CAPI Surveys on Android Devices in the Developing World

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NORC's International Projects Department

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- **Services:** Impact and performance evaluations, analytic research, surveys, focus group discussions, and other data collection methodologies
- **Topics:** agriculture, infrastructure, international finance, microfinance, housing finance/mortgage lending, think tank mentoring, business climate, land registration, poverty alleviation
- **Clients:** MCC, MCA's, USAID, WB, German Ministry of Development and Cooperation (DEG, GIZ), development organizations
- **Data:** household surveys, institutional surveys, focus groups, key informant interviews, observation, document review

Where We Work

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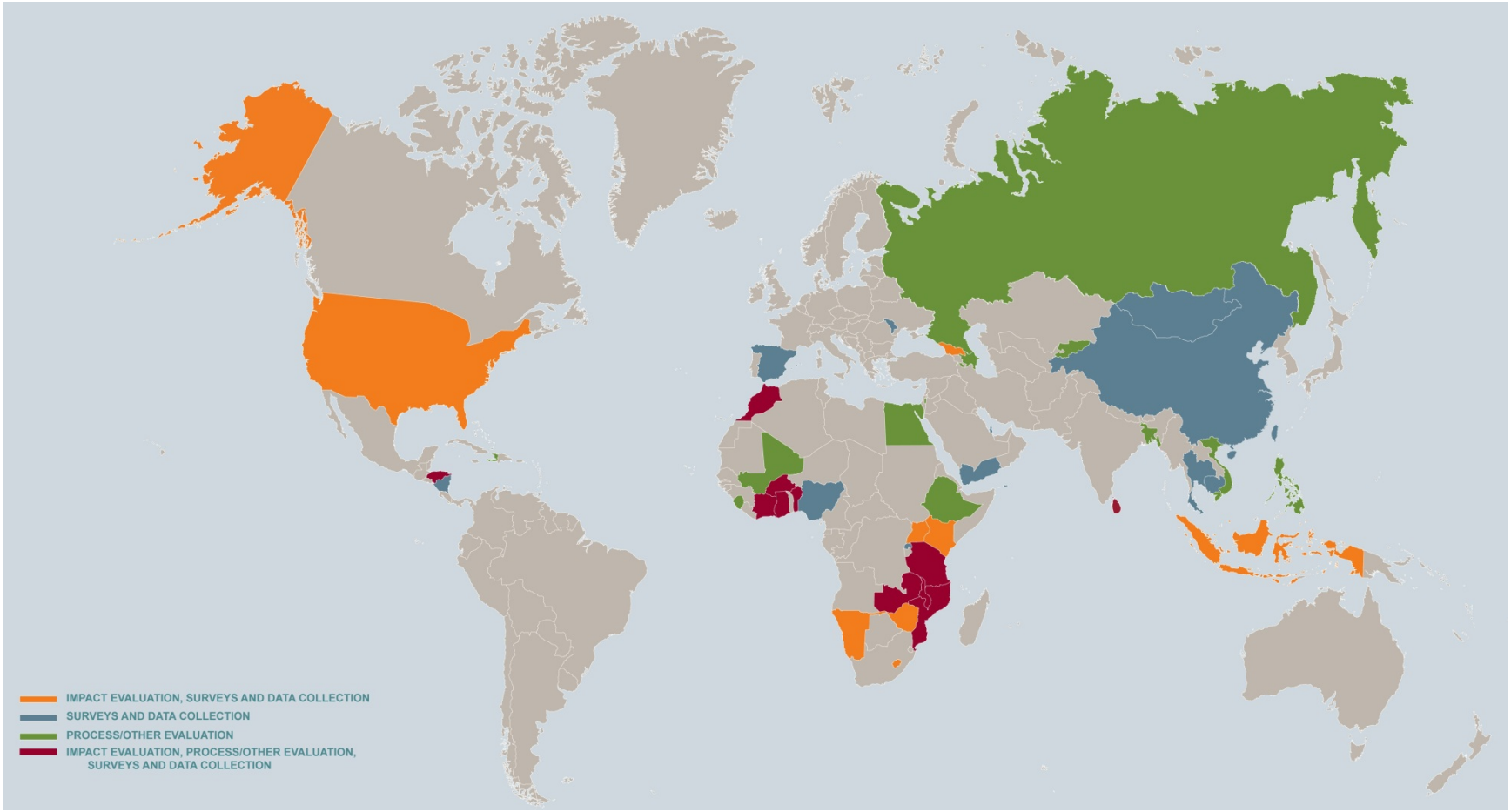

