

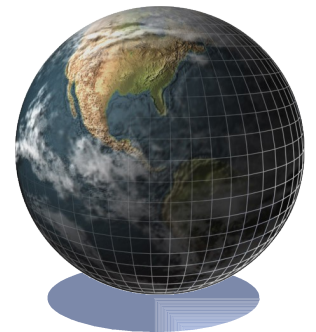
# The Internet in the Developing World



Veljko Pejovic  
veljko@cs.ucsb.edu

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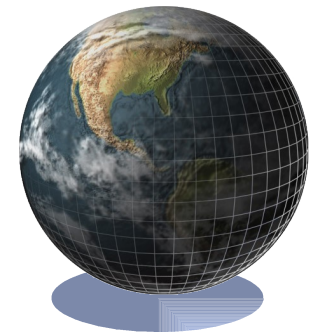
# Motivation

- Basic human needs may not be satisfied, but “We believe that ICT can greatly help in the provision for such needs” - UN ICT Task Force, 2002
- Bridging the digital divide
- Rural areas in the developing world are the *market*



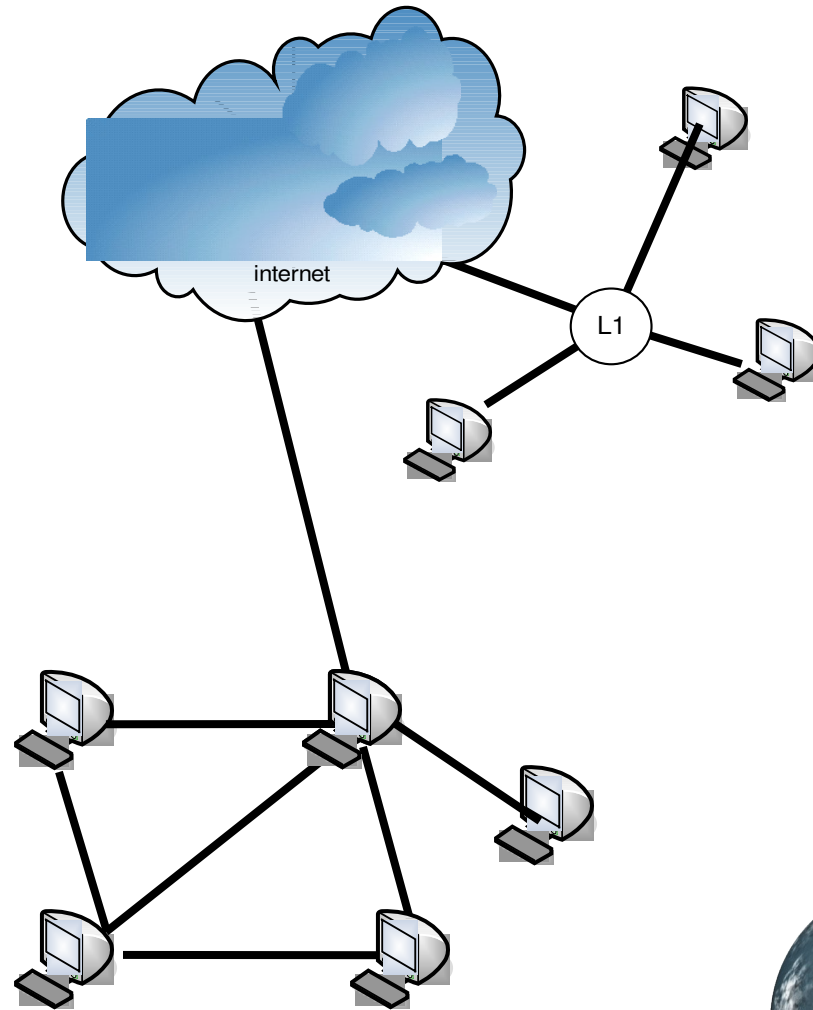
# Building the Internet

- The technical aspect
  - Building a cheap network
    - Power supply varies, alternatives: solar or wind power, less power consuming equipment, better routing protocols
    - Wired vs. Wireless
  - Policies
    - Parts of spectrum may or may not be free
    - Some services might be illegal (VoIP)



