

# How will life change in the future mobile information society

another opportunity for developing economies



using rural India as an example

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# Outline

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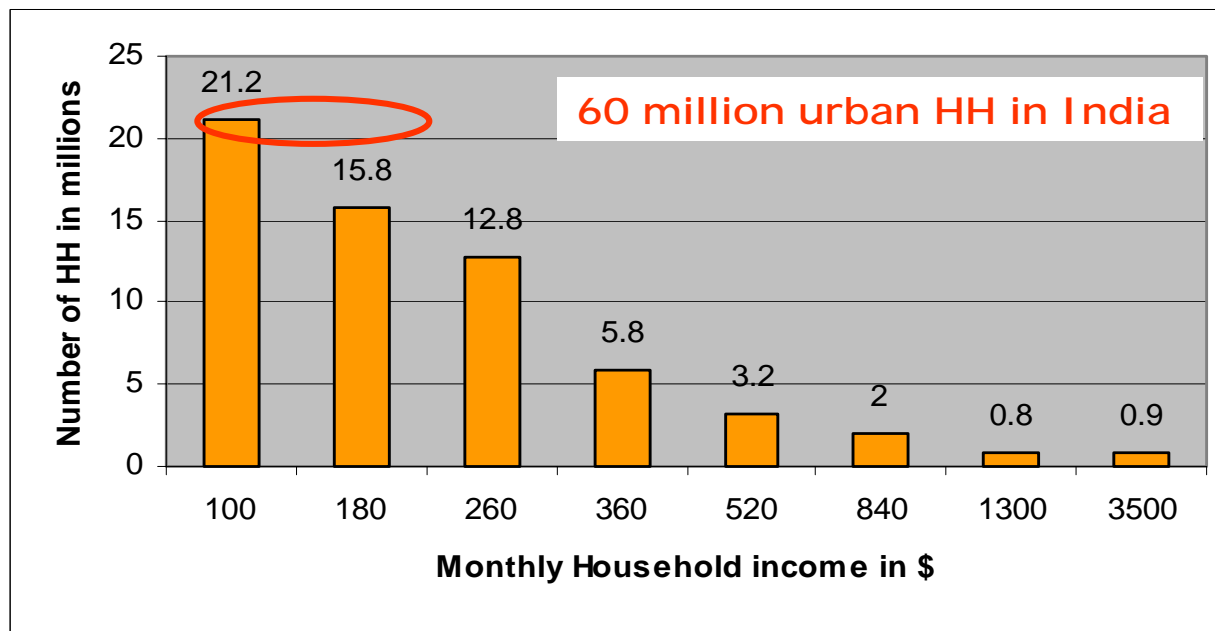
- Can Developing Economies afford Communications?
  - Upwards of 3.5 billion people (other than China)
    - India has a billion
      - represents average of Developing Economies (minus China)
    - multiply India Population Vs Income number by 3.5 to get the Developing Economy (minus China) numbers
  
- How does communications change life in these countries?
  - Education
  - Health
  - Incomes -- GDP
  - Lifestyles, way of work

# The Urban Population : 30%

300 Million in India -- a billion people in Developing Economy

Monthly telecom expenditure (assuming 4% income can be spent on telecom)

4    7.2    10.4    14.4    20.8    33.6    52    144



- 60% of Urban households can spend under \$7 /month (ARPU) on Telecom
  - can spend \$ 50 for terminal...

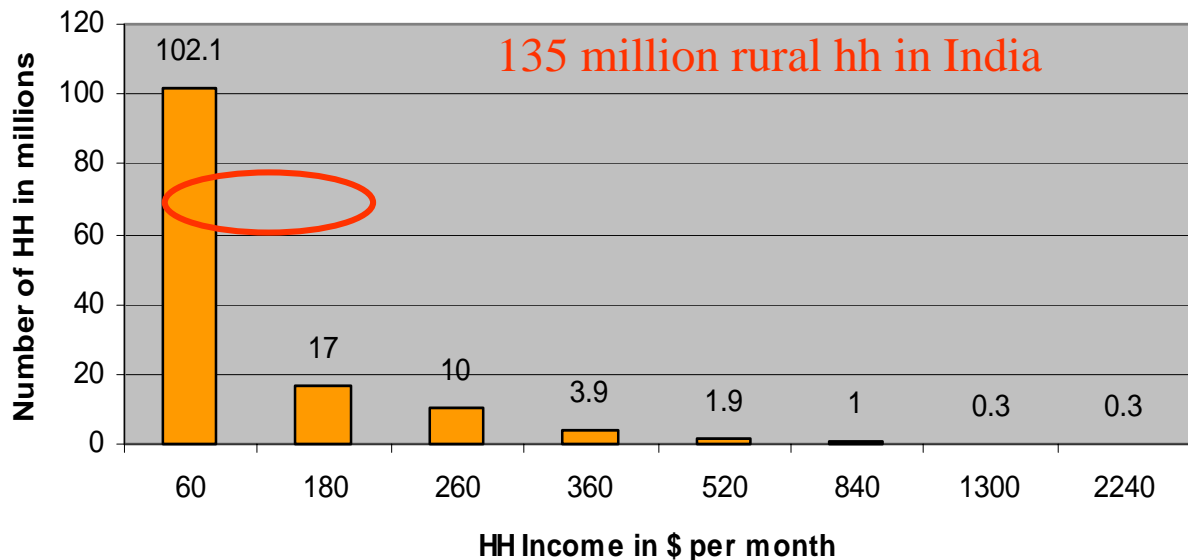
# Rural Population of Developing Countries is 2.5 billion

