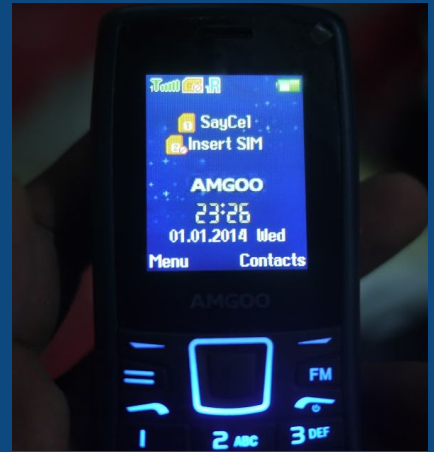




Open Source
Community Mobile Networks





PEARL LAGOON

UNICEF INNOVATION FUND

Are you a start-up with
an **open source** tech
solution that can help
improve children's lives?



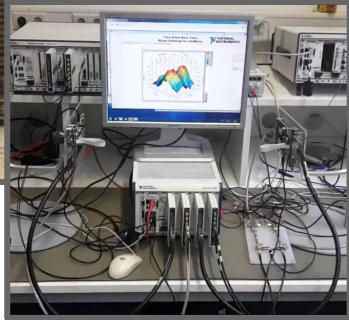
APPLY today for investment
www.unicefinnovationfund.org

unicefinnovationfund.org





Brooklyn 5G summit Making 5G a commercial reality



5G Millimeter Wave

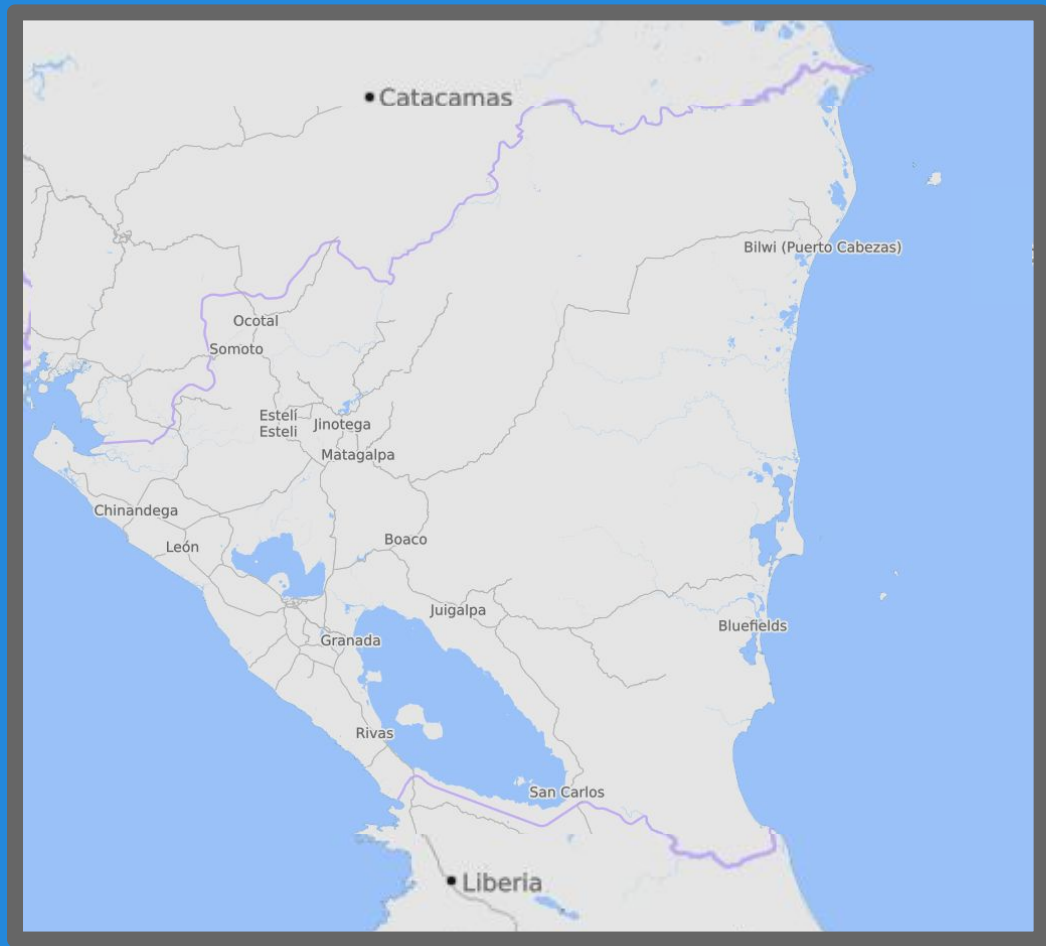




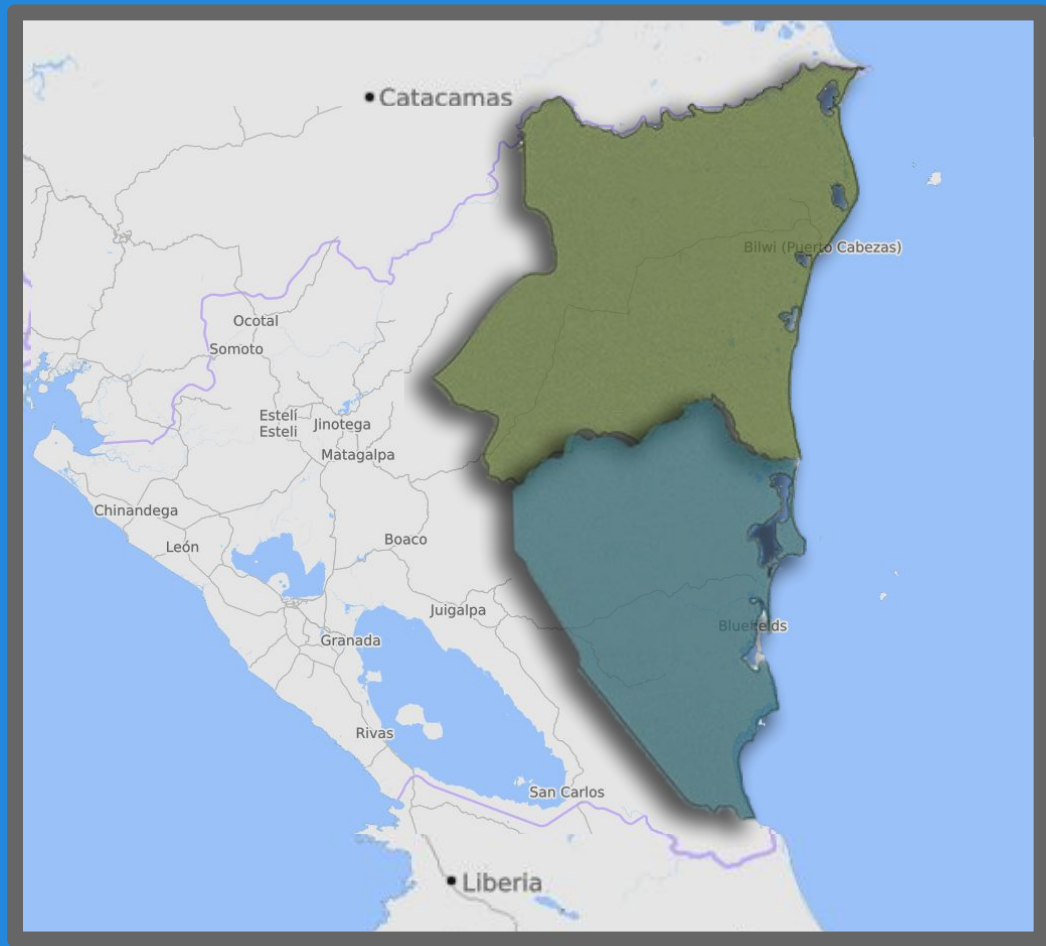


Communications Infrastructure





Nicaragua



Autonomous Atlantic Region



SAY  **CEL**

An aerial photograph of a coastal town, likely in a tropical region, showing a dense cluster of buildings with colorful roofs (red, blue, green) along a waterfront. The town is surrounded by lush green hills and vegetation. The water in the foreground is dark, and several boats are visible in the harbor. The overall scene is dimly lit, suggesting dusk or dawn.

Indigenous & Afro-descendants

Limited Roads

Limited Communication



GUYAMEL FRUIT COMPANY

GROWERS, PURCHASERS AND

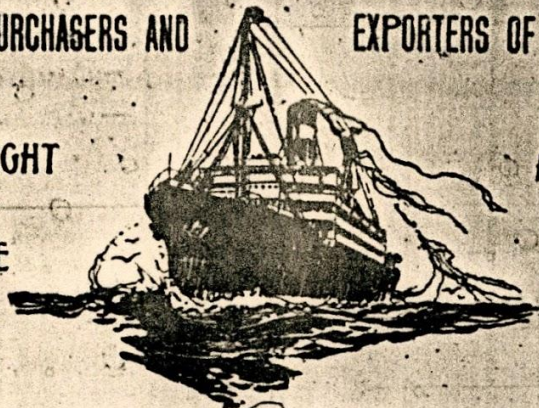
EXPORTERS OF BANANAS.

