

World Science Forum

Impact of the ICT Boom

India Stands up

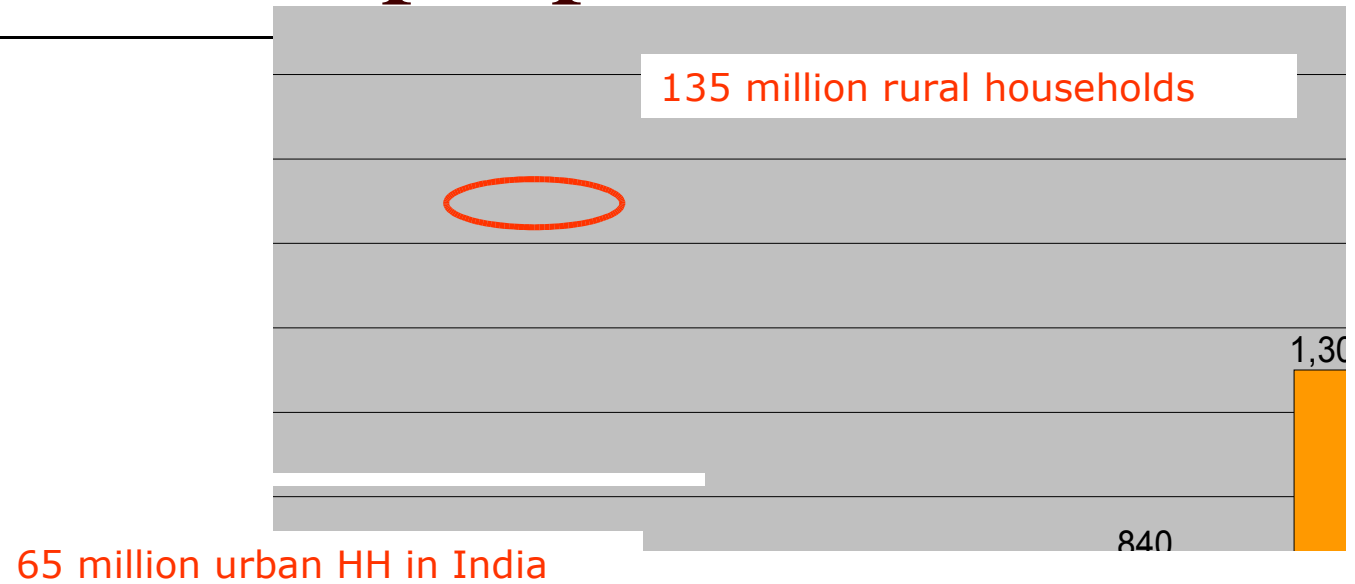
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Changing India

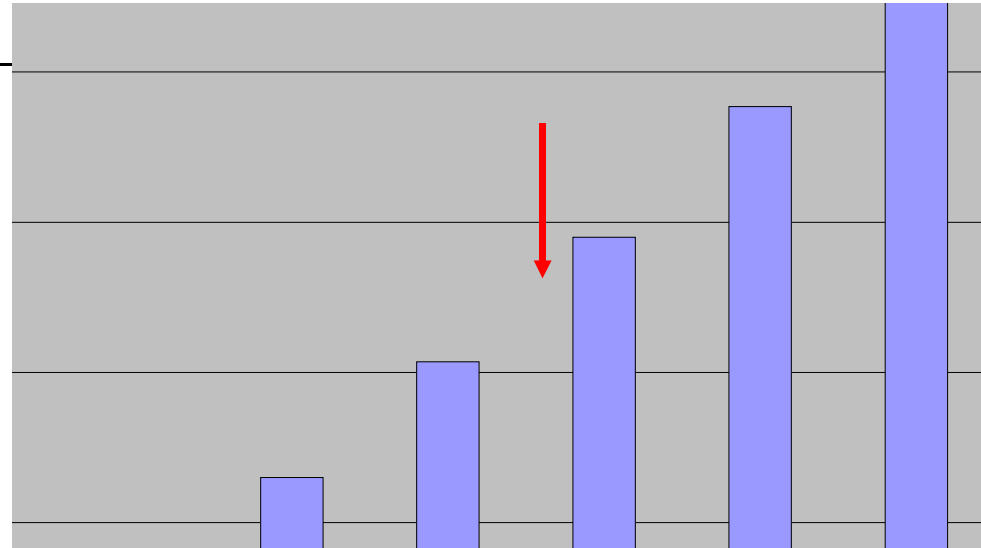
India has billion people, but...



