ICT and Elections

THEMATIC WORKSHOP

Information Technology and Elections Management
Informed Decisions for Sustainable Outcomes

RM : The Zambian Experience

- Capture of results is a manual, paper based process

- Codified at a collation centre

- Due to the lack of a stable communications infrastructure, a fully electronic process is not yet technically feasible

RM : The Zambian Experience

- In 2006, a 'medium tech' solution based on OMR was developed.
  - Forms were captured, scanned, OMR processed at the district offices
  - Summaries were generated

- When all rollup results were available, the results were sent via WAN to Lusaka.

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BUT

Only about 70% of the districts were on-line on polling day ...

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MANDATE

TO HAVE A PRESIDENTIAL RESULT WITHIN 48 HOURS OF CLOSE OF VOTING.

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Options

- Fibre and PC capable infrastructure
- Internet
- Mobile phone networks
- Satellite

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Advantage of SMS
- Store-and-forward model

- Disadvantages of SMS
- Small message size
- Security

RM : The Zambian Experience

The Results Process – First step
- Manual counting at the polling station

- Capture of count on formal documents
- Authorized by party agents and RO
- Announcement

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The Results Process – Electronic capture
- Forms transported to the Constituency office (150 offices in Zambia)

- Declaration of results
  - Officers have tools for reporting / automatic rollup

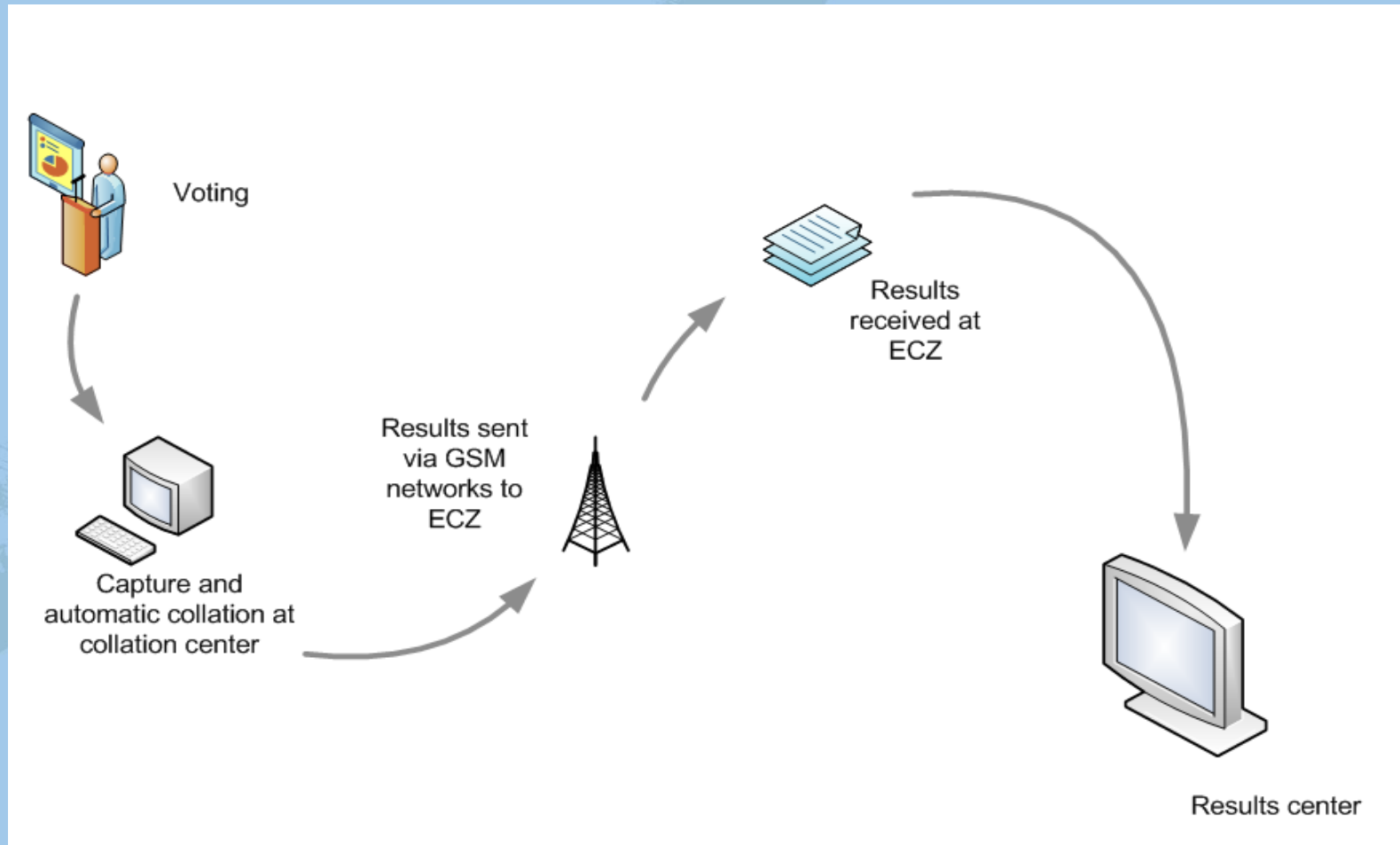- Message encrypted and transmitted to HQ

