



Challenges of Sustainability

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Outline

- Background
- Current status
 - Rural PC kiosks in India
- Why is sustainability so difficult?
- Suggestions and recommendations

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Why do we care?

- Microsoft Research India



- *Microsoft*: positive impact and long-term growth of worldwide economy
- *Microsoft Research (MSR)*: scientific research and long-term possibilities of new technology
- *MSR India, Technology for Emerging Markets group*: applications of computing for underserved
 - Social science research and technical innovation

What we've looked at so far...



Data sources:

- Extensive kiosk surveys
 - 300 kiosks, 1 year so far, 4 times each, 5 customers, 1 operator per kiosk
- Ethnographic studies
 - Longitudinal kiosk life-cycle
- In-depth interviews with kiosk agencies
 - At least six organizations
- Over 30 site visits in India and Africa
- Discussions with third-party observers
- Literature in journals, books, web sites, whitepapers

What we've looked at so far...

Kiosk projects:

- n-Logue
- Drishtee
- ITC e-choupal
- TARAhaat
- MSSRF
- Dhan / SARI
- Akshaya
- World Corps
- Others...



Definitions

(valid only for the duration of this presentation)

- “Kiosk”
 - Rural center with PC as the focus of services
 - Socio-economic improvement as goal

- “Sustainable”
 - Self-sustaining, as a business

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Preface

This presentation points out weaknesses in the sub-goals, approaches, or results of kiosk projects, but...

None of it is meant as a criticism of the project agencies or the people who work with them, almost all of whom are dedicated and deeply devoted to development. They should be lauded for having had the courage to try these experiments.

The real problems are not due to approach or implementation; they are fundamentally embedded in a fact that we could never have known without these experiments.

Kiosk in Tamil Nadu



The financial sustainability of the model adopted by [redacted] is still in question. But it has seen some success in raising the awareness of most of its

Srinivasan, Janaki (2004)

The Effects of e-Governance Implementation on Women:
A Study of the Sustainable Access in Rural India (SARI) Project, Madurai.
Masters Thesis, Indian Institute of Information Technology

Rural kiosk in Retawadi village, Maharashtra
12-year-old boy taking typing lessons

Two kiosks operator Retawadi and Kharpudi closed down their kiosk. They do not find it profitable, they are looking for other job.

Kiosk run by print shop owner near
Sirsa, Haryana
Proud father of kiosk owner

Those kiosks have closed since we last visited. There was a change in government and the local DC has not been as supportive. In addition, none of the kiosks were able to generate income required to break even.

Sustainability is nearly impossible!

and generation. The report concludes that a lack of financial sustainability is the most glaring drawback of the project, and that the project is unlikely to achieve this goal in the near future.

of local content were essential for the long-term sustainability of such a project. Moreover, the project team felt that demand (usage) and supply (content) markets functioned sub-optimally, and that the state had to intervene to create critical masses for markets to function in the long run. This was attempted by creating a critical number of ICT access centres, a critical mass of

sustainability for three or four years, experience on sustainability is limited. [redacted] which started operating in 2000, has seen few telekiosks reach commercial viability.

stage. While consciously targeting the 'poorest of the poor' and 'women' sets this project apart from others that follow a revenue-based approach, it is evident that this also places financial constraints on the project - the sections of population targeted are least able to pay for services, regardless of their relevance.

When sustainable, IT is not central

into the agricultural value chain. The resultant savings are not a direct result of the technology, which was not in general use at all. Rather, efficiencies improved because the process of information exchange resulting from introducing the technology led to the rationalization of production flows. Thus, it is not the computers, email, and Internet that are generating these savings but the elimination of inefficiencies from the market. Technology is a catalyst for another process, which is social and economic, and to argue that all this has been because of computers would not be accurate.³¹

For a rural PC kiosk with social development goals, sustainability as an independent business is nearly impossible!

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Value for Cost

- Some enterprises sustain even in the poorest areas...
 - Petty shop
 - Construction
 - Tailor
- Value is clear; cost is locally appropriate.



PC Value?

- E-mail?
 - Incremental improvement over postal service
- VoIP?
 - Incremental improvement over pay phone
- Games?
 - Incremental improvement over physical recreation
- Telemedicine?
 - Incremental improvement over visit to town
- E-Government?
 - Incremental improvement over visit to town
- Job search online?
 - Incremental improvement over newspaper ads
- ...