Mobile Market in India boomed

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

TENET
IIT Madras



- ◆ Not until Mobile Infrastructure Capex < US\$ 70 per line
 - ◆ and with handset price of \$ 50 onwards
 - ◆ service available at 2 cents per minute
 - ◆ ARPU of about US\$ 7
 - ◆ 2+ million subscribers added each month



- ◆ Just Like number of TVs in India rose from 10 million to 100 million in 90's when prices became \$50 onwards and cable TV tariff fell below \$2 per month
 - Number of TV channels boomed
 - Entertainment industry in India one of the biggest

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- ◆ Growth of IT and IT enabled services is legendary
 - ◆ Crossed \$28 billion this year
 - ◆ Likely to reach US\$ 50 billion revenue by 2008

The World is Flat

But you aint seen nothin yet

for the changes has not yet touched Rural India

Even Airline Industry

- ◆ Is booming in India
 - ◆ doubled its passenger carrying capacity in two years
 - ◆ Average tariffs have fallen by half making it affordable to middle class Indians
 - ◆ In spite of rising petrol prices

The only limitation to growth is the airport infrastructure



The not so visible

Engineering Education

- ◆ 400K engineering students graduate every year from 1500 engineering colleges
 - ◆ Up from 25,000 in 100 schools in early eighties
- ◆ Uneven quality is a major problem
 - ◆ was foreseen and resulted in reluctance to expand

But it is this human resources which has driven growth

Rural India has 700 million people

- ◆ in 600,000+ villages (about 1200 people per village with per-capita income of **US\$0.50 per day**)



