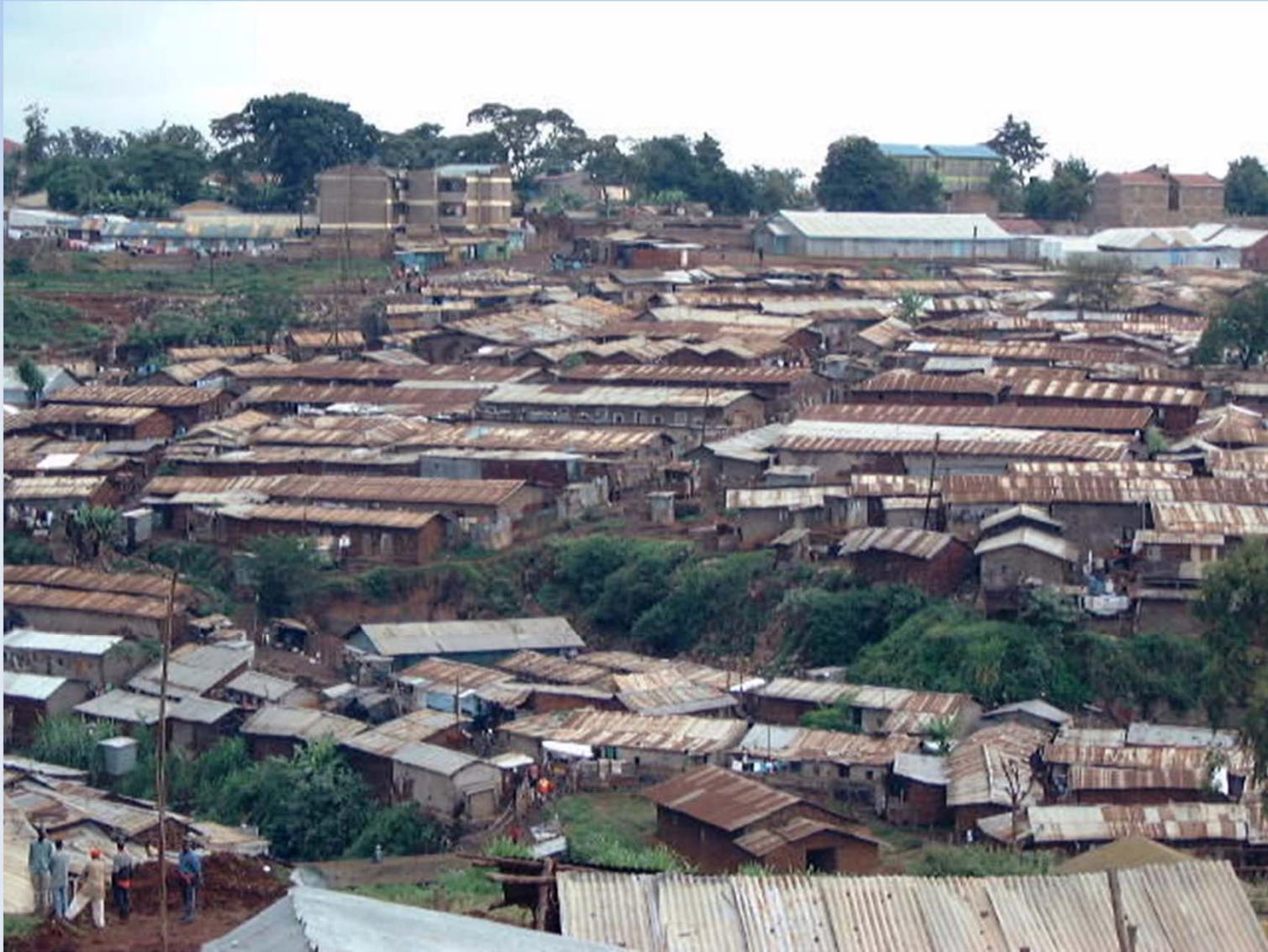


# Village Telco

- The Problem
- Village Telco
- Mesh Potato
- Dili Village Telco

# Cities of the Future



# The Problem



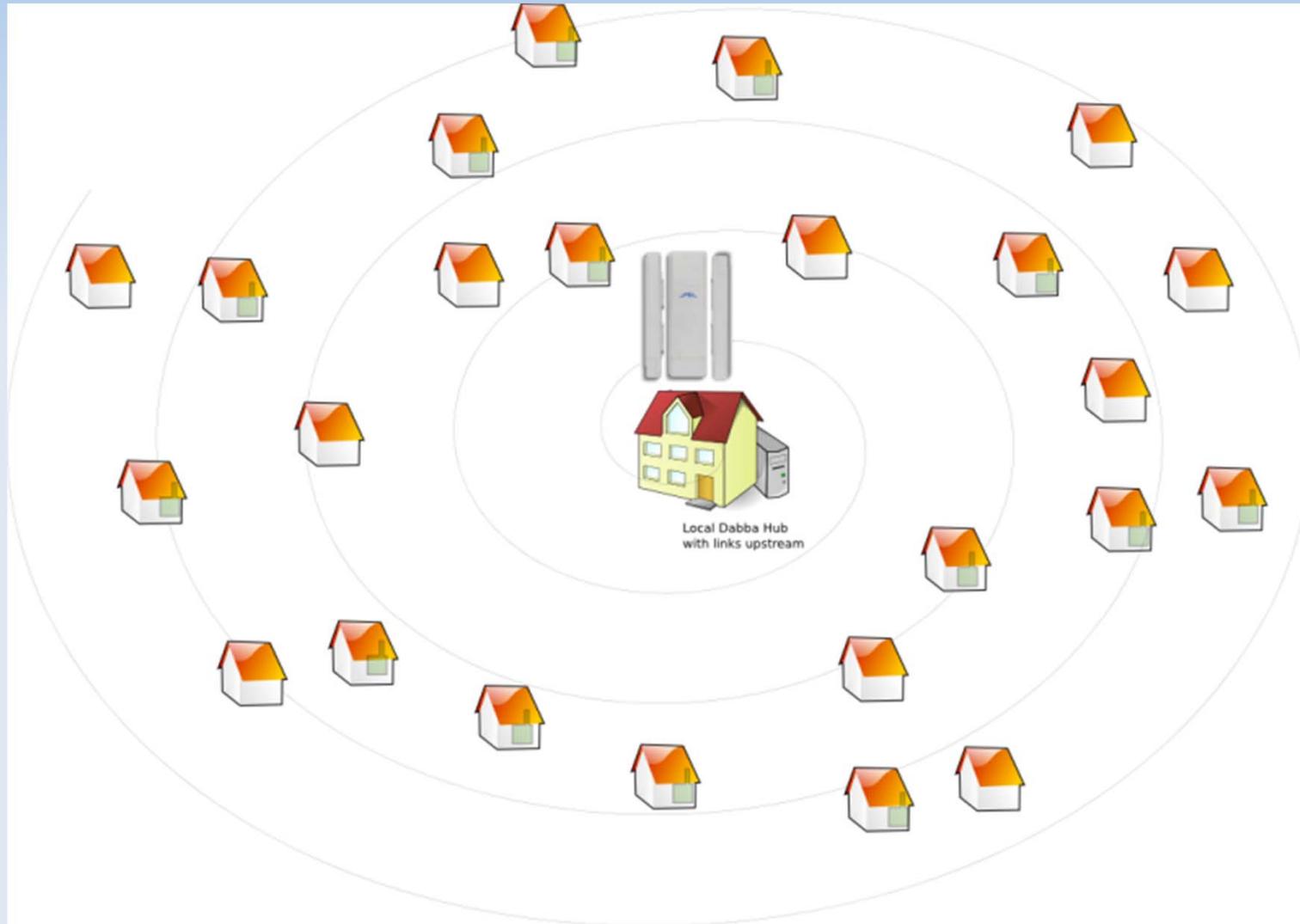
# Village Telco - The Problem

- In many countries mobile phone calls are very expensive
- For example US\$0.25 cents/minute
- Average Income \$1.52/day
- messages delivered by driving, runners, tax on business
- A phone call should be a human right, not a privilege of the rich