PC Cost (absolute minimum)

Keyboard/mouse: Rs. 300

CRT display: Rs. 2000

Power supply:
Rs. 800

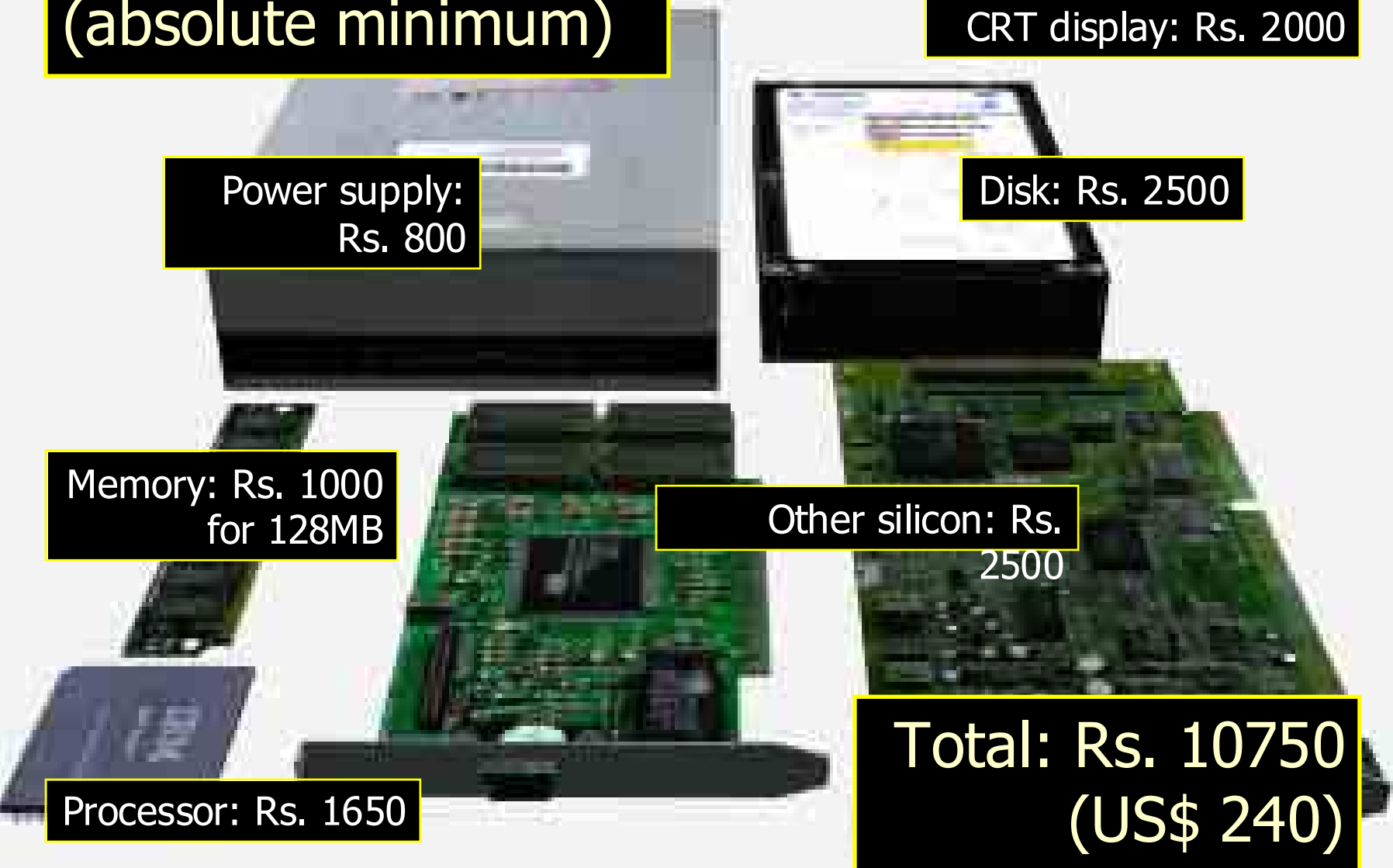
Disk: Rs. 2500

Memory: Rs. 1000
for 128MB

Other silicon: Rs.
2500

Processor: Rs. 1650

**Total: Rs. 10750
(US\$ 240)**



Other Data on Low-Cost PCs

| Who/What | Device | OS | With Monitor? | Real Total Cost? (USD) | Real Total Cost? (INR) |
|-------------------------|-------------|-------------|---------------|------------------------|------------------------|
| Nivo | thin client | OSS | 0 | \$270 | 12,150 |
| PC Quest | PC | Linux | 0 | \$267 | 12,000 |
| Local System Integrator | PC | pre-OS | 0 | \$250 | 11,240 |
| AMD PIC | sub-PC | WinCE | 0 | \$235 | 10,575 |
| Wyse | thin client | various | 1 | \$225 | 10,125 |
| Simputer | PDA | Linux | 1 | \$220 | 9,900 |
| sofcomp | sub-PC | Linux | 1 | \$220 | 9,900 |
| Chuck Thacker | PC | pre-OS | 0 | \$295 | 13,275 |
| PCTvt | PC+ | XP or Linux | 1 | \$250 | 11,250 |
| Intel "Shelton" | PC | Linux | 0 | \$249 | 11,205 |
| SolarPC | PC | Linux | 0 | \$150 | 6,750 |
| Steve Ballmer | PC | pre-OS | 0 | \$150 | 6,750 |
| Nicholas Negroponte | PC | Linux | 1 | \$100 | 4,500 |

