

Data Collection and Information Management for Rural Development



Tapan S. Parikh
School of Information | UC Berkeley
<http://ischool.berkeley.edu/~parikh> | parikh@berkeley.edu

Financial Services for the Poor

Microfinance: Global Movement

- Grameen Bank & Muhammad Yunus – 2006 Nobel Prize

Self-Help Groups (SHGs) - ROSCAs, ASCAs, Village Bank, etc.

- Collect savings during meetings
- Use capital for small loans
- Business, livestock, education, health care, etc.
- Repayment based on peer pressure

Decentralize financial service provision



Linking Formal and Informal

SHGs are being linked to banks

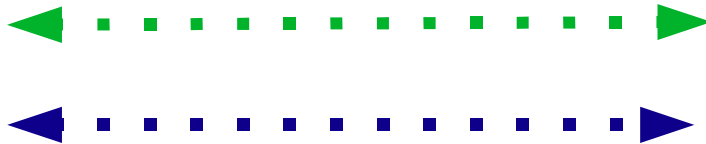
- ✓ Access more credit at better rates
- ✓ Other services (insurance, investment, savings, etc.)
- ✓ Local intermediation can reduce cost of service
- ✓ Excellent repayment performance (90-98%)

However, many obstacles Parikh - ICTD 2006

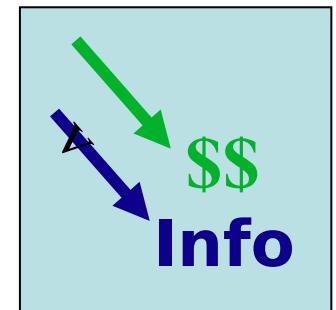
- x Spread across remote rural areas
- x Limited education, infrastructure, financial capacity
- x Documentation practices are inconsistent
- x Difficult to assess credit risk and make decisions



SHGs



Banks



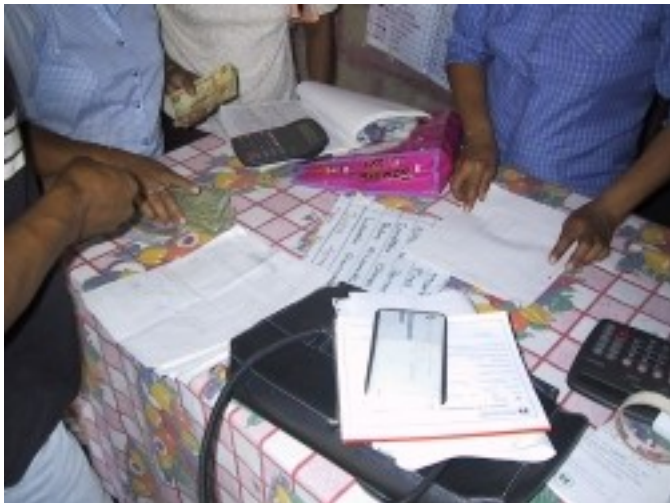
Information can be the Bridge

Information can bridge the divide

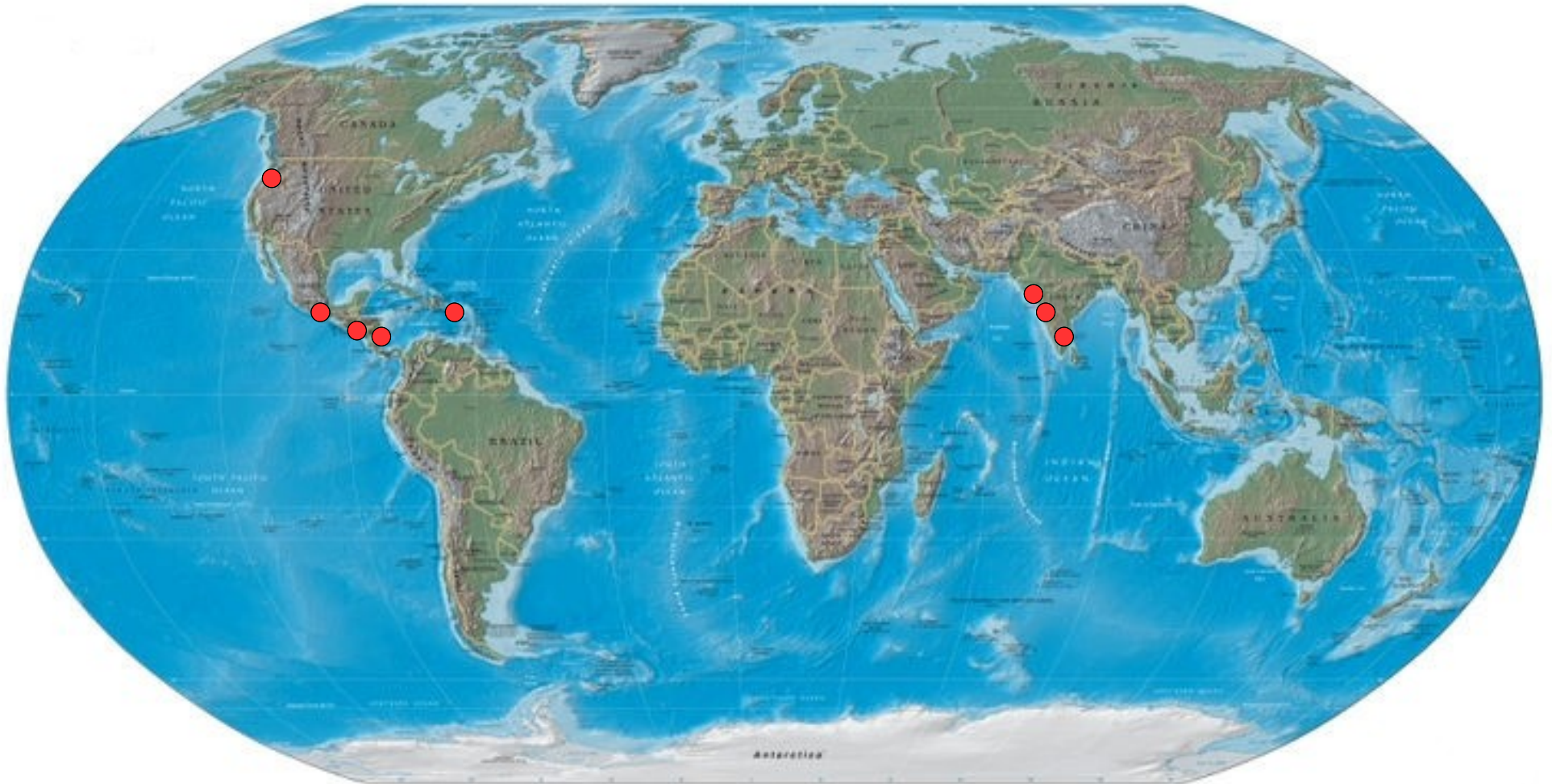
- Connect the formal and the informal
- Provide oversight and understanding for SHGs
- Provide credit ratings and risk analysis for banks
- Result: SHGs get better rates for better performance

Can we design a system for SHGs to aggregate data?

- Accessible to users
- Accurate and efficient
- Intermittent power, connectivity
- Generalizes to other applications



Step 1: Understand



2002-3

Investigate interface design space for rural users

- SHG members and supporting staff
- Some may be semi-literate or illiterate
- Use SHG data collection as sample application

Only previous work was Grisedale et al., CHI 1997

- Data collection for rural health care workers in Rajasthan
- Using Apple Newton

We used laptop / PC for maximum flexibility

- Not considering real deployment issues



contextual study



Received by *Wases*

Monthly MIS for Mahakalam *payment*

S.No. வரிசை எண்	Member Name உறுப்பினர் பெயர்	Savings வரவினம் Receipts						கடன் நிலுவை <i>Loan</i>	வட்டி நிலுவை <i>Interest</i>	மொத்தம் <i>Total</i>	செலவினம்			
		No. ரகீது எண்	Subscription சந்தா வரவு	கடன் வரவு <i>Principal loan repaid</i>	வட்டி வரவு <i>Interest paid</i>	நிர்வாக நிதி <i>Admin charge</i>	இதர வரவு <i>Other Receipts</i>				வவுச்சர் எண் <i>Voucher No.</i>	புதிய கடன் <i>New Loan</i>	பெ பெ <i>Gr Gr</i>	
	ஆரம்ப இருப்பு கையில் ரொக்கம்		<i>opening balance</i>											
	வங்கி இருப்பு		<i>Bank balance</i>											
	மகாகலச டெபாசிட்		<i>Mahakalam deposit</i>											
	மகாகலச கூட்டு தொழிலுக்கு		<i>"</i>	<i>"</i>	<i>(enterprise)</i>									
1														
2														
3														
4														
5														
6														
7														
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11														
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17														
18														
19														
20														
21														
22														
	மொத்தம்													

கலச ஒருங்கிணைப்பாளர் கையொப்பம்
Coordinator
Master Incharge

Accounts
ஏழுதுயவர் கையொப்பம்

who for
கையொப்பம்

design iteration



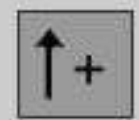
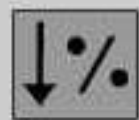
தர்ந்தெடுக்கப்பட்ட ள்ளார்

தேதி : 12/10/02

1	2	3	4	5	6	7	8	9	10	11
	விஜயா	50	50							
	பாரதிதாசன்	50	50							
	கார்த்திக்	50	0							
	பிரியா	50	<input type="checkbox"/>	 50	<input type="text"/>					
	மீனா	50		12.10.02	50	✓				
	லல்வி	50		05.10.02	50	✓				
	சித்ரா	50		22.09.02	50	✓				
	சத்யானந்தன்	50		15.09.02	0	✗				
	சத்யானந்தன்	50		03.09.02	50	✓				
	சத்யானந்தன்	50		26.08.02	50	✓				
	வீலகானந்தன்	50								
	கார்த்திக்	50								