# June 2008 Workshop



# Village Telco

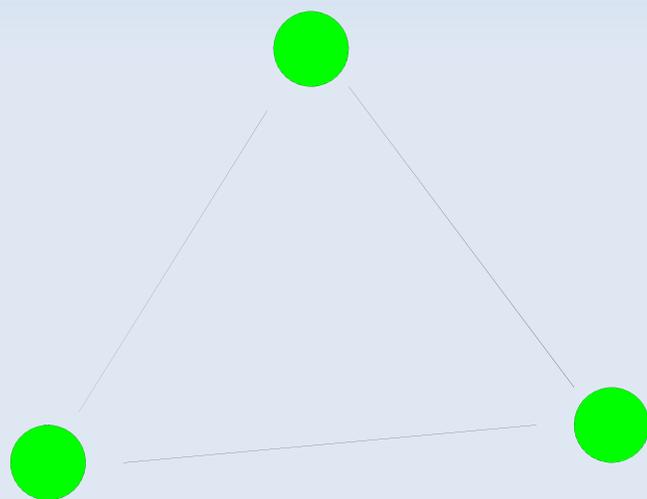


# Village Telco

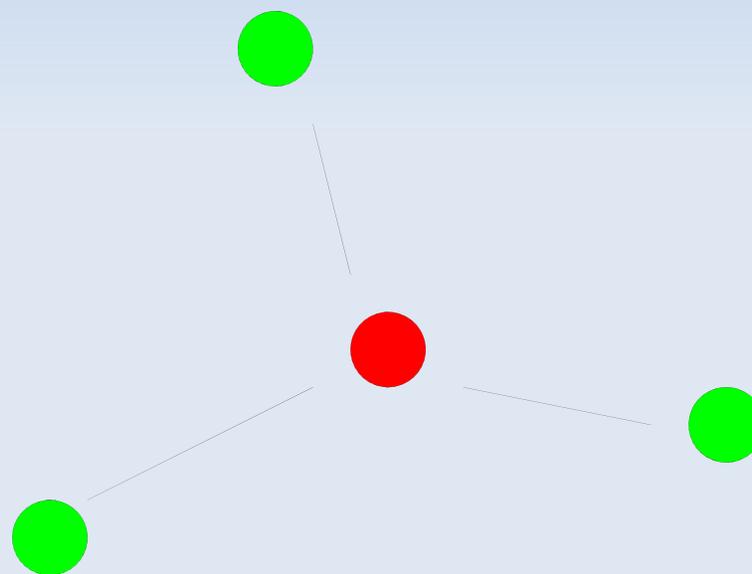


# Mesh Wifi

- No AP

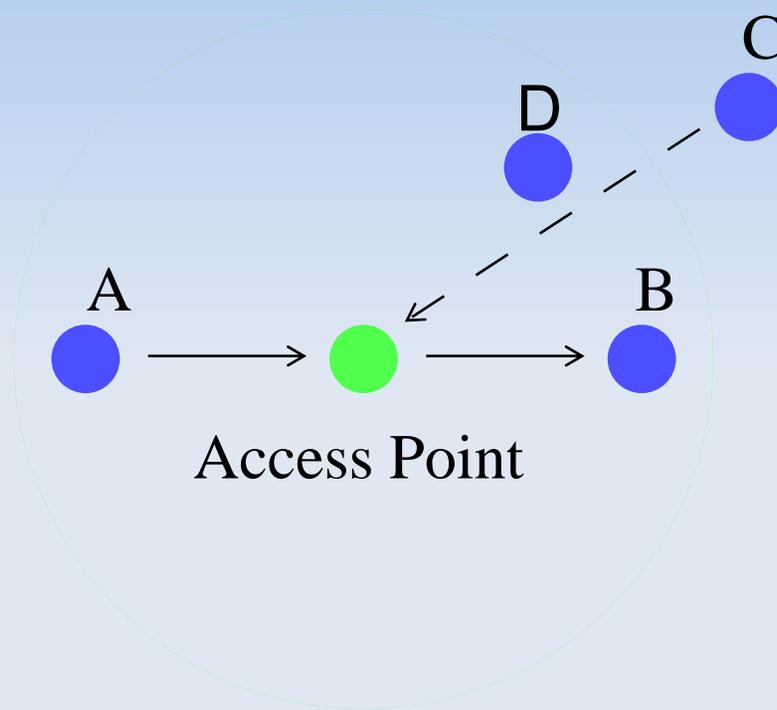


Mesh Wifi



Regular Wifi

# Advantages of Mesh Networks



Extended range

