




ENSURING FREE AND FAIR ELECTIONS  
ELECTORAL COMMISSION

## Elections and Technology

### Emerging trends and innovations


Melanie du Plessis  
Electoral Commission of South Africa  
November 2017



ENSURING FREE AND FAIR ELECTIONS  
ELECTORAL COMMISSION

### 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 Constitution, Act 108 of 1996
  - The Electoral Act, 107 of 1998
  - The Electoral Commission Act, 51 of 1996
  - The Municipal Electoral Act, 27 of 2000



## Electoral Processes

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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.

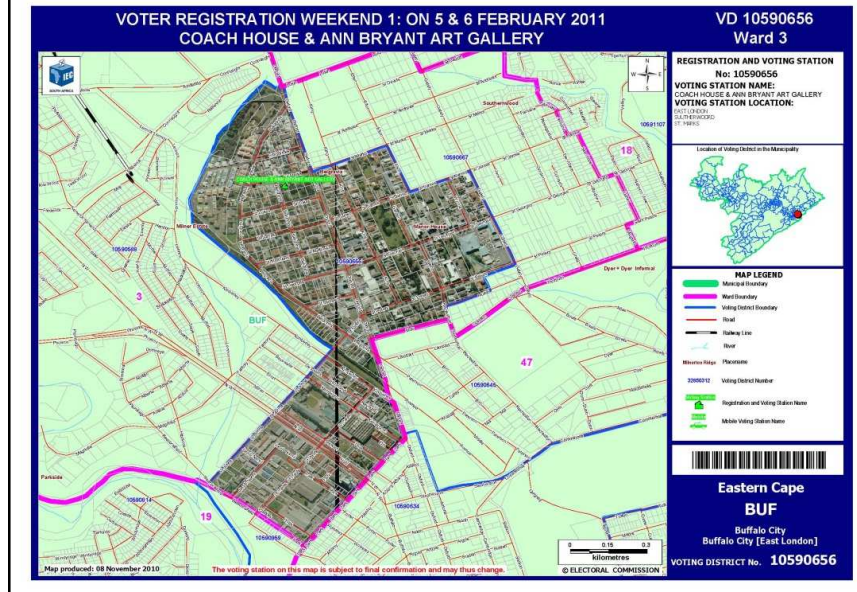


ELECTORAL COMMISSION

- 



## Barcoded voting district map



## Delimitation and Registration

ENSURING FREE AND FAIR ELECTIONS  
ELECTORAL COMMISSION

- 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



ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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



ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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.



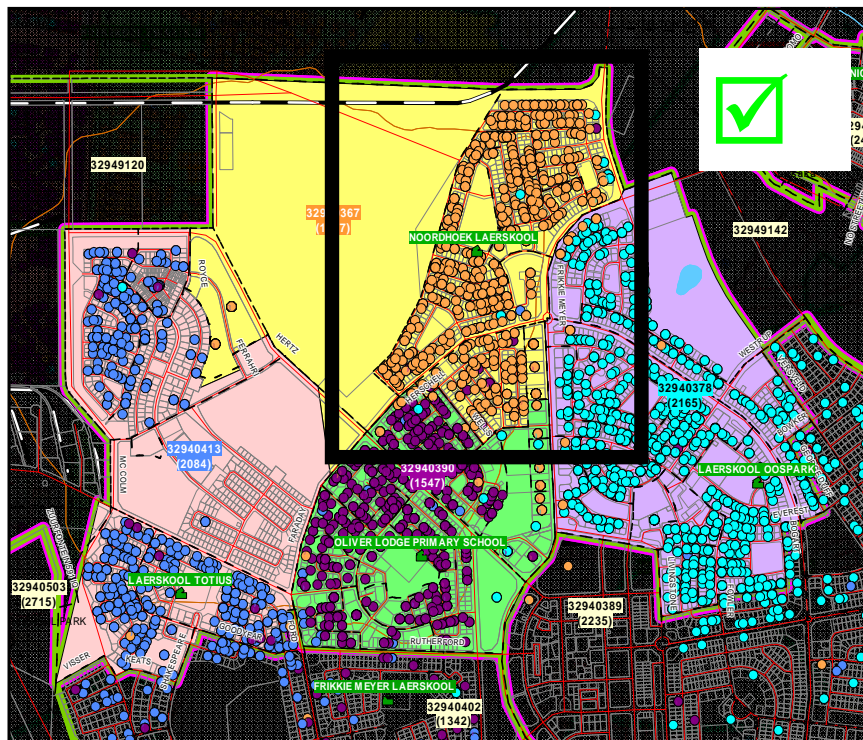
## Delimitation and Registration



ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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

**My Address**

To ensure that you, as the voter, are registered in the correct ward and voting district, you are required by law to provide the address (or sufficient particulars) of where you ordinarily reside. This is the home or place where you normally live.