PAPI Data Collection Model

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Partner
- Enumerators
- Local knowledge

Train
- In-country by NORC staff
- Adheres to NORC standards

Collect
- Data collection by local partner
- Paper and pencil

Enter
- Excel, SPSS, or data entry program
- Cleaning requires many iterations

Outcomes of Model

- Quality depends heavily on partner's ability to hire experienced enumerators and enforce NORC standards
- No access to data until after data entry
- Difficulties with data entry
- Natural lag in reviewing response data that must be keyed before delivery
- Data cleaning uses resources, time
- Weeks or months from data collection to data analysis

Solution?

- NORC has years of experience using laptops for computer-assisted personal interviews (CAPI)
- In-survey quality checks
- Data available quickly
- Less time needed for data cleaning

Except…

Unique Challenges

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- Availability of technology
- Theft
- Remote, sparsely populated areas
- Rough conditions
- Little access to infrastructure or communications
- Quality control depends on local partners
- Highly localized languages and often low literacy rates

Why Mobile Devices?

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- Relatively inexpensive (and prices are still dropping)
- Discreet
- Greater battery life
- Durability
- Cellular connectivity
- Consistent access to data
- Easy switching of languages
- Closer monitoring of interviewers

Also:

- Familiar, exciting technology for young enumerators
- Additional built-in capabilities: GPS, apps
- Client and organizational interest

Since April 2012

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11 Months

6 Projects

4 Countries

30,000+ Interviews

160,000 Households listed

Which Projects?