PC Costs Dwarfed by Other Costs

| Item | "One-Time" Cost (INR) | Monthly Cost (INR) | Five-Year No-Interest Loan Payment (INR) | Five-Year No-Interest Loan Payment (USD) |
|---------------------------------------|-----------------------------|--------------------------|--|--|
| PC | 10000 | | 167 | |
| UPS + battery backup (4 hrs) | 9000 | | 150 | |
| Printer | 4500 | | 75 | |
| Hardware for connectivity (modem) | 900 | | 15 | |
| Rent (maybe) | | 450 | 450 | |
| Connectivity (40 hrs/wk; 9 kbps) | | 450 | 450 | |
| Power (40 hrs/wk; 1 PC + 1 lightbulb) | | 450 | 450 | |
| Maintenance (twice a year, at \$42) | | 315 | 315 | |
| Baseline Total | 24400 | 1665 | 2072 | \$45 |
| Service Charges | | 500 | 500 | |
| Hardware for connectivity (wireless) | 3800 | | 60 | |
| Scanner (optional) | 3000 | | 50 | |
| Webcam (optional) | 6000 | | 100 | |
| Telephone (optional) | 900 | | 15 | |
| Generator (optional) | 20000 | | 338 | |
| Connectivity (unlimited, 64 kbps) | | 550 | 550 | |
| Personnel (maybe) | | 2250 | 2250 | |
| High-End Total | 58750 | 4965 | 5945 | \$132 |

Rough estimates on monthly costs

Advertised break-even points:

n-Logue

Rs. 3500 / mo.

Drishtee

Rs. 5000 / mo.