4 பிரியா



<input type="checkbox"/> ஆரம்ப இருப்பு	12.10.02
<input type="checkbox"/> குழுவின மொத்த சேமிப் 1080	<input type="checkbox"/> கையிருப்பு 1600
<input type="checkbox"/> Group Investments	<input type="checkbox"/> Bank balance 6850



Design Guidelines for Rural Users

Parikh et al. - ACM CHI 2003, ACM CUU 2003 (Best Paper)

Two-month iterative design study conducted in a village
32 rural users - farm laborers (10 semi or illiterate)

- ✓ Paper formats are important
- ✓ Local language audio builds trust
- ✓ Numeric input/output is accessible
- ✓ Guide the user through the task
- ✓ Realistic icons are better



Step 2: Build

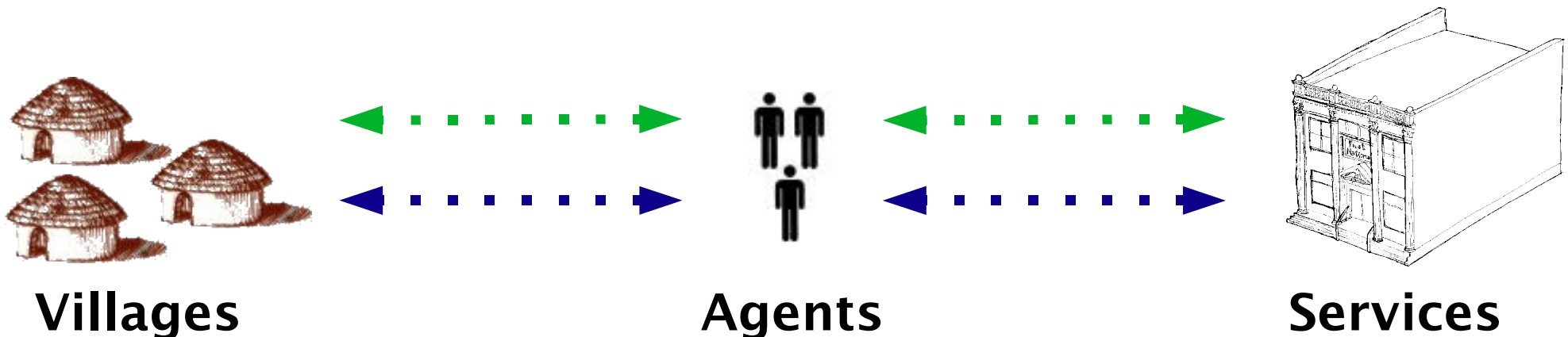


2004-5

1) Agents - Rural Service Providers

Agent Model: Provide services through local intermediaries

- Employ underemployed youth and women
- Convenient for users / clients (travel is hard!)
- Common motif for many services
 - Primary health care
 - Retail supply chains
 - Agriculture
 - Communications, etc.
- In microfinance, {bank, NGO} field staff collect info, repayments & deliver reports



2) Mobile Phones

Mobile phones are the perfect client device

- Exponential growth across developing world
- Numeric Keypad, Speakers & Microphone
- Intermittent network, Battery-operated, Low-cost
- Supports Agent-based service model



Problems and Limitations

- Small screen: adapted WIMP metaphor
- Numeric keypad: text entry is difficult
- Difficult to program applications



3) Paper User Interfaces

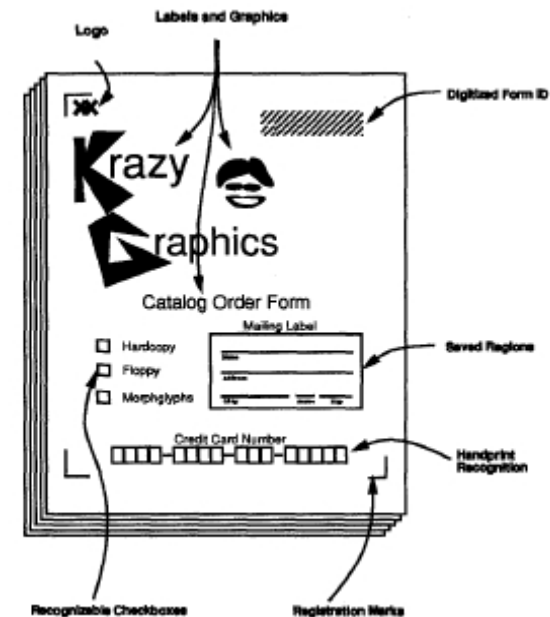
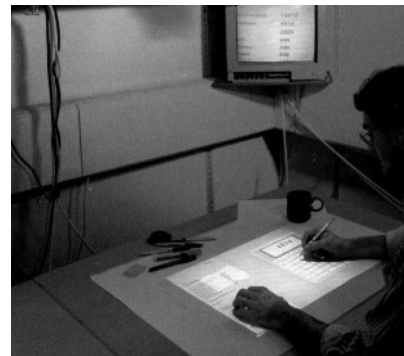
Leverage affordances of paper in digital UIs

- XAX, Digital Desk, A-Book, Paper PDA, Cooltown, Books with Voices, etc.

However, thus far these approaches have had limited impact

Rural developing world could be the killer application

- Familiarity with paper formats
- Offset high technology cost by performing some operations on paper “client”



CAM: Application Toolkit for Mobile Phones

Parikh et al. - IEEE Pervasive 2005, WWW 2006

CAMForms

interactive paper forms

Formulario de Inspección Interna de Asobagri

Direcciones: Este formulario de inspección consta de 12 secciones. Para ingresar una sección al teléfono, deberá de ingresar el código de barras correspondiente, seguido del código del productor. A continuación, el teléfono comenzará a proporcionar el espacio para contestar las preguntas de esa sección. Si usted quiere tomar alguna fotografía o hacer una grabación de audio para proporcionar evidencia de su inspección, usted puede ingresar el código de barras con el título 'tomar fotografía' o 'grabar audio', respectivamente, seguido también del código del productor.

Sección 0 Información general		90#0 tomar fotografía	91#0 grabar audio	70 Sección 0
0.1. Código de	0.2. Fecha			
0.3. Cuántas parcelas tiene?	Proyección por parcela			
Sección 1 Semillas y Tratamiento		90#1 tomar fotografía	91#1 grabar audio	71 Sección 1
1.1. ¿Hay 1. Si semillero?	Código de la parcela de origen de semillas			
2.No	Estado de la parcela			
1.2. Cantidad de semillas en libras:	Producto que uso para desinfectar:			
1.3. ¿Que sustrato 1. Mat. uso para el Organica semillero?	Producto que uso 1. Plantas para desinfectar			
2. Tierra	Cantidad o dosis:			
3. Arena				
Sección 2 Furtite de plántones y		90#2 tomar fotografía	91#2 grabar audio	72 Sección 2
2.1. ¿Compro 1. Si almuerzo de café? 2. No	Estatus 1. Organica 2. Natural 3. Conversion 4. Convensional			
2.2. ¿Sembró 1. Si algunos frutales dentro de la parcela?	Código de la parcela de origen: Cuales? 1. Citrico 2. Banano 3. Conversion 4. Convensional			



CAMBrowser

mobile phone app to process forms










```
<function name="a_click">
  d = input_date("Date", "date.wav");
  i = input_int("Interest", "int.wav");
  p = input_int("Principal", "pri.wav");
  if (d & p & i)
    http_put("...");
</function>
```

CAMScript

scripting language for form interaction

Formulario de Inspeccion Interna de Asobagri

Direcciones: Este formulario de inspeccion consta de 12 secciones. Para ingresar una seccion al telefono, debera de ingresar el codigo de barras correspondiente, seguido del codigo del productor. A continuacion, el telefono comenzara a proporcionarle espacio para contestar las preguntas de esa seccion. Si usted quiere tomar alguna fotografia o hacer una grabacion de audio para proporcionar evidencia de su inspeccion, usted puede ingresar el codigo de barras con el titulo "tomar fotografia" o "grabar audio", respectivamente, seguido tambien del codigo del productor.