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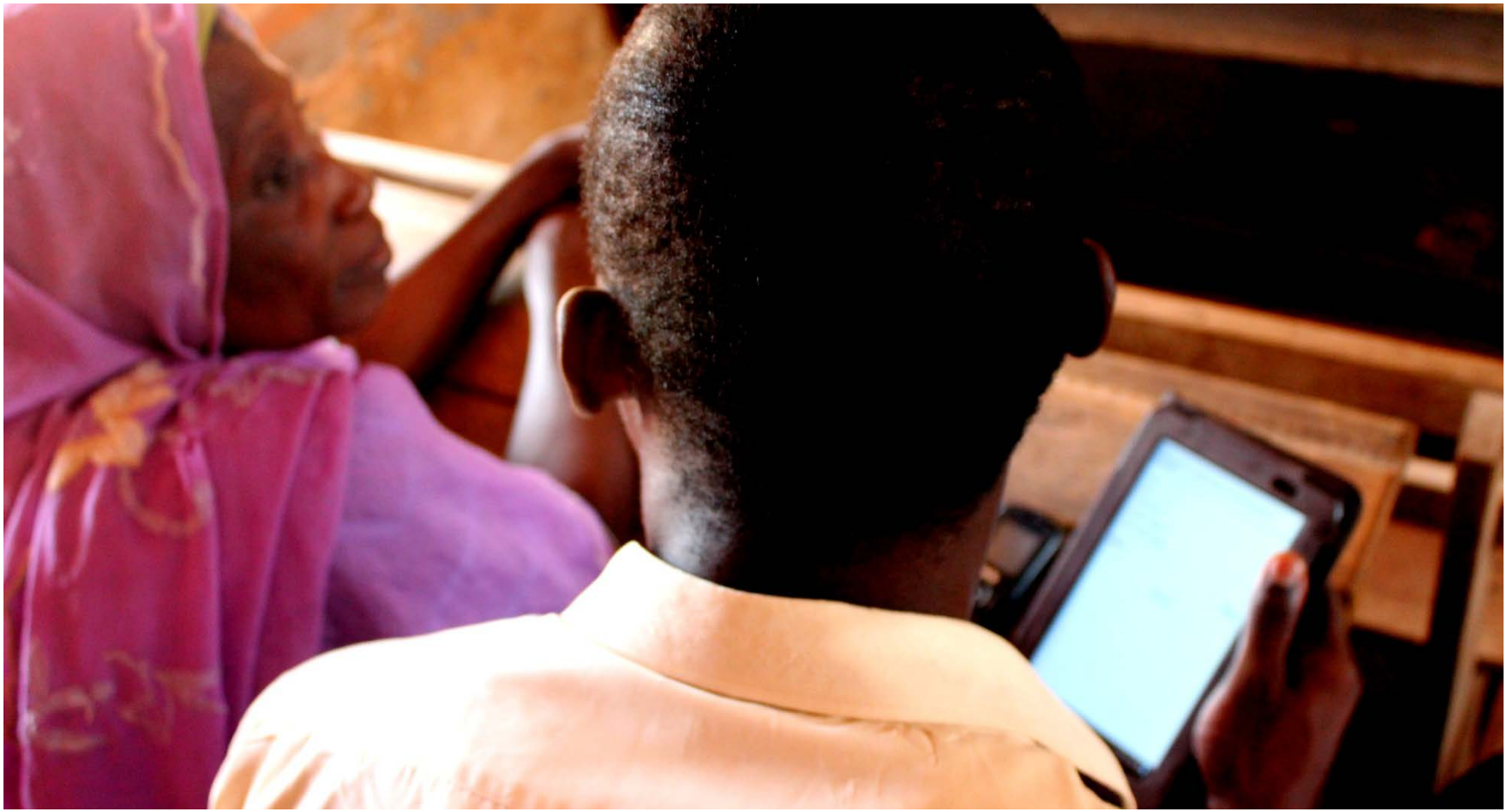

Competitive African Cotton Initiative (COMPACI)

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- Impact evaluation of a program to increase small-scale cotton farmers' incomes
- DEG
- Ghana
- April 2012
- 7-inch tablets
- 350 cotton-farming households
- 4,000+ variables

African Cashew Initiative (ACI)

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- Impact evaluation of a program to increase cashew farmers' incomes
- GIZ
- Cote d'Ivoire, Ghana
- July to September 2012
- 7-inch tablets
- 700 cashew-farming households
  - 180 in CIV
  - 520 in Ghana
- 1,000+ variables

Yes Youth Can! (YYC)

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- Evaluation of USAID's largest youth-focused program in the world, which creates youth groups to reduce post-election violence (PEV)
- dTS/USAID
- Kenya
- July to September 2012
- Small Huawei smartphones
- Youth groups throughout Kenya
  - 10,000 youth 18-35 years old
  - 600 group leaders
- 1,300 variables

Kenya Municipal Program (KMP)

- "State of the Cities" data collection to produce estimates of key demographics, economic profiles, and infrastructure access
- World Bank
- 15 cities in Kenya
- July 2012 to March 2013
- 7-inch tablets, 4-inch smartphones
- Simultaneous listing and interviewing
  - Listing: 160,000 households
  - Interviewing: 14,600 households
- 5,400 variables

MCC Ghana Impact Evaluation

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- Impact evaluations of six activities under MCC's Compact with Ghana
- MCC
- Ghana
- August 2012 to January 2013
- 7-inch tablets
- Two similar questionnaires, 2,700 total households
- 6,000+ variables each

Coffee Project Tanzania (CPT)

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- Monitoring data for CPT, which aims to increase income of smallholder coffee farmers
- DEG
- Tanzania
- November 2012 to January 2013
- 7-inch tablets
- 1,600 coffee farms
- 2,600 variables