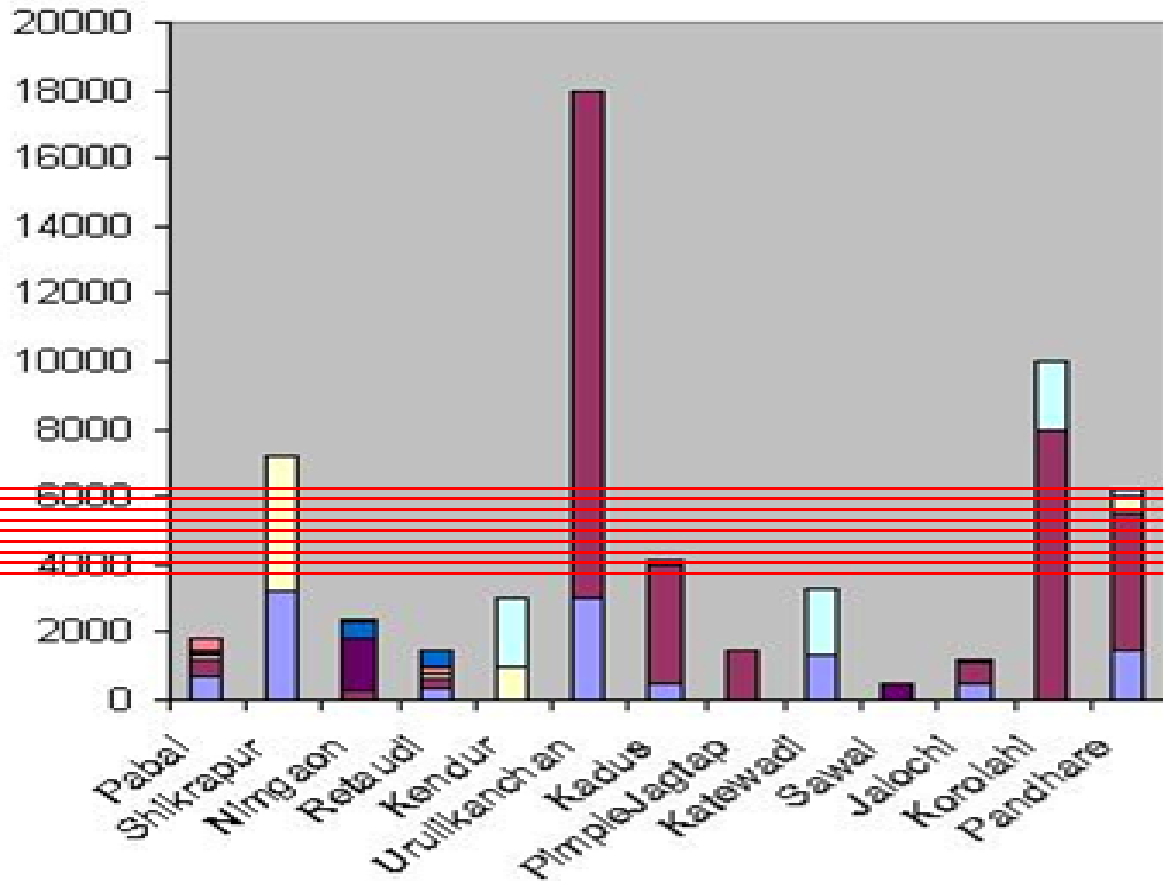
TARahaat

Rs. 12000 / mo.

In healthy Tamil Nadu village
(poorest making 150%
national per cap. GDP):

Petty shop gross revenue
Rs. 5000-8000 / mo.

Difficult to Break Even

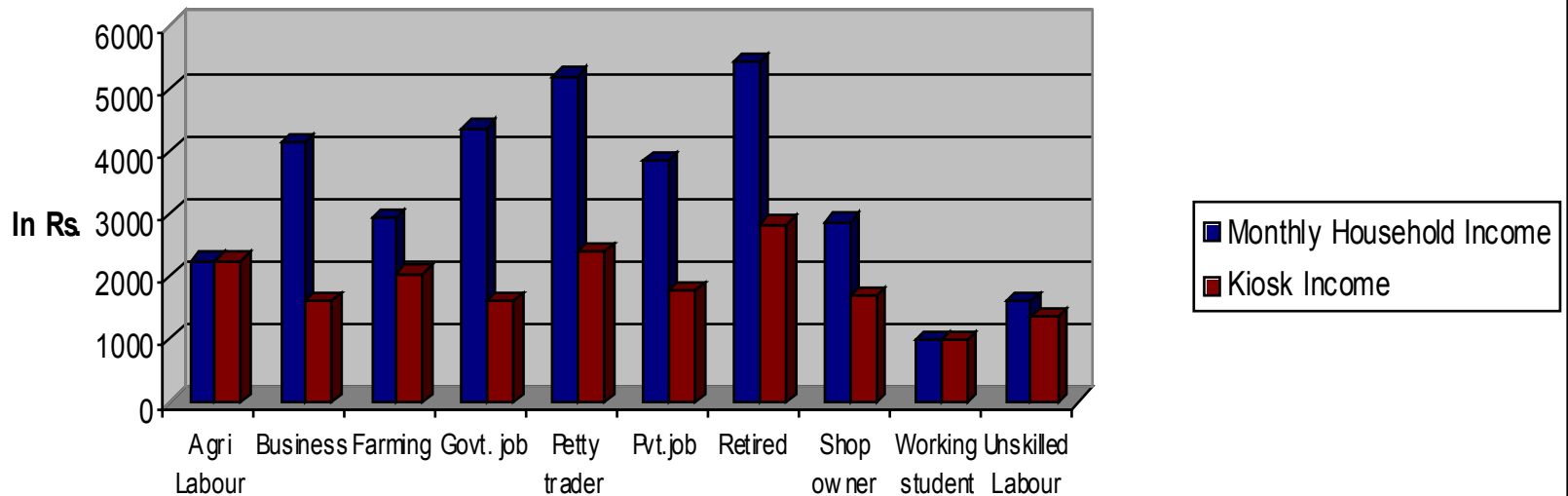


Dhawan, Vivek (2004)