				
Seccion 0 Informacion general		90##0 tomar fotografia	91##0 grabar audio	70 Seccion 0
0.1	Codigo de productor	0.2 Fecha ___/___/___		
0.3	Cuantas parcelas tiene? ___	Proyeccion por parcela a. ___ b. ___ c. ___ d. ___ e. ___		
				
Seccion 1 Semillas y Tratamiento		90##1 tomar fotografia	91##1 grabar audio	71 Seccion 1
1.1	Hizo 1. Si semillero? 2. No	Codigo de la parcela de origen de semillas		
		Estado de la parcela	1. Organica 3. Conversion	2. Natural 4. Convencional
1.2	Cantidad de semillas en libras: Producto que uso para desinfectar:	1. Plantas 2. Ceniza 3. Quimico 4. Agua Caliente		
1.3	Que sustrato 1. Mat. uso para el Organica semillero? 2. Tierra 3. Arena	Producto que uso 1. Plantas para desinfectar 3. Quimico		
		Cantidad o dosis:		
Recomendaciones inmediatas:				
				
Seccion 2 Fuente de plantones y		90##2 tomar fotografia	91##2 grabar audio	72 Seccion 2
2.1	Compró 1. Si almácigo de café? 2. No	Estatus 1. Organica 2. Natural 3. Conversion 4. Convencional		
		Codigo de la parcela de origen:		
2.2	Sembró 1. Si algunos frutales dentro de la parcela?	Cuáles? 1. Citrico 2. Banano Estatus 1. Organica 2. Natural 3. Conversion 4. Convencional		

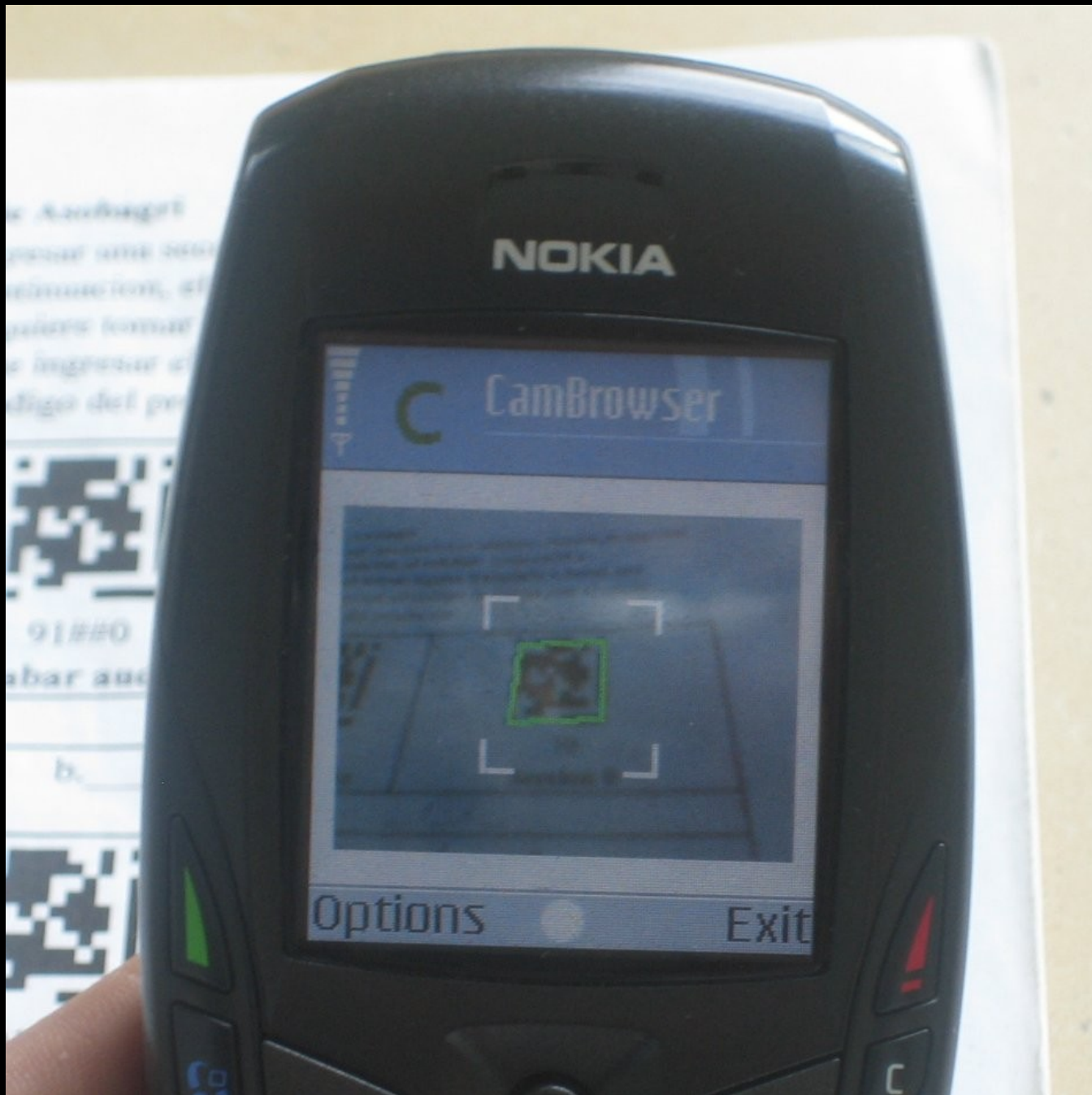
NOKIA

CamBrowser



Options Exit

The screen displays the CamBrowser application interface. At the top, the title 'CamBrowser' is shown next to a green 'C' logo. The main area shows a screenshot of a document with a QR code in the center, framed by a white border. Below the screenshot, there are two buttons labeled 'Options' and 'Exit'. The background of the screen is blue.



NOKIA

CamBrowser

தேதி

123

11/09/2007

OK

Cancel



NOKIA

CamBrowser

19##123

01-09-2007

Options Exit

Tight linkage to paper practices

- Retain paper as the authoritative local record
- Avoid abstract, menu-driven interaction
- Not optimizing for local labor – don't need OCR!

Simple, scripted programming model

- Easy to program and use

Multimedia Input & Output

- Capture audio and images instead of text

Disconnected Operation

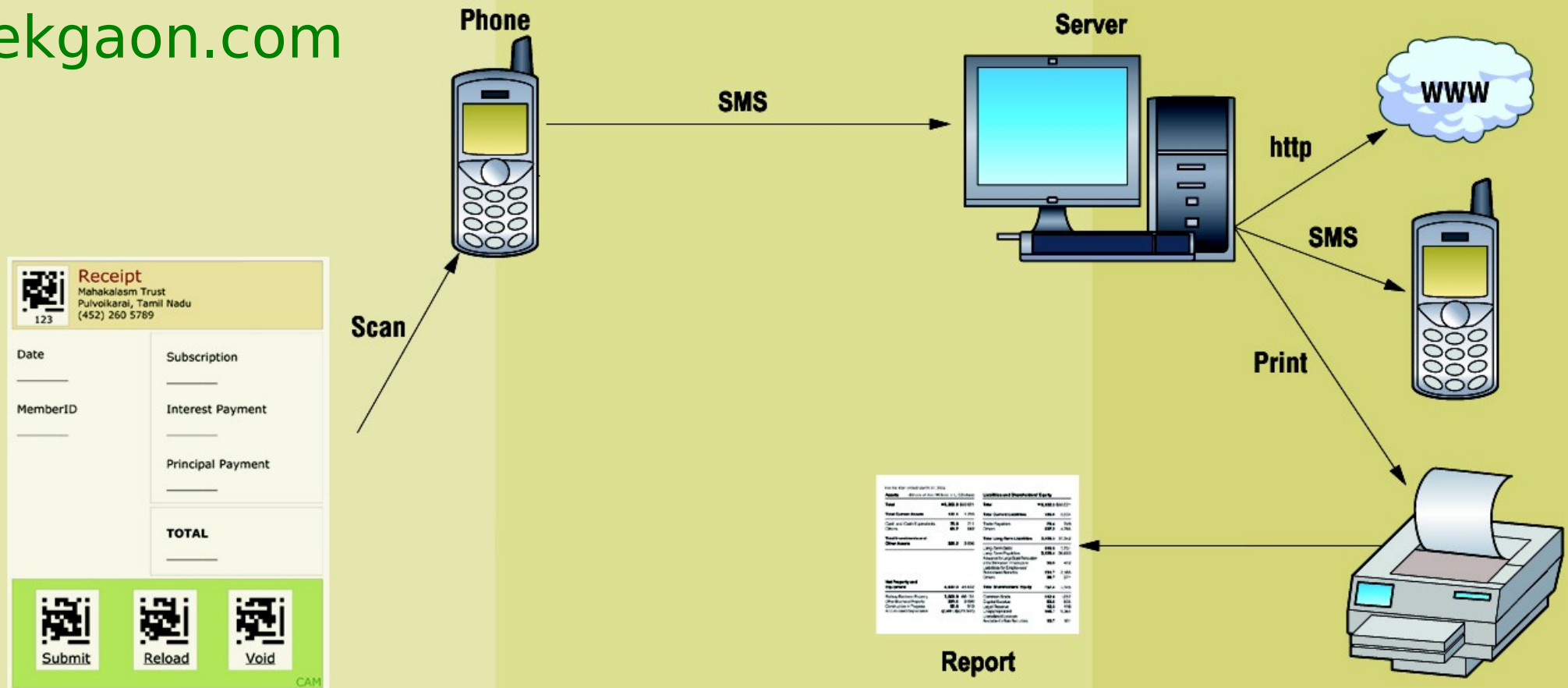
- Transfer data using SMS, MMS, Email (and HTTP)

```
<function name="a_click">
  date = input_date("Enter Date" "date.wav");
  amt = input_int("Enter Amount", "amount.wav");
  message_note("Say your name", "sayname.wav");
  record_audio("name.wav");
  email("tap2k@yahoo.com", "a=#amt, "name.wav");
</function>
```