REGULAR FREIGHT

AND PASSENGER

SERVICE

BETWEEN



NEW ORLEANS

CIENFUEGOS

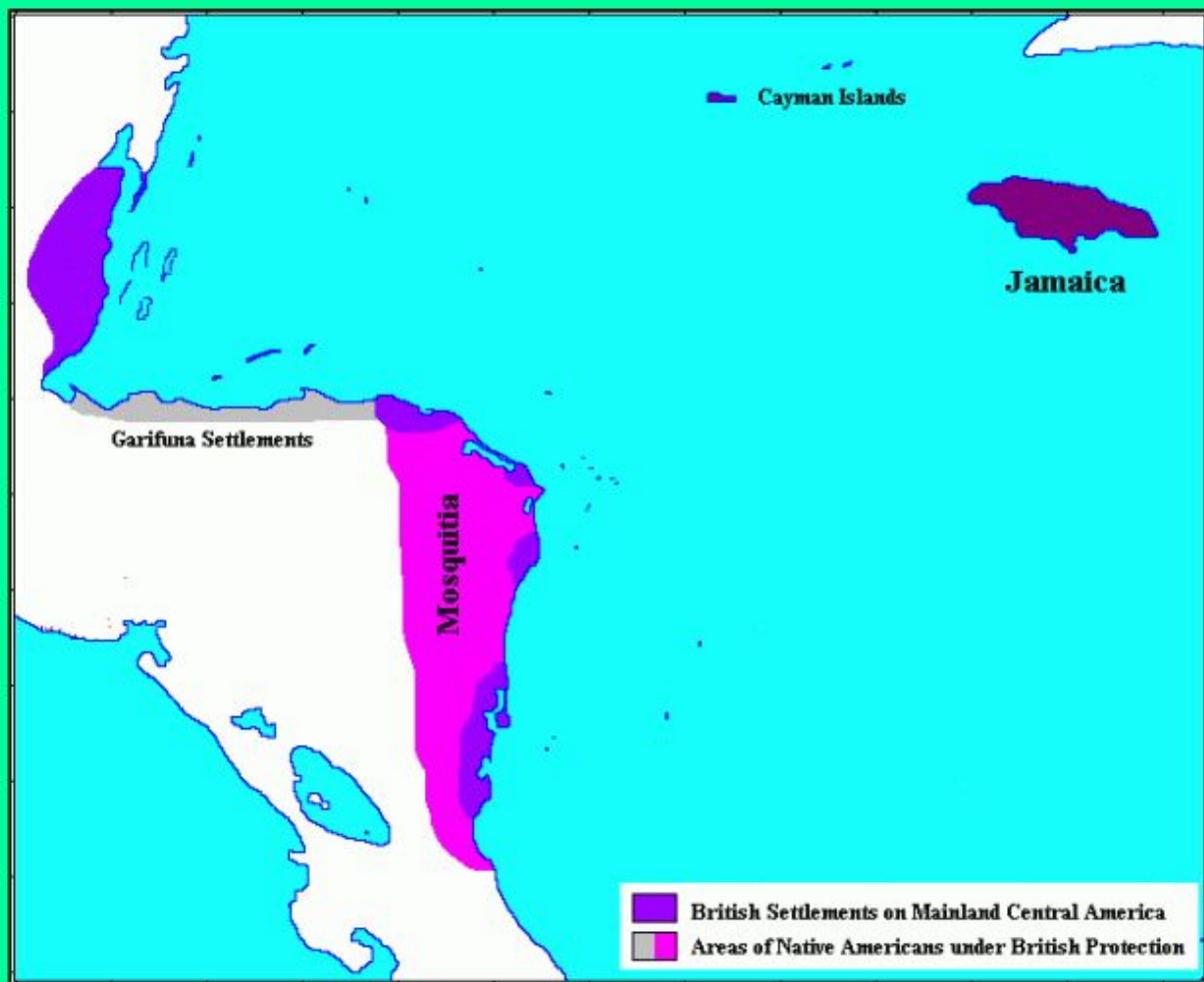
BLUEFIELDS

Cotton Tree Point, Bluefields, Nicaragua





Miskito King





1979

Sandinista Revolution



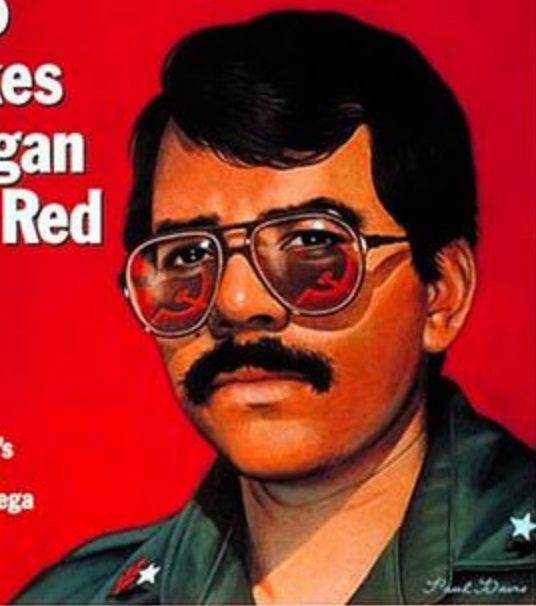
MARCH 31, 1986

\$1.95

TIME

**The Man
Who
Makes
Reagan
See Red**

**Nicaragua's
President
Daniel Ortega**



**Money, Money
Everywhere**





Autonomy





Autonomy gives communities the rights to manage their natural resources including cellular frequencies



Nación Comunitaria Moskitia







Maypole Festival

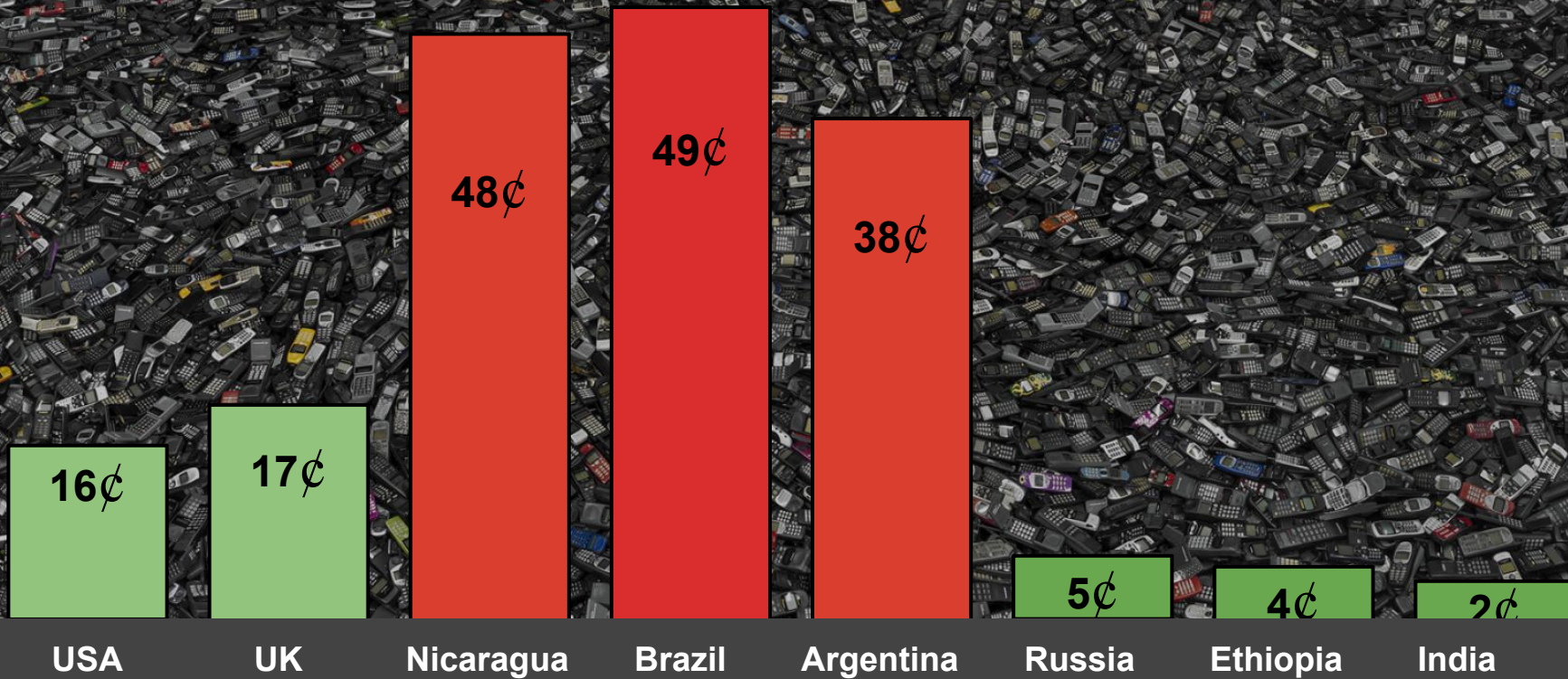
**BLUEFIELDS
SOUNDSYSTEM**



**Multimedia
Center**

2005-2012

Average Per Minute Cellular Call





Teacher Salary
\$200/month

TO SELF RESPECT & COMMUNITY BUILDING
IMPORTANT
"IT IS IMPERATIVE THAT WE NAME OURSELVES, DEFINE OURSELVES, SPEAK
OURSELVES, AND CREATE FOR OURSELVES INSTEAD OF BEING
DEFINED, SPOKEN FOR AND CREATED FOR BY OTHERS"
"WE MUST BE THE CHANGE WE
TO SEE IN THE WORLD" - MALAUNA (KUNICHIA
RESPECT)

**Nicaraguans spend up to 25% of their
income on communication**

Major Telecoms

**Don't Invest in
Low Density
Low Income Areas**



Monkey Point
No Network Coverage

**People can't
call a doctor.**



Punta Gorda
No Network Coverage

700 Million
users without cellular
coverage



UN's International Telecommunication Union





Interactive Telecommunications Program



Mexico sees its first open-source village cellphone network

158 77 Share This Story! Let friends in your social network know what you are reading about Facebook Email Twitter Google+ LinkedIn Mexico sees its first open-source village...

USATODAY.COM

September 16, 2013



Towers of Power

ITPG-GT.2699.001:

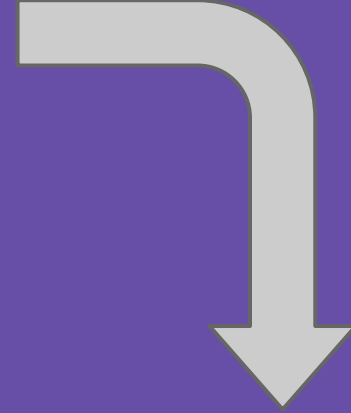
Learn about GSM cellular infrastructure by building your own network using open source hardware and software.