# Village Telco Goals

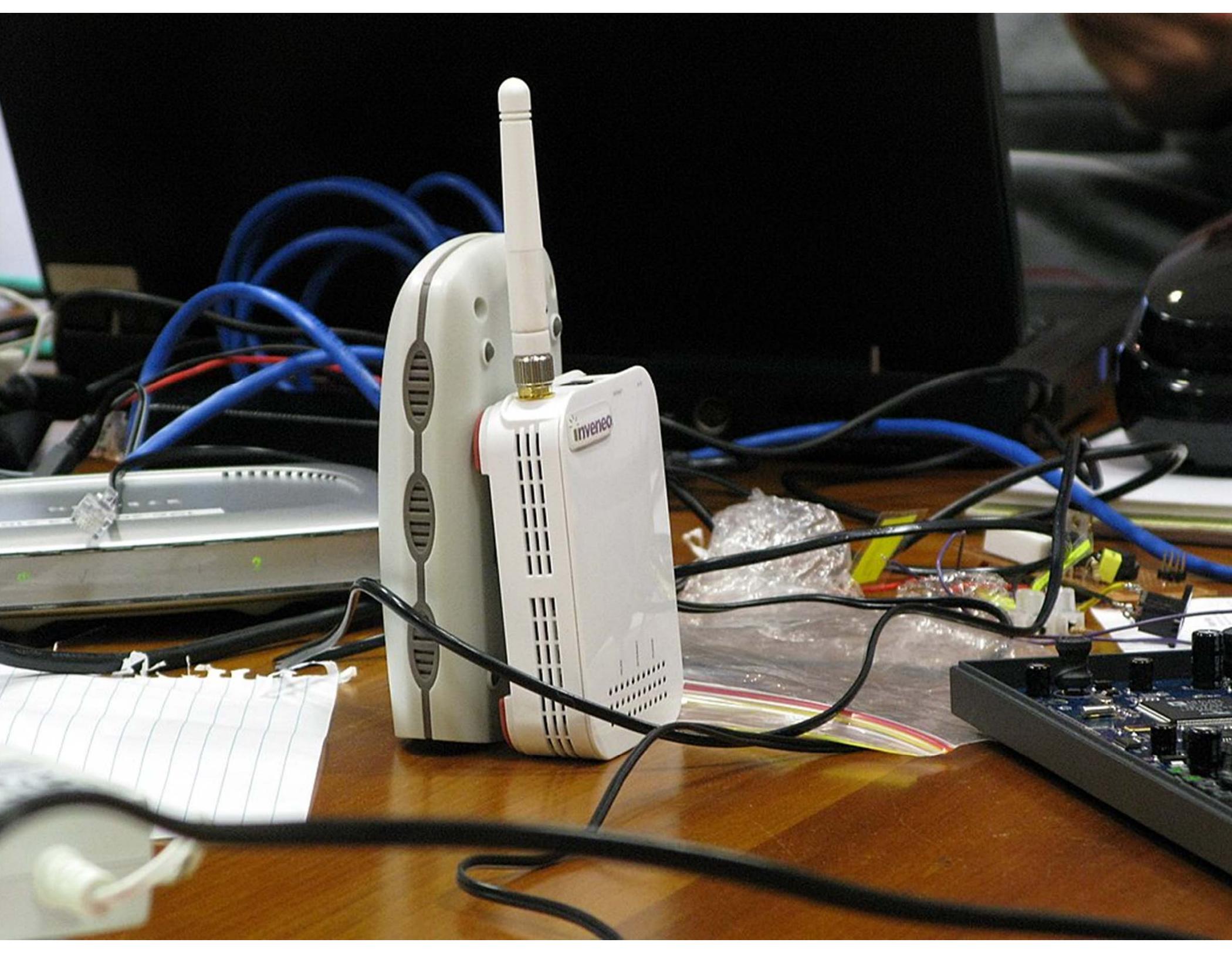
- Small Telco business for 2<sup>nd</sup> or 3<sup>rd</sup> world
- Self sustaining business (viral growth)
- Scalable up and down
- Business for a reasonably geeky entrepreneur
- \$5,000 Capital
- 6 months break even
- Grounded in business (not tech or charity)