Critical Success Factors for Rural ICT Projects in India,
Masters Thesis, IIT-Bombay

Even surviving kiosks are supported by other business

MONTHLY HOUSEHOLD INCOME vs. KIOSK INCOME



Income

Literacy & education

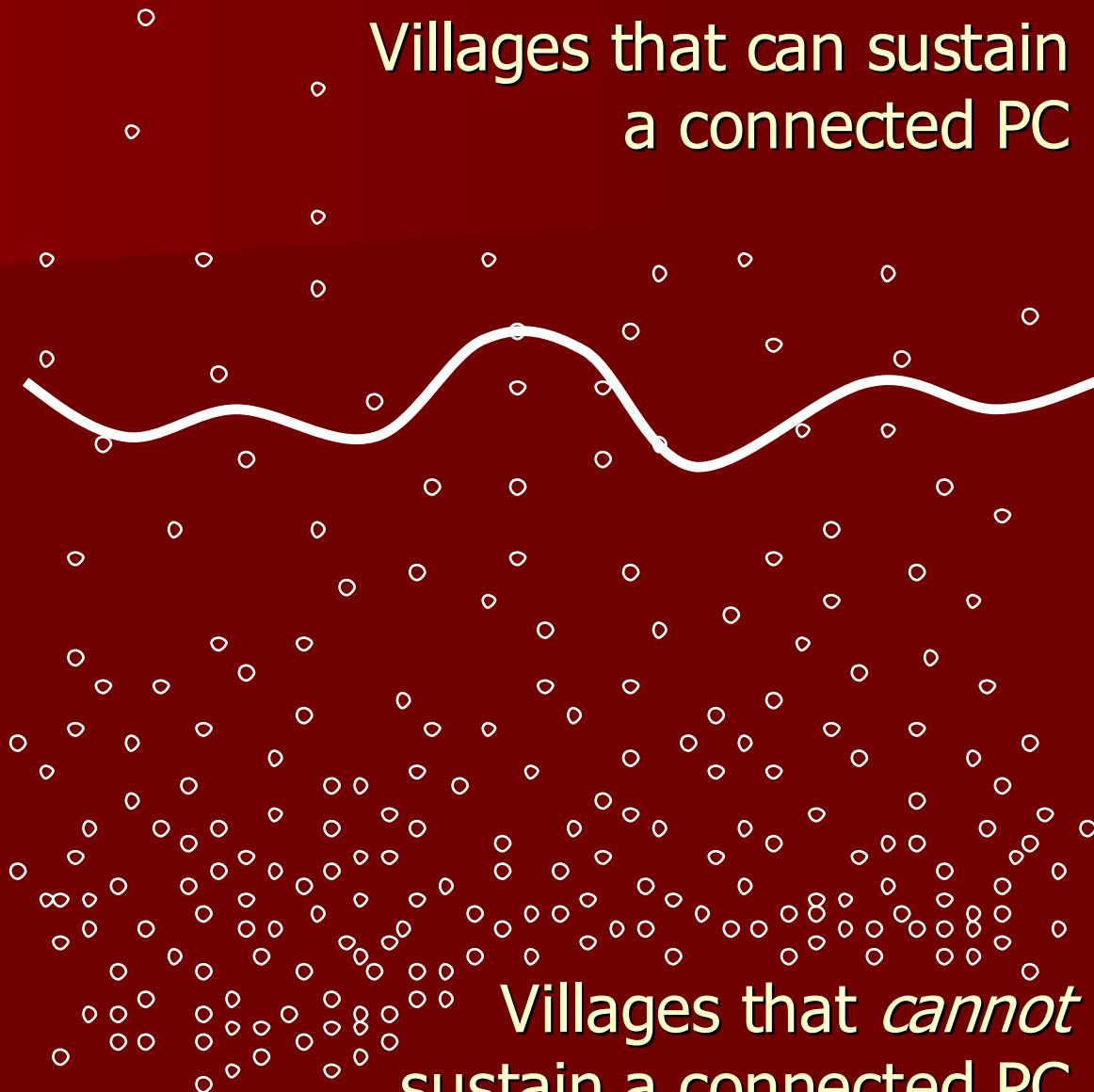
Knowledge-based needs

Infrastructure

Economies of scale

Villages that can sustain a connected PC

Villages that *cannot* sustain a connected PC



Tweaking
kiosks
means...