- But per capita income is no more than \$ 200 per year



- Can ICT make a significant difference in life of such people?

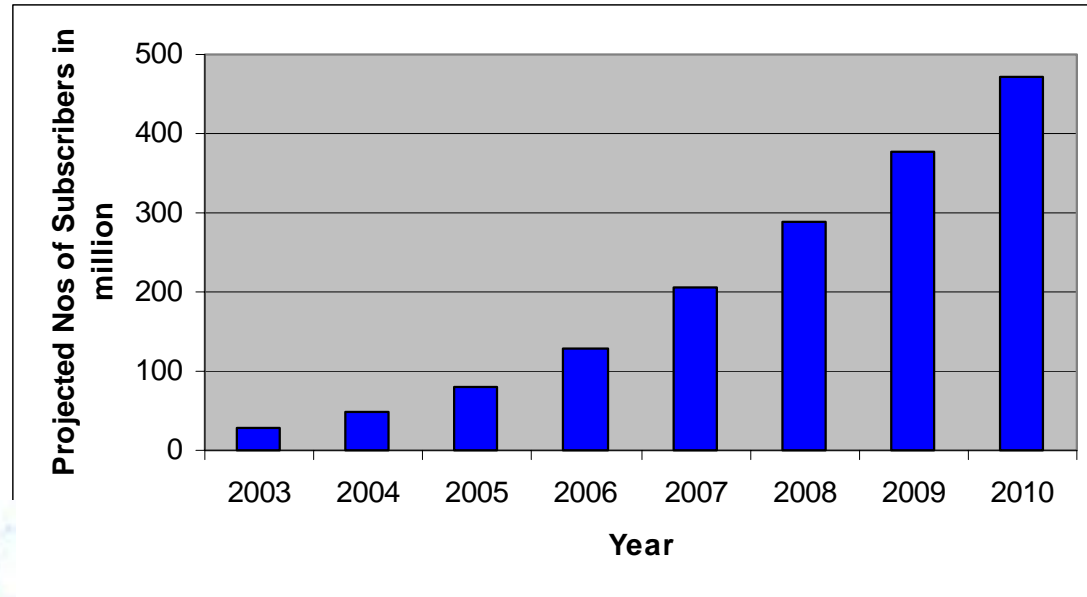
- Can it bring to them health & Education
- Can it significantly enhance their incomes?



# Mobile Market in India boomed

5 million  $\Rightarrow$  50 million  $\Rightarrow$  150 million  $\Rightarrow$  400 million

- Only with Mobile Infrastructure Capex < \$ 60 per line
  - and with handset price of \$ 50 to \$ 250



Just Like number of TVs in India rose from 10 million to 100 million in 90's when prices became \$50 - \$300

# Similarly

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- Broadband Market will also boom in India and other Developing Countries
  - when Infrastructure Capex falls below \$100
    - PC / terminal price falls to \$60 to \$300
  - Market size in India can be 50 million in next four years
    - in Developing Countries (minus China), market size could approach 200 million

# Potential Impact

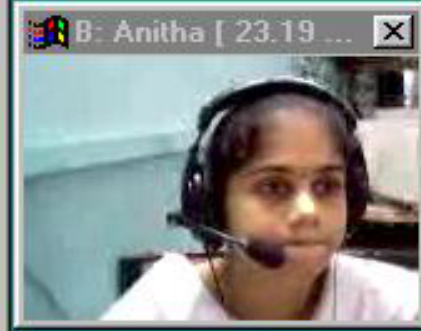
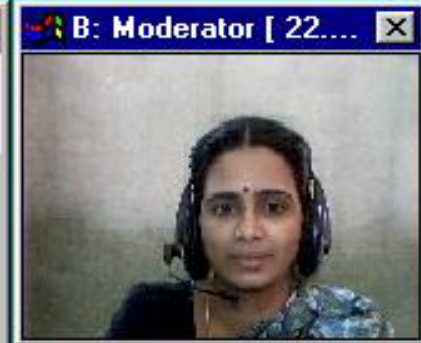

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- Another Opportunity for Developing Countries
  - to stand up and be counted in the world
  - leave two hundred years of colonisation, slavery and resulting lack of confidence behind
  