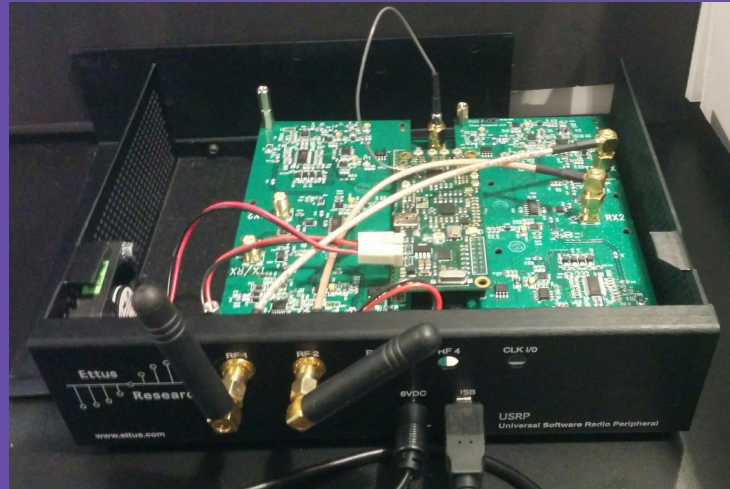
Software Based Cellular Networks



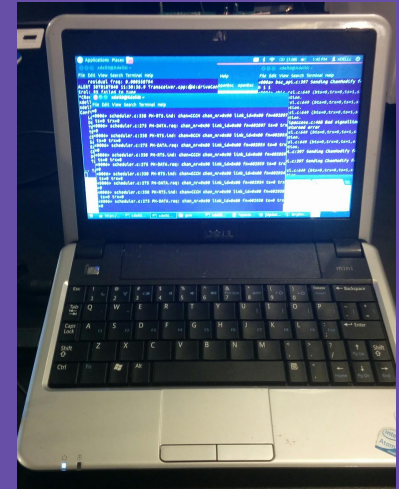
Harald Walte



Open Source GSM Network



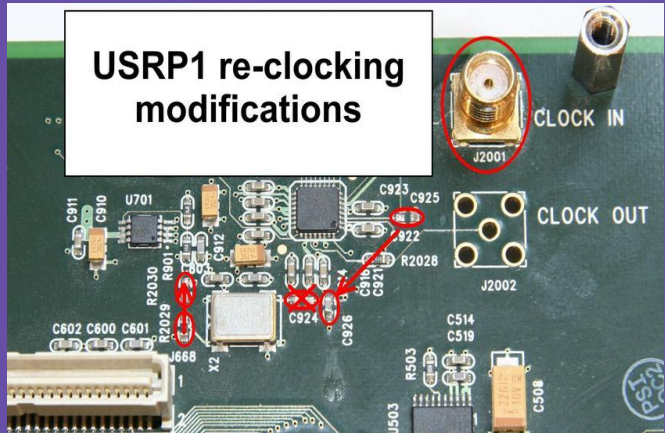
USRP 1

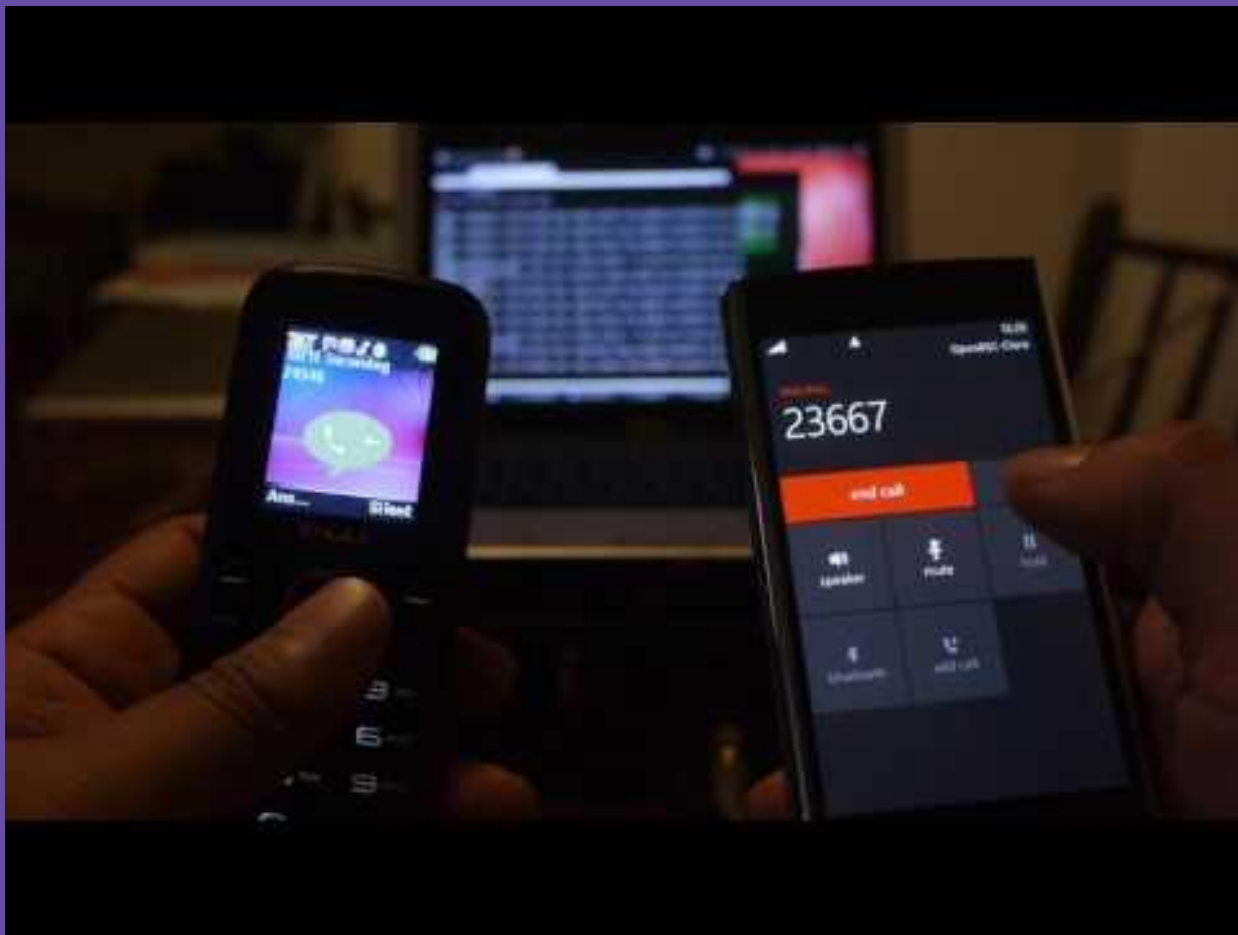


Linux Computer



REDIAL





<https://www.youtube.com/watch?v=pDJJvMliZQ>

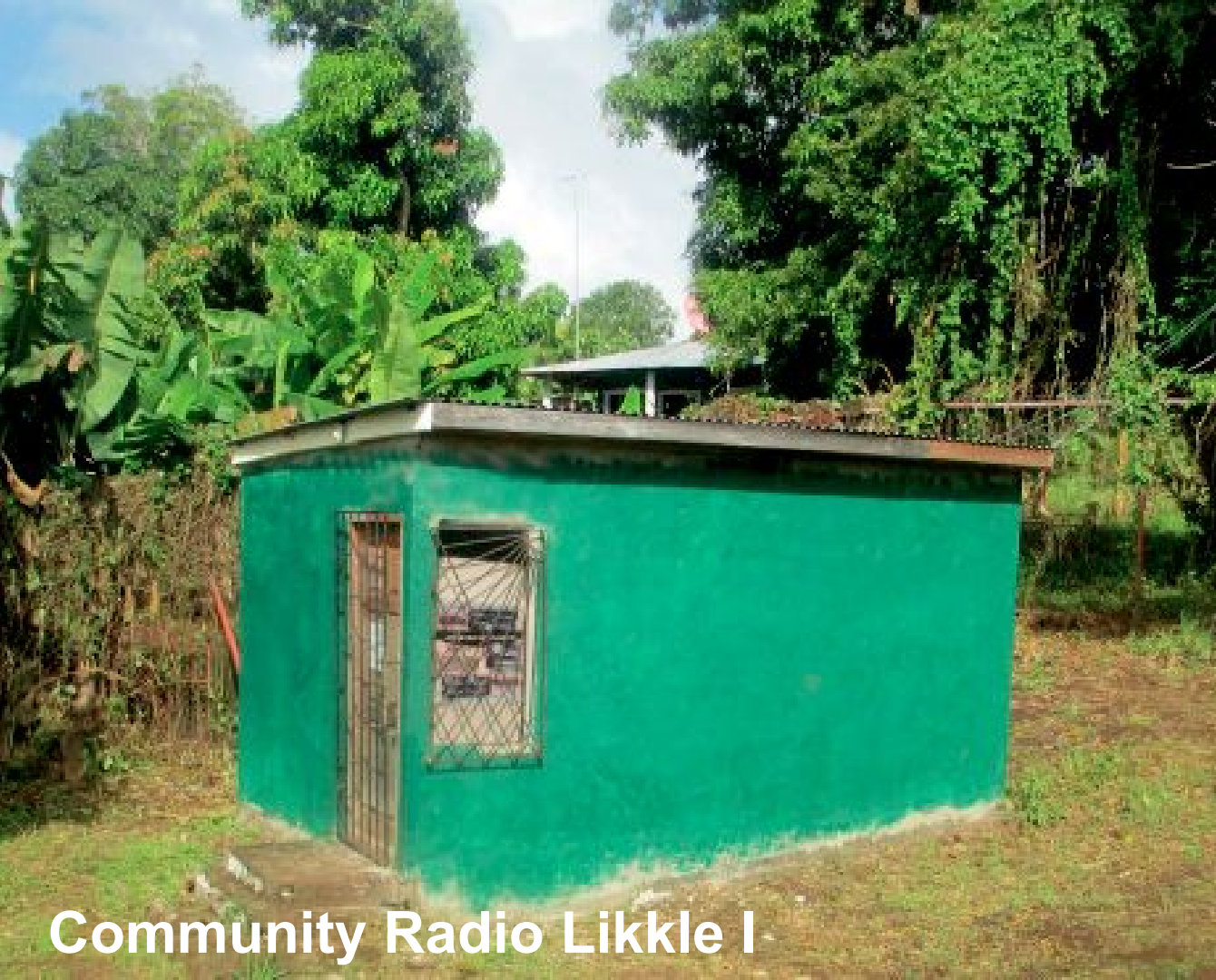




**RHIZO
MATICA**

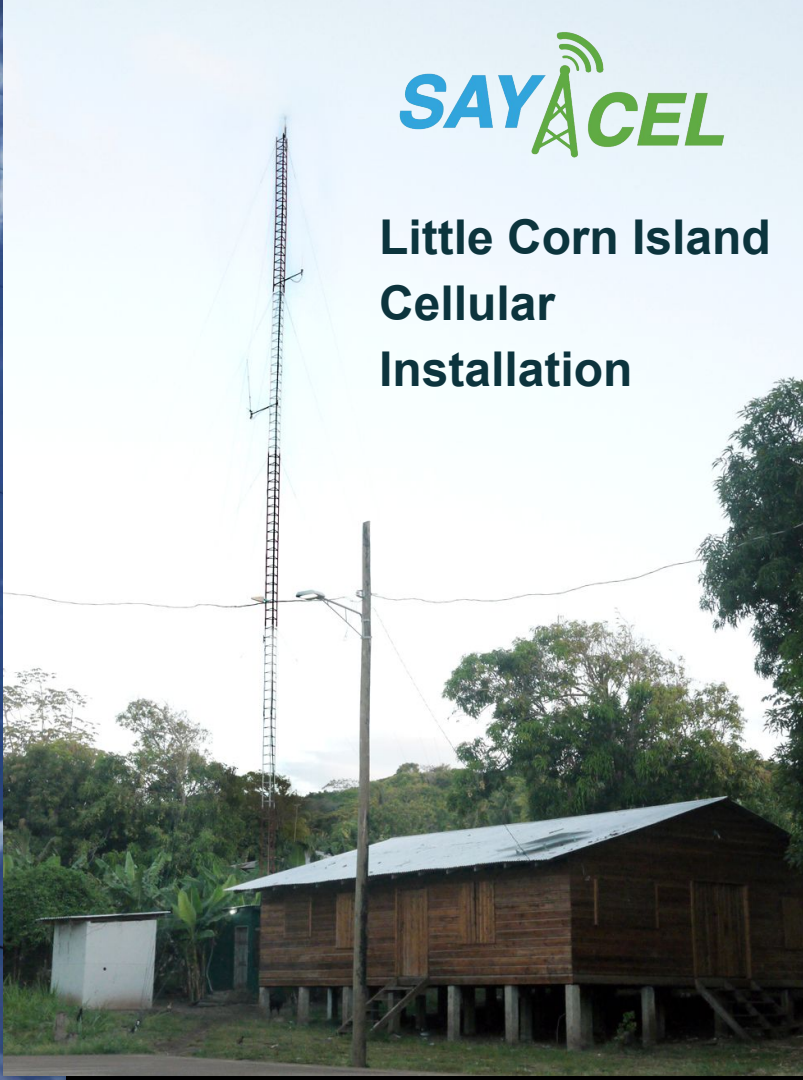


**Community
Mobile Networks**



Community Radio Likkle I





SAY  **CEL**

Little Corn Island Cellular Installation



Meetings with Communal Government

Equipment



BSC

**Base Station
Controller**



BTS

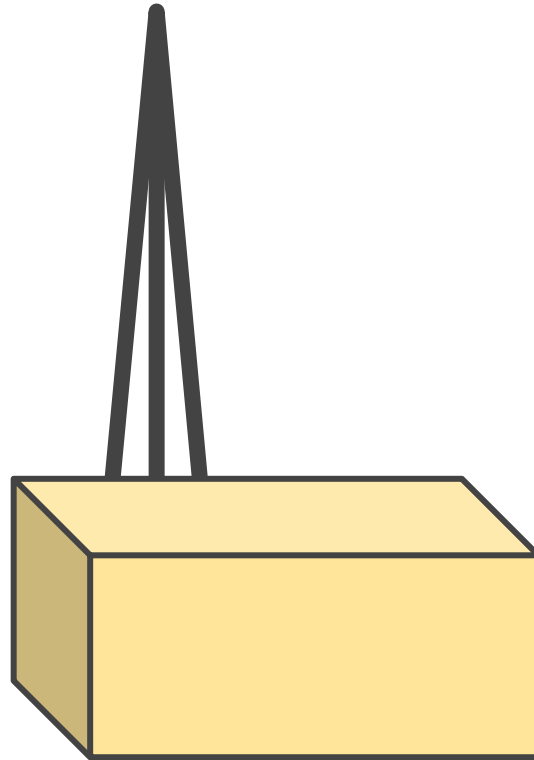
**Base Transceiver
Station**