Use one of the 3 options below to submit your address - select, insert or use map.

**Option 1: Select your address from the search list**

Enter your address to search

Example: 7040 baillieys cres, cerfontein, south africa

**OR**

**Option 2: Insert/update your address**

Please insert/update the details of the address where you ordinarily reside below

Flat number (if applicable):	102	eg unit 10
Complex name (if applicable):	CRESCENT GARDENS PIETERMARITZBURG C	eg LAKEMORE
Number:		eg 101
Street name:	110 LOOP STREET	eg DORSETT CRES
Suburb:	PIETERMARITZBURG CENTRAL	eg MIDLAND TOWN
Tribal authority:		eg Mankweng village
Town:	PIETERMARITZBURG	eg PHOENIX

**OR**

**Option 3: Use map to locate your address**

Use map to locate your address if you could not find your address using the options above

**Submit your address**

**Back**

## “Zip-Zip”



## New registration device

ENSURING FREE AND FAIR ELECTIONS  
ELECTORAL COMMISSION

- 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

ENSURING FREE AND FAIR ELECTIONS  
ELECTORAL COMMISSION

- 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

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

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



Online Candidate Nomination

Home • Generate Ref No & Pay • Manage Candidates • Reports • System Administration • Help • Sign-out

Party Name: XISOXISO PARTY  
 Logged in as: JOHANNES GORHAMUS COTTEBE  
 Level (Access): National



Note: You will only be enabled to capture candidates for specified level seats included in the Payment Reference Number.  
 If you cannot capture candidates for a particular level seat, please contact your Online Party Administrator (OPA) to generate payment reference number for those level seats you would like to capture candidates for.

21 Dec 2017 By Election  
 (Currently Open For Capture)

Current Election Event Statistics

List Item	Not Submitted As Final		Submitted As Final	
	PR & DCATs	Ward	PR & DCATs	Ward
Candidates Submission Status	1	1	0	0
Candidates Listed	0	0	0	0
Candidates Withdrawn	0	0	0	0
Open For Non-Compliance	0	0	0	0
Candidates Captured	1	1	0	0
Candidates Completed	3	3	0	0
Candidates with Outstanding Documentation	1	1	0	0
Disqualified Candidates	0	0	0	0

Online CNS Notification

List Item	Files Uploaded	Files Processed (N/A)	Files Processed (Final)
Municipal Bulk Event List	0	0	0
Party Candidate Doc Files	2	0	0

Election Timetable: The Time table will only be available after proclamation

SOUTH AFRICA

## Online CNS

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

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

The screenshot displays the 'Online Candidate Service' interface. At the top, it says 'Electoral Commission of South Africa, ensuring free and fair elections'. Below this is a navigation bar with links: Home, Candidates, Results, Payments, System Administration, Help, and Sign out. The main content area is titled 'Generate Payment Reference' and includes fields for 'Election Date' (17 Dec 2017), 'Province' (Gauteng), and 'Municipality' (City of Johannesburg). It also shows 'Payment Ref #', 'Total Amount', and 'Local Govt'. A 'Generate Payment Reference' button is visible. Below this, a table lists 'Generated Payment Reference' details, including 'Payment Reference No.', 'Amount to be Paid', 'Valid Payment Reference', 'Date Payment Refs Generated', and 'Payment Status'. A 'Make payment using Online Payment Gateway' button is also present.