  - How?
    - So far one needed to be in the developed part of the world
      - to get access to resources and education
      - to be able to compete
      - to be able to use one's ingenuity and hard work for one's economic and social benefit
  - Now, for the first time, the distance does not matter

C:\PROGRAM FILES\ISEE\Slide\_Show\earth\Slide\_2.wmf

Select Slide Show:  
earth

- Solar System
- Force of Gravitation.
- Formation of Earth
- Formation of Moon.
- Effect of Cooling.
- **How oceans and rivers were formed.**



Moderated\_server @ 144.16.244.2:7072

See View Address Book Options Help

Chat Address Book Online Users

Participants  
Anitha  
Moderator

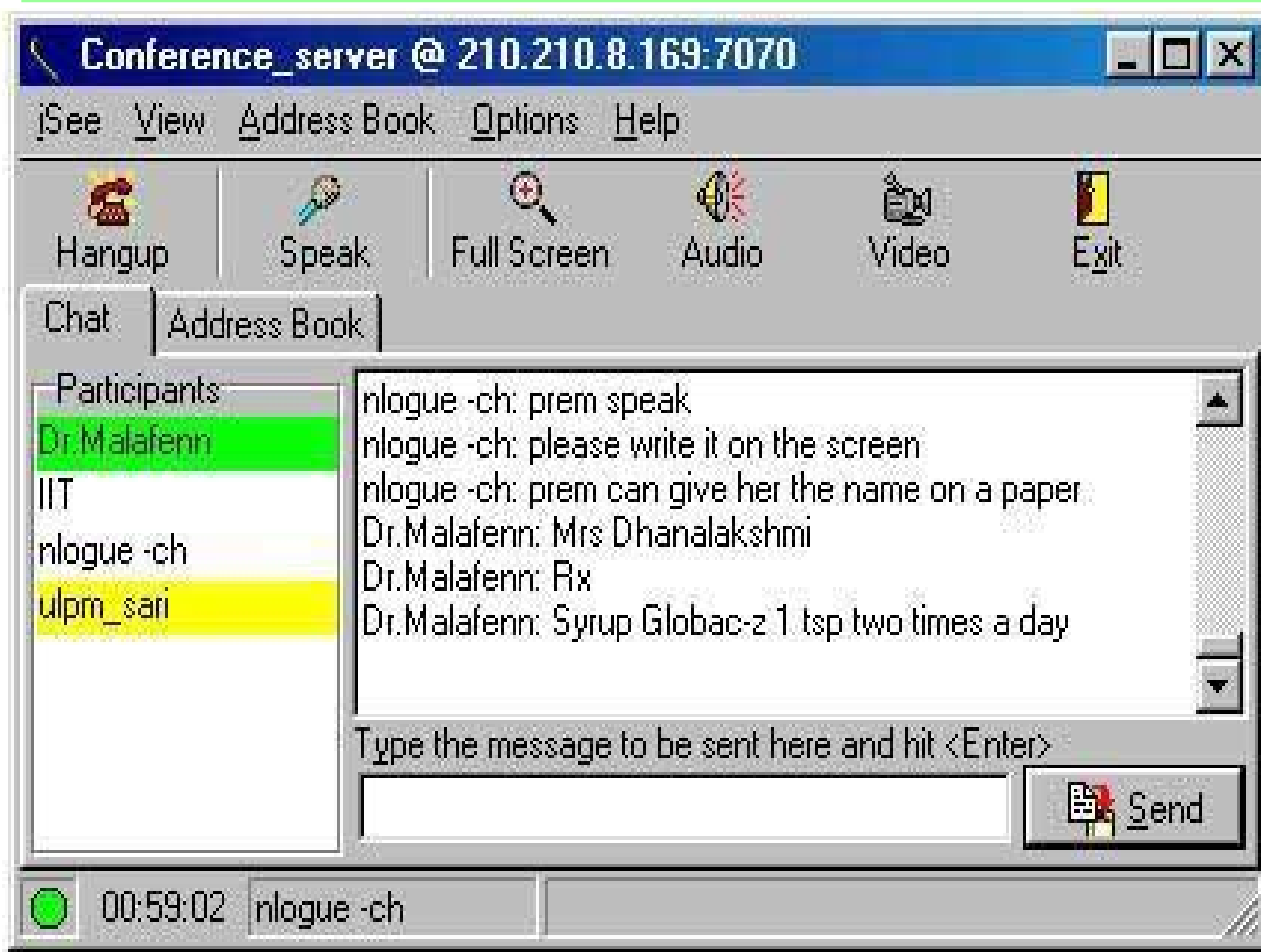
Moderator: Good Morning Students  
Moderator: Today we are going to see about long question  
Anitha: Ma'm I have a question

Type the message to be sent here and hit <Enter>

- *Education can indeed be obtained wherever one is*
  - *from the best teachers in the world*
    - *vocational training, information & support*