CAM: Data Flow in Microfinance

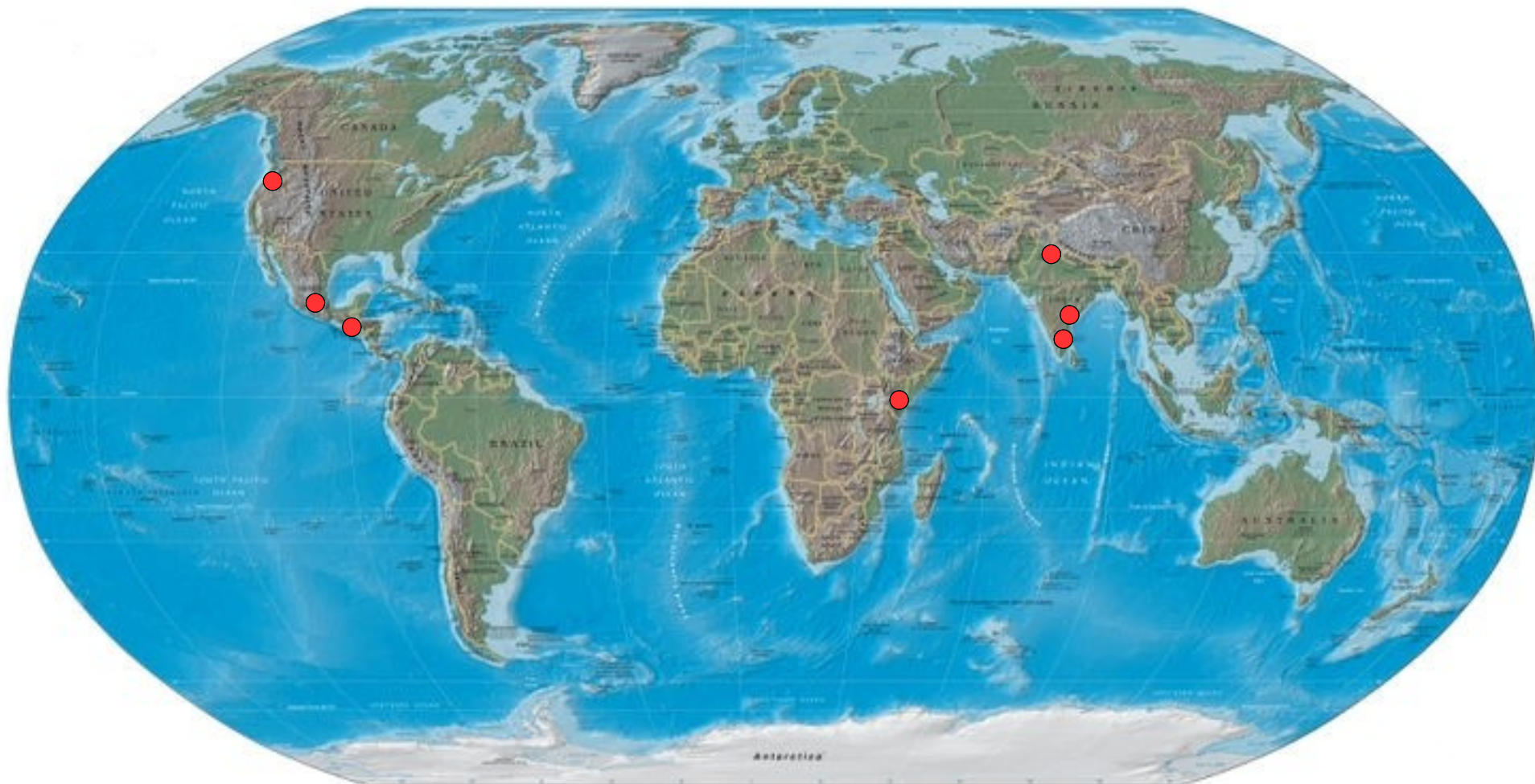
- Framework for SHG data collection and reporting
- Increased transparency within SHG
- Improved documentation when applying for loans
- Provide new services to members (e.g. flexible savings)

ekgaon.com





Step 3: Evaluate



2006-8

CAM: Usability Evaluation

Parikh et al. - ACM CHI 2006

Task: Record transactions during SHG meetings

- Users: 14 field agents from NGO
- 7th grade to college educated
- Simulated and in situ testing

Results:

- Learnable: Learned within 1-3 sessions
- Efficient: 30 secs per form, 8-10 mins per meeting
- Accurate: Error rate < 1% (0% for in situ tests)
- Users performed significantly better with audio



CAM: Impact in Microfinance

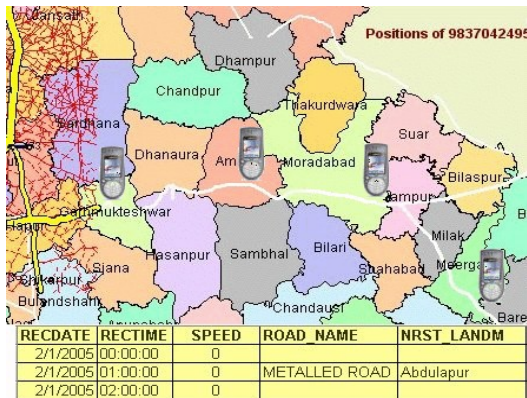
Commercialized by **ekgaon technologies pvt.ltd**

2 NGOs / 17 agents / 700 SHGs / 10000 members

In active use in Tamil Nadu since October 2006



ekgaon.com



Supply Chain Javid and Parikh - ICTD 2006

- Monitor inventory at rural warehouses
- Plan collection & distribution
- Tested in Uttar Pradesh, India



Public Health DeRenzi et al. - ACM CHI 2008

- Automate clinical protocols
- Reduce training, improve adherence
- Tested in Tanzania



Agriculture Schwartzman and Parikh - MobEA 2007

- Monitor cultivation using pictures, audio
- Provide extension and certification
- Pilot w/ 1000 coffee farmers in Mexico

Understand, Build, Evaluate

Yael



Agriculture: Digital ICS

Schwartzman et al. - MobEA Workshop at WWW 2007

Internal control system for agri-cooperatives

Maintain quality, certifications (organic, fair trade)

Pilot w/ over 1000 small farmers in Oaxaca, Mexico

Inspection

Inspectors use **mobile phones** to monitor farms

Evaluation

Evaluators use a **web application** to give feedback

Report Generation

Generate **reports** for extension and certification



REGISTROS DE ETIQUETAS DEL HONGO UTILIZADO

9 - Aspectos Organizativos

- EL PRODUCTOR NO CONTRATO MANO DE OBRA
- EL PRODUCTOR NO CONTRATO NIÑOS(AS) PARA TRABAJAR EN EL CAFETAL
- EL PRODUCTOR SI PARTICIPO EN LAS ASAMBLEAS DE SU ORGANIZACION O GRUPO COMUNITARIO
- EL PRODUCTOR SI SABE SI LA DIRECTIVA DE SU ORGANIZACION REGIONAL REALIZO UN BALANCE DE COMERCIALIZACION.
- EL PRODUCTOR SI SABE SI LA DIRECTIVA DE SU ORGANIZACION REGIONAL INFORMO COMO SE VENDIO EL CAFE DE LA COSECHA ANTERIOR.
- EL PRODUCTOR VENDIO SU CAFE EN FIRME Y SI CONOCE EL PRECIO FINAL DE SU CAFE QUE FUE DE 20.90 PESOS
- EL PRODUCTOR NO SABE CUANTO DINERO RECIBIO SU ORGANIZACION DE PREMIO SOCIAL

kg. Fecha de aplicación de abono : 04-10-2007

5 - Manejo de cultivos

- 5.1 El productor realizó podas, en su parcela
- 5.2 No hay problemas con plagas o enfermedades
- 5.3 Vio evidencia o muestra de aplicación de fertilizante para n o enfermedades en la parcela
- 5.4 El productor no cuenta con equipo de aspersión.
- 5.5 Hay poca basura inorgánica en la parcela
- 5.6 control
- 6.1

Inspector: Yael Schwartzman Resultado: Fecha Insp: 10/07/2007

6 - Ma 60001001 no evaluado

e: la parcela

SO baja

LANOS

EZ

OBSERVACIONES:

NOMBRE	Fecha insp.	Nombre insp.	Fecha eval.	Nombre eval.	Resultado	OBSERVACIONES
Pedro Gonzales	11/05/07	Felipe	12/05/07	Manuel	Aprobado	Ver barreras
Manuel Felipes	11/05/07	Felipe	12/05/07	Manuel	Sancionado	uso quimicos
Roxana Claudia	11/06/07	Felipe	12/05/07	Manuel	Aprobado	
Alberto Ramos	11/06/07	Felipe	12/06/07	Manuel	Sancionado	5.5 hay poca basura en la parcela
Sawila Camote	11/07/07	Felipe	12/06/07	Manuel	Aprobado	
Meche Fuentes	11/07/07	Felipe	12/06/07	Manuel	Aprobado	
Roberta Fuentes	11/08/07	Felipe	12/07/07	Manuel	Aprobado	



Building mobile tools for public health
Standards-based (XForms), Open Source

Applications

Disease Surveillance
Clinical Protocols
Clinical Trials
Household Surveys
Birth and Death
Support CHWs

Organizations

OpenMRS
EpiHandy
EpiSurveyor
Berkeley
Washington
MIT
Cell Life (South Africa)
MRC (South Africa)
IRD (Pakistan)
Dimagi
D-Tree

Rural users may never “own” technology

How do different identification technologies, interaction mediums and social contexts impact trust in computing?

Can we facilitate distant personal / business relationships?





Empower local people to build their own solutions

Physical tools for content creation and application development

Paper formats, visual and tangible programming



Final Thoughts

Design for real people & problems
Attracts diverse & energetic students
Impact sustains credibility & collaboration



Thanks for all the Fish

Yaw Anokwa, Brian DeRenzi, Paul Javid, Neil Patel, Yael Schwartzman, Anil Gupta, Vijay Pratap Singh Aditya, Kaushik Ghosh, Apala Chavan, Sarit Arora, Puneet Syal, K. Sasikumar, Muthu Velayutham, Gaetano Borriello, Neal Lesh, Kentaro Toyama, ekgaon technologies, CCD, Mahakalasm, Asobagri, CEPCO, D-Tree, Dimagi, Cell Life, IHRDC, Jataan, HLPPT, Media Lab Asia, HFI, UW CSE, UW MLC, Intel Research, MSR India, Ricoh Innovations, Transfair, David Bonderman, SEEP, IDRC, ekgaon and everyone else I've had the pleasure to work with.







paper prototyping



ekgaon technologies

ekgaon was founded in 2002 and works in providing technical, managerial and strategic support to community-led initiatives around India and the world. Currently we are based in New Delhi with a field office in Madurai, Tamil Nadu.

