

**ICTD**



# Me

- UW '07
- PhD UC Berkeley '13
- Entered as OS/Distributed Systems
- Computer Engineering
- Computer Science
- Left as Networking/HCI/ICTD/...



# PROJECTS



A photograph of a classroom where students are seated at desks equipped with computer monitors. The students are wearing light blue school uniforms. In the background, a teacher in a white uniform stands near a chalkboard. The room has a window on the right and a door on the left. The text "DIGITAL STUDY HALL" is overlaid in the center of the image.

# DIGITAL STUDY HALL

# Digital Study Hall

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- Problems were quickly non-technical
  - Move to “mediated content”
  - Lack of teacher availability
  - Lack of effective measurements
- End result
  - Still being debated, I think

A photograph of a computer lab with several students sitting at desks. They are wearing headsets and looking at computer monitors. The text 'METAMOUSE' is overlaid in large, bold, black letters on the left side of the image. The background shows rows of desks and blue plastic chairs.

**METAMOUSE**



# MOTI'S LESSONS ON SAFETY



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हिन्दी

START

Beyond Curriculum Activities

Teacher's resource Bag





# COMMUNITY CELLULAR NETWORKS

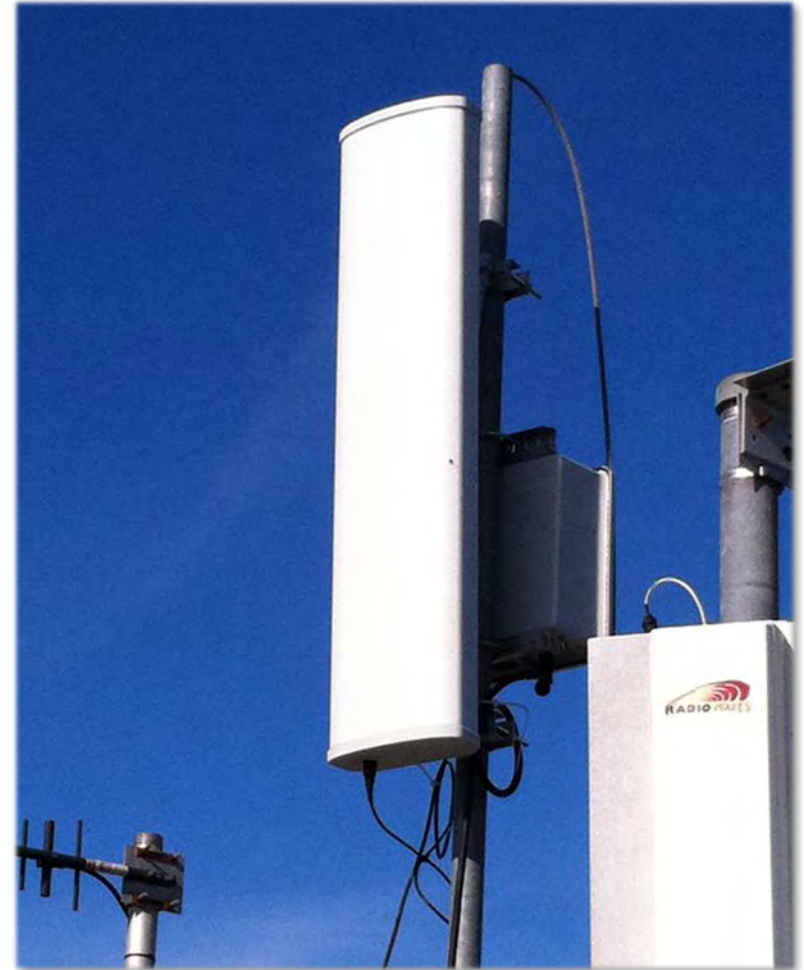


# Community Cellular Networks

- Owned and operated locally
- Small-scale
- Support local goals



# Village Base Station - Hardware



# Village Base Station

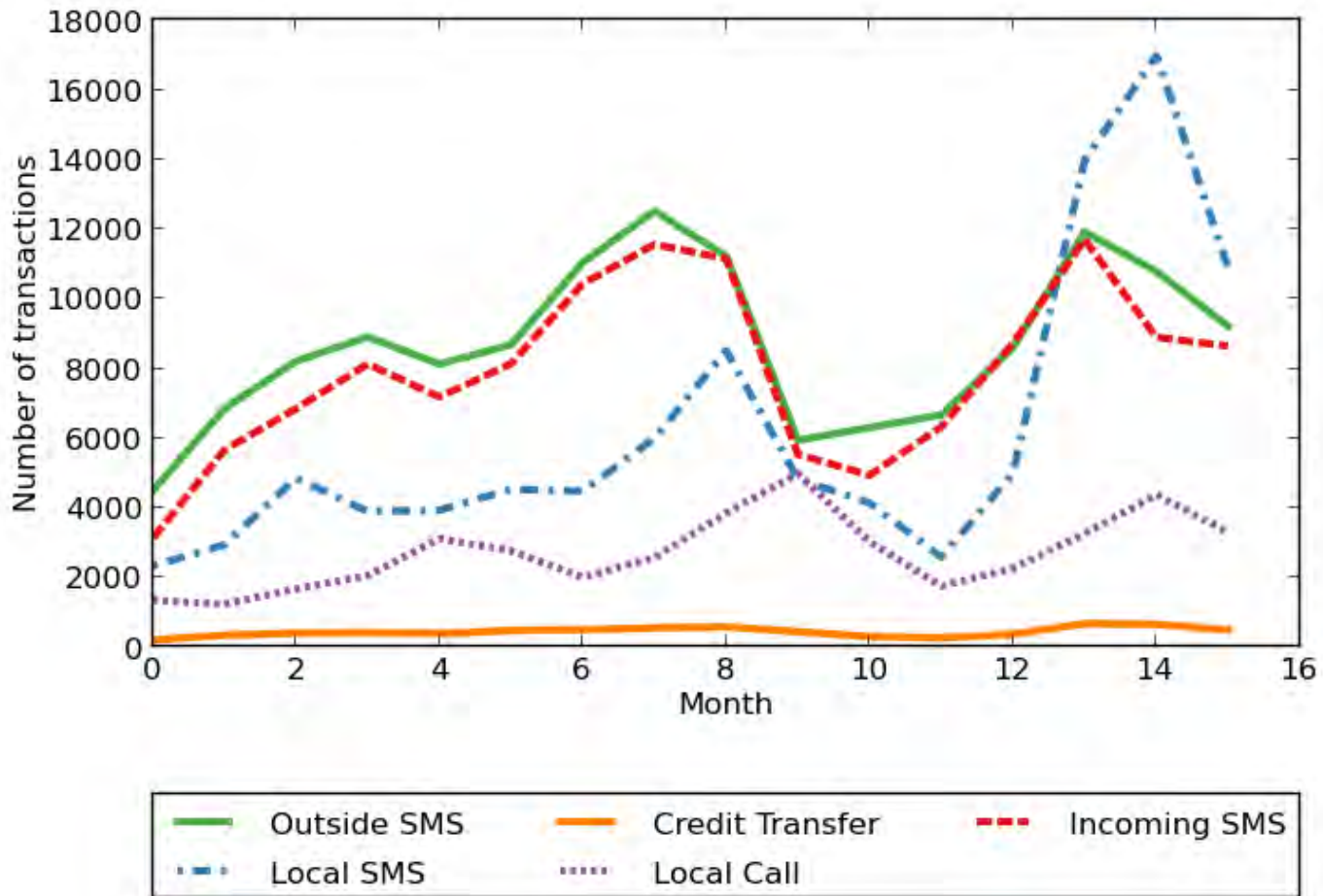
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- **Complete** cell-phone network-in-a-box
  - Not an extension of existing network
- **Everything** needed to run a network
  - Internal BSC/MSC/HLR/SMSC...
  - Billing
  - Routing
  - Interconnect

# Installation



# Service Usage



A woman wearing a white sari with red and green floral patterns and a red border is talking on a mobile phone. She is standing between two concrete pillars. In the background, a man in a light blue shirt is partially visible. The text "GRAMEEN PHONE LADY" is overlaid in large, bold, black letters across the center of the image.