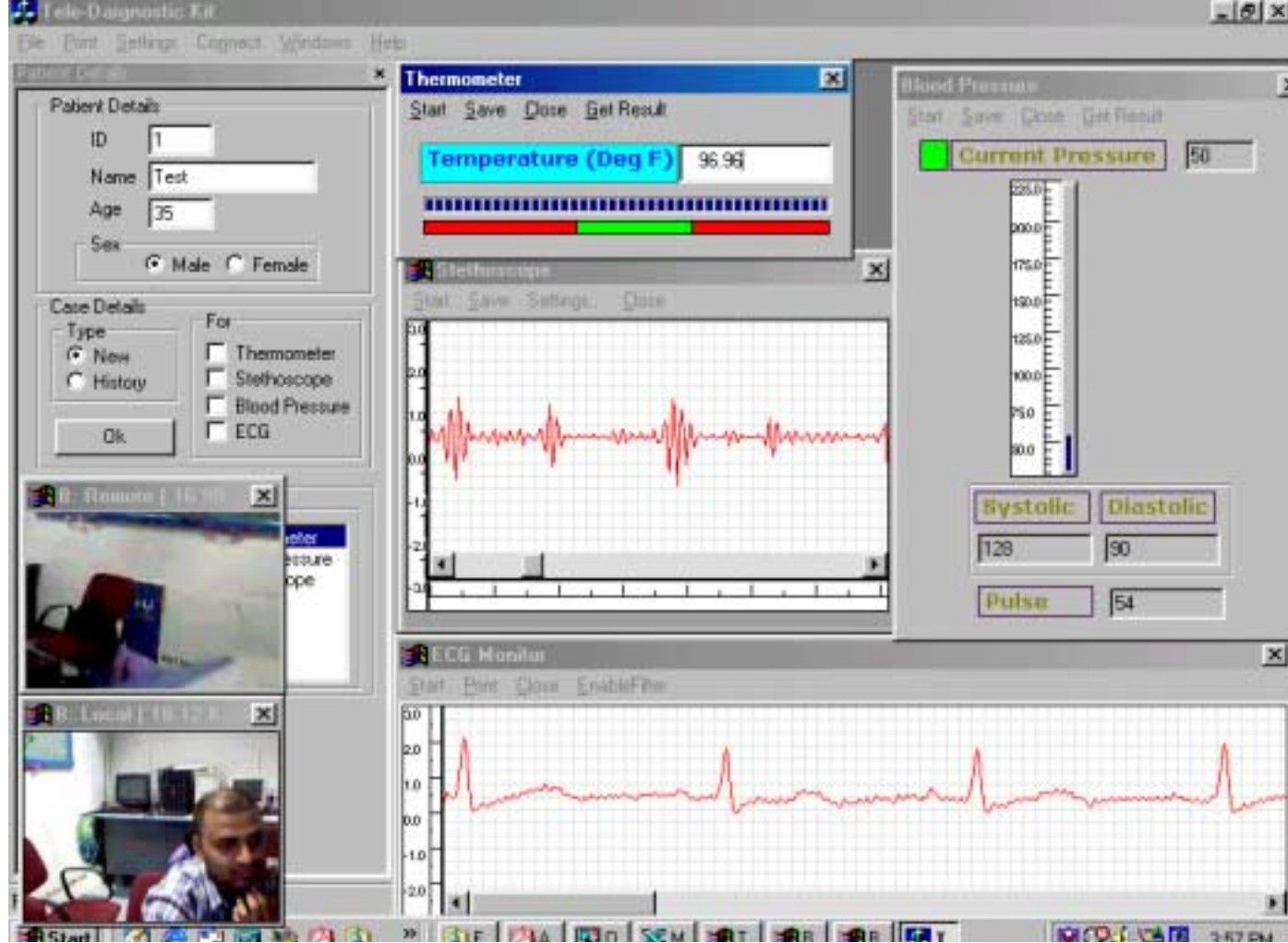


# An Online Health Clinic at every kiosk set up by n-Logue in rural India



\*Dr Mala Fenn is a leading Gynecologist in Madurai, India

Remote  
Monitoring  
of patient's  
health  
using  
wireless



## The Vet is on the Net ...

Rural Magic: true stories which have “magically” impacted the lives of people in Indian villages



- This goat had a wound near its mouth and could not eat for a week
- Advice from the doctor cured its problem in two days