Antennas

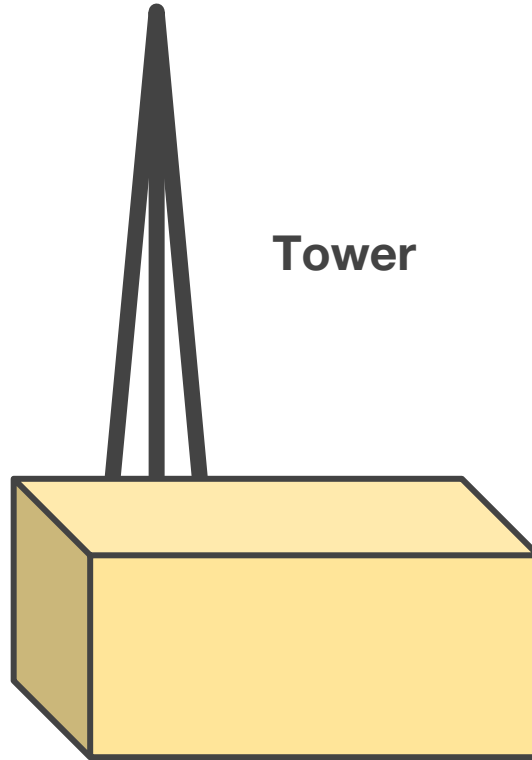
Omni-Directional

Community Cellular

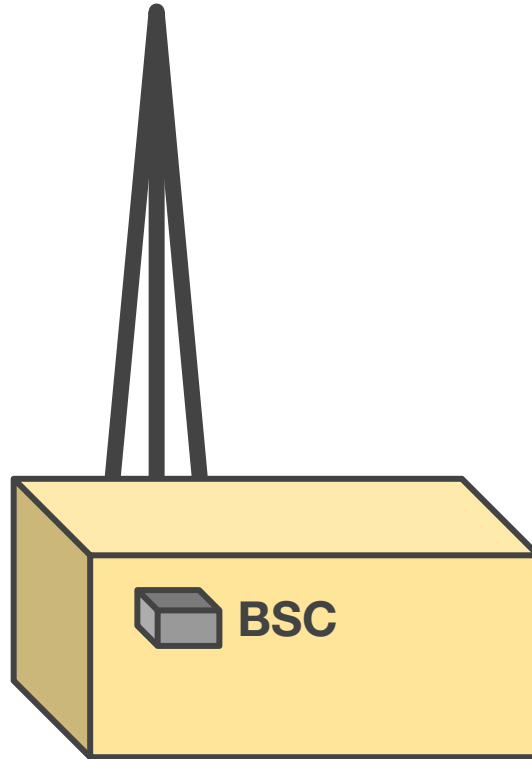


Communal
Radio
Station

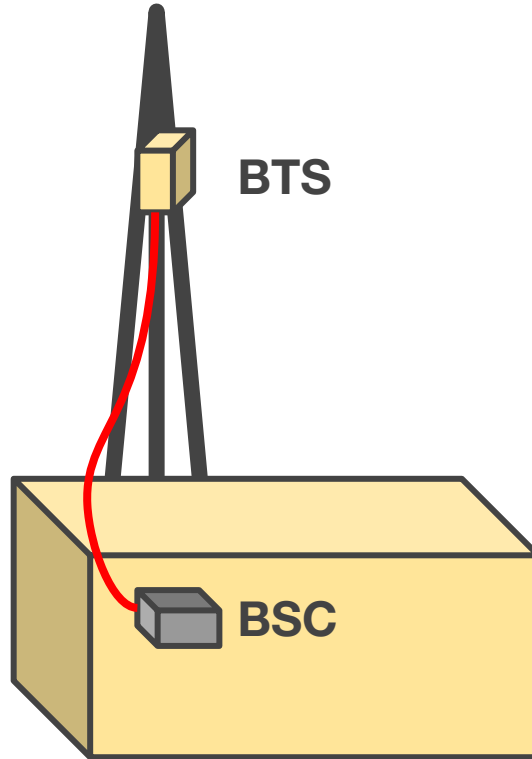
Community Cellular



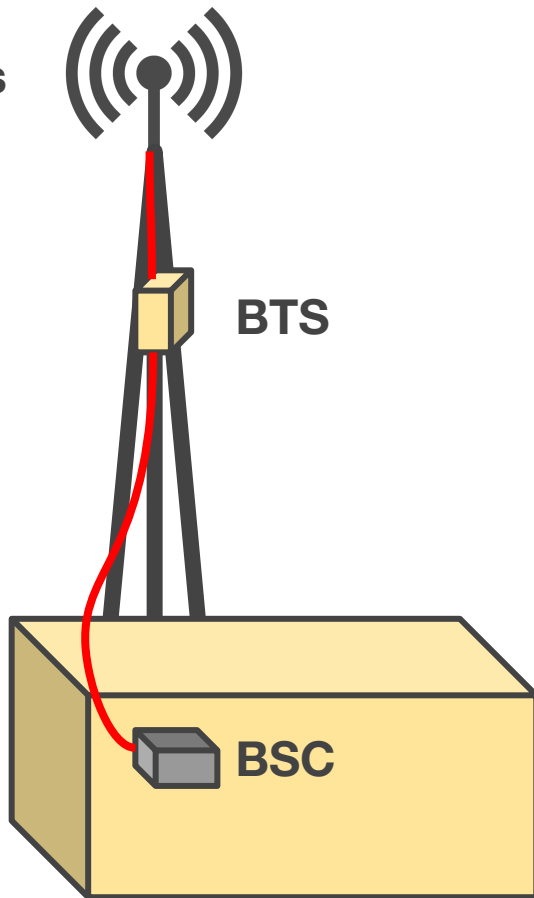
Community Cellular



Community Cellular



Antennas



BTS

BSC

Community Cellular

Antennas

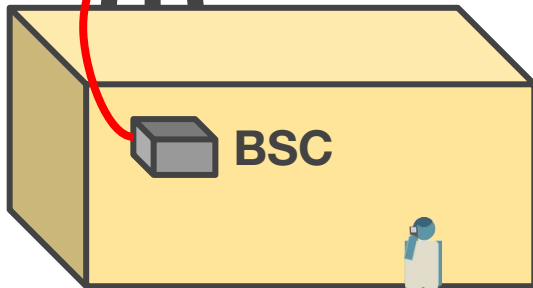


BTS



BSC

Communal
Radio
Station



Community Cellular



Antennas



BTS

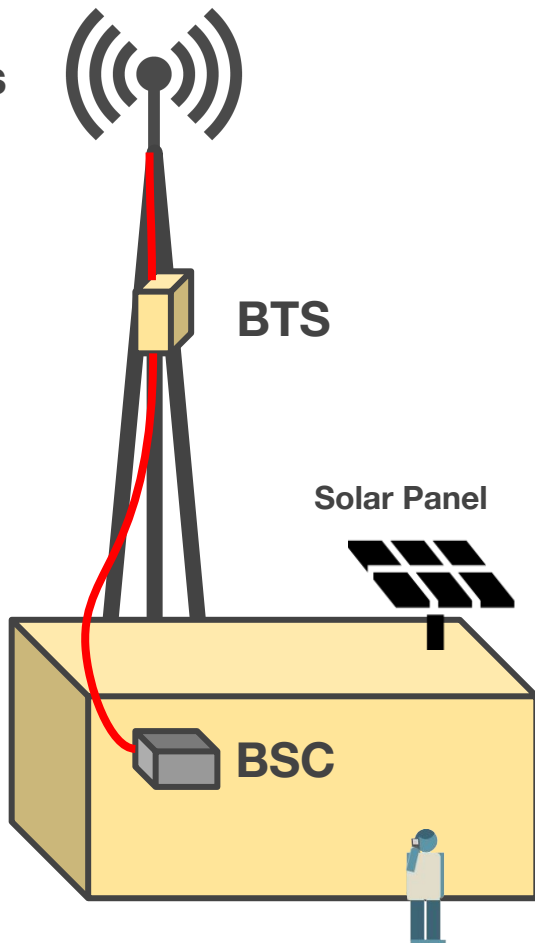
Solar Panel



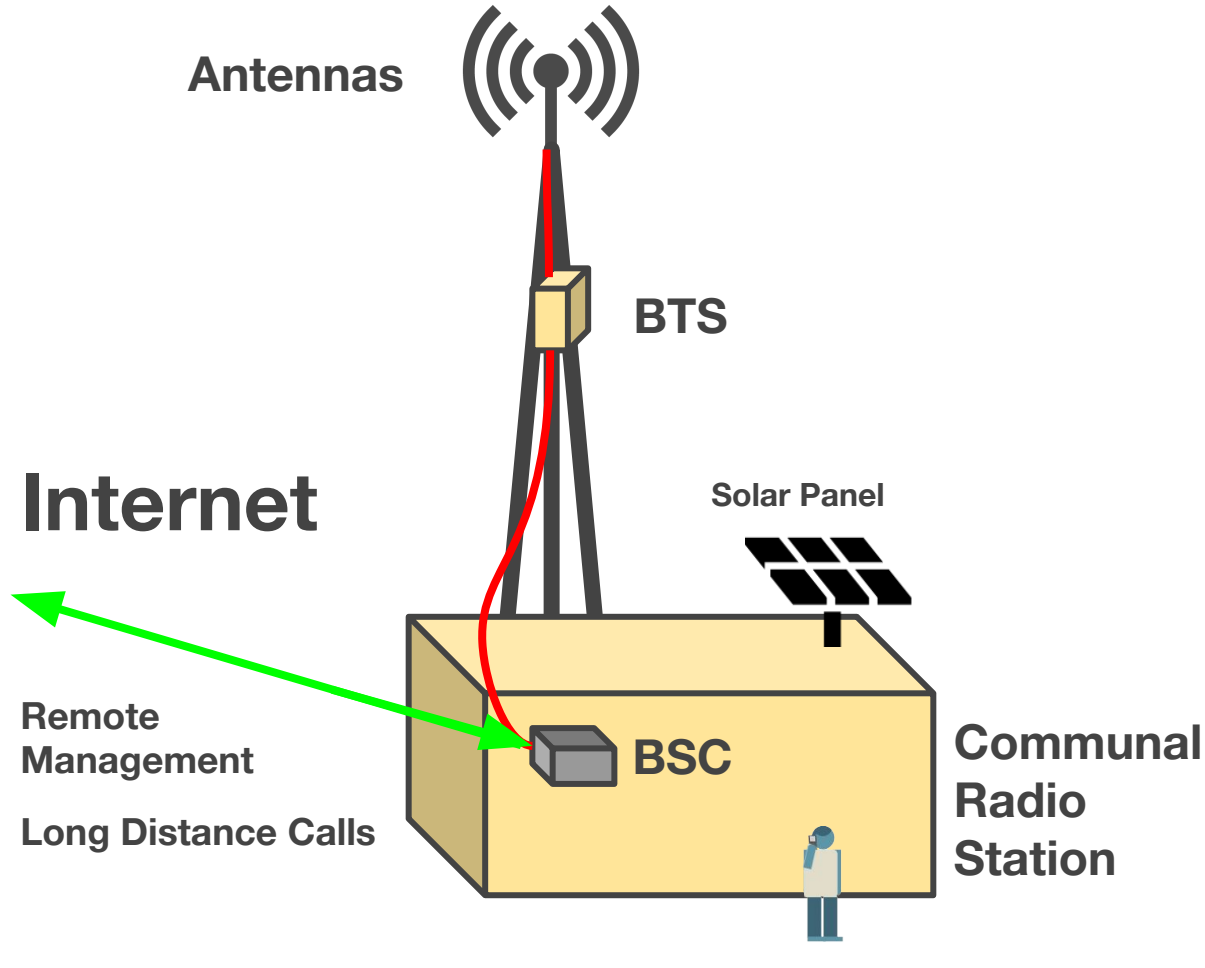
BSC

Communal
Radio
Station

Community Cellular



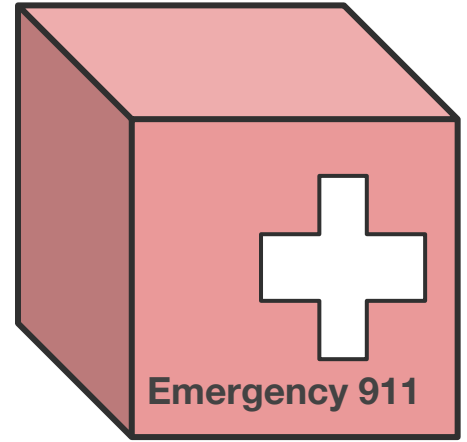
Community Cellular