# Village Telco and Cell Phones

- Call Cost
- Community Approach
- Unlicensed Spectrum
- Infrastructure cost and availability
- Cell Phone networks don't scale down
- Capital (it's not just the handsets)

# I d e a s

- Cell Networks (closed, strong licensing, high cost/bit) versus the Internet (open standards, unlicensed, anyone can connect, low cost/bit).
- Community ownership versus big business or government
- Development: Many good projects have been ruined by money
- Voice is the killer application.



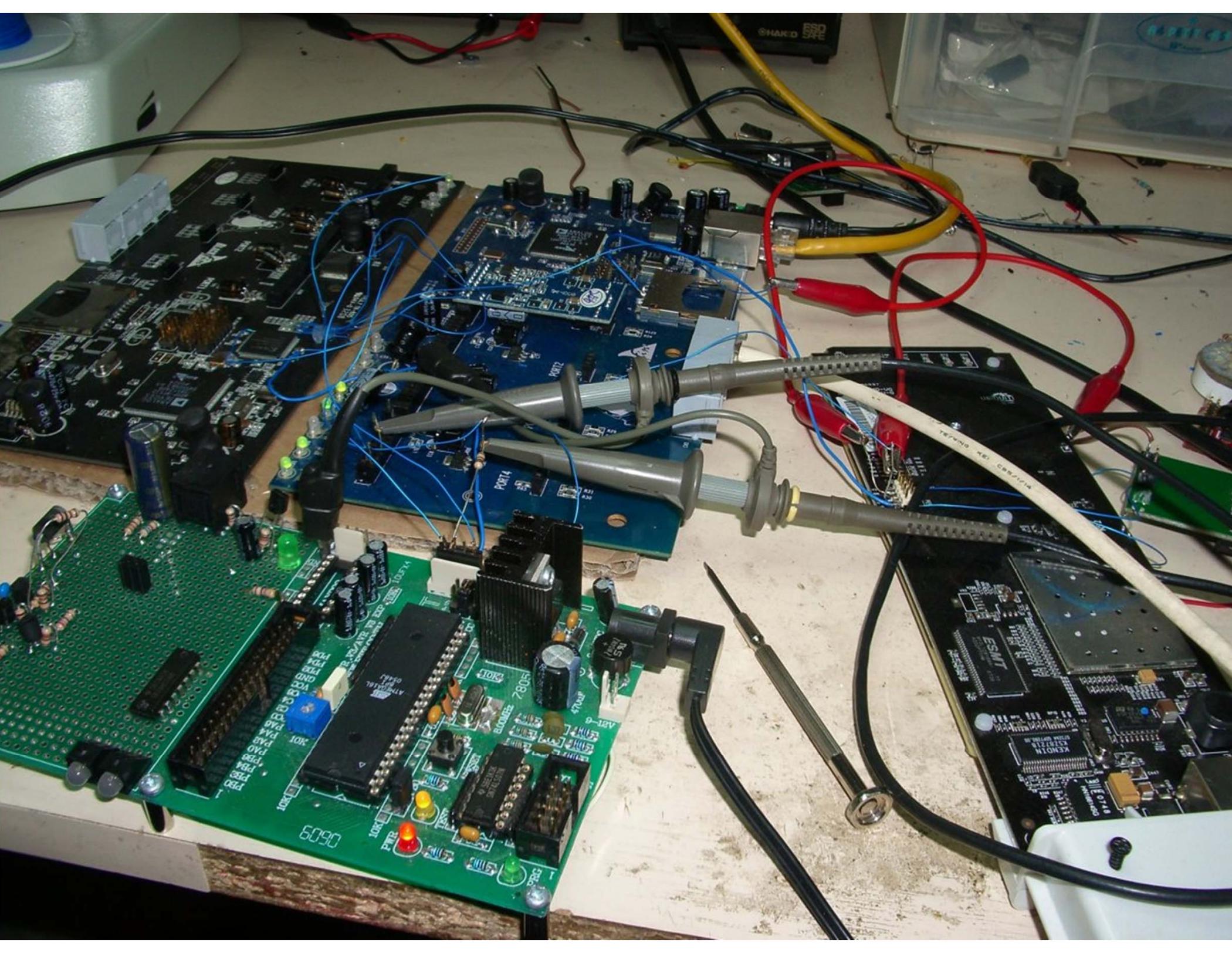
# Mesh Potato

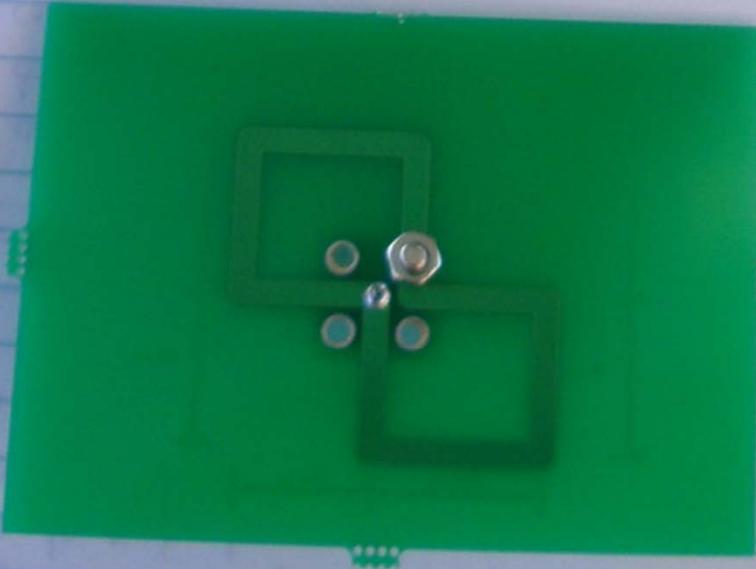
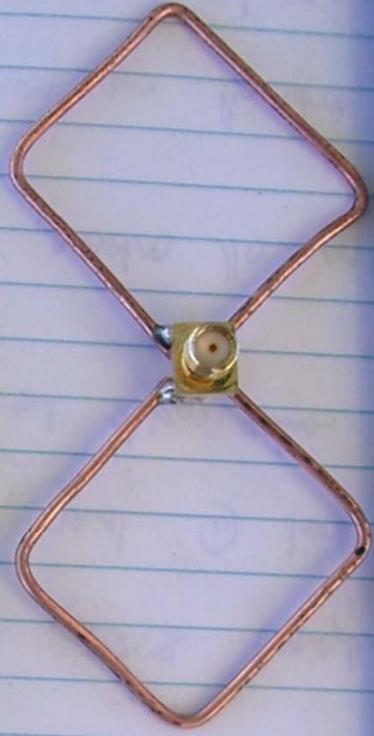
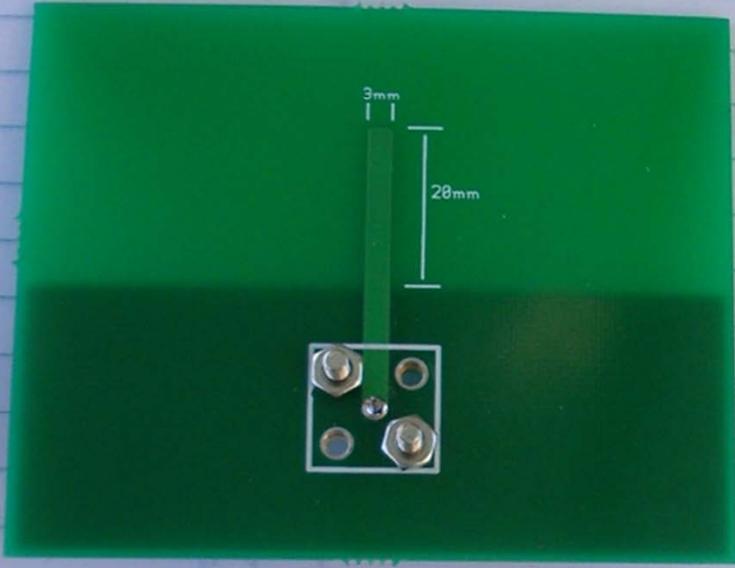
- wifi land line
- POT-ATA
- target USD\$60
- open hardware
- product
- custom
- dev world