# Palaniammal's eyes...

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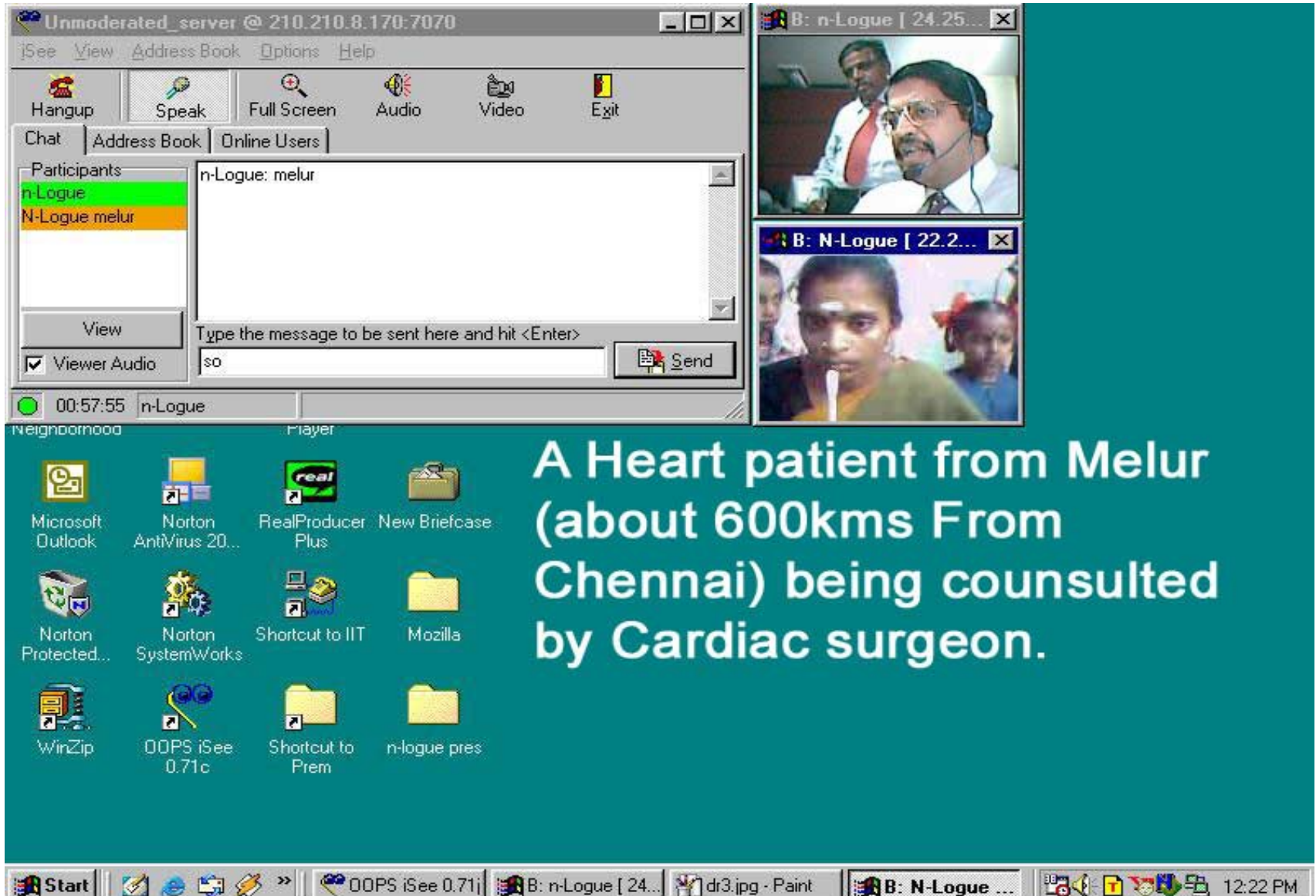
- A 60 year old from a village near Melur



Photographs by an ordinary web camera: Remote feedback given by Aravind Eye hospital



# Remote Cardiac care



The image displays a screenshot of a remote cardiac care session. The main window is titled "Unmoderated\_server @ 210.210.8.170:7070" and shows a video conference interface. The interface includes a menu bar with "iSee", "View", "Address Book", "Options", and "Help". Below the menu bar are buttons for "Hangup", "Speak", "Full Screen", "Audio", "Video", and "Exit". The "Chat" tab is active, showing a list of participants: "n-Logue" and "N-Logue melur". A text input field contains the message "so" and a "Send" button. The video conference window is split into two panes: the top pane shows a man wearing a headset, and the bottom pane shows a woman. The desktop background is teal and features several icons: Microsoft Outlook, Norton AntiVirus 20..., RealProducer Plus, New Briefcase, Norton Protected..., Norton SystemWorks, Shortcut to IIT, Mozilla, WinZip, OOPS iSee 0.71c, Shortcut to Prem, and n-logue pres. The taskbar at the bottom shows the Start button, several application icons, and the system clock displaying 12:22 PM.