Community Cellular Services



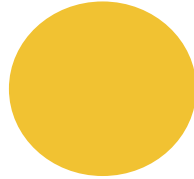
**Unlimited
local calls
and texts**



Pearl Lagoon Study

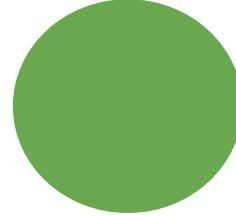


*Units: Dollars
per month*



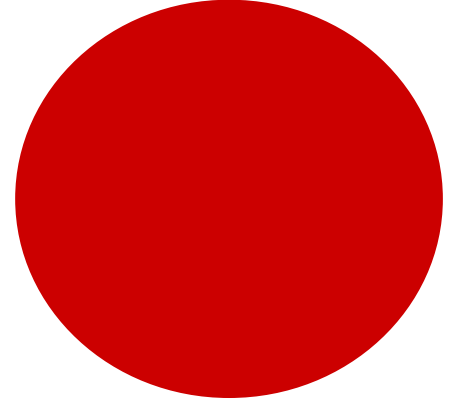
\$14.38

Average
Postpaid



\$17.25

Average
Prepaid



\$72.73

Maximum
Post-Pre-Paid

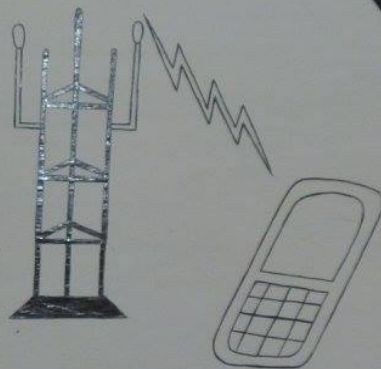


SAY  **CEL**

**NYU STERN
Entrepreneurial
Challenge**

**Social Venture
Award**

COMMUNAL
GOVERNMENT
PEARL
CELL





PEARL  **CEL**
Community
Cellular
Network

**FOR FRIENDS & FAMILY
TO BE CONNECTED**







FISHLINE SMS



FISHLINE SMS Community Advertising



FISHLINE

SELL ANYTHING
NOT JUST FISH !



DO YOU HAVE A
SHOP?