Summary of Projects

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Project:	KMP	YYC	MCC	ACI	COMPACI	CPT
Tablets	X		X	X	X	X
Phones	X	X				
Responses	14,600	10,600	2,700	700	350	1,600
Client	World Bank	dTS, USAID	MCC	GIZ	DEG	DEG
Location	Kenya	Kenya	Ghana	Ghana, CIV	Ghana	Tanzania
Language	Eng, Swa	Eng, Swa	Eng, Fra	Eng	Eng	Eng, Swa

Software Used

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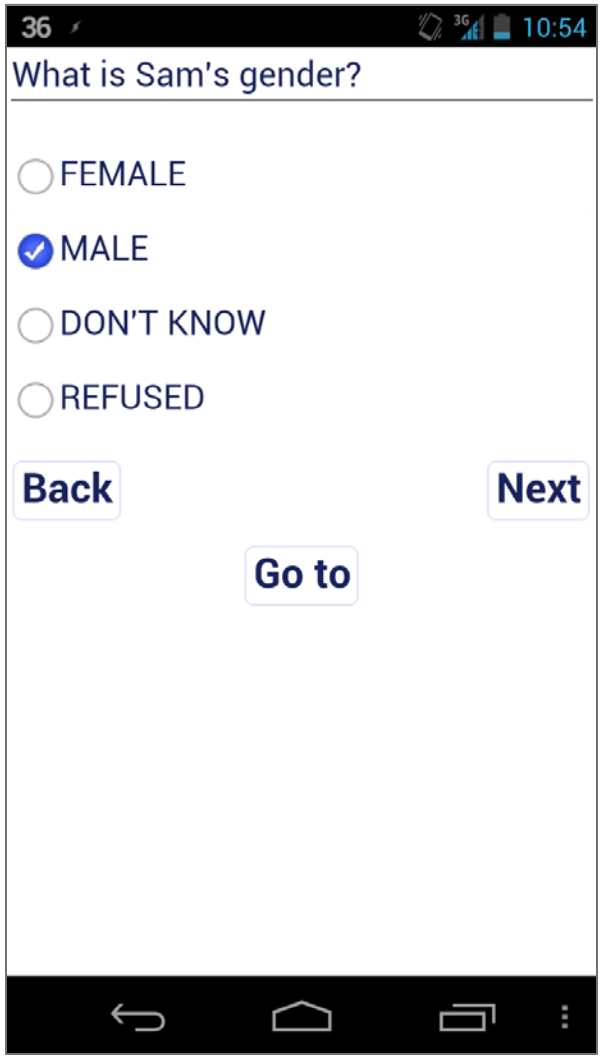
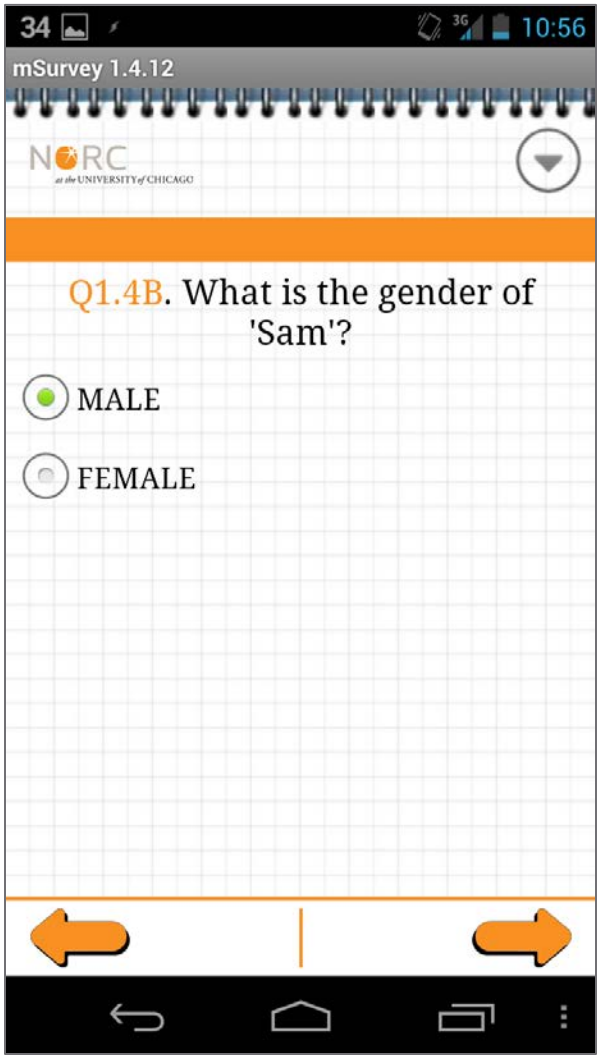
- Two different applications (Senegal, Canada)
  - Web and/or desktop programs for survey design
  - Web interfaces to access data
  - Text piping
  - Consistency checks
  - Alerts to interviewers
  - GPS readings
  - Offline data capture
  - Data encryption
  - Runs on most Android tablets and smartphones