**A Heart patient from Melur (about 600kms From Chennai) being counsulted by Cardiac surgeon.**

# Saving Crops and Agri-consultancy



*Before*

In a Village in Madurai, the Lady's Finger (Okra) crop was turning white

The problem was sent to the experts at the Department of Rural Extension, Madurai Agricultural College and Research Centre who diagnosed it as "Yellow Mosaic disease"



*After*

Saving to farmer - \$3500  
Cost of Information - a dollar



# Web- Durbar: DM does video-conferencing with multiple villages using wireless connectivity

Unmoderated\_server @ 10.0.120.1:7070

See View Address Book Options Help

Hangup Speak Full Screen Audio Video Exit

Chat Address Book Online Users

Participants

- access center
- drdacollector
- Kadambathur
- kakalur
- kilambakkam
- Kondanjeri
- Melnallathur
- Othikadu

kakalur: hello chengu sir wat hapend  
kakalur: hello chengu sir wat hapend  
Othikadu: pl be ready  
Othikadu: and tell customer to be there  
Kadambathur: yes sir  
kilambakkam: hello sir manu people aer still waiting

Type the message to be sent here and hit <Enter>

Send

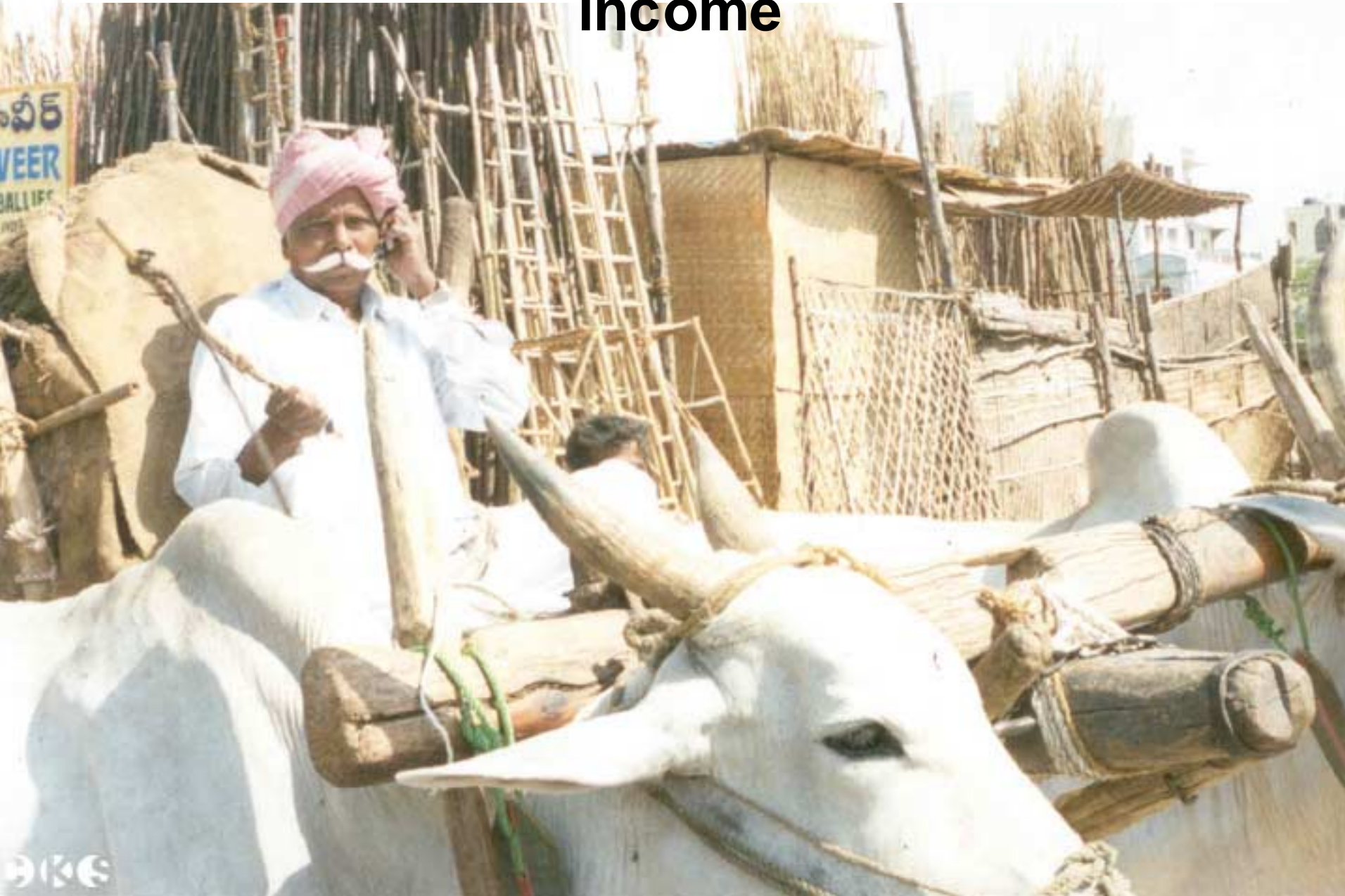
01:13:23 Othikadu

B: Othikadu [ 19.6... X

B: drdacollector [ ... X



# Self-Scaling Users are Enhancing their income





# Mobiles are Gender and Class Agnostic





**Phones Create and Recreate their Social Contexts**

**Phones seen as a kind of Accessory**



# Indian-English SMS



**Emerging Market coming up with  
Innovative Applications of Mobiles**

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- Rapid Citizen Feedback

- can Mobiles be used tomorrow for voting during elections?
  - Can we assure authentication?