# Building the Internet

- Two approaches
  - Top-Down



- Bottom-Up



# Case Studies

- Africa

- Mali – rural desert areas and East Africa – urban but underdeveloped areas of Tanzania and Kenya, *Wireless Networking in the Developing World, Ian Howard et al.*
- Wireless Africa, NOKIA

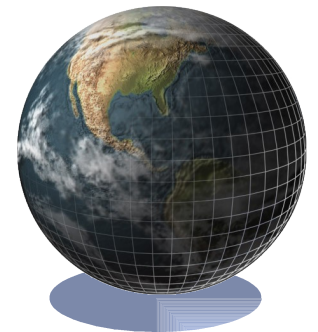
- Asia

- India, SARI project
  - Rural parts of south India
  - Providing “kiosks” with Internet access and involving the community



# How to get Population to Adopt the Internet?

- Community Involvement During the Building Phase
  - Support of persons who speak the language and are trusted and respected by the community
  - Involve the local economy – hire local contractor



# How to get Population to Adopt the Internet?

- Prices are very important
  - Internet connection can be built for \$1000, and maintained for \$60/month
  - Anchor clients should be found (Mali example)
- Experiences from SARI project:
  - Rise awareness: organize “events”, people should know about the services offered
  - Establish the Internet as community asset rather than as mere commercial enterprise



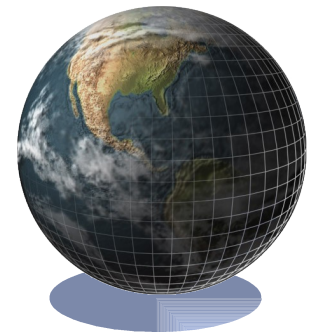
# How to get Population to Adopt the Internet?

- Governments should provide online versions of the most popular services
- Showing business opportunities to local economies
- Designing an adequate interface for different local languages and illiterate people



# Problems

- Bad habits die hard: corruption example
- Payment may become irregular - seasonal work produces seasonal income, however, most Internet providers do not tolerate late fees
- Experienced staff is hard to find, and volatile



# Problems – Free rider dilemma

- Some characteristics of free riding
  - Depends on the group size
  - If tasks are identifiable, unique or at least perceived that way, free riding can be prevented
  - Individual rewards
- Architecture determines whether free riding may occur
  - Poorly administrated wireless network



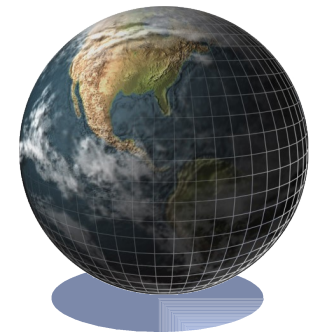
# Social Analysis

- Most Popular Services (SARI)
  - Agricultural and veterinary
  - Communication
  - Government services
- Direct business effect
- However, computer training itself is seen as a very beneficial outcome



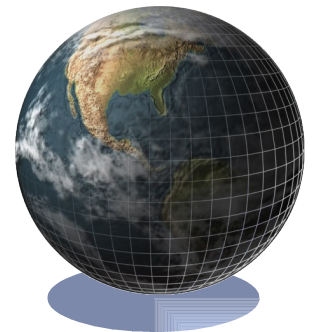
# Social Analysis

- Digital divide:
  - Users are usually young people
  - Predominantly male, however having a female person in charge can help
  - Mid to high income households
  - Users are more educated members of the community
  - Minorities are underrepresented
- Resources located in wealthier areas, advertised in one language only, create an atmosphere unwelcoming to particular members of the society and result in economic divide



# Social Analysis

- But the benefits of the new technology can help people bridge some gaps
  - SARI: People from one caste would be willing to come to the village inhabited by people of different caste
  
- Rural areas have longer “penetration” period for new technologies



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# Thank You

Questions/Comments?