Software Used





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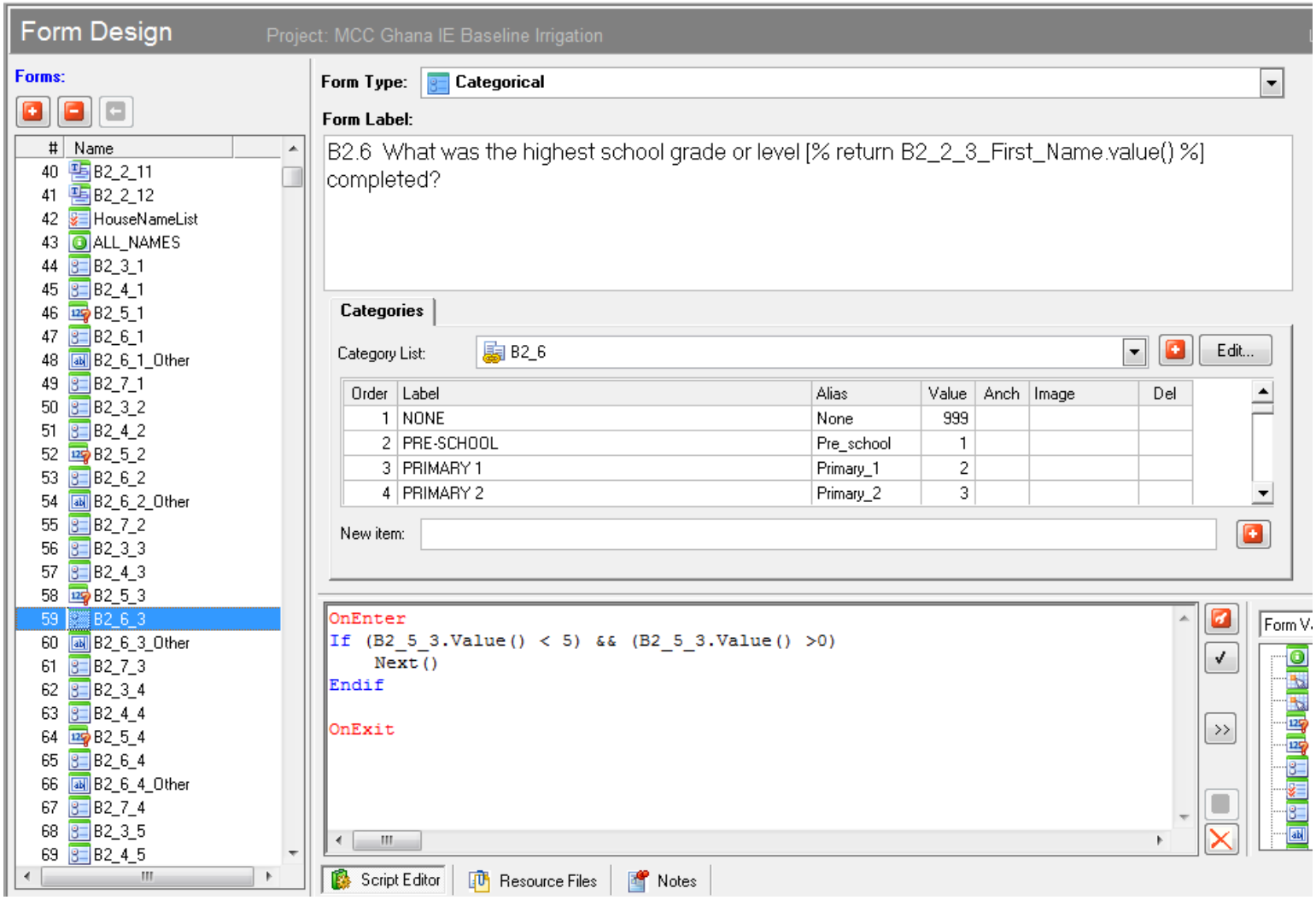

