Elections and Technology
Emerging trends and innovations

Melanie du Plessis
Electoral Commission of South Africa
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Functions of the Electoral Commission

• Manage elections of national, provincial and municipal legislative bodies
• Ensure that those elections are free and fair
• Declare those results within a period prescribed by national legislation
• Applicable legislation includes, *inter alia*:
  – The Electoral Act, 107 of 1998
  – The Electoral Commission Act, 51 of 1996
  – The Municipal Electoral Act, 27 of 2000
Electoral Processes

• High level electoral processes:
  – Delimitation and Registration
  – Party Registration and Candidate Nomination
  – Electoral Staff management
  – Ballot papers and Logistics
  – Voting
  – Counting and Results
  – Dissemination of information
• Political parties are involved in electoral processes through Party Liaison Committees at all levels.
• ICT underpins all of the electoral processes.

Delimitation and Registration

• The Constitution, Act 108 of 1996, stipulates that all elections must be based on a national common voters’ roll (i.e. a person’s name may appear only once on the voters’ roll).
• Electoral Act, 107 of 1998, provides for a SA Citizen over the age of 16 to apply for registration, where they are ordinarily resident (will only be included on voters’ roll at age 18).
• In order to achieve this, the Act provides for the creation of voting districts, each with one voting station, in accordance with specified guidelines.
Delimitation and Registration (GIS)

- Using the guidelines and business rules, the delimitation process is as follows:
  - Using the GIS, voting district boundaries determined and working maps produced for each ward (A0/A1) with background information, current voting station etc.
  - Maps are sent to municipal offices for confirmation and sign-off by party liaison committees and then returned to national office;
  - At national office requested amendments are evaluated and, once approved, implemented on the spatial database (GIS);
  - GPS locations for identified voting stations are recorded on the Voting Station Operation system;
  - Bar-coded voting district maps are produced in A3 for use during the registration process.
Barcoded voting district map

Delimitation and Registration

- Specialised barcode scanners (called “Zip-Zips”) are used to register voters.
- In 1998, when the first voters’ roll had to be created, the use of these devices enabled the Commission to register 18.1 million voters accurately in the 6 days of the first general registration drive.
- The devices also ensure that prospective voters, irrespective of place of residence (urban/rural), level of education or socio economic status, receive the same level of service from the Commission with respect to registration.
Delimitation and Registration

• Registration Process:
  – Using the Zip-Zip, the barcode on voting district map is scanned first to create a spatial reference for registrations in the voting district.
  – The barcode in the identity document (ID) of an applicant is then scanned. The ID number is a 13-digit number, containing info regarding birth date, gender, citizenship and a check digit to verify that the number is authentic.
  – Two receipts are printed on labels; one affixed to the ID of the applicant and the second on the form (REC1) which they completed with the personal and address details.
  – The Zip-Zips are then docked at the municipal office and the files containing the scanned ID numbers transferred to national office via the wide area network (WAN).
  – Files are processed using the Voter Registration System.

Delimitation and Registration

• Registration process (continued)
  – Using the ID number, the name and surname and status of the person is then extracted from the National Population Register (NPR).
  – Persons can check whether their registration has been successful via SMS or the Commission’s web-site (“Am I registered?”) or via the mobile application.
  – In the case of two registration weekends, an inspection voters’ roll is produced after the first weekend, so that persons can verify their inclusion on the roll during the second weekend.
  – An application will be unsuccessful if, for example, the person is not a South African citizen, or the ID number not found on the population register.
  – A voters’ roll can be produced within a week of a registration weekend.
Post December 2015:

- A Constitutional court order focused attention on addresses of voters which led to:
  - Changed registration processes - including GIS analysis to determine whether voters are correctly registered for by-elections
  - Addresses printed on the physical voters’ rolls
- Number of projects have been and will be undertaken to obtain addresses for all registered voters, including:
  - Capturing addresses on election day (3 August Municipal elections and all by-elections since)
  - Online address capture facility on the website
  - Address weekend planned for 10/11 March 2018
Online address capture

- Create secure profile
- Add or edit address using search, typing or a map
- Confirm address – at this point a link is established to the correct voting district
- If voting district of registration is different from address voting district – advise voter of a move and if accepted, apply the move

“Zip-Zip”
New registration device

• An evaluation process is currently underway to procure new registration devices
• The new devices will (hopefully 😊) enable:
  – Recording the registration (similar to current device) with a printed receipt
  – Capture the applicant’s address and relate to the correct voting district
  – Immediate transmission of data (where connectivity available) or docking at the various offices
• What it will look like ....