<http://www.ekgaon.com>

Other Partners and Supporters

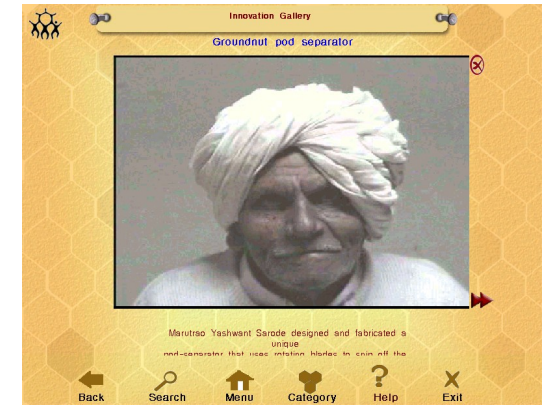
Covenant Centre for Development
Mahakalasm SHG Federations
CARE India

Deutsche Gesellschaft for Technische Zusammenarbeit (GTZ)
Small Enterprise Education and Promotion Network (SEEP)
International Development Research Centre (IDRC)
Sarai New Media Initiative
Ricoh Innovations
Microsoft Research
Intel Education Program

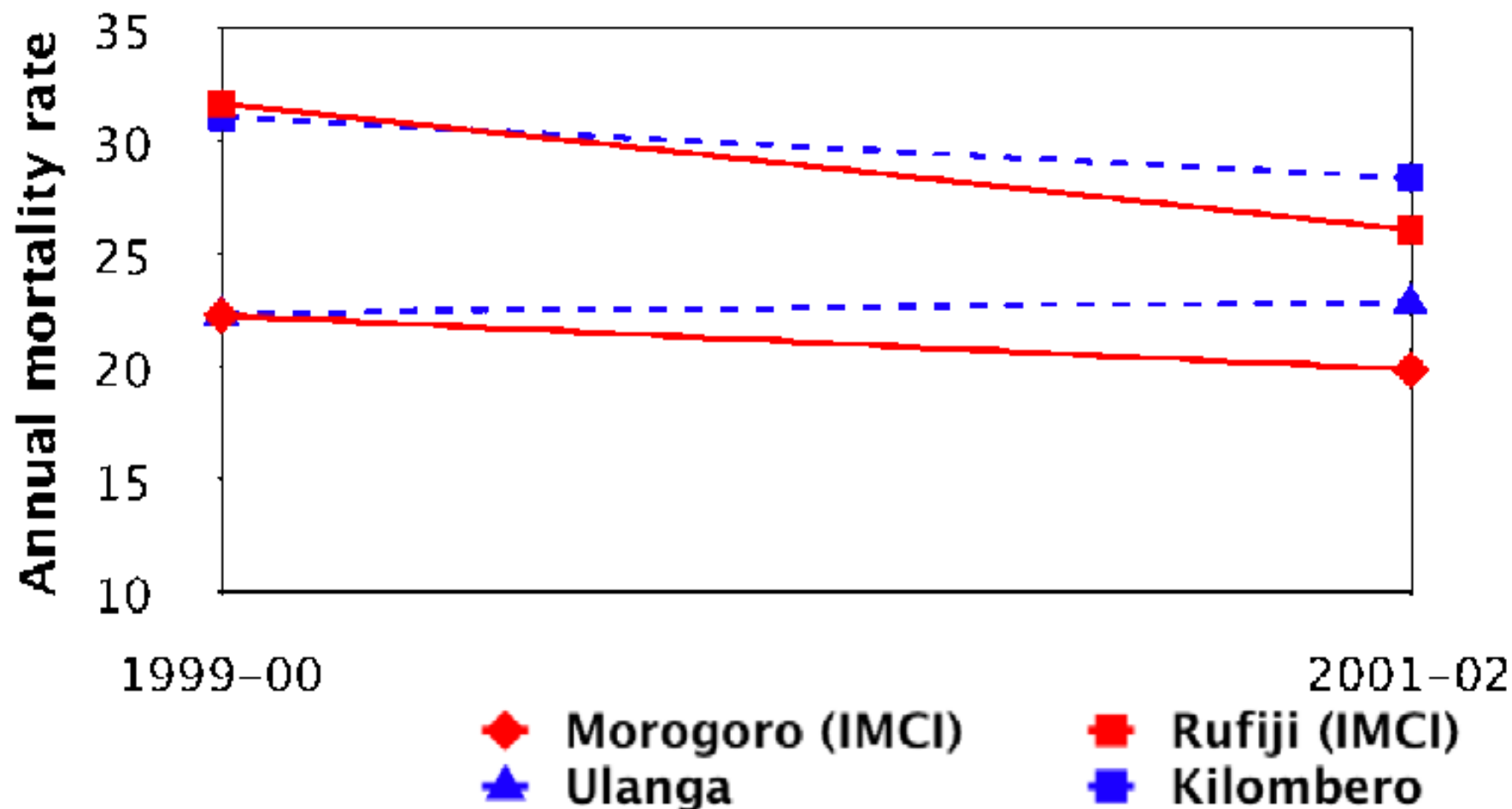
Knownet-Grin

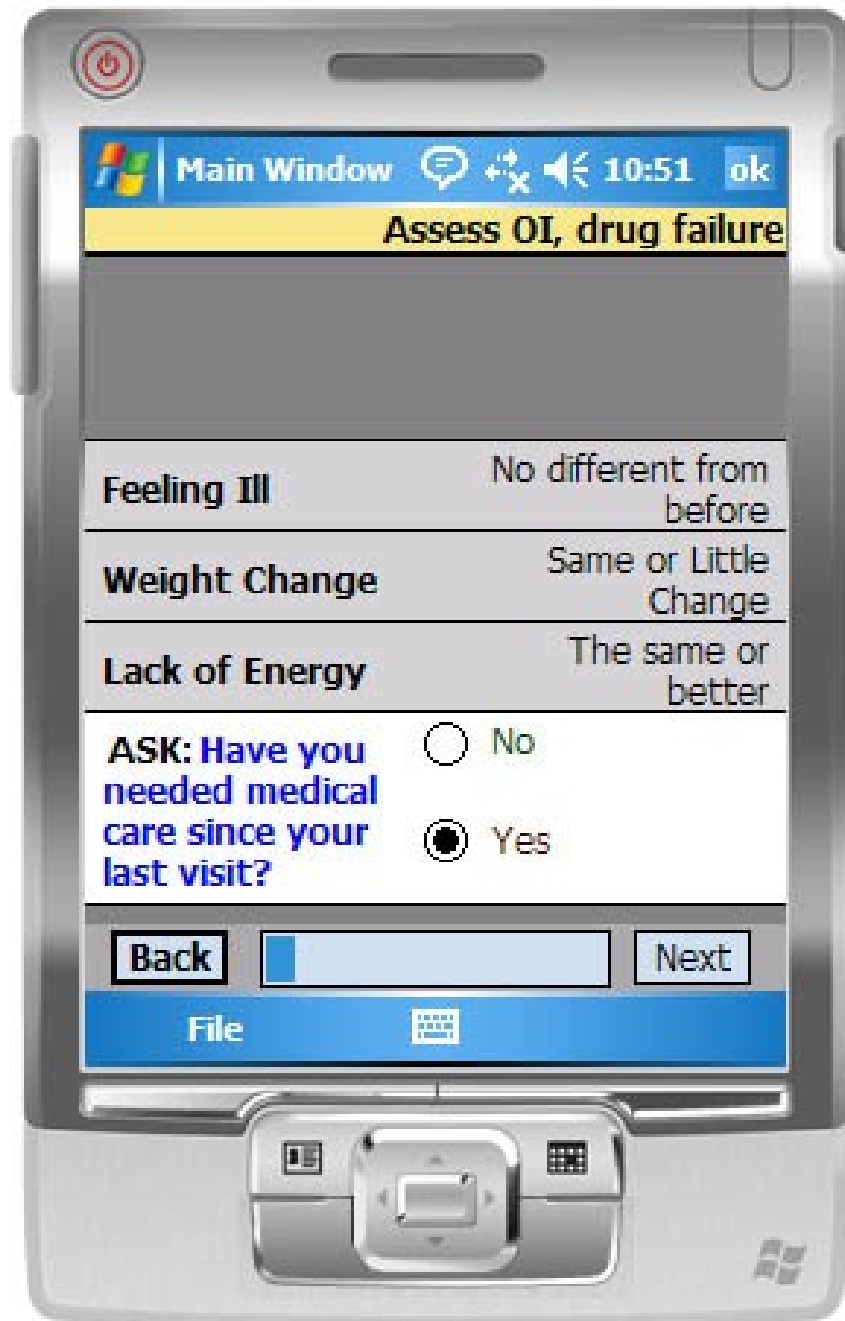
Knowledge Network for Grassroot Innovators: A **Honey Bee** Project

- Honey Bee shares grassroots knowledge and innovation
- Publishes 7 regional magazines about agricultural practices and other innovations
- Interested in new ways to share content and facilitate communication
- Developed multi-media distributed database and communications application
- Networked using asynchronous CD-based updates
- Implemented at kiosks in Gujarat, Madhya Pradesh, Maharashtra and Tamil Nadu



Under five mortality was 13% less in two districts implementing IMCI





Main Window 10:51 ok

Assess OI, drug failure

Feeling Ill	No different from before
Weight Change	Same or Little Change
Lack of Energy	The same or better

