

# Management Considerations for Transitioning from PAPI to CAPI: Procurement

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# Overview

- Getting technical advisors
- Understanding technology
  - hardware
  - software development
  - infrastructure
- Deciding on a system
- Understanding procurement challenges



# Overview

- Writing the tender - contract requirements
  - Time to test and deliver
  - Ownership of data
  - Knowledge transfer
  - Replacement of faulty systems
- Risk register and Plan B

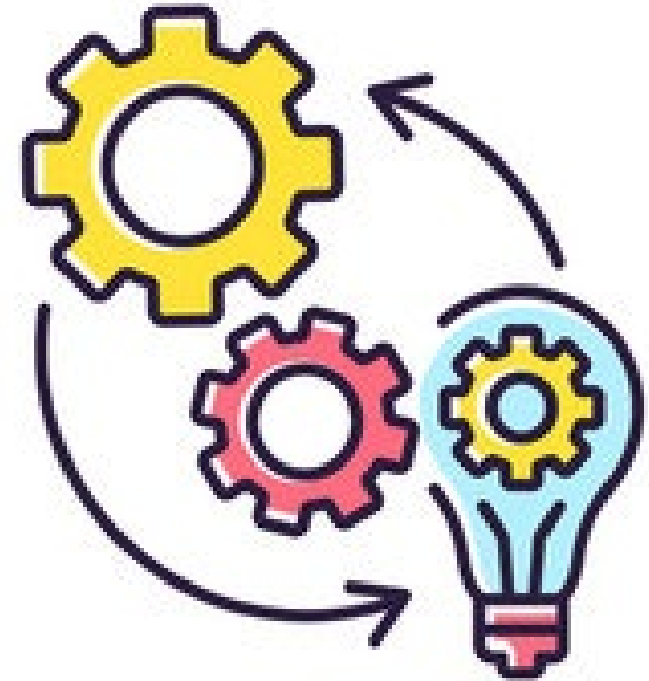


# Technical Advisors

- Core expert staff in statistical offices are statisticians, demographers, sociologists, geographers and economists.
- A CAPI census/survey makes it necessary to have expert knowledge on many technology and infrastructure issues.
- Thus, need technical experts **WITH** experience working on digital data collection, transfers, database management, etc. as advisors.