New registration device

• Applications currently available on the Zip-Zips are:
  – Voter registration – the ID number is recorded against a particular voting district
  – Voter participation – the ID number is recorded at the voting station and some information inferred from that, i.e. time of voting, gender, age and place of voting
  – Staff attendance – ID number of staff member is recorded and linked to the ESS system to facilitate speed and accuracy
• The mobile framework intended for the device will enable other applications such as ballot paper tracking and tracking issues logged by political parties
• All the applications for the new device will be done in-house
ICT Electoral Systems

- Systems developed in-house include, *inter alia*:
  - Voting Station Operations – voting stations
  - Voter Registration System
  - Party Registration System
  - Candidate Nomination System as well as an *online version for parties* to capture their own candidates
  - Electoral Staff System
  - Ballot Paper Generation System
  - Outreach Management System
  - PLC Documentation Tracking System
  - NPE Results System
  - LGE Results System
  - eProcurement System

Online CNS

- Facility to capture candidate details for each available seat and upload required documentation
Online CNS

- Facility for online payment through a secure gateway. The correct amount and reference number for the selected areas are provided by the system.

Results

- Special votes application support – Special Votes Application module is available to capture and verify applications for special voting.
- Results Systems support the capturing and auditing of results, exceptions management, edit windows, seat calculation and assignment. A link to the CNS is available for candidate information. NPE and LGE use different seat calculation methods.
- Result slip scanning was introduced during the 2009 elections where each slip is scanned and linked to the corresponding captured result, improving transparency of the results process.
- Results Operations Centres (ROC) – IT operations provides infrastructure and network connectivity at 1 national and 9 provincial results operation centres. System support for display boards and GIS map and graphic displays are also provided.
- Issue Tracker and Voting Station Monitoring systems
- An Atlas of Results is done by GIS after National & Provincial elections.
Voting, Counting and Results Process

1. Voting
2. Counting
3. Results slips to MEO
4. Verification
5. Results
6. Audit, Exception Check, File, System vs. Original, Save and Print

RESULTS SLIP SCANNING

[Image of a hand placing a results slip into a scanner]
Results Operations Centre

Dissemination of information

• Communications and Knowledge Management & Dissemination
  – Web-site (Am I registered? / Where do I register? / Results / Registration information etc.)
  – Mobile application & SMS – providing up to date information
  – API used for internal systems and externally by media and political parties and other stakeholders
  – IEC Intranet Portal (link to IEC systems, GIS on desktop and internal news)
  – Business Intelligence Portal (i.e. repository of historical data from all systems).
  – IEC Call centre – Voting station finder developed by GIS is used to assist voters and a voice genie to deal with call volumes
  – Spatial Management Reporting maps – these maps graphically represent business process information. Progress of electoral staff appointments, cell phone coverage in voting districts, registration activity and leading party maps are examples of this concept. Another example is the Atlas of Results.
Analysing standard BI data

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<th>PROVINCE</th>
<th>MUNICIPALITY</th>
<th>VOTING DISTRICT</th>
<th>LEADING PARTY</th>
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<td>ANC</td>
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</tbody>
</table>

Number of voting districts: 10,726

ATLAS OF RESULTS
Leading party by voting district
Voters’ roll analysis and comparison

Voter participation by predominant age
Information Communication Technology

• ICT Operations
  – Infrastructure
  – Telecommunication and networks
  – Security
  – Databases
  – Operations (monitoring, backups etc.)

• ICT Business Systems
  – Geographic Information Systems (GIS)
  – Electoral systems (i.e. voter registration, voting station operations, logistics, electoral staff, candidate nomination, party registration, ballot paper generation, voting station monitoring, special votes application, results, web-site (internet) and portal (intranet))
  – Financial systems (i.e. SAP, eProcurement)

Security

• Security has always been a high priority and several methods are employed to secure systems and data transmission
• Key to security is not only implementation of systems, but also monitoring and the ability to react to any attempted breaches
• External security firms are regularly appointed to test the overall security posture
• Security awareness is increasingly important and a formal staff awareness programme will be implemented.
Considerations

• What has contributed to the success of our ICT implementation:
  – Solid business processes
  – Flexibility to adapt to changing business needs and legislation
  – Continuous maintenance of systems
  – Policy framework and governance
  – Up-to-date platforms (O/S, browsers, DBMS)
  – Disaster recovery, backups, up-to-date security
  – In-house control over electoral systems allows flexibility and autonomy

• Future trends
  – Electronic voting
    • Verifiable online voting

Finally…

… thank you!