135 million rural households



1,30

840

Even in Rural India early signs of changes taking place

- But a long way to go

Distributed Production enabled by Internet

◆ Embroidery for Life

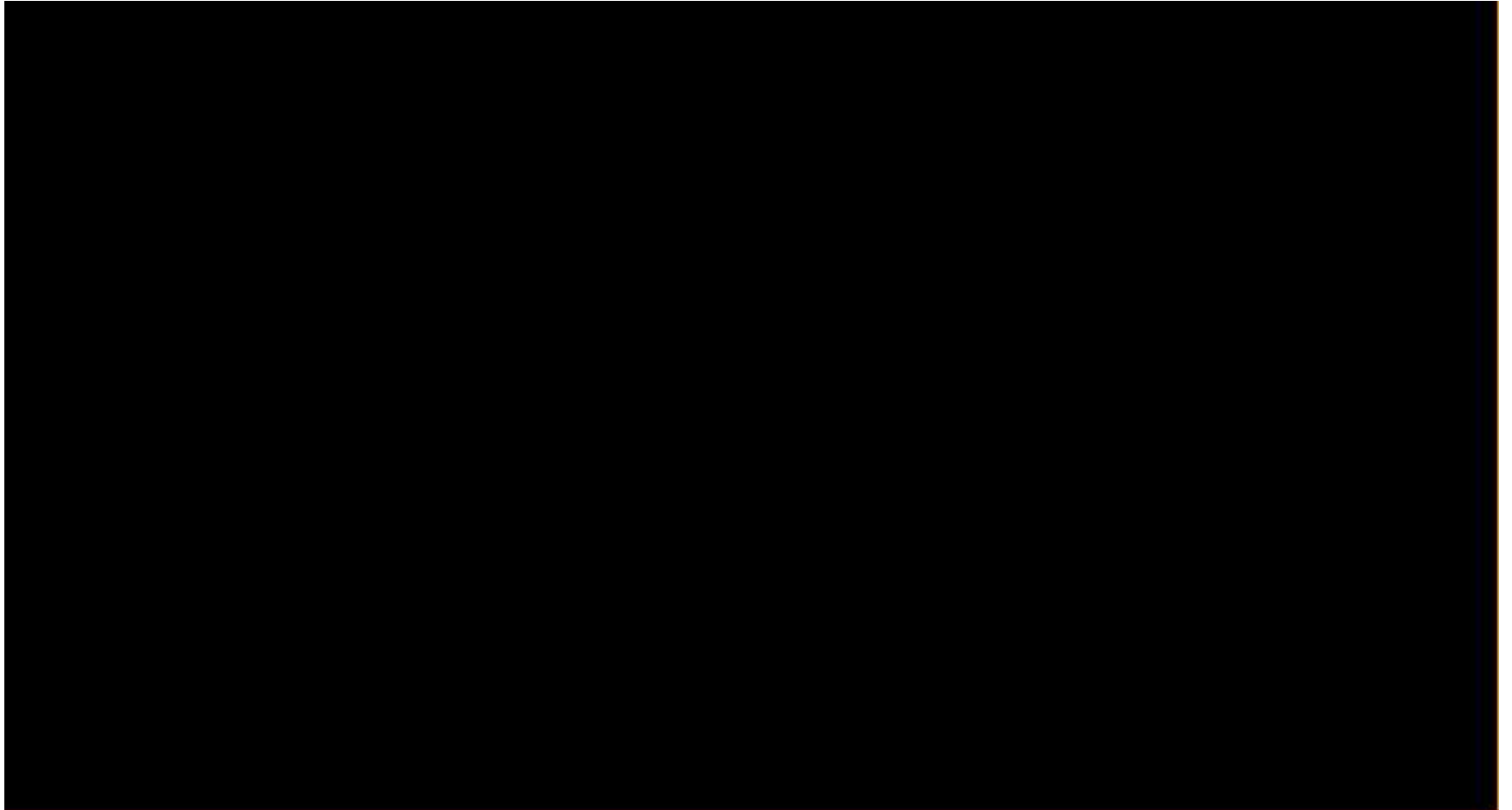
- ◆ Women embroiderers trained by designer entrepreneur in villages
- ◆ An emerging business model for entrepreneur and kiosk operator

◆ Bags for Life

- ◆ Training in handmade paper bag, organizing production, quality control
- ◆ Quality products for the domestic and export market



Job work performed at Rural kiosk



Technology lead Innovation

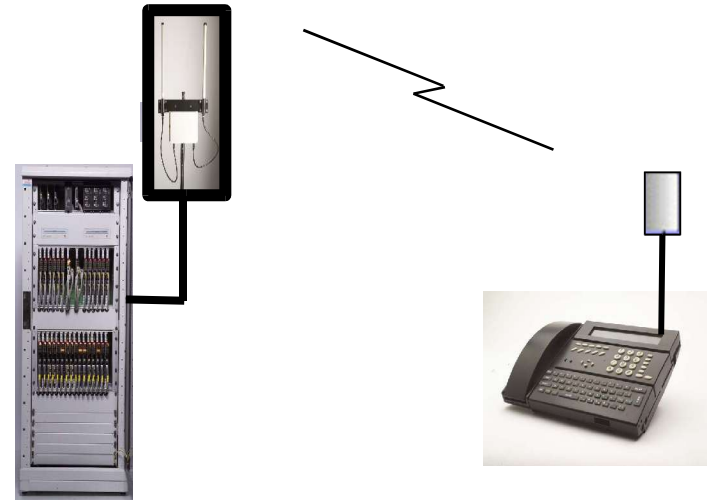
The Story of **TeNeT Group at IIT Madras**
Incubating Entrepreneurs in a University
Balancing Economic Growth & Social Development