ADVERTISE WITH
FISHLINE

AND GET
ANNOUNCEMENT ON THE
RADIO



Challenges



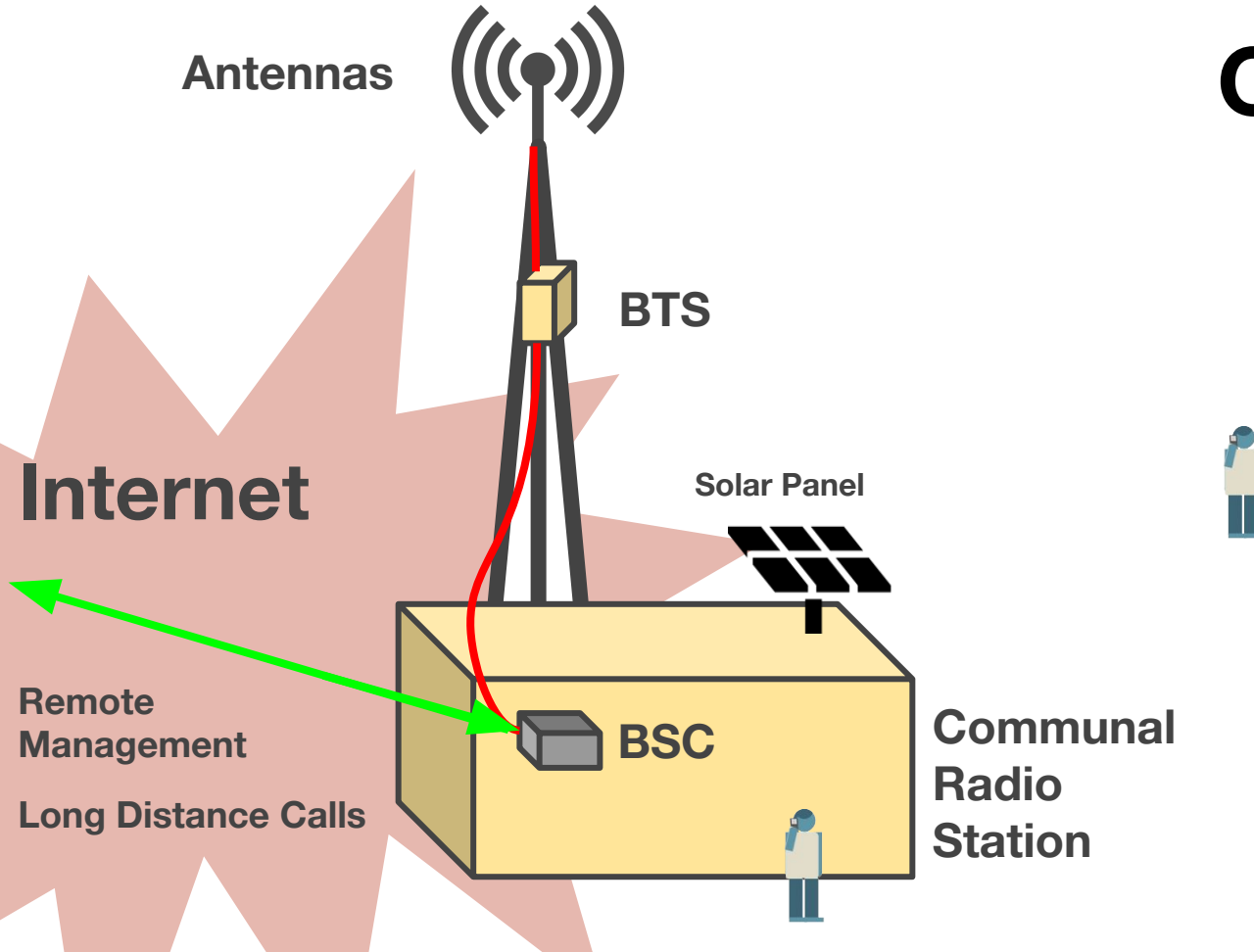


Electricity & Infrastructure

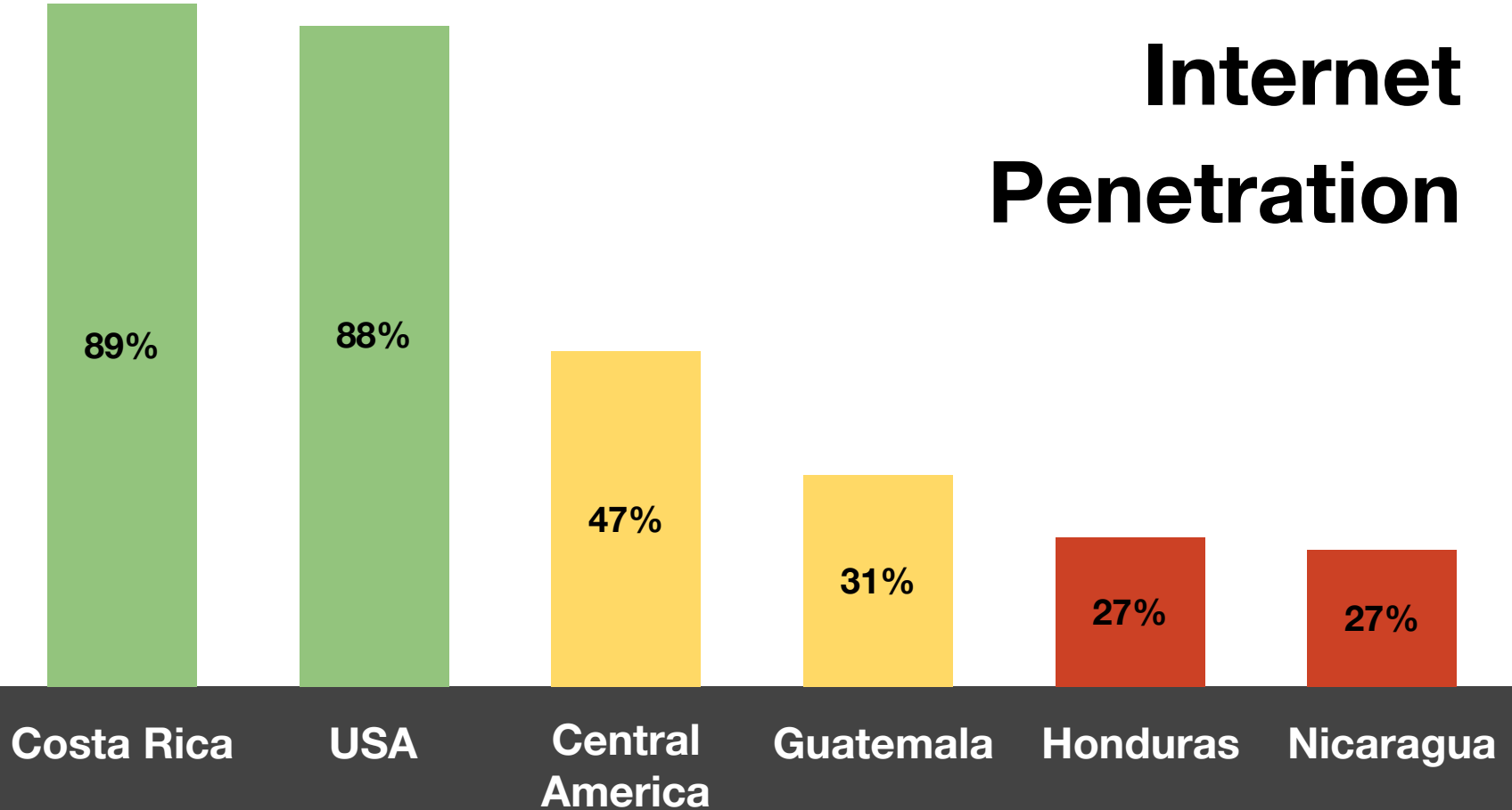


Internet Backhaul

Community Cellular



Internet Penetration





SAY  **CEL**



Bluefields





**Fastest
Internet
Nicaragua**

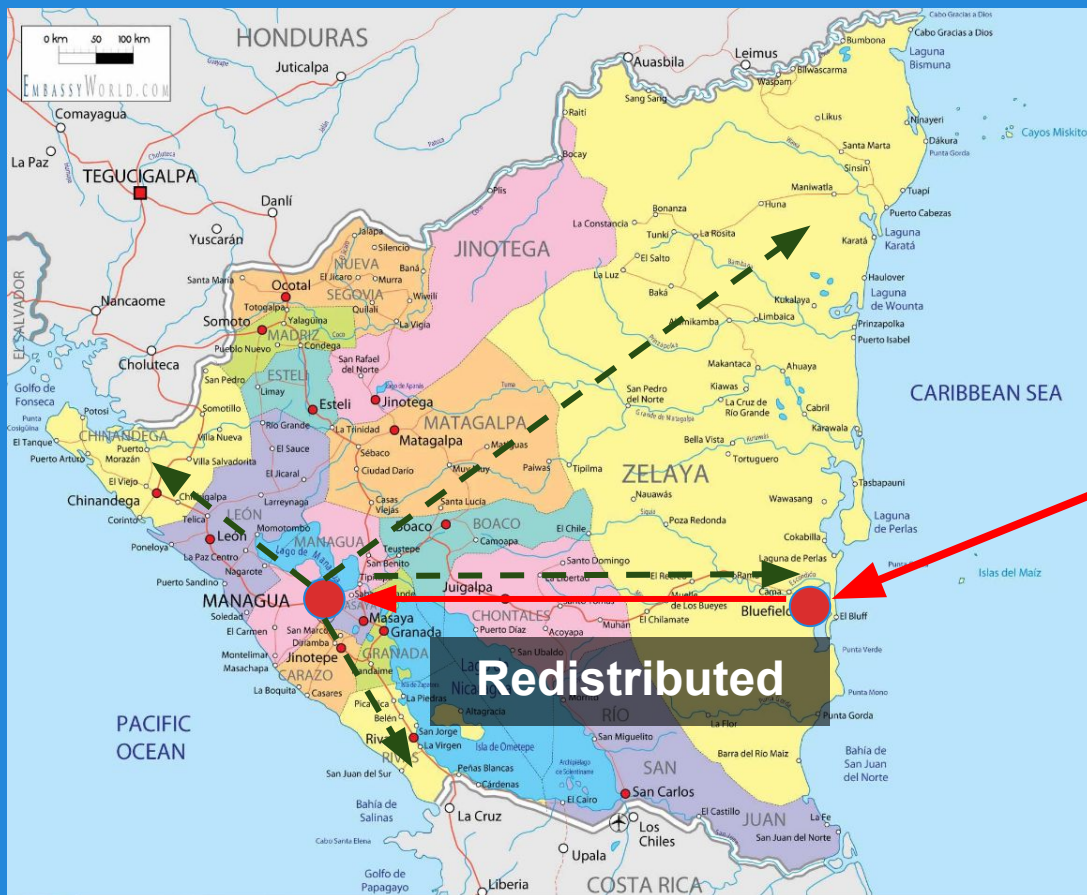


Bluefields Colocation Facility

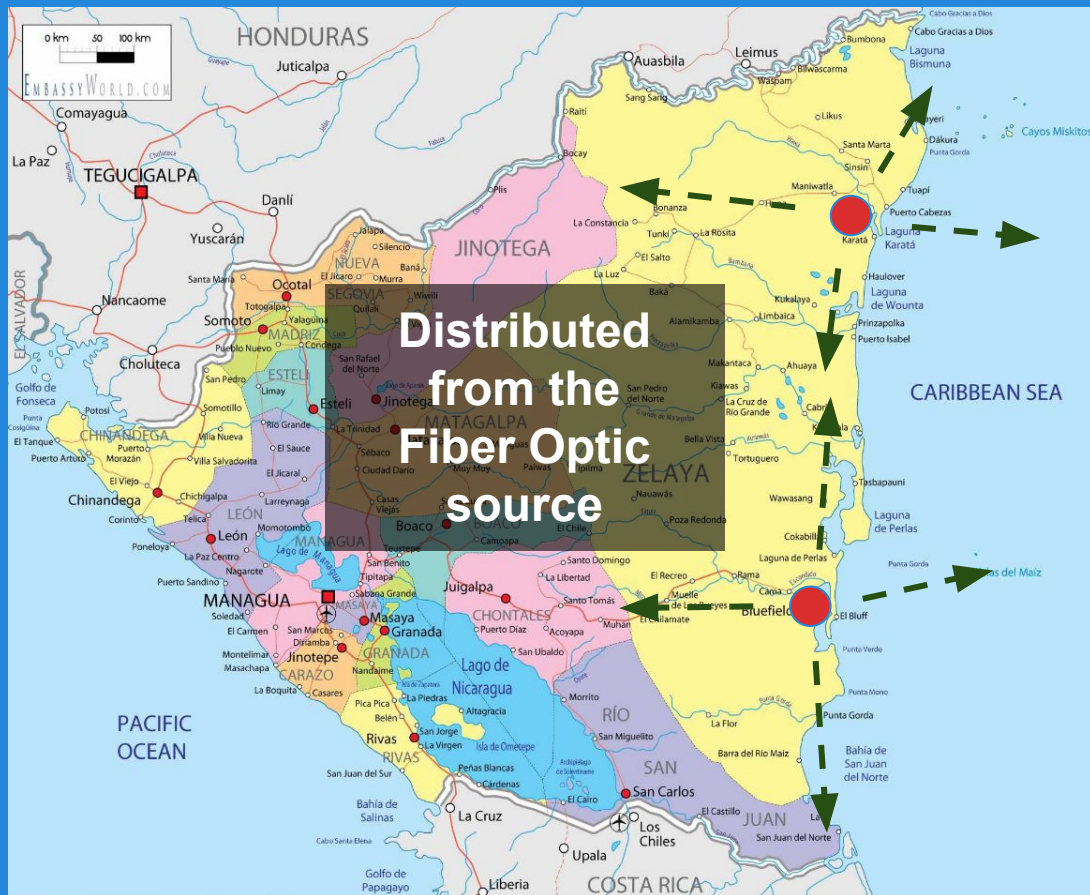


Bluefields Colocation Facility