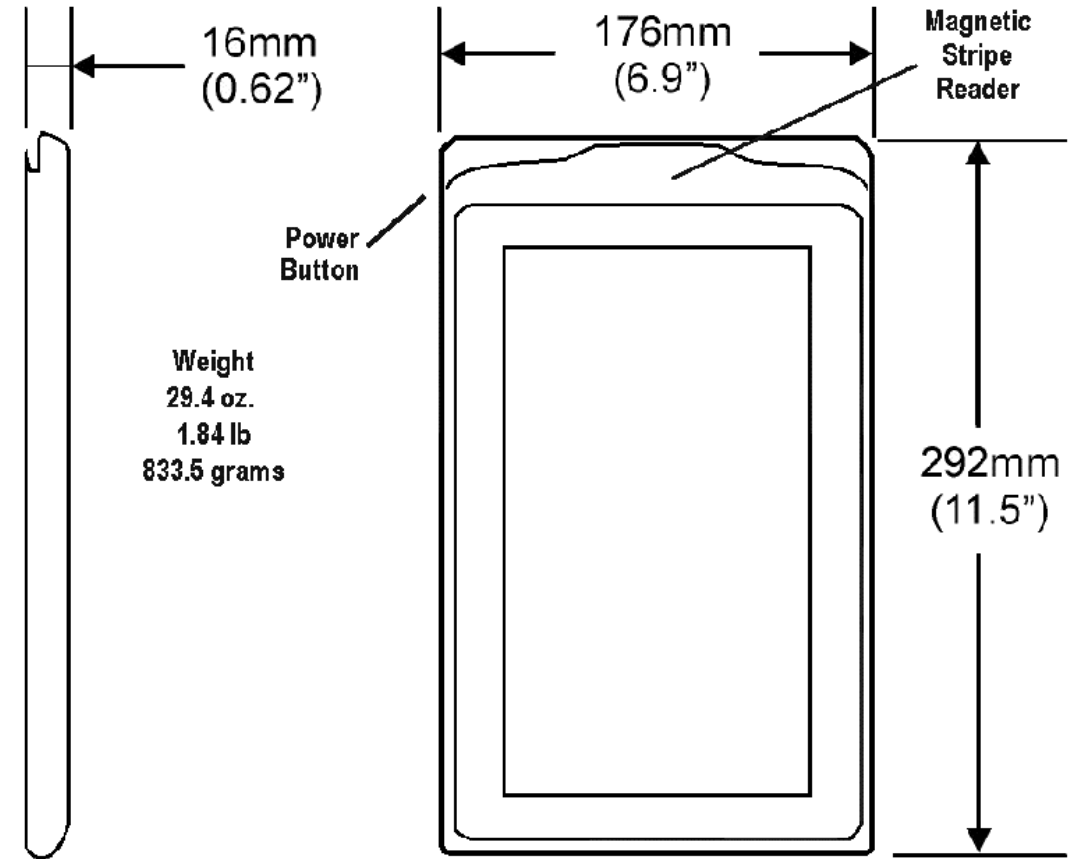
# Understanding Technology

- E-census or survey does **NOT** yet have an out-of-the-box ready to plug-and-play solution
- E-censuses are complicated systems that need to be designed and integrated depending on the requirements and specifications of the country



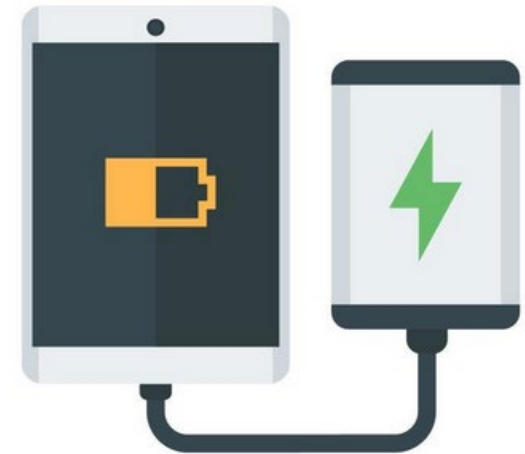
# Understanding Technology - Hardware

- Deciding on a platform for your mobile data capture technology
  - Cost
  - Production and delivery schedules
- Do you need GPS capability?
  - Mapping
  - Enumeration area fencing
- Tablet specifications



# Understanding Technology- Hardware

- Server specifications
- Battery packs as back up
- Mobile phones
- Computers



# Understanding Technology- Software

- List of all the software needed
- Software development is an iterative process
- Schedule enough time in the contract to allow for multiple mini-pilots
- Try to build in some in-house training and capacity building into the contract
- Who owns the software afterwards?



# Own and Third-party Software

- Data collection
- Mapping/GIS
- Phone/texting
- Mobile Device Management or MDM (VMWare Workspace ONE, IBM MaaS360, Cisco Meraki, etc.)
- Document viewers

2015 LESOTHO PHC(EA - C211051 3034)

Sex

B4. Is SAVY a male or a female?

Male

Female

Relationship: 1 - Inmate's Head

Sex: 1 - Male

Age

Month of Birth

Year of Birth

Residential Status

Residence Absent/Outside Lesotho

Time Outside Lesotho

Institution



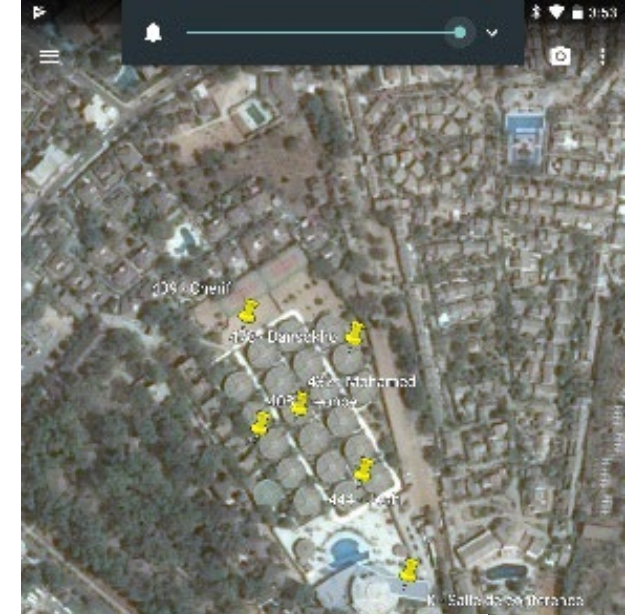
Where Born

How Long Lived in Village/Town

Residence April 2015

Residence April 2016

Flowwhere Lesotho



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**FOR SUPPORT CONTACT:**

Email: [tco.mdm.support@census.gov](mailto:tco.mdm.support@census.gov) | Phone: 301-763-4826

# Understanding Technology-Infrastructure

- Evaluate if the country has adequate infrastructure for a CAPI survey/census
  - Access to electricity
  - Telecommunication networks
  - LAN/WAN set up
  - Internet connectivity