# Africanisation

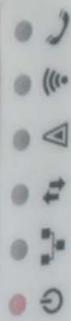
- Design for real world problems based on field experience of Village Telco team
- Reverse polarity on DC connector
- 240VAC connected to DC connector!
- Wide range AC adaptor (350VAC)
- Humidity, rain, hail, connector weatherproofing
- lightning protection on phone port







ATCOM



35

MeshPotato

# Dili Village Telco

- First real world deployment of Village Telco
- Partnership with Fongtil – Timorese IT & Wifi guys
- Not just technical problems!

# Dili Village Telco





# Life in the Developing World 1

- Timor was part of Indonesia until 1999
- Studied IT in Indonesia
- Involved in Timorese independence movement in 1996
- Jumped in Polish embassy to avoid arrest
- Spent 4 years in Portugal (political asylum)
- The whole country of Timor Leste was REBOOTED in 1999

# Life in the Developing World 2

- Wants to help Timor develop
- No one knows how to use computer
- No networking or IT knowledge
- Decided to work for NGO Forum (Fongtil)
- Fongtil organisation helps other NGOs in Timor with IT, VOIP, training, PC repair
- Lemi is motivated to help his country

# Life in the Developing World 3

- Bandwidth, Virus
- Power lost for hours each day
- Local Expertise, Linux command line
- Relative Cost
- Shipping (mail service, couriers)
- What happens when the foreigner goes home?
- Making anything work in the developing world is very difficult

# Dili Village Telco - Goals

## Goals

- Train Timorese to install a Village Telco network
- Install 100 Mesh Potatoes
- Build a local call telephone network

# Project Plan

- Rowetel provides training and equipment
- Fongtil and Timorese people perform installation
- Fongtil and Timorese people run and maintain network





djhonda









# Surprises

- How bad Wifi Interference can be
- Killer app is VOIP for local calls
- Value in even partial functionality
- Each phone call is like a valuable gift
- Ease of installation, no 1<sup>st</sup> world guy
- Very popular project with Timorese
- Local demand very strong

# Outcomes

- 70 nodes deployed, demand for more
- Very easy to set up
- Some problems with mesh links
- Timorese training Timorese
- A phone call can save a 3 hour walk
- Connecting rural Clinics, Police, Ambulance, NGOs, University IT support
- Really helping people every day!
- Land line training

# What Worked

- Ease of Set up
- Training
- Timorese training Timorese
- Due to popular demand - expansion to two other towns (Baucau and Ermera)
- End users very, very happy
- Strong demand for expansion
- You really can make phone calls.....

# What went Wrong

- Nasty Interference in Dili
- Usual schedule slips and staff movements
- Ease of use idea breaks down in some cases and we are back on the command line
- Reliance on 3<sup>rd</sup> party hardware
- Local calls means no business model

# Patience

- Different to the 1st world
- Imagine your power going off for several hours a day
- Usefulness in even partial functionality
- 1/5 tech projects actually work
- Its OK if it takes a few more months
- as long as WE know how.....

# Future

- Timorese team will continue to expand in 2011
- Improve long distance links
- Work on business model
- Timorese now spending own valuable \$ now grant money has finished
- In Developing World projects it doesn't get any better than that.....

# Thanks

- ISIF and ISOC grants
- Atcom, who manufacture Mesh Potatoes
- Shuttleworth Foundation, who supported the Village Telco project
- Village Telco community
- <http://dili.villagetelco.org>
- TAPR