A group of 16 faculty members at IITM and about 14 companies incubated or nurtured by it with about 1400 engineers

TeNeT Learnings

- ◆ Successful Business driven by S&T is the best way to drive development dreams of a country
 - ◆ Let entrepreneurs flourish
 - ◆ Examples:
 - ◆ Entrepreneur lead PCOs (STD) brought in telephony to 300 million middle and lower middle class Indians
 - ◆ Local Cable TV operators brought in cable connection to homes at US\$2 per month
 - ◆ Telecom/ airline / IT and ITeS
- ◆ India is a large market at the right price point
 - ◆ Nirma, sachet shampoo

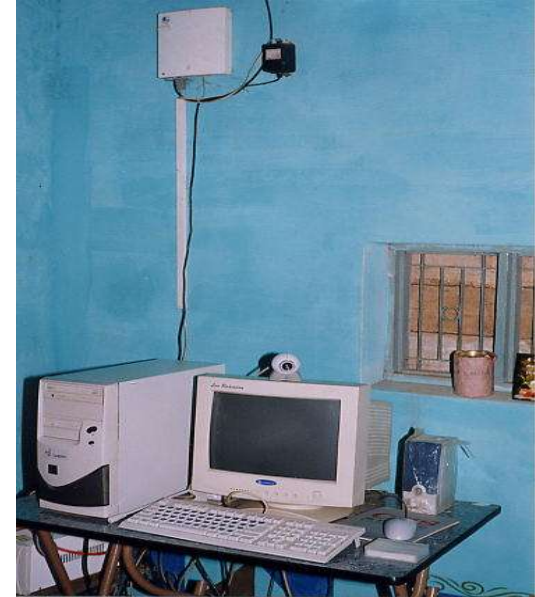
1994TeNeT Vision:
Connect India with 100
million telephones



Identify Local Loop Capex as
primary bottleneck:
Incubate **Midas**: help develop
Wireless in Local Loop
technology

- ◆ 2005
 - ◆ India crosses 100 million telephone lines
 - ◆ corDECT WiLL sales cross US\$ 200M (Rs 1000 Crore)

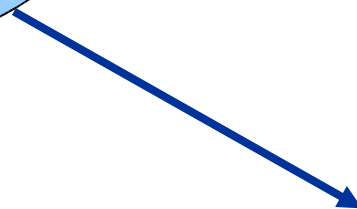
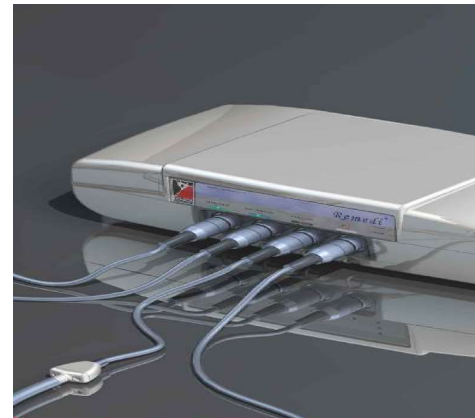
TeNeT 2001 Vision:
Connect every village
of India