# Deciding on a CAPI System

- Elements and complexity of a system can vary
- Elements may include some or all of these-
  - Mapping application
  - CAPI address canvassing
  - CAPI questionnaire
  - Data transfer
  - Management and monitoring progress
  - Database management
  - Tabulation and reports

# Deciding on a CAPI System

- Decision will depend on the following-
  - Infrastructure of the country
  - Budget
  - Training or capacity of staff
- But the system decision needs to be made much earlier than paper based censuses because of the need for multiple mini-pilots, setting up secure networks and procurement processes

# Understanding Procurement Challenges

- Government procurement takes time
- Multiple tenders will probably be required for the integrated CAPI system
- Getting the specifications for all the elements of the system is extremely important
- Procuring thousands of mobile data capture units means a company needs time to produce them

# Jordan had 50 Tenders for 2015 Census

## Electronic Census Tender

- This tender included purchase of the tablet devices, programming systems for the Census (Electronic Questionnaire, Field Work Management, Call Center System, Data Processing System, Results Extraction & Dissemination System), GIS licenses in addition to systems and data transmission services

## Data Centre Tenders

- Infrastructure maintenance: Purchase of adequate air conditioning systems, fire fighting systems, UPS, electric generator, Monitoring System, civil and electrical works
- Purchase of Hardware Components: Servers, Storage System, Network Components (switches, routers, firewalls, and load balancers)
- Software Licenses: Microsoft SharePoint, Microsoft SQL Server, Microsoft Data Center, ArcIMS, Arc SDE, ArcGIS Runtime

# Jordan had 50 Tenders for 2015 Census (continued)

## Call Center Tenders

- Infrastructure maintenance: electrical and civil work, desks for Call Center Agents, headsets
- Call Center: Hardware (call center servers, network switch, screens, monitoring system) and software components (call center software).

# Jordan's Tenders (continued)

## Regional Offices Preparation Tender

Procurement of required components for the Regional Offices were as follows:

- Personal computers and laptops.
- Laser printers
- Wireless access points for data connection and transmission
- Data show



# Jordan's Tenders (continued)

## Operation Room Equipment Tender

- Personal computers
- Smart screens to view main dashboards

## Oracle Database Tender

- Oracle database enterprise edition – processor licenses

# Jordan's Tenders (continued)

## Multifunction & Photocopiers Tender

- Multifunction A3 black printer
- Production printer A3 black printer
- A3 color printer production printer

# Jordan's Tenders (continued)

## Media Awareness Campaign Tenders

- Awareness publications for the enumeration process
- Cartoon movie and a musical tune for the census
- School competitions to educate the students about the census and its importance

# Writing Tenders

- If you are outsourcing your system, it is important that your lawyers review the terms of the agreement
- Clauses should account for:
  - The iterative process of software development
  - What happens in case of failure or defect
  - Software and data ownership
  - Knowledge transfer, if any



# Risk Analysis

- Create a risk register that includes:
  - Risk for each element of the system
  - Risk of the system failing
- Plan risk response strategies:
  - Delayed procurement
  - Broken or stolen tablets
  - Network issues
  - Partial paper-based
  - Data entry plans for paper
  - Etcetera



# Risk Analysis Matrix

Operation	Change/exception	Scope	Requirement	Development	Testing and validation	Launch
Census data collection	Add or change question	Green	Green	Yellow	Red	Red
	Change or update code list	Green	Green	Yellow	Yellow	Red
	Consistency check parameters and implementation	Green	Green	Yellow	Yellow	Red
	Complete training materials	Green	Green	Green	Yellow	Red
Frame activities	Frame creation methodology	Green	Yellow	Red	Red	Red
	Statistical and administrative boundary placement	Green	Green	Green	Yellow	Yellow
Procurement	Selection of tablet	Green	Yellow	Yellow	Red	Red
	Change in procedure for loading data onto tablets	Green	Green	Yellow	Red	Red
Publicity	Use of interactive sensitization materials	Green	Yellow	Yellow	Yellow	Red
	Final collection applications used in publicity campaign	Green	Green	Green	Yellow	Yellow

Note: An exception refers to a change that takes place after a linked milestone has passed.

Source: U.S. Census Bureau.

# Conclusion

- Procurement process is A LOT more complicated in CAPI than in PAPI
- Timelines are longer than paper-based operations
- Technical advisors needed for the procurement process
- Build in clauses into contracts that mitigate risk

# Content Caveat

- Much of the content of this presentation comes from the experience of the International Programs Center in other countries



# Questions?