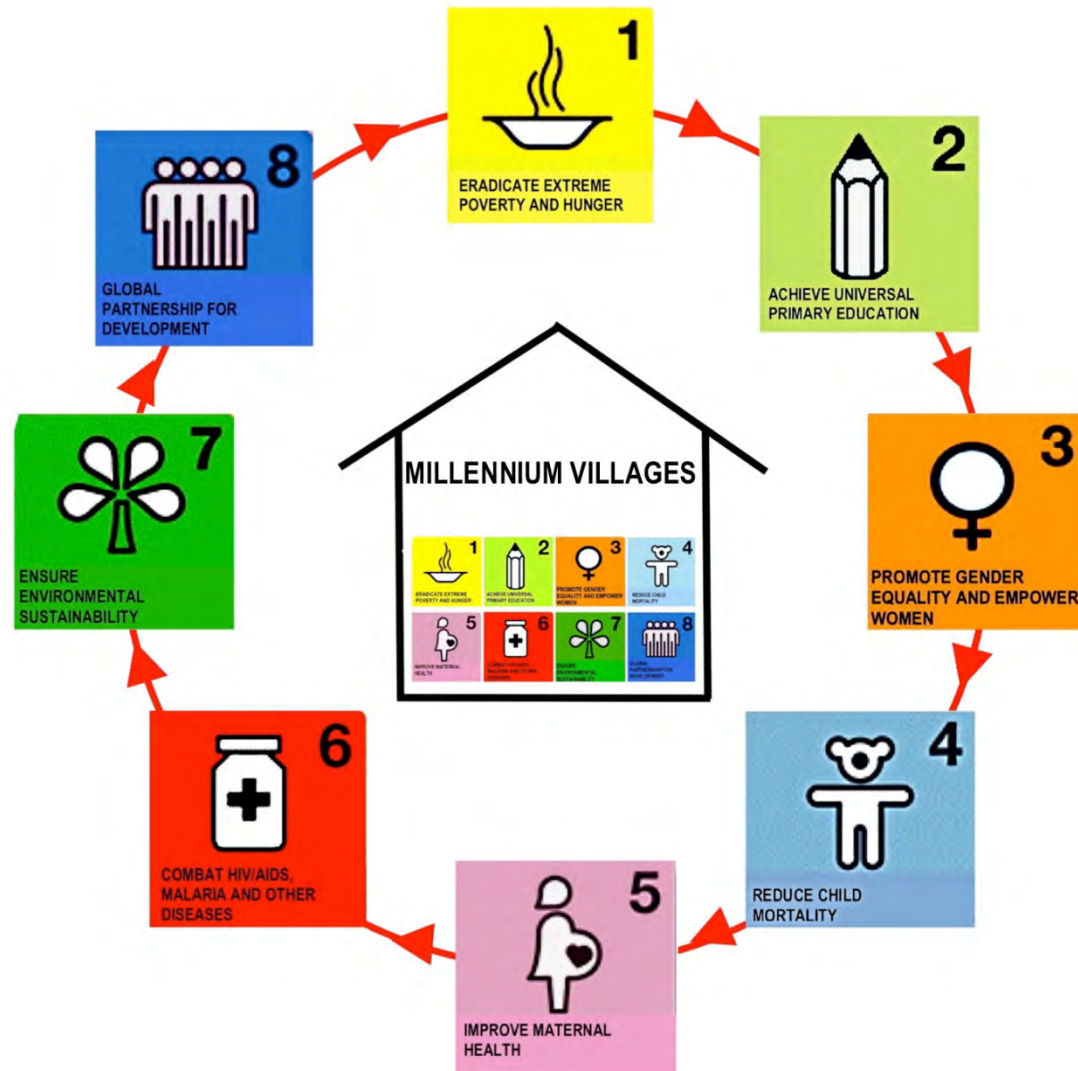
# GRAMEEN PHONE LADY



# MILLENNIUM VILLAGES PROJECT (MVP)



# Millennium Development Goals







mPESA

# mPESA



# mPESA

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- Huge impact
  - 17M in Kenya
  - Transactions of 50% of GDP
- Limitations
  - Failed to repeat in many markets
  - Very little storage of money
    - Mostly for transfer, not banking

# Key Points of Projects

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- ICTD is **BROAD**
- Many appropriate skillsets
- But a few key features...