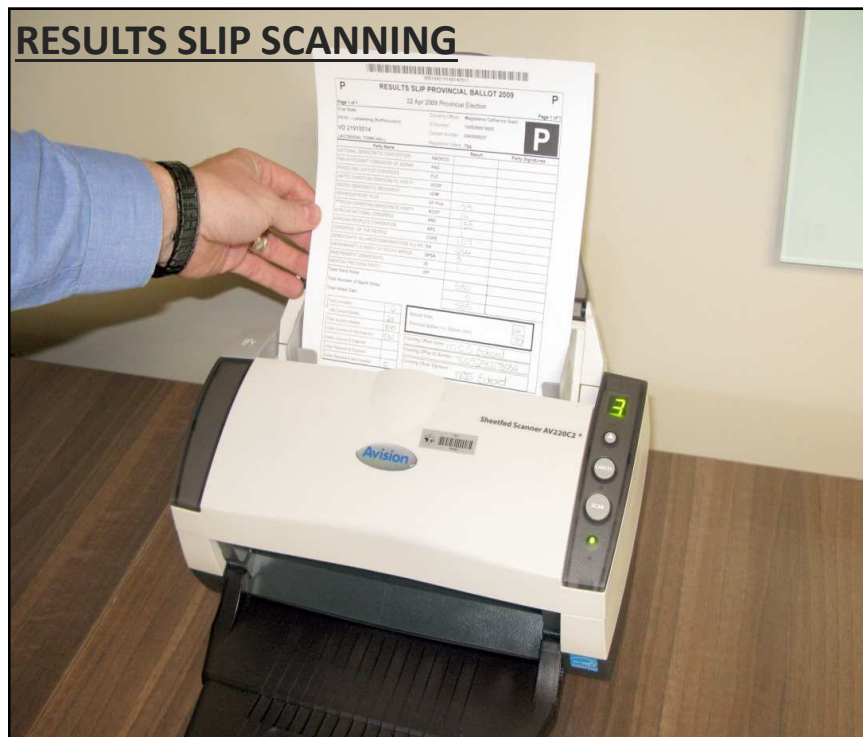
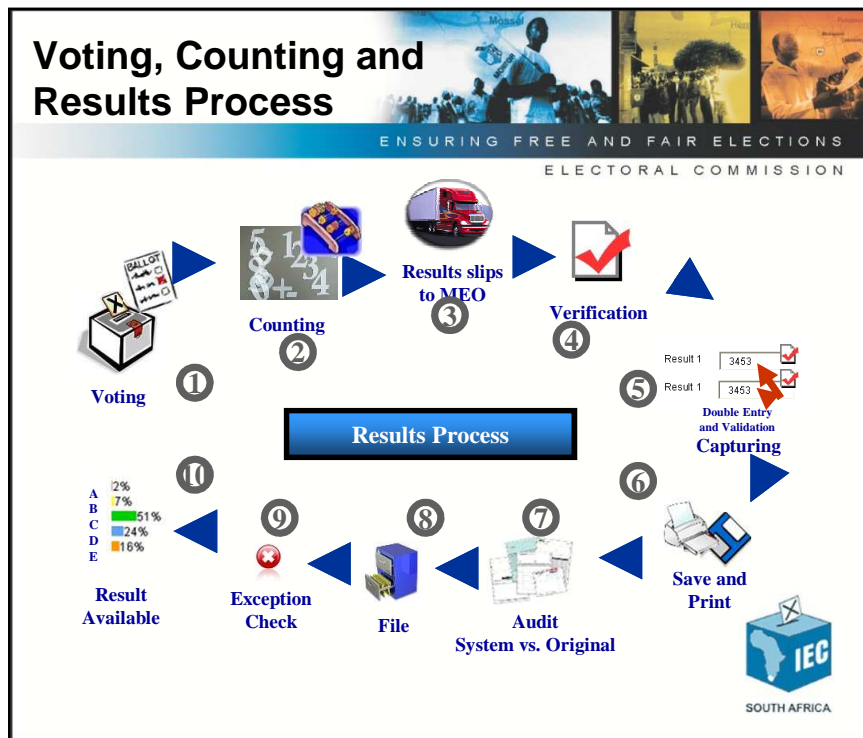
## Results

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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.