Villages that can sustain
a connected PC

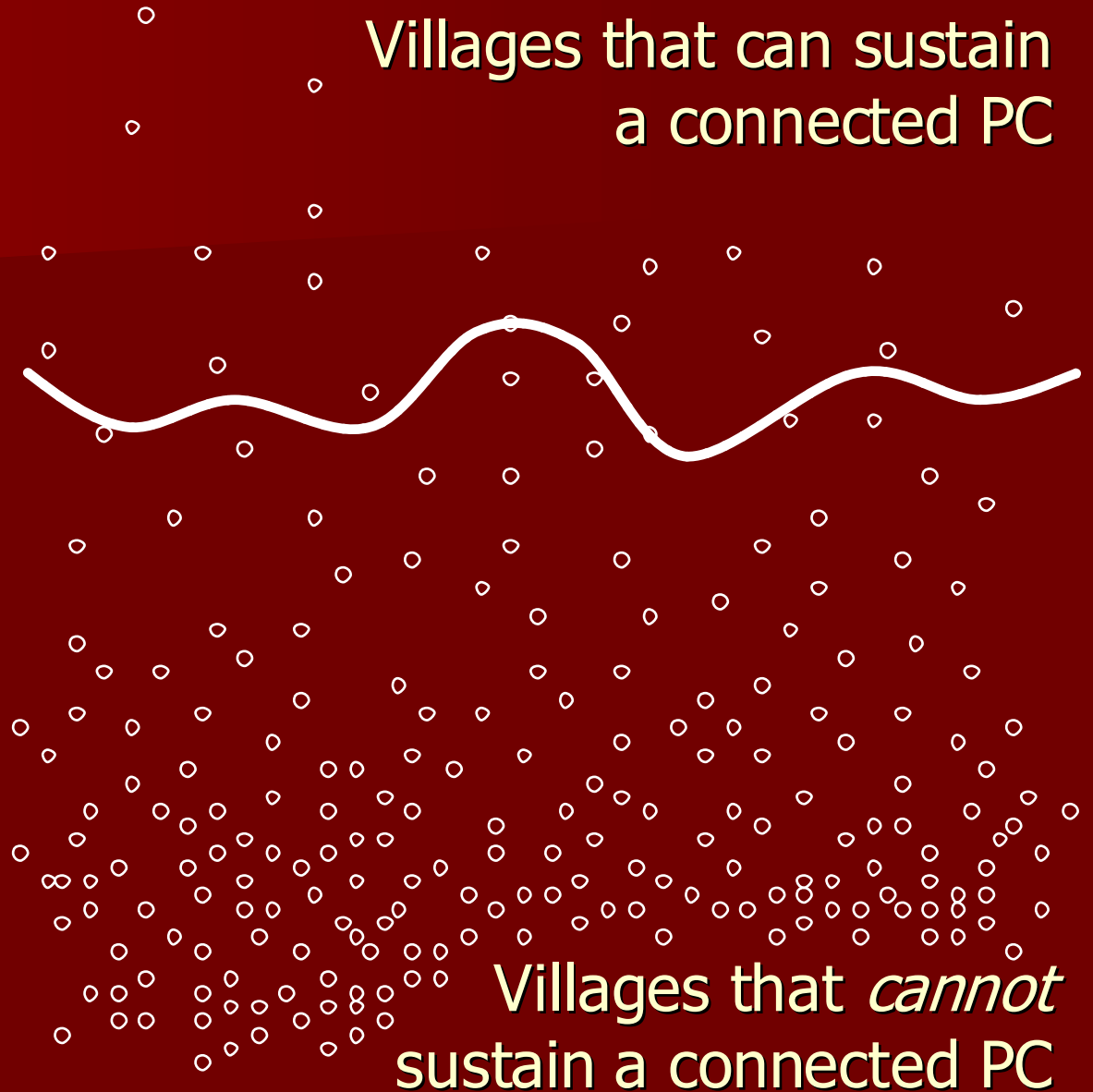
Income

Literacy &
education

Knowledge-
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Infrastructure

Economies
of scale



Exactly where socio-economic development is most needed, local economies are not large enough to sustain a kiosk as an independent business.