Bluefields Colocation Facility



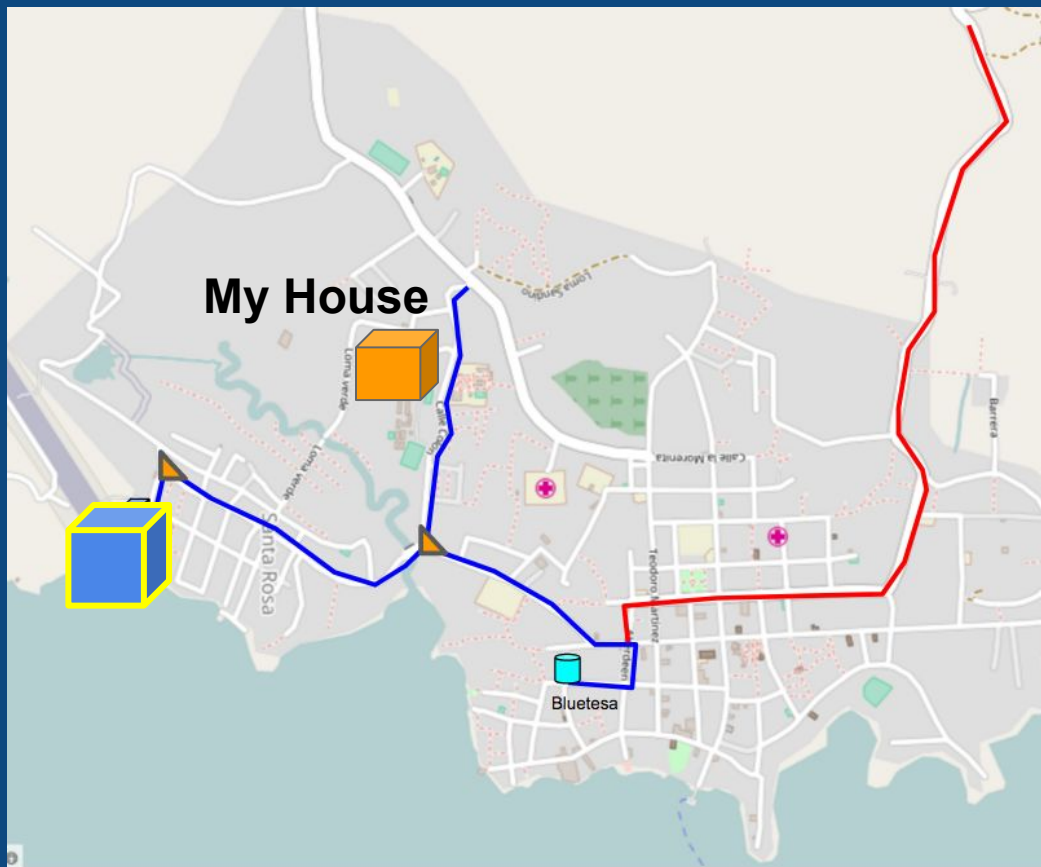
SAY  **CEL**

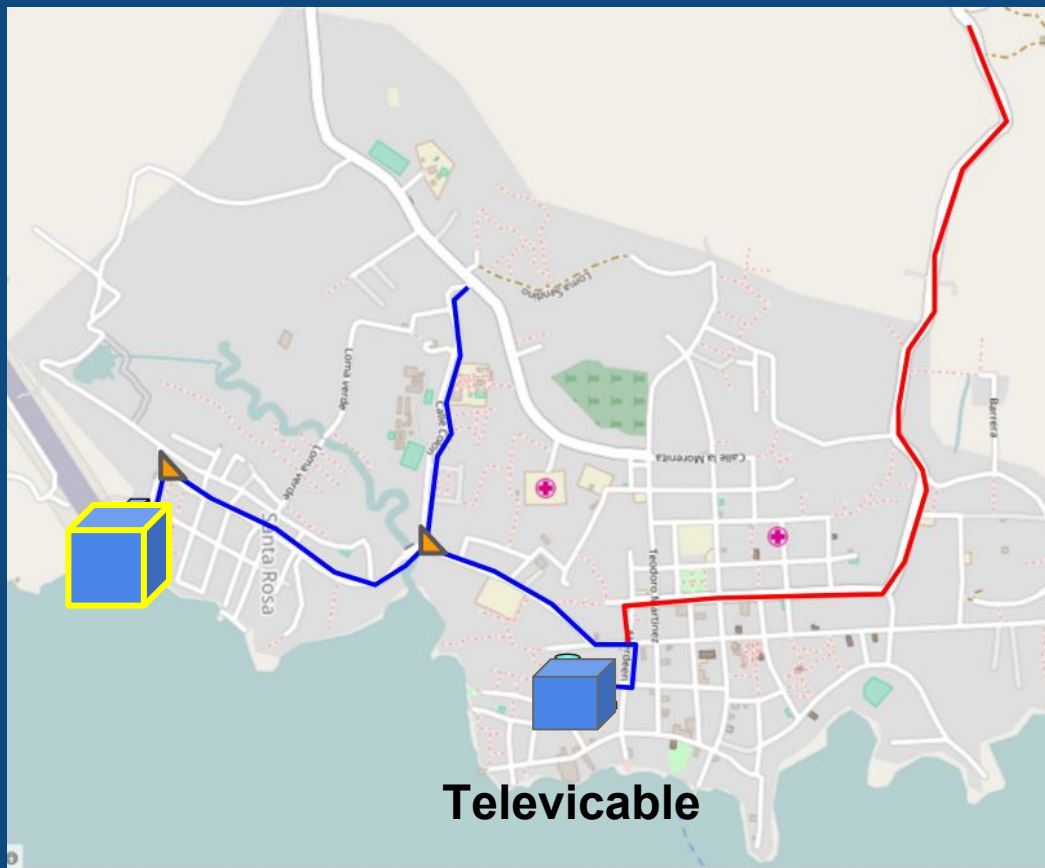


Fiber Connection







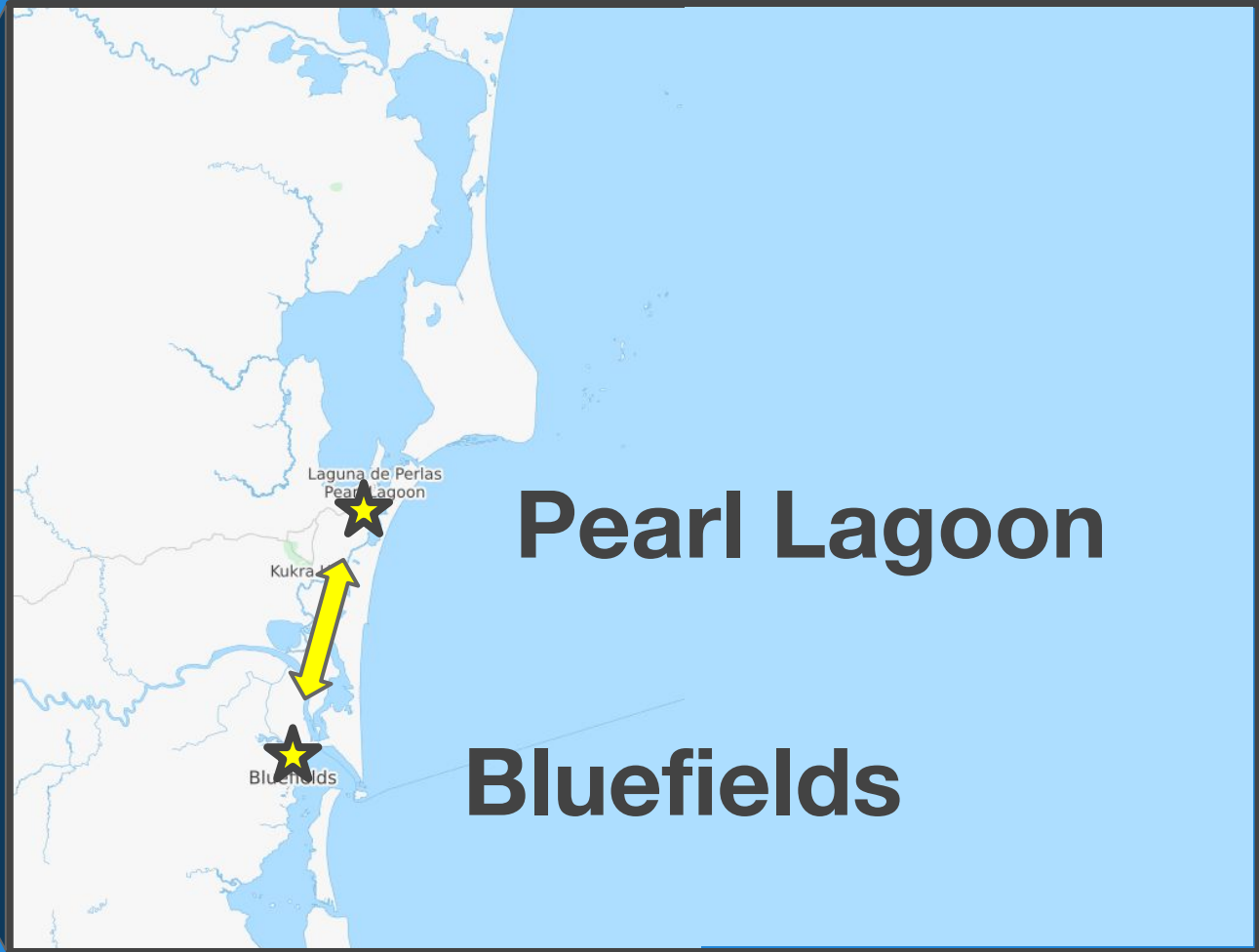












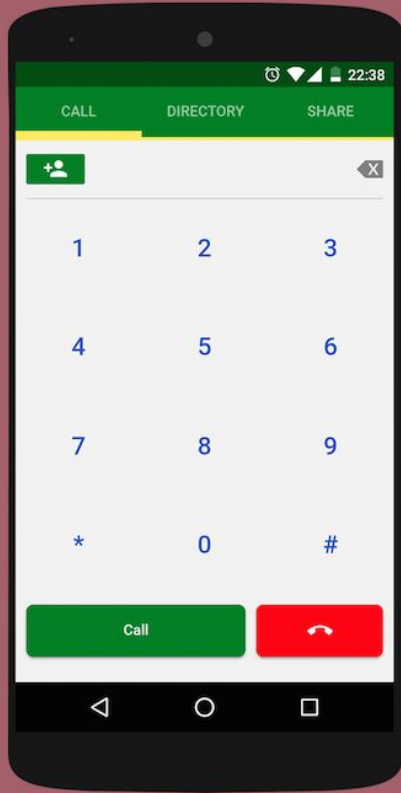
SAY  **CEL**



**Internet Service
Provider**



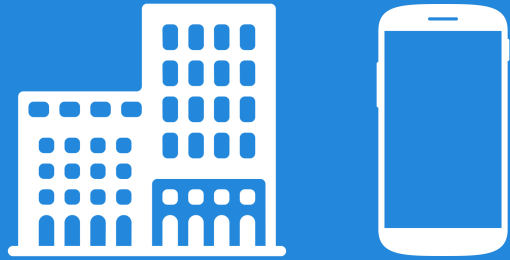
~~Internet Service
Provider~~



WebPh.one

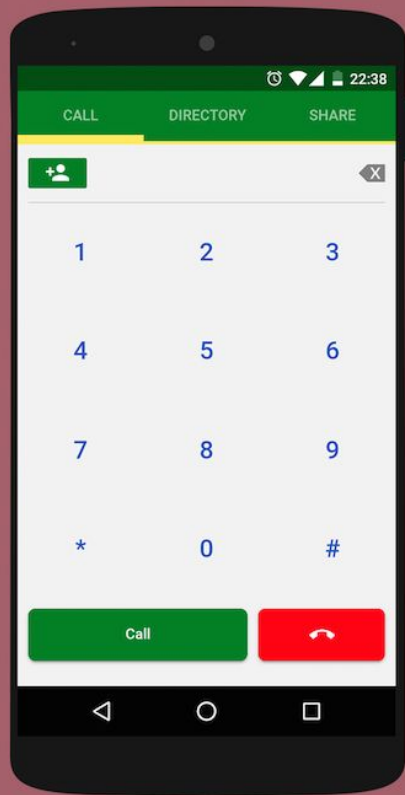
Open Source
Communication App
for Community Networks