## Results Operations Centre

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION



## Dissemination of information

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

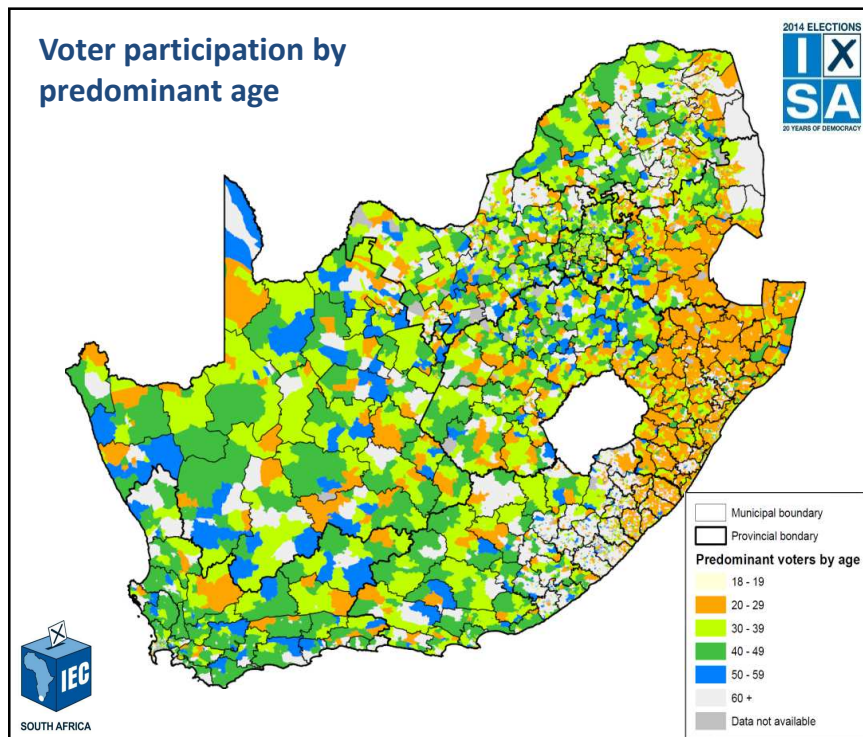
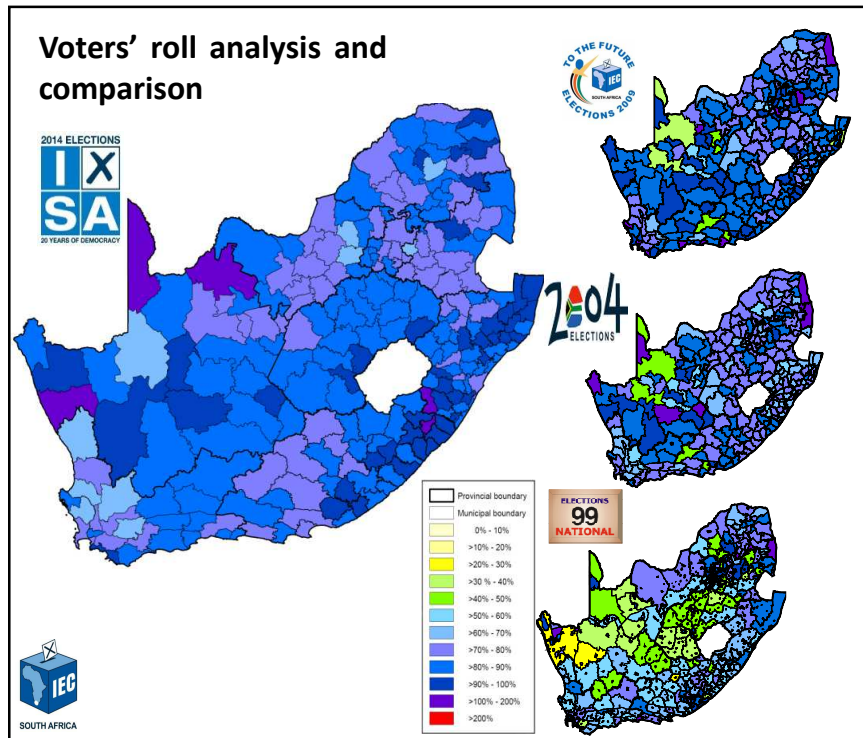
- **Communications and Knowledge Management & Dissemination**
  - Web-site (Am I registered? / Where do I register? / Results / Registration information etc.)
  - Mobile application & SMS – providing up to date information
  - API used for internal systems and externally by media and political parties 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.



SOUTH AFRICA







## Information Communication Technology

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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

ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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



ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

- 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



SOUTH AFRICA

## Finally...



ENSURING FREE AND FAIR ELECTIONS

ELECTORAL COMMISSION

... thank you!



SOUTH AFRICA