- There are some businesses not all rural villages can sustain, *e.g.*, a movie cinema.
- *Incremental* value of PC-based services often not worth the cost.
- Internet cafes open spontaneously when economy is large enough.

Yet the debate over the digital divide is founded on a myth--that plugging poor countries into the internet will help them to become rich rapidly. This is highly unlikely, because the digital divide is not a problem in itself, but a symptom of deeper, more important divides: of income, development and literacy.

This does *not* mean...

- A particular rural PC kiosk can't be sustainable as a business.
- ICTs have no value in rural areas.
- Investing in rural ICTs is a bad idea.
- Sustainability wasn't a worthwhile goal until now.
- Sustainability still isn't a worthwhile goal for a kiosk operator or agency.

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Focus on
Development

Villages that can sustain
a connected PC

Income

Literacy &
education

Knowledge-
based needs

Infrastructure

Economies
of scale



Villages that *cannot*
sustain a connected PC

Suggestions

- Don't focus on financial self-sustainability
- Start with "CT"
- Let go of client side
- Work through cybercafes
- Try "featherweight" computing
- Bait and switch with IT

Don't Focus on Self-Sustainability

- There are no “rural kiosks” in US.
 - Public libraries serve as e-community centers.
 - Funded by government and NGOs!
- Public-private sector partnerships
 - E.g., school computer lab as after-school kiosk?
 - E.g., village administrative office as weekend e-community center?



Start with "CT"

- Take Grameen's Village Phone model
 - Start with mobile shared-access phone
 - Build capacity for entrepreneur
- Then, add community centre
 - Establish physical base
 - Start accounting classes?
 - Buy IT hardware?
 - Continue upgrading...



Let Go of Client Side

- Ensure back-end is built first
 - If it doesn't work for wealthy urban users...
 - E-government services
 - Online bill payment
 - Commercial services online
 - Telemedicine
 - Why would it work for poor rural?
- Then, value of Internet easier to demonstrate to villagers

Work through Cybercafes

- Where Internet cafes exist, sustainability is established.
- Options:
 - Coax entrepreneur to hold classes, etc.
 - Rent space/time from entrepreneur
 - Provide compelling content for entrepreneur
 - Another possibility for public-private sector partnership



Try “Featherweight” Computing

- PC might not be necessary.
- Try other forms of “computing”
 - Leapfrog Leap Pad for hygiene education
 - IIT-Madras phone/e-mail device
 - Smartphone applications



Bait and Switch with IT

- Let PC attract attention
- Then, pile-on profitable community activities
 - Cooking classes
 - Sewing classes
 - English classes
 - Entrepreneurship classes
- If PC is actually used, great!



Not Quite Solutions

- Multi-tiered franchise hierarchy
 - May be necessary, but does not contribute to sustainability
 - Solves organizational issues; adds as many financial burdens as it solves
- New technology
 - May be necessary, but does not contribute to sustainability
 - E.g., connectivity by wireless networks – rarely cheaper than alternatives
- Local language content
 - May be necessary, but does not contribute to sustainability
 - Who will generate fresh content?
- Rural BPO
 - Not necessary, and does not contribute to sustainability
 - Difficult to beat urban economics of scale

What NOT to Do

■ Don't put quantity before quality

- As a donor/funder, don't demand scale and don't fund scaling, unless pilots are *bullet-proof*
- As an implementer, if it doesn't work for 10 centers, why should it work for 100,000?



What to Do



- Define clear *development* goals
- Focus on kiosk operator training
 - Most important factor in success of kiosk
 - Education will last, even if kiosk closes
- Involve community; listen to community

Summary

- For a rural PC kiosk with social development goals, sustainability as an independent business is nearly impossible.
- Exactly where socio-economic development is most needed, local economies are not large enough to sustain a kiosk as an independent business.
- Focus on the community; de-emphasize IT; don't rush to scale.