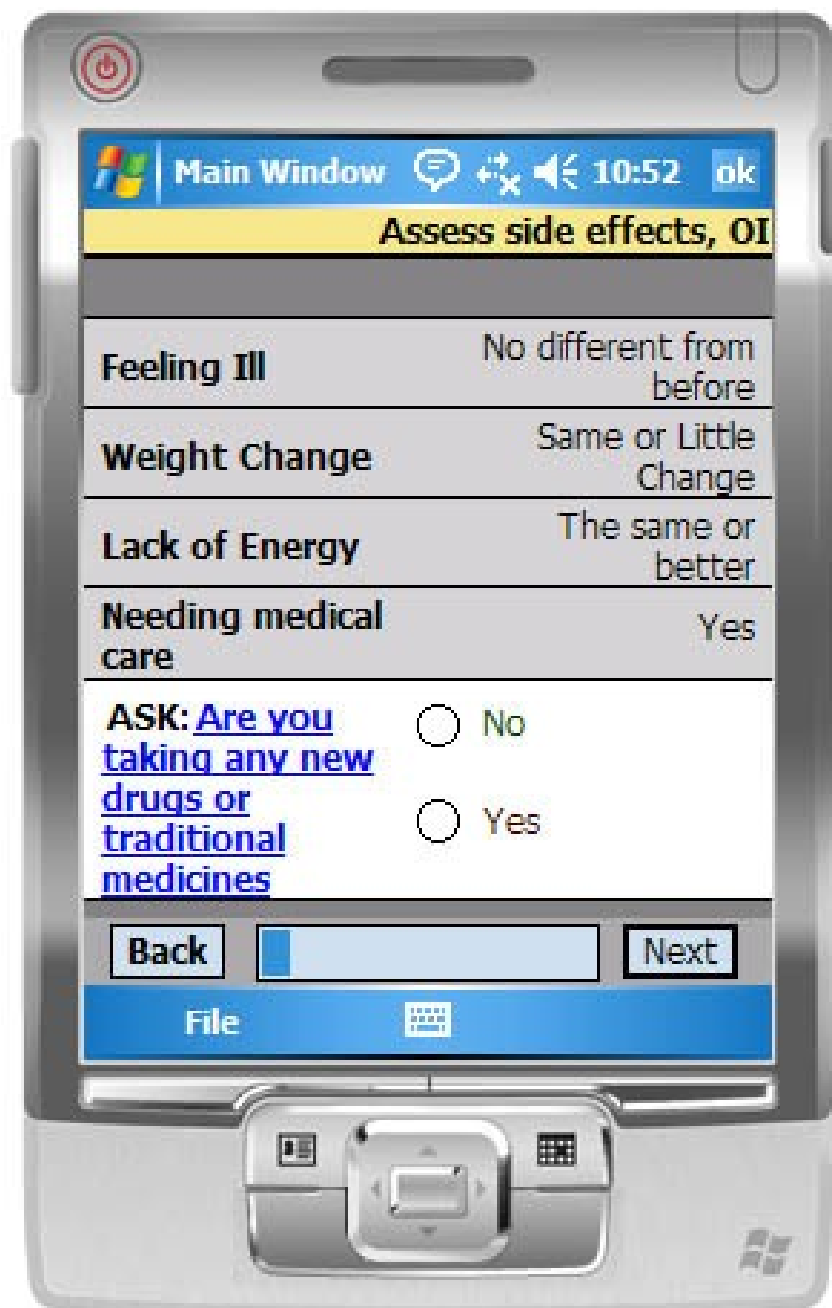
ASK: Have you needed medical care since your last visit?

No

Yes

Back [Progress Bar] Next

File [Keyboard Icon]



Main Window



10:52

ok

Assess side effects, OI

Feeling Ill

No different from
before

Weight Change

Same or Little
Change

Lack of Energy

The same or
better

Needing medical
care

Yes

ASK: Are you
taking any new
drugs or
traditional
medicines

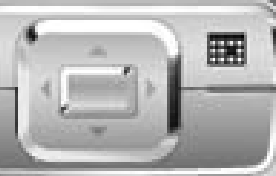
No

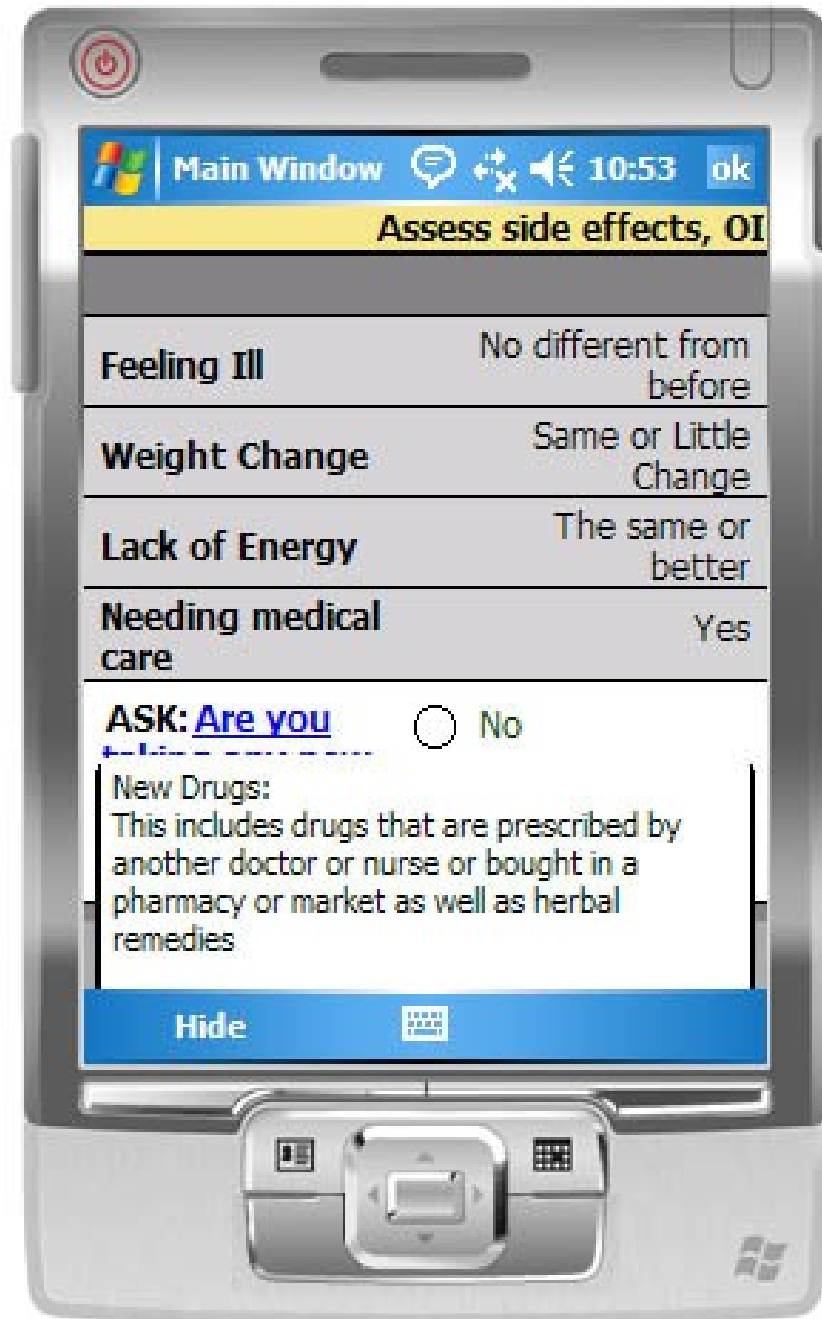
Yes

Back

Next

File





Windows logo | Main Window | Messages icon | Zoom icon | Volume icon | 10:53 | ok