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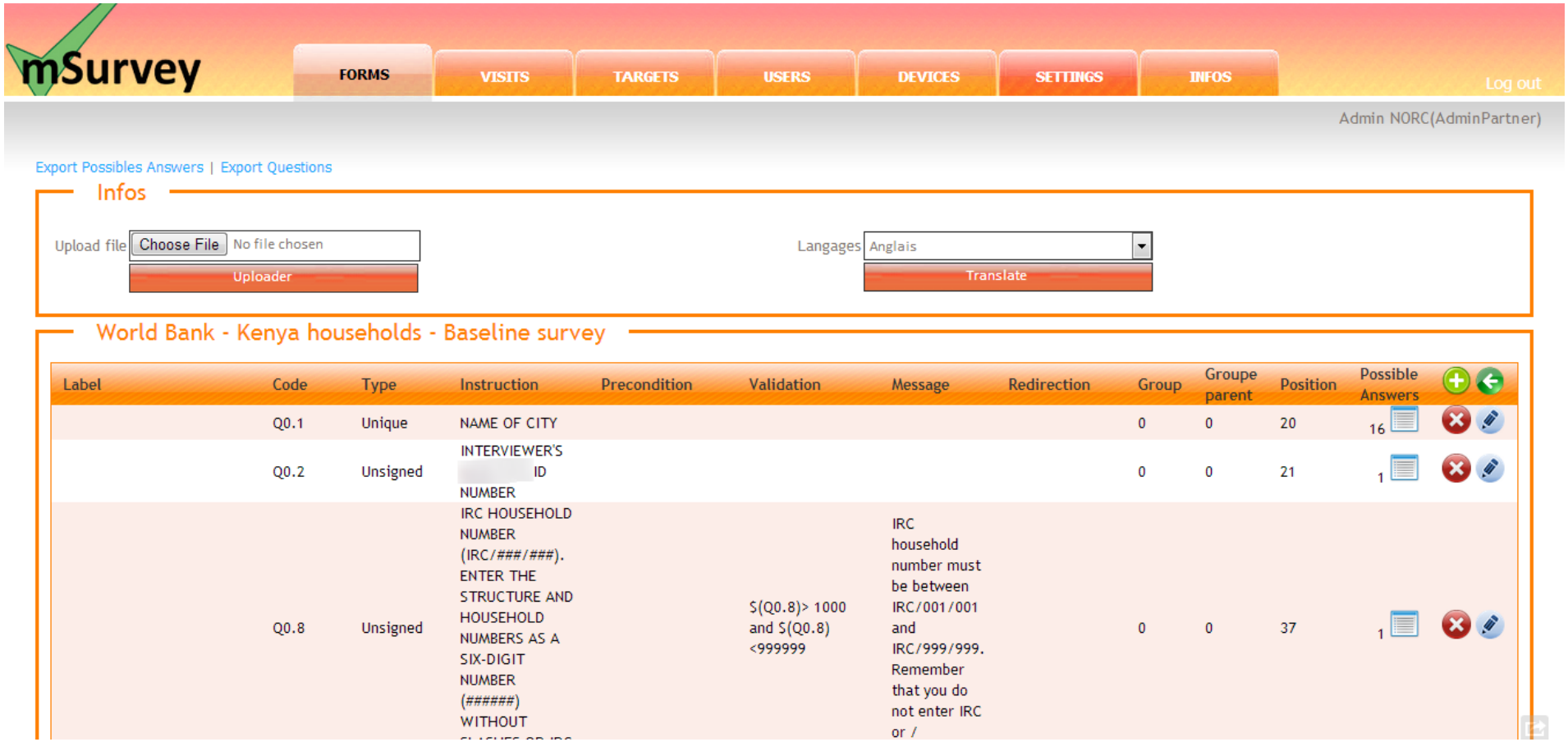