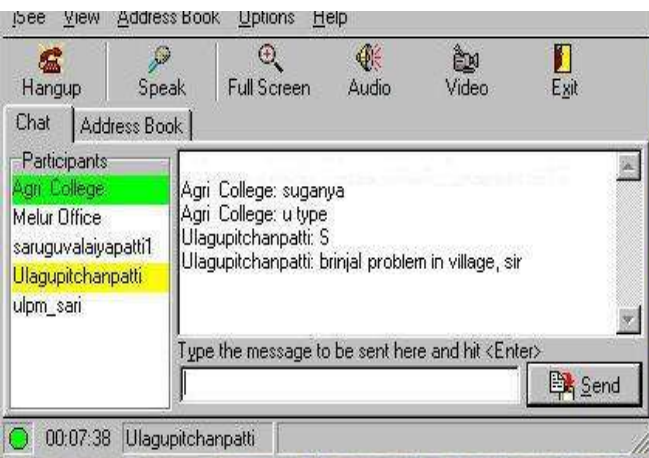
n-Logue focuses on
Internet Connection to each
village and drive education,
health and microenterprises
Double per capita
Rural GDP using ICT

- ◆ aggregate a village demand into a kiosk owned & driven by a local entrepreneur
 - ◆ **US\$ 1200 Kiosk** providing telephone, Internet, multimedia PC, printer and power back-up, plus Indian language software, video conferencing software, **training** and maintenance and 6 months unlimited Internet

TeNeT Vision:
Double per capita
Rural GDP using ICT



VorTeX designs a Rural ATM
at US\$ 1200
a 15th of prevalent cost



50 Million Broadband Connections in India by 2010

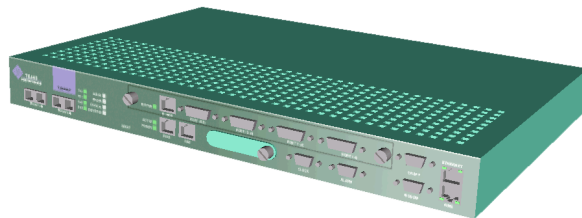
- ◆ Midas drives the Broadband connectivity Solution
 - ◆ From wireless, DSL and cable wireless
 - ◆ Introduces disruptive technologies like Cable wireless leverages existing coax infrastructure

- ◆ Novatium introduces NetPC at US\$ 80 plus monitor
 - ◆ Lower maintenance as all data stored in servers



As Telecom Product companies in West Recede

- ◆ and as Chinese companies try to fill in the void
- ◆ Imperative for India to build Billion Dollar product companies
- ◆ Midas and Tejas (with leadership in Optical Products moving towards such dreams



Can India become

- ◆ Technology leader in one or two areas?
- ◆ TeNeT helps India Create a public-private Partnership to build a take leadership in Wireless Technology



Challenges for ICT Scientists: Leveraging this changing India

- ◆ 20 million children in India ready to enter schools every year
 - ◆ Very small number of good teachers
 - ◆ Poor infrastructure in schools
 - ◆ Large drop-outs



Can technology be used to help overcome the shortcomings and train all the children?

Not a issue of selling operating systems, computers

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- ◆ Can ICT be used to significantly enhance
 - ◆ college education
 - ◆ Science, engineering and management education
 - ◆ skill training
 - ◆ entrepreneurship training

in absence of sufficient number of quality
trainers / teachers

Drive dreams like

- ◆ 50 million Broadband connections by 2010
 - ◆ Connectivity
 - ◆ User terminal / PC
 - ◆ Content: education, entertainment, transaction, information
 - ◆ What roles will mobile play?

Use Broadband to further strengthen Human Resources

and Dreams like

- ◆ Double per capita Rural GDP in ten years
 - ◆ What kind of market will this create?
 - ◆ Ten or more Micro-franchise and micro-enterprises in each village employing 10 to 15 people each
 - ◆ Can ICT help bring in the required finance, knowledge, training and support, buying, selling and logistics and risk mitigation
 - ◆ *Will require 25 KVA to 100 KVA decentralized power plant in each village operated by a local entrepreneur*

Equity has to go hand in hand with development

Make India a Product House

- ◆ Conceptualize, build and drive new products from India
 - ◆ Capitalising on Indian talent
 - ◆ Leveraging Indian academia

To Conclude

- ◆ India is changing rapidly
 - ◆ ICT success has resulted in self belief
- ◆ Knowledge lead Growth key to India's future