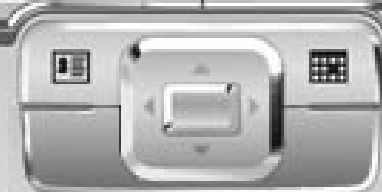
Assess side effects, OI

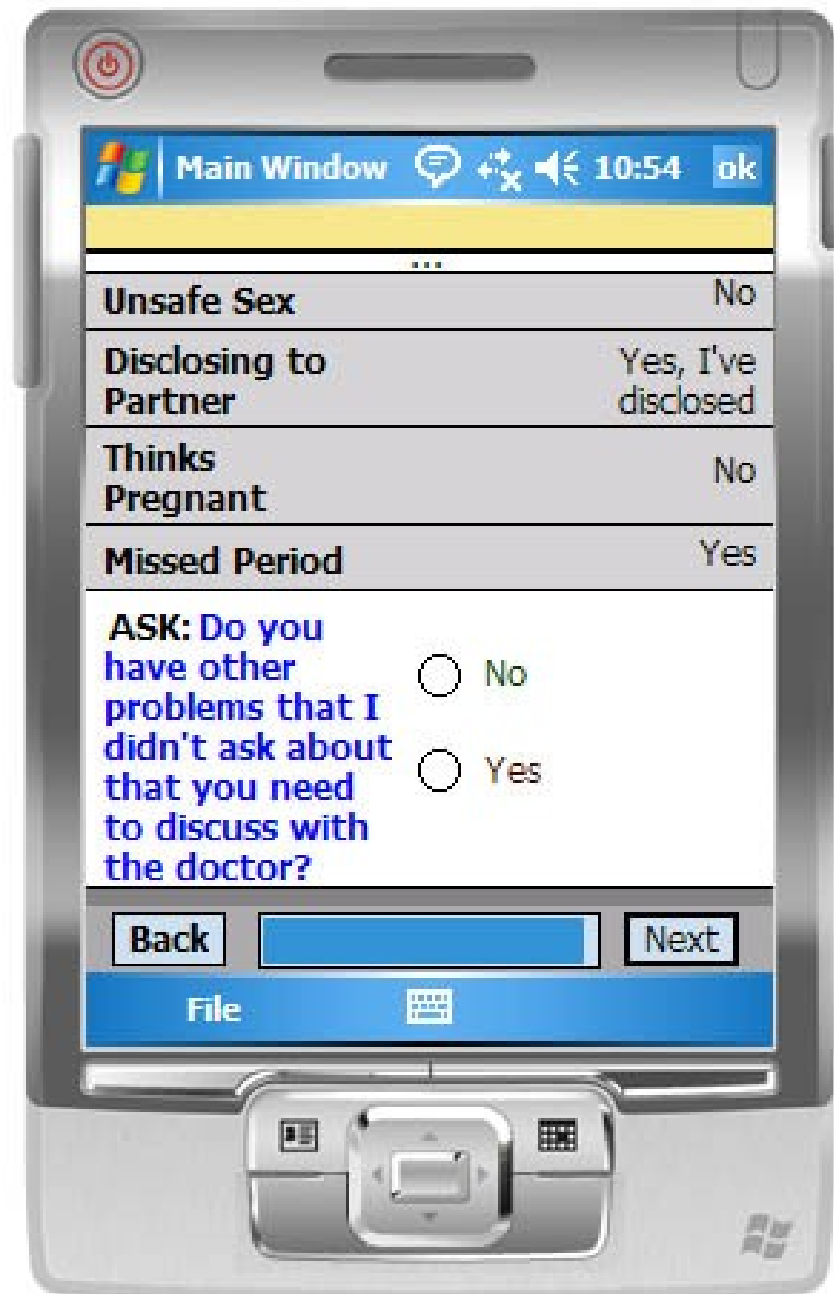
Feeling Ill	No different from before
Weight Change	Same or Little Change
Lack of Energy	The same or better
Needing medical care	Yes

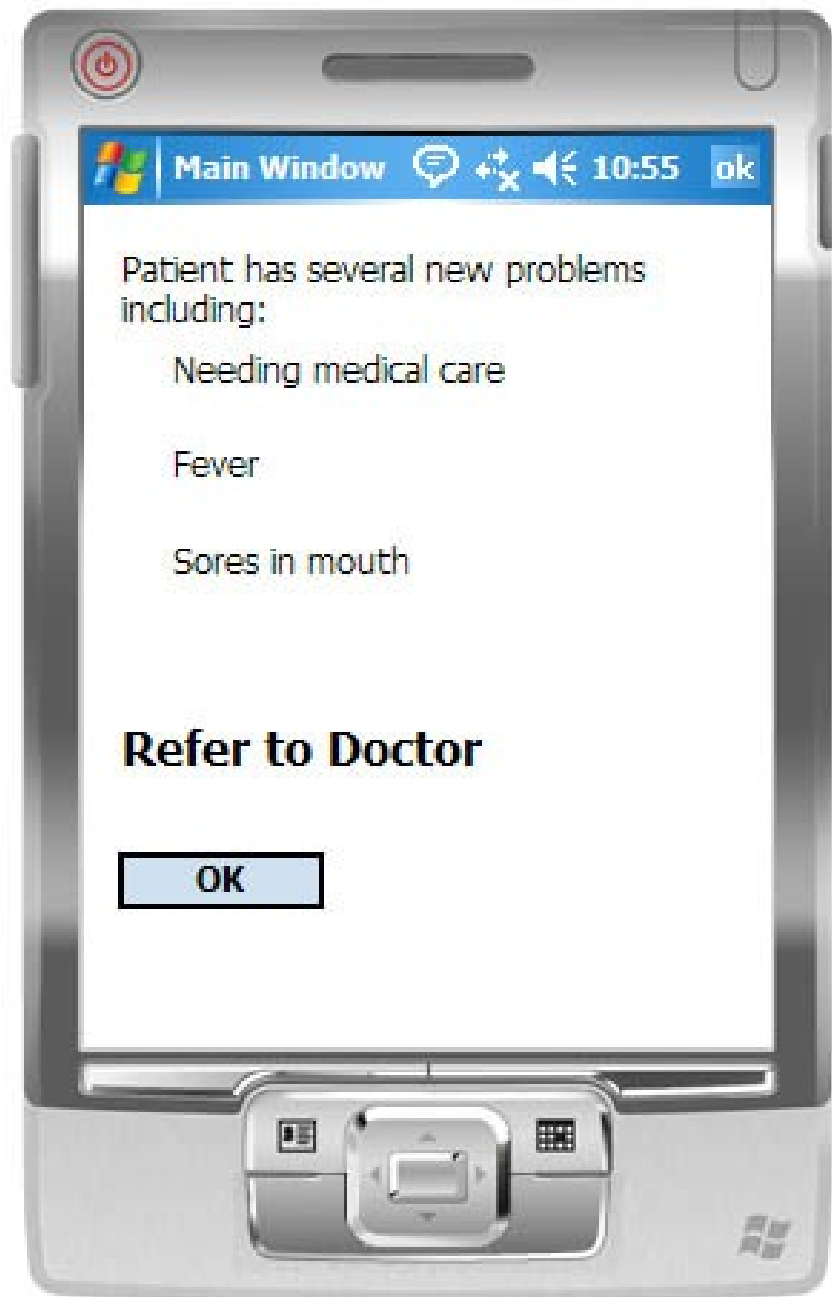
ASK: Are you No

New Drugs:
This includes drugs that are prescribed by another doctor or nurse or bought in a pharmacy or market as well as herbal remedies

Hide [Keyboard icon]







Patient has several new problems including:

- Needing medical care

- Fever

- Sores in mouth

Refer to Doctor

OK

3 billion people in the rural developing world need the same information we do

- ✓ Business: new opportunities
- ✓ Finance: capital to invest
- ✓ Government: services & programs
- ✓ Health: informed, consistent care
- ✓ Education: personal advancement



3 billion people in the rural developing world have different limitations and capabilities

- x Money: to buy technology
- x Education: to use technology
- x Infrastructure: power, connectivity
- ✓ Time: lots of available labor
- ✓ Community: lots of relations



Outline

- 1 Background: Microfinance
- 2 Contextual Design for Rural Users
- 3 CAM: Data Collection for Mobile Phones
- 4 Evaluation: Usability, Breadth, Impact
- 5 Future Work
- 6 Conclusions

User Interface

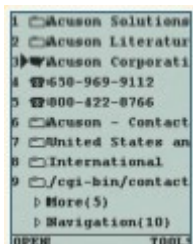
- Adapted point-and-click metaphor
- Text entry is difficult; limited use of other media

Mobile UI research has largely focused on improving display of web content on small screens

- WEST, PowerBrowser, Wingman, Digestor, AppLens, Summary Thumbnails, Collapse-to-zoom, etc.

Programming Model

- Proprietary APIs and programming environments
- Web-based applications require online connection



TIER Group, UC Berkeley

- Long-distance wireless, DTN
- Mobile educational software

Digital Studyhall, Princeton / UW / MSR

- Video for education
- Postmanet – physical networking

Emerging Markets, MSR India

- Design for semi-literate users
- Multiple mice for education

One Laptop Per Child (OLPC)

- Laptops for education

Other Efforts

- MSR funded 17/162 proposals



Contributions

தர்ந்தொடுக்கப்பட்ட எணர்
தேதி : 12/10/02

1	வெட்டா	50	50			
2	லாத்திசை	50	50			
3	கார்த்திக்	50	0			
4	பிரியா	50		50		
5	கீனா	50		12.10.02	50	✓
6	கல்வி	50		05.10.02	50	✓
7	சித்ரா	50		22.09.02	50	✓
8	சுப்பிரமணியன்	50		15.09.02	0	✗
9	சுருத்தா	50		03.09.02	50	✓
				26.08.02	50	✓

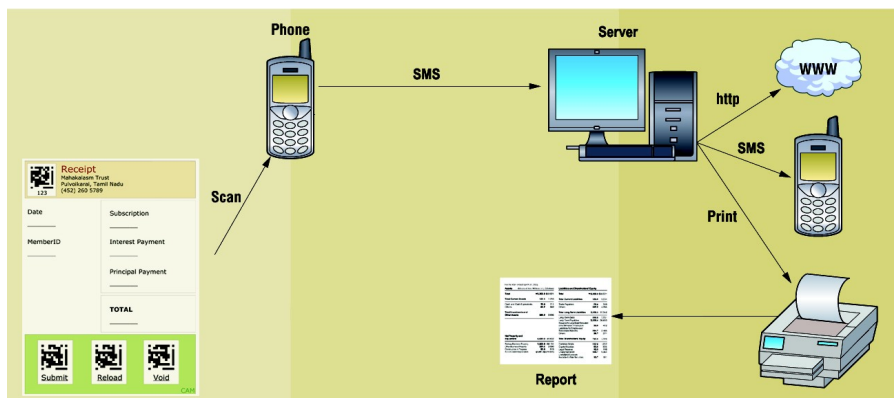
Design Lessons for Rural Users

- importance of paper
- local language audio
- numeric i/o



CAM Toolkit

- paper user interface
- multimedia i/o
- scripted & asynchronous



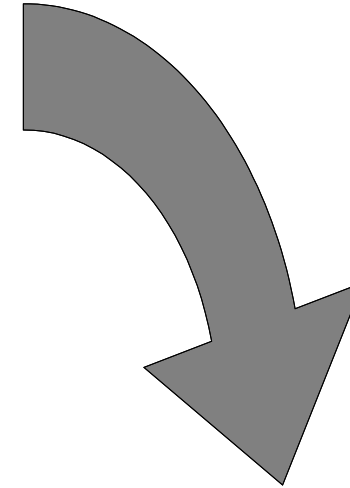
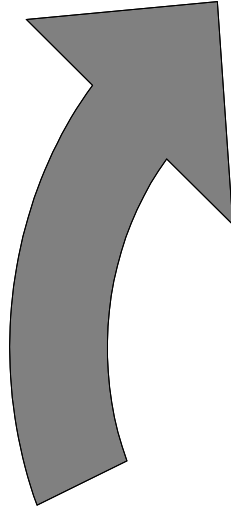
CAM Evaluation