# Defining Features of ICTD

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- Focus on Poverty
  - “Top-down”
    - Healthcare
    - Education
    - Disaster relief
  - “Bottom-up”
    - Microlending
    - Community Empowerment

# Defining Features of ICTD

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- Focus on Poverty
- Interdisciplinary
  - Ethnography
  - Geography
  - Information Science
  - Science and Technology Studies (STS)
  - Other engineering (Mech, civil, etc)

# Defining Features of ICTD

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- Focus on Poverty
- Interdisciplinary
- Heavy use of Critical Theory
  - Development is older than mainstream computing
  - Dependency Theory vs Modernization Theory
    - Engagement with this theory is hit and miss
  - Tons and tons and tons of mistakes...

# Unintended Consequences

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- Early “aid” to Africa
- Bangladesh well project
- “Washington Consensus”
- Personal story: Digital Study Hall



# ICTD Critiques

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- What is “Development”?
  - If you want to hear a researcher sigh...
  - Sen: “Freedom as Development”
  - Toyama: “Development as Wisdom”
  - I vote for power: Development is the redistribution of power

# ICTD Critiques

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- What is “Development”?
- The “Silver Bullet”
  - Idea that a single tech idea is it
  - Drones! Balloons! Internet! BRCK! Cellular Connectivity! \*cough\*
    - Media driven IMO
  - Ignores question of **why** these areas are in poverty
    - Almost always structural!

# ICTD Critiques

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- What is “Development”?
- The “Silver Bullet”
- The “Big Statement”
  - Basically gloss over the hard parts
  - Eric’s paper is an example
  - Classic grant-driven systems
  - Tend to cycle through tech fads
    - Mesh Networks, Crowdsourcing, Etc

# ICTD Critiques

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- What is “Development”?
- The “Silver Bullet”
- The “Big Statement”
- “Pilotitus”
  - Pilots are easier than long deployments
  - Media is easier than evaluation
  - Somewhat noticeable in Yaw’s paper
    - Though ODK/Nafundi is a great counter example

# Defining Techniques of ICTD

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- HCI-Focused
  - Obvious overlap
  - Iterative Design
  - Qualitative Evaluations
  - See upcoming sections:
    - Behavior change
    - Cross-cultural HCI

# Defining Techniques of ICTD

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- HCI-Focused
- Interdisciplinary
  - As mentioned before
  - Fundamentally a big field, need more perspectives to be successful

# Defining Techniques of ICTD

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- HCI-Focused
- Interdisciplinary
- Partnerships
  - NGOs/Governments/Individuals
  - Locals know best

# Defining Techniques of ICTD

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- HCI-Focused
- Interdisciplinary
- Partnerships
- “Field Work”
  - Participatory Design
  - Ethnographers often spend years just learning the language!



A person with long hair, wearing a dark t-shirt and light-colored pants, stands with their arms crossed on a gravel path that leads towards a mountain range under a cloudy sky. The path is the central focus, leading the eye from the foreground towards the person and the mountains in the background.

**Fin**

Kurtis Heimerl

[kheimerl@cs.Washington.edu](mailto:kheimerl@cs.Washington.edu)

# Metamouse

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- Basic idea:
  - Many kids in developing areas share machines
  - In educational context, play games
  - Can we automatically make single-player games multiplayer, to keep all students involved?

# Digital Study Hall

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- Just out of undergrad
  - MSR India
  - Randy Wang, rogue academic ex-princeton
- Kinda-sorta networking project
- Basic idea: Netflix for educational content
  - In areas where network is unavailable
  - Built off of “sneakernets”
  - DVDs by mail were most efficient transport

# mPhone

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- Basic idea:
  - Network very shaky in lots of places
  - SMS used as “bridge”
    - Asynchronous messaging is the key
    - Bit limitations to SMS
      - Character set
      - Literacy
  - How would people use asynchronous **voice** messaging?