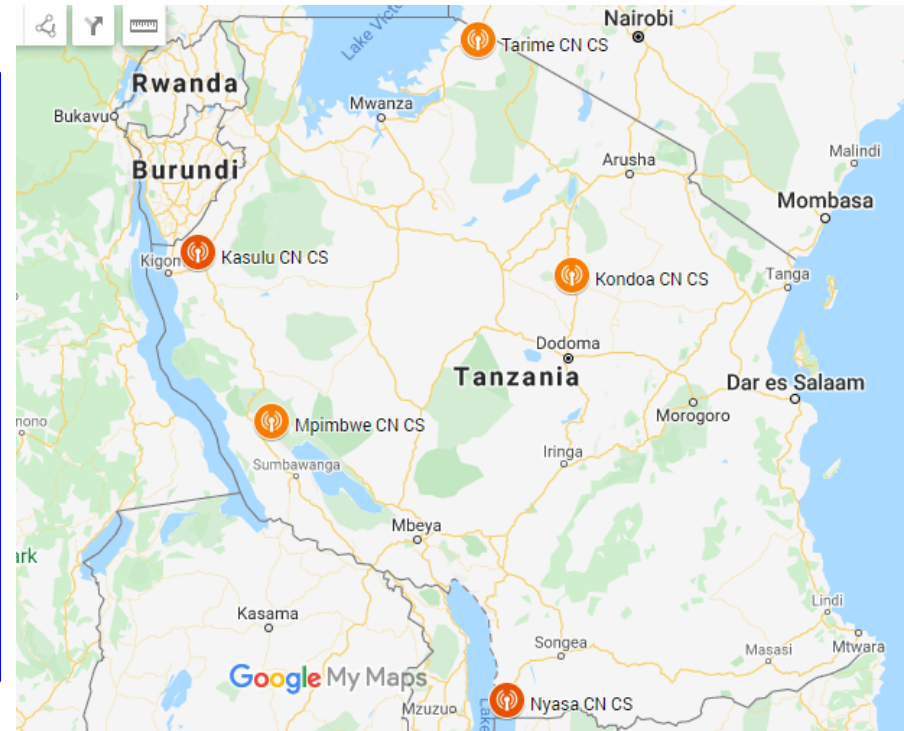

Device donated by Basic Internet Foundation

Read our community network initiative:
https://giswatch.org/sites/default/files/gw2018_tanzania.pdf

Five Community Network Cooperative Societies

- Kasulu CN Cooperative Society
- Kondoa CN Cooperative Societies
- Mpimbwe CN Cooperative Societies
- Tarime CN Cooperative Societies
- Nyasa CN Cooperative Soceities

Challenges Facing Rural Broadband

- Lack of affordable backhauling solution

- High broadband cost

- High co-location fees

- Lack of stable power solution

- High rate of illiterate rate in rural Tanzania

- Lack of local content in rural Tanzania context

- Lack of policy favoring the use of both Community Network Cooperative Society and TV White Space

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