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The Results Process – Final
- Message decrypted; checked

- Rollup

- Verification and announcement

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RM : The Zambian Experience

There is a close relationship between the CMS and the RMS

- Candidate records used to generate result records
- Records are created in the DB of each kit for every result
- The RM software *updates* these records

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Message transmission

- SMS messages not secure – therefore need encryption
- SMS's text based – cannot carry binary data.
- SMS's small – 160 characters
- Use encoding to convert binary data to text data – reduces the available size for the message content even further

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Message transmission
- In the 80 characters available we need
  - Header: polling station information
  - Candidate results
- Header : 16 characters
- Each candidate : 4 characters
- Thus can cater for 16 candidates in one SMS

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Message transmission
- SMS messages unreliable

- Service providers unreliable

- Need to cater for multiple failures

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• Each kit is fitted with a GSM modem

• SMS processing is handled by Ozeki SMS software

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•An NT service processes the queue, and adds the message to the Ozeki queue, with a destination of the ECZ short-code number

•After 10 minutes, it adds a message to the Ozeki queue to the first backup number, and after another 10 minutes, it adds a message to the Ozeki queue to the second backup number.

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- The process stops on receipt of a receipt acknowledgement from headquarters

- As soon as headquarters successfully receives a message, it sends a receipt to the kit, terminating transmissions for that result

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Technical issues
- Reliability of SMS
  - Peer-to-peer fine for small quantities of messages
  - Under high stress, can lose up to 50% of messages
  - Resolved by use of short-codes - not peer-to-peer. Messages received by the service provide are carried directly on a secure connection to head office.

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Technical issues

- Network coverage .. some areas don't have GSM coverage
- Set up satellite phones to act as modems
  - Our training wasn't good enough .. operators did not understand that that the satellite would not get a signal unless outdoors

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Technical issues

- A common feeling in the field is that if the paper is filled in, the computer based bit DOESN'T MATTER .. the main work is done

- This leads to 'technology failure' – the technology doesn't work because it is not used

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Causes of 'human issues'
- •'Train The Trainer' approach - these trainers are not properly up to speed
- •They are also taught WHAT to do, and not WHY. It is imperative that operators, irrespective of rank, have knowledge of the importance of correct data capture, the reason for it, and how it fits into the 'bigger picture'

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Causes of 'human issues'

- Basic computer literacy. We tend to assume a basic computer knowledge
- Much of the time allocated to training is given to basic training and not to the required software and systems training

Concerns and recommendations
- Vendor locking
- Lack of in-house skills

NEED FOR EMB OWNERSHIP

European Commission
Development and Cooperation DG
EuropeAid

United Nations
Development Programme

5 - 9 March 2012, Mombasa, Kenya