- Disaster Management

- data collection and early warning
  - coordinating relief

- Agricultural Consulting

- Rural Marketing and Advertising
  - buying and selling, futures and auction

# Overcoming congestion on City Roads

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- Infrastructure in Cities of Developing World has not kept pace with increase in Vehicles
  - Serious road congestion during peak hours
    - upper middle class uses cars rather than buses
    - car pooling is inflexible
  - Mobile Phones have enables introduction of special luxury mini-bus
    - Check next bus status on *mobile phone*
      - book seat and make payment using mobile
        - conveyed to the driver
        - bus-stops at every two hundred meters, but only when pre-booked

# Back to Rural Hinterlands

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- ▣ Wireless is enabling Health, Education, Training and Access to Government Services
  
- ▣ But Can Communications impact economy of the Disadvantaged?

# Communications has enabled

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- India has become an expert in providing IT and IT enabled Services to the West using communications
  - But Wireless is taking the connectivity to hitherto unreached rural areas in these developing economies
  - Can these rural areas provide IT enabled services to urban areas?
    - Why not?
    - Some villagers with Computers and Wireless connections are already providing CAD/CAM and web-design services to urban India
      - and some villagers are also collecting market data for FMCG companies



# Market Research: Collecting Data from the Villages

Family Head Name	-Select-
Address	-Select-
Total Land	A.Aanaikaruppan
Water Source(Agri)	A.Aathimoolam
Water Source(Drink)	A.Arunachalam
Residence Details	A.Boss
Residence type	A.Chellayee
Bought by Loan	A.Chinnadaikkan
Total Houses Own other than residence	A.Chinnaiya
Crops Grown	A.Duraipandi
Items Own	A.Elangovan
Total Animals Own	A.Kaneshan
Number of Relatives abroad	A.Kasiraja
Relationship	A.Manikandan
	A.Mariyamma
	A.Markandan
	A.Mookkan
	A.Murukan
	A.Nondichamy
	A.P.Azhagan
	A.P.Poominathan
	A.P.Veeranan
	A.Paari

Show



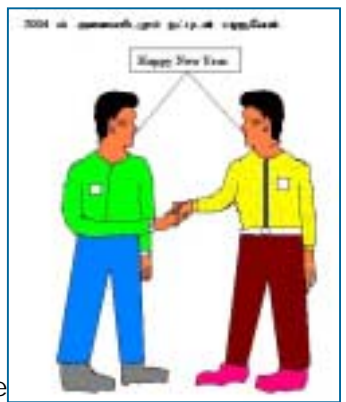
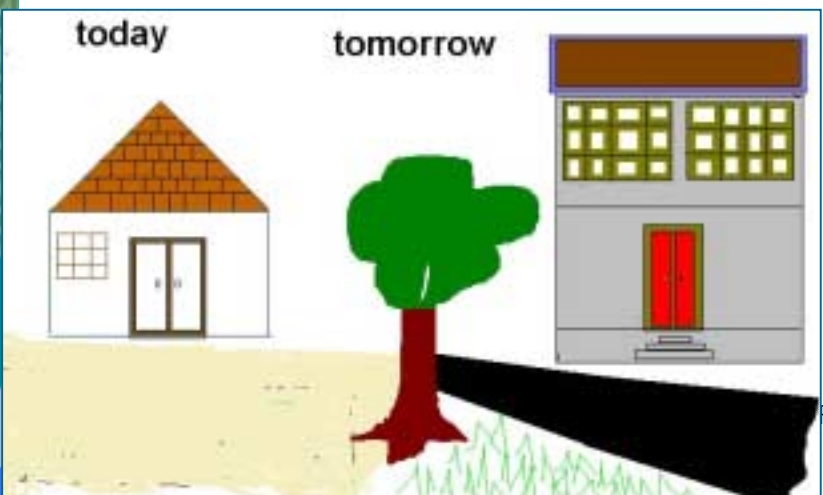
Family Head Name	A.P.Veeranan		
Address	6/ 4,,T.Ulagupitchanpatti,Thiruvathavoor,Melur,Madurai		
Total Land	None Acres		
Water Source(Agri)	None		
Water Source(Drink)	Water Tank		
Residence Details			
Residence type	Own Kaccha		
Bought by Loan	No		
Total Houses Own other than residence	House Type	Number Bought with Loan?	
	-	- -	
Crops Grown	-		
Items Own	Item Name	Bought with Loan?	
	-	-	
Total Animals Own	Animal	Number	Vaccinated Health Problem
	Cows	2	No None
	Hens/ Chickens	4	No Vella Erukku
	Sheep	above 12	No None
Number of Relatives abroad	0		
Relationship			