- usability
- generalizability
- real-world impact

Understand Context



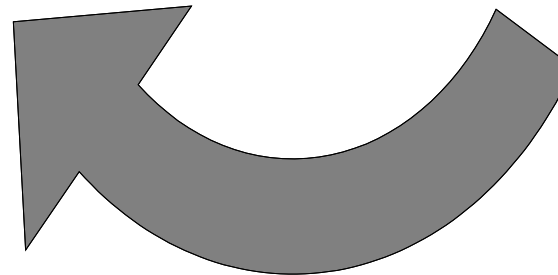
ACM CUU 2003
ICTD 2006, 2007
IEEE Pervasive



Build Solutions



WWW 2006
IEEE Pervasive
MobEA 2007



Evaluate Results



ACM CHI 2006
ICTD 2006
ACM CHI 2008

E-Z Rural Computing

Easy to Use: Max outreach

Easy to Teach: Word of mouth

Easy to Access: Travel is hard

Easy to Share: Amortize high costs

Easy to Create: Local ownership

Easy to Adapt: Localization essential



Understand Context

A highly 'embedded' approach to designing, developing and evaluating technology

Build Solution

CAM: a mobile phone toolkit for distributed data collection in the rural developing world, and several applications using it



Evaluate Impact

Microfinance – actively used in India

Agriculture – pilot in Guatemala and Mexico

Public Health – tested in Tanzania



Integrated Management of Childhood Illness (IMCI)

Use of IMCI protocol can significantly reduce child mortality (Armstrong, 2004)

Automate using mobile device to reduce training, improve adherence

GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING
(See FOOD advice on COUNSEL THE MOTHER chart)

Plan A: Treat Diarrhoea at Home
 Counsel the mother on the 3 Rules of Home Treatment: Give Extra Fluid, Continue Feeding, When to Return

1. GIVE EXTRA FLUID (as much as the child will take)

TELL THE MOTHER:

- Breastfeed frequently and for longer at each feed.
- If the child is exclusively breastfed, give ORS or clean water in addition to breastmilk.
- If the child is not exclusively breastfed, give one or more of the following: ORS solution, food-based fluids (such as soup, rice water, and yogurt drinks), or clean water.

It is especially important to give ORS at home when:

- the child has been treated with Plan B or Plan C during this visit.
- the child cannot return to a clinic if the diarrhoea gets worse.

TEACH THE MOTHER HOW TO MIX AND GIVE ORS. GIVE THE MOTHER 2 PACKETS OF ORS TO USE AT HOME.

SHOW THE MOTHER HOW MUCH FLUID TO GIVE IN ADDITION TO THE USUAL FLUID INTAKE:

Up to 2 years	50 to 100 ml after each loose stool
2 years or more	100 to 200 ml after each loose stool

Tell the mother to:

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue giving extra fluid until the diarrhoea stops.

2. CONTINUE FEEDING

3. WHEN TO RETURN } See COUNSEL THE MOTHER chart

Plan B: Treat Some Dehydration with ORS
 Give in clinic recommended amount of ORS over 4-hour period

DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS.

AGE*	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
WEIGHT	< 6 kg	6 - < 10 kg	10 - < 12 kg	12 - 19 kg
In ml	200 - 400	400 - 700	700 - 900	900 - 1400

* Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75.

- If the child wants more ORS than shown, give more.
- For infants under 6 months who are not breastfed, also give 100-200 ml clean water during this period.

SHOW THE MOTHER HOW TO GIVE ORS SOLUTION.

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue breastfeeding whenever the child wants.

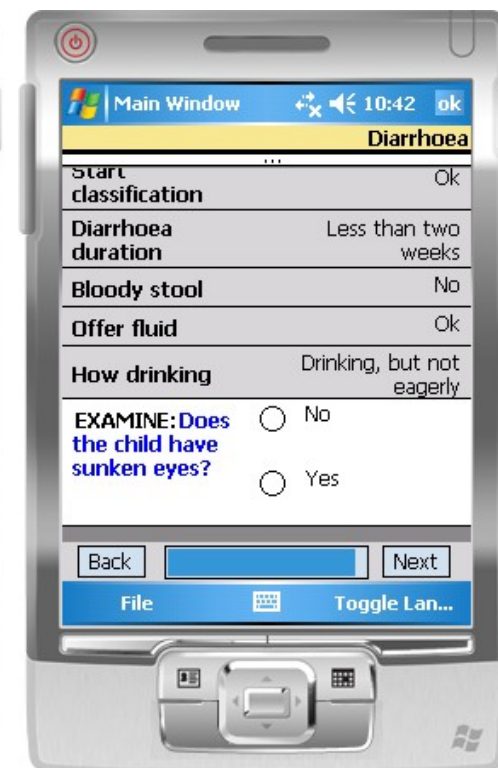
AFTER 4 HOURS:

- Reassess the child and classify the child for dehydration.
- Select the appropriate plan to continue treatment.
- Begin feeding the child in clinic.

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:

- Show her how to prepare ORS solution at home.
- Show her how much ORS to give to finish 4-hour treatment at home.
- Give her enough ORS packets to complete rehydration. Also give her 2 packets as recommended in Plan A.
- Explain the 3 Rules of Home Treatment:

- GIVE EXTRA FLUID** } See Plan A for recommended fluids and
- CONTINUE FEEDING** } See COUNSEL THE MOTHER chart
- WHEN TO RETURN**



e-IMCI: Improving Adherence

59

DeRenzi et al. - ACM CHI 2008 (to appear)

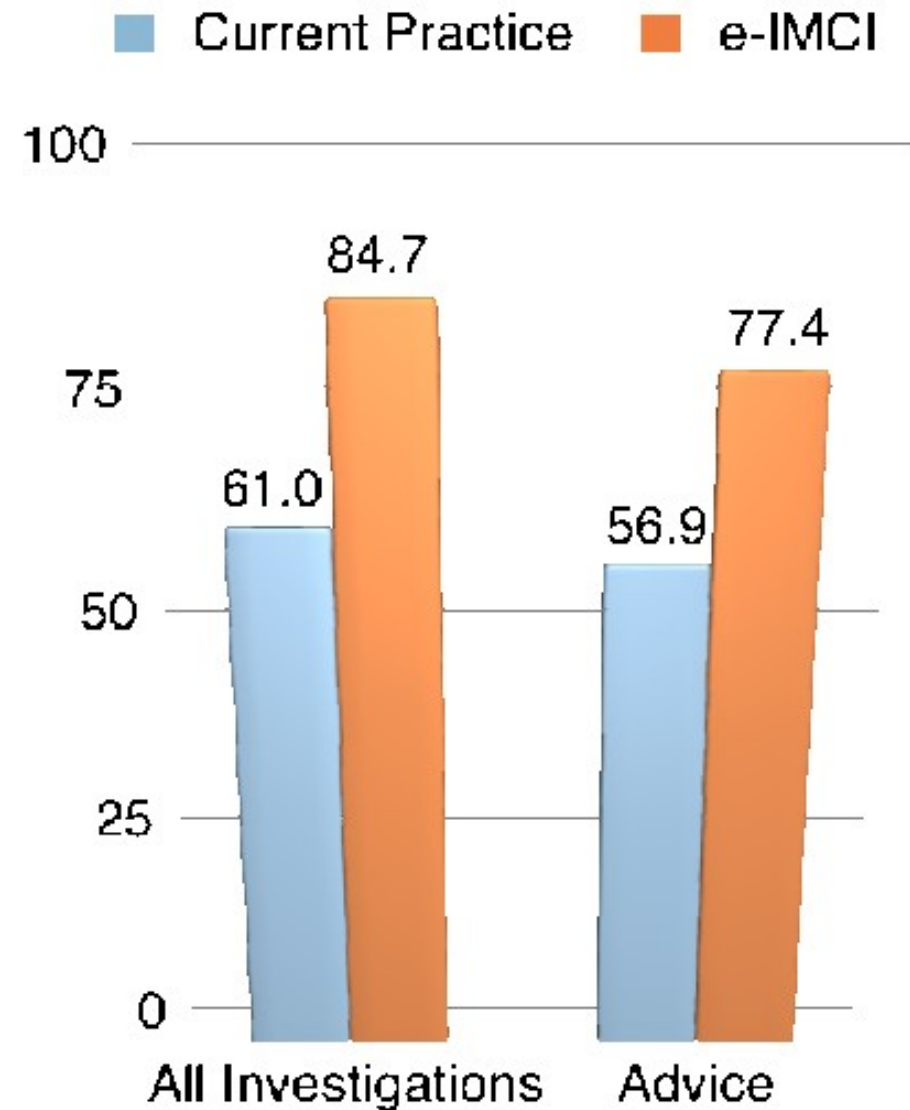
Tested with IHRDC in
Mtwara, Tanzania

Measured adherence to
the IMCI protocol

Observed 27 e-IMCI
sessions, 24 paper-
based sessions

Use of e-IMCI can
significantly improve
adherence compared to
current practice

Preferred by all users



Long-term Vision



Equitable Economic Development

Environmental Sustainability

Freedom & Political Stability

Information Technology

Decentralization