Internet Networks

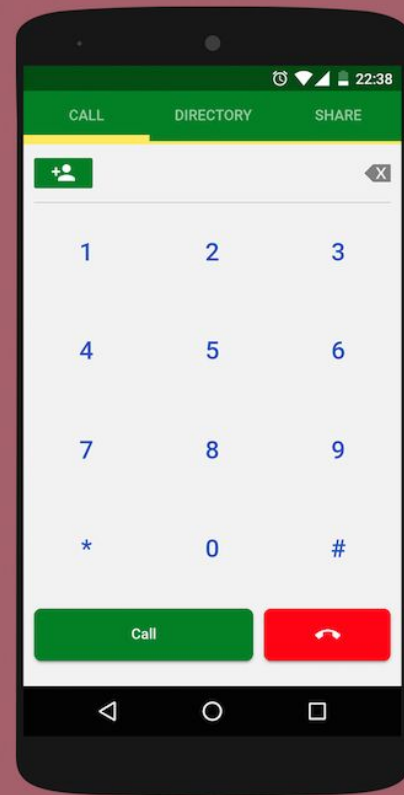


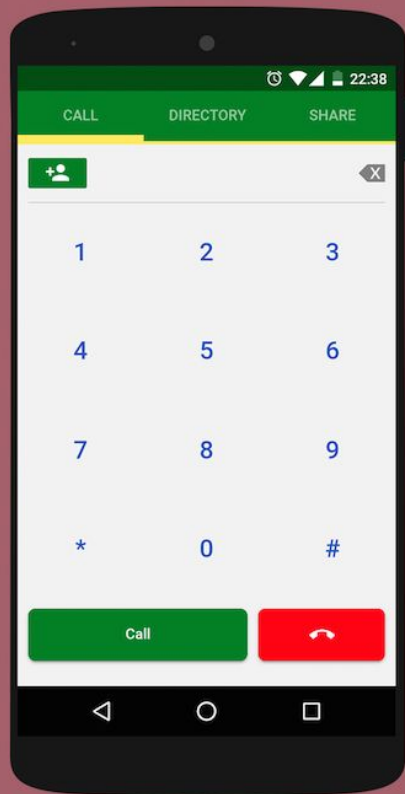
Community Networks



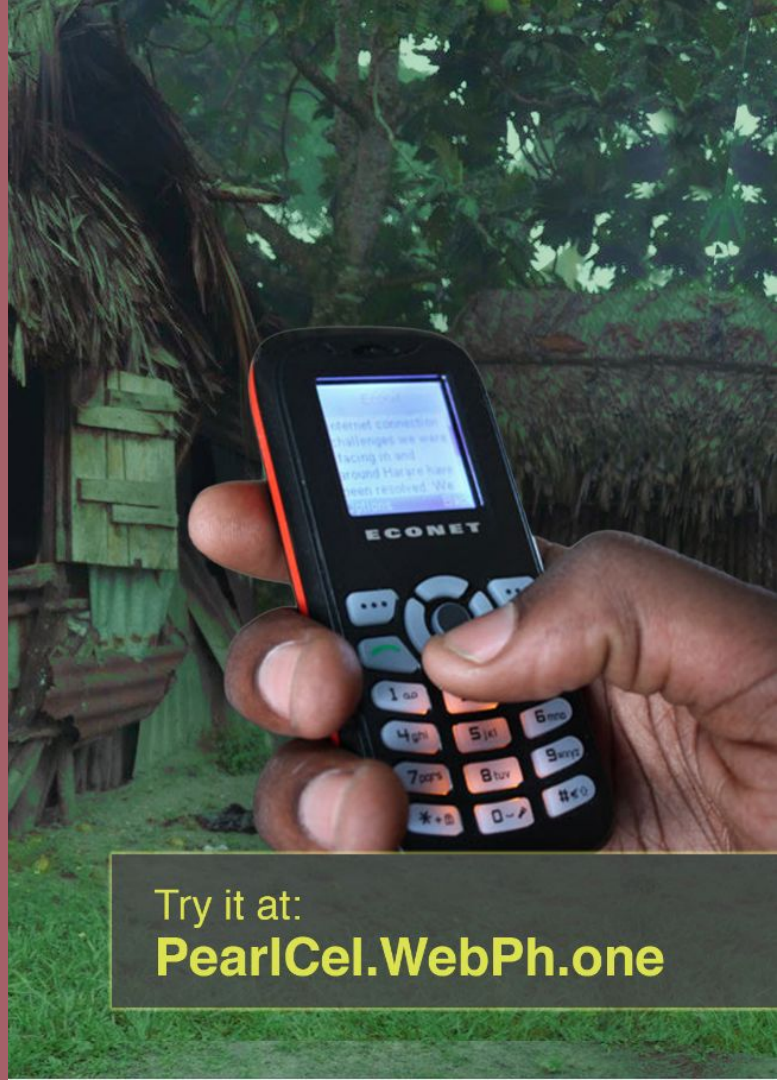


WebPh.one



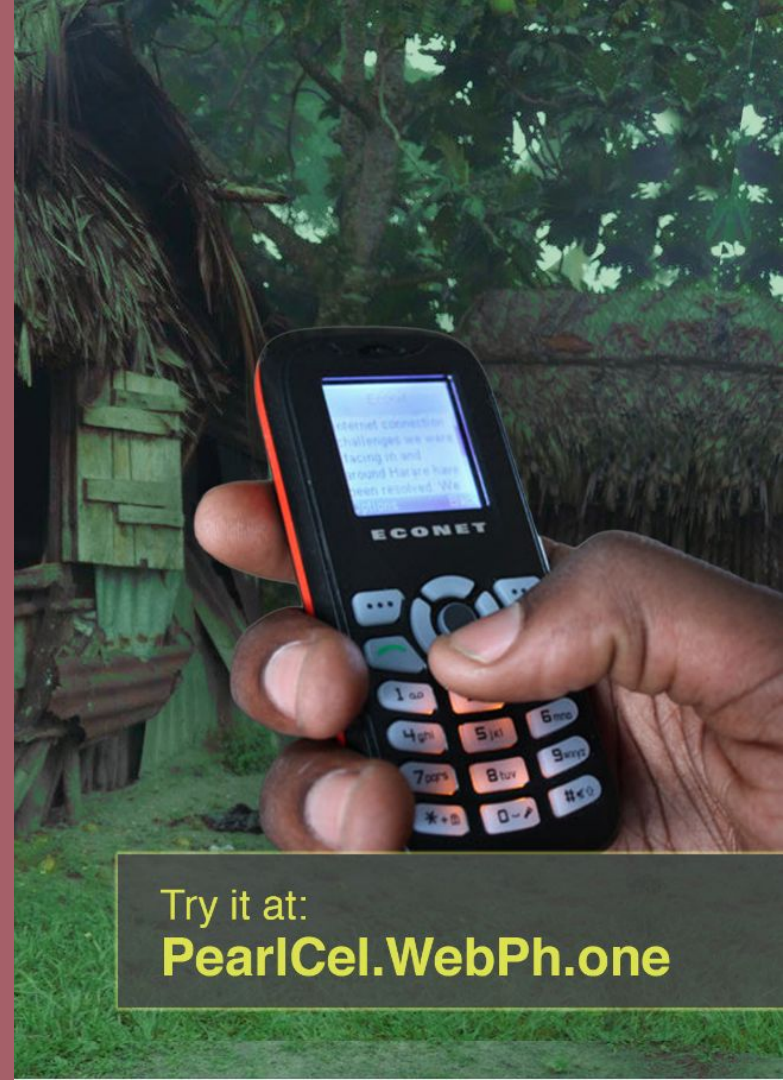
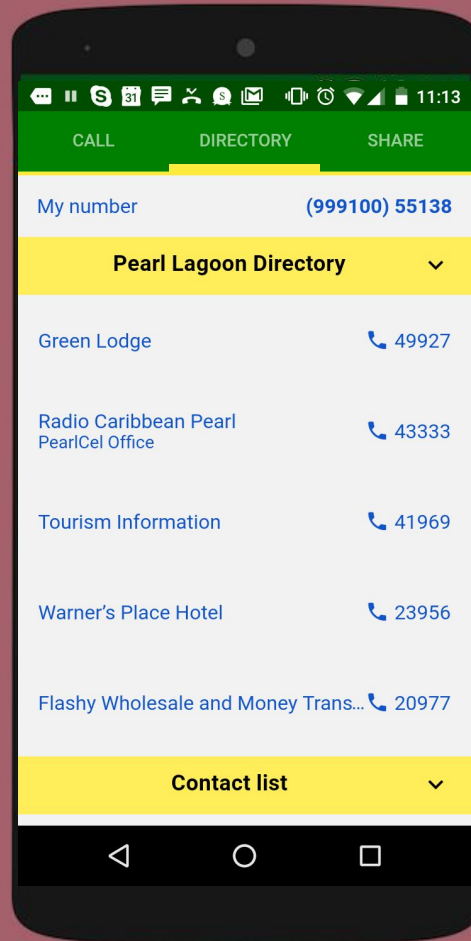


WebPh.one



Try it at:
PearlCel.WebPh.one

Local Directory



Try it at:
PearlCel.WebPh.one

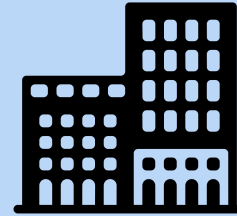


~~Internet Service
Provider~~



~~Internet Service
Provider~~

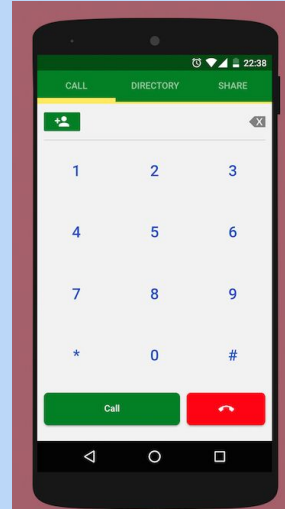
Large Local
Area Network
Bluefields





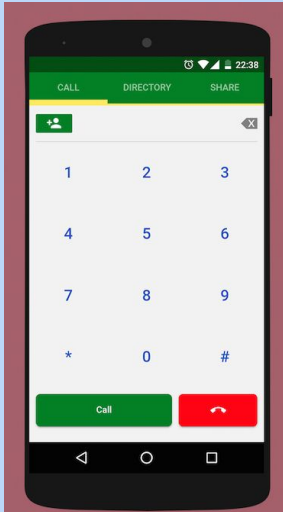
~~Internet Service
Provider~~

Large Local
Area Network
Bluefields

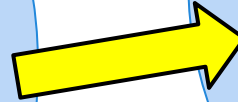


WebPh.one

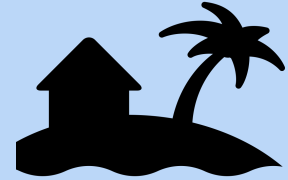
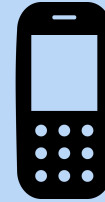
Large Local Area Network Bluefields



WebPh.one



Pearl Lagoon Network





SAY  CEL

THANK YOU



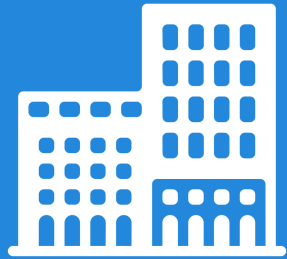
SayCel.com

Webphone.saycel.com

PearlCel.WebPh.one

Facebook.com/SayCelNica

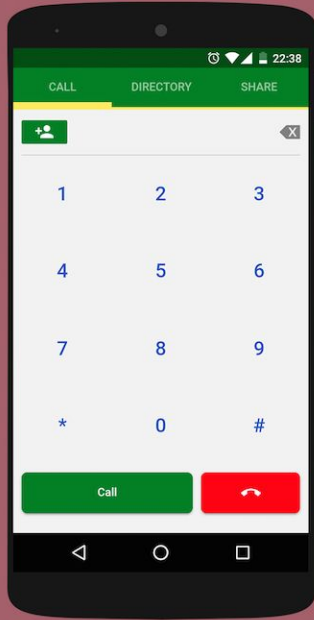
Intarnet ~~Internet~~ Networks



Community Networks



Internet ~~Internet~~ Networks



WebPh.one



Community Networks





TELECOM INFRA PROJECT



Problem:
Call from a web-enabled device to a Open Source Cellular BTS