### Family Members

[A.P.Veeranan-Head](#)  
[V.Karuppayi-Wife](#)  
[V.Thirumathi-Daughter](#)  
[V.Ranjith Kumar-Son](#)  
[V.Muthupandi-Son](#)

# Rural Children create computer drawings for greeting cards



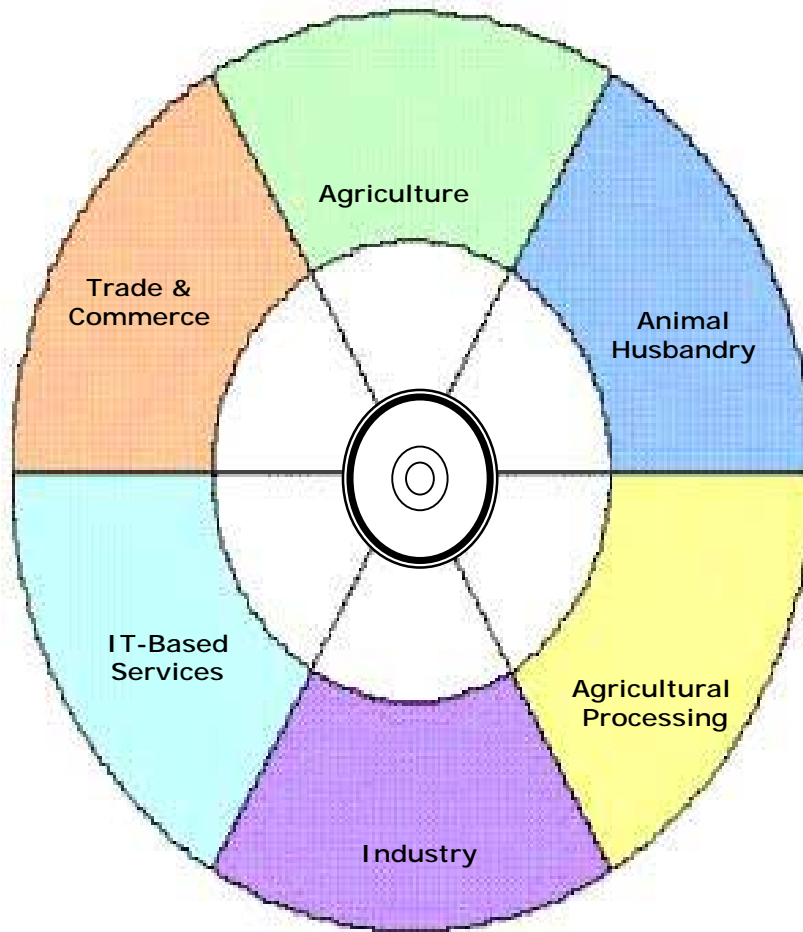
All drawn on a PC

# But can one go further?

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- Can one enable creation of large number of micro-enterprises in Rural Areas?

# Rural Micro-Enterprises are the Wealth Creators



- Micro-enterprises need
  - Finance
  - Knowledge and Training
  - Buying & Selling
  - Risk Sharing : Insurance
  
- Can Communications Enable these ?

# Financial Services in Rural Areas

- Low cost Rural ATMs
  - installed cost under \$ 1000
    - conventional ATMs cost \$ 15,000
  
- connected to banks using wireless connection

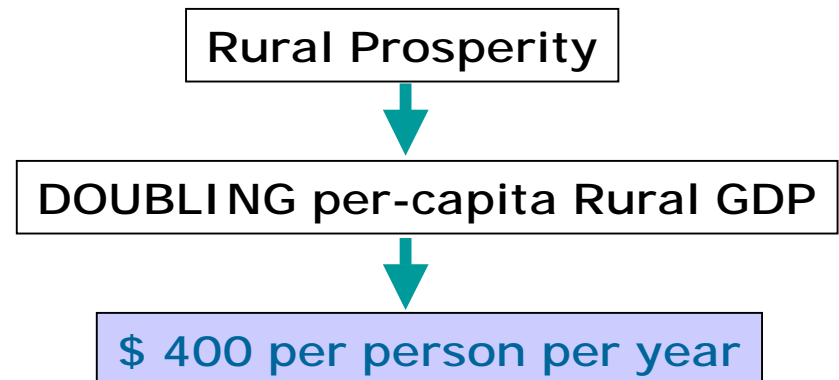




# An Opportunity for Hinterland

Rural GDP in Developing Economies = \$ 200 per person per year  
For a Population (outside China) = 2500 million people

*in less  
than ten  
years*



# what we require...

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- affordable connectivity : wireless is the way to go
- affordable terminals
- applications ...
- and above all
  - the will to transform the developing world...