What Have We Learned?

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Training

- Training requires different focus
  - PAPI: enumeration techniques, survey format, how to enter responses
  - Mobile: enumeration techniques, how to use devices, teach enumerators to “trust the devices”
- More important to learn the devices than anticipated
  - Practice is key
  - Keyboards in particular
  - We are developing some good training tools
- Easy adoption by enumerators

Programming

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- Add as many skips, checks, confirmations, pop-up notifications, and other QC measures as possible
  - Useful to set limits even if they catch very few typos
- Test, test, test, then test again
  - Test all steps of data collection process, including data export
  - If possible, test at scale of main survey to identify loads on network connectivity
- Write questions exactly how they should be asked
  - Text fills are very useful, especially in loops
  - Helps enumerators trust the tablets
- Translate late, but update often

Data Collection

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- Take advantage of interim data
  - Requires preparation – different software options output data slightly differently
  - Make data monitoring easily replicable, have it ready before data collection begins
- Monitor data regularly, especially in the initial stages
- Lack of a paper trail complicates survey management
- Provide rapid feedback to interviewers to improve quality and catch problems quickly

Project Timelines

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- Need to be significantly altered
  - Less time on the back end in data entry and cleaning, but more in the lead-up to data collection
  - Need more time between pilot and data collection to make programming changes
- If there is not adequate time for preparation before data collection, do not force it
  - We often work with tight deadlines in international projects

Software

- Case management is lacking in the options we've used
- Very difficult to incorporate outside apps, so we have not done it yet – but there are many possibilities
  - Area measurements using GPS
  - Audio recording of interviews
  - Mapping community resources (hospitals, schools, parks)
- Time differences
- Test the proper scale to simulate real-world scenario
  - Number of devices
  - Amount of data

Hardware

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- GPS chips in mobile devices are fairly unreliable
  - Up to 30% missing
  - Can be inaccurate, hard to find specs
- Wireless transmission problems
- Bigger screens are not always preferable
  - Safety
  - Keyboards
  - Respondent concerns
- Soft keyboards are a weak point
  - Typos
  - How do we encourage more detailed responses?
- Other hardware – can we take advantage?

Hardware


Google
Apps
12:25
PM
Mon, September 5
26°C 27° 13°
Barcelona
Partly Sunny
Hubble captures a group of interacting galaxies
Phone
Social Hub
Maps
Browser
Market
12:25 PM
SAMSUNG

vs


LG
10:10AM
Google
WEATHER
London
12:58 PM
02/11/2012 TUE
24°
Clear
Camera
Video Player
Calculator
LBS
Call
Message
Contacts
Applications

Key Advice

- Testing, testing, testing!
- Tailored training
  - Basic user interface
  - Practice interview scripts
  - Keyboard experience
- Maximum quality control
  - Text piping and complicated skips
- Frequent data monitoring
- Targeted innovation

Thank You!

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