Challenges Facing the Creation of a Standard South African Address System

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Key words: Address System.

SUMMARY

Statistics South Africa is charged with collection of data, statistics and running of censuses and surveys. Currently enumeration areas are used to collect information. Enumeration areas are whereby the country is divided up into small portions, which a person taking a survey or census is able to walk door-to-door collecting information. Enumeration areas require constant maintenance (i.e. splitting and merging) owing to population dynamics in the settlement areas during the intercensal period. . It is therefore important to have a reliable address system in South Africa. Having a good address system will ensure information collected in the field can be tied to each individual address and essentially improving the management of enumeration area maintenance processes.

South Africa is divided into four settlement types, which are urban (formal) areas, informal areas, traditional areas and farm areas. Each of this have their unique set of challenges and address formats.

Most of the urban formal areas have a relatively structured form of addressing. But have a few problems like where streets exist but do not have names, cadastre may be reflected differently on the survey plans, missing or wrong addresses and addresses associated with the wrong parcel of land (cadastre).

The main challenge lies in the traditional settlements, informal settlements and farms.

Informal areas are unplanned settlements, which in most cases do not have streets, and the dwellings are haphazard. In traditional areas settlements are not in a structured format; some settlements are far from each other and make sequence numbering difficult. The farm areas pose a different challenge in that one farm may cover an extensive area. Thus a suitable address system has to be formulated to cater for the uniqueness of the different settlement types.

The paper explores challenges encountered by Statistics South Africa in standardizing the national address system and register for South Africa, by creating a spatially referenced address frame that can be used for censuses and surveys, by consolidating and integrating governmental addressing initiatives and related projects through standardizing concepts, data models and methodologies.

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1. BACKGROUND

South Africa inherited an inconsistent system of addresses from the apartheid era in all different types of human settlement. South Africa has the following main settlement types: Urban Formal, Informal, Traditional and Commercial Farms. Dwellings in urban formal areas have an established physical and postal addressing system, which forms the basis for postal services, emergency response, policing and the like. However, a physical address system is largely absent in rural areas and less-formal settlements. The dawn of new democracy did not witness integration and improvement in the existing systems of addresses as new systems also mushroomed, for example the telephone company -TELKOM and electricity company - ESKOM who created their own numbering systems for identification. The new identifiers did not seek to align to existing addresses. Such developments further enhanced disparities of the addresses, consequently strengthening the difficulties in the usefulness of the identification system. Resultantly a lot of confusion has emanated from the use of such identifiers particularly in most of the informal areas. While such predicament is more intense in all informal areas of habitation, formal areas have a fair share of their problems in that many new developments are yet to be updated on an address database.

There is a heightened demand by decision makers to gather information to deal more effectively with geographic inequalities in social and economic development. The current Enumeration Area framework being used, which is essentially the country divided into small portions of land spatially, is not necessarily the best suited for this.

2. CHALLENGES

The address project is a complex, integrated project with several key role players trying to meet the requirements for each of their mandates, for the betterment of the people on the ground. Having the different role players is a challenge making each come to an agreement about different issues that may arise. On the ground the challenge of developing a standard integrated address system lies in the nature of settlement types found throughout the country. Even within the same settlement type, complex inconsistencies are such that different information for each type should be gathered in order to effectively standardize the address system.

2.1 Urban Formal Settlements

Urban formal areas are consciously built-up with characteristics as economic activity and services. They are surveyed, registered and proclaimed; hence have a legal status. Cities, towns and suburbs are typical urban areas. They comprise of one or more densely populated

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centres as well as adjacent densely settled surrounding areas (urban fringe). They have a formal administrative structure.

Though the urban areas are fairly structured many housing developments take long to be registered. The process required is fairly slow, having to submit the cadastral plans to the Department of Housing, the Surveyor General's Office or Local Municipalities among others. We thus have fragmented and incomplete database for these new developments.

Due to security issues in the urban area security complexes have become the trend with a lot of the new developments. These complexes have one or two gates where all residents gain access. They comprise of one type of housing for example cluster houses, town houses, apartments or a combination of all. These units have their own numbering within the complex, which may be used for service provision. The problem with this kind of developments is that the numbering is not necessarily official. The other problem may be that the smaller units and townhouses are situated on a single plot with one cadastral number.

Different settlement types in the urban areas require collection of different information. There is a need to break down the different types and identify the necessary information to collect for each standard field. Sub-types of urban settlements include individual plots (stand alone houses), security villages, high-rise flats, town houses, institutions, central business district, industrial premises and recreational areas.

Aerial Photo 1: Urban Settlement

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2.2 Informal Settlements

The occurrence of Informal settlements is part of the urbanisation process in third world countries. As elsewhere in Africa, the phenomena is also present in South Africa. Informal settlements are areas that have not officially been planned, surveyed and proclaimed, and are therefore usually not found in detail or at all on conventional town cadastre maps. They usually have unofficial place names. Mostly no services are rendered in these areas that are illegally occupied. Some areas may seem to have an orderly network of streets and sequentially numbered dwellings along the streets, but as this level of planning is unofficial, no records of the individual structures/stands exist in the Surveyor General's office.

The majority of the Informal settlements do not have official address systems. Service providers like ESKOM, TELKOM, and in many cases 1996 South African Census, assigned numbers for their specific reference purposes. Some of the shortcomings of the existing numbers assigned by these service providers are:

- Numbers may not be sequential.
- Numbers are not captured in a single database or not on a digital database at all.
- Numbers are not fully visible.
- One structure carries a multitude of numbers assigned by individual service providers for example. TELKOM, ESKOM and 1996 Census.
- Numbering is only updated or maintained as a service provider identifier.
- The occupants are using any or none of the various numbers as reference.

The other major problem is that some of these structures are not permanent. Furthermore the fact that the land is not surveyed a physical address can not be attached to a cadastre.

Aerial Photo 2: Informal Settlement (Note lack of cadastre)

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2.3 Traditional Settlements

The complexity of the traditional settlements results in variations between and within provinces. The set up of traditional areas differs from province to province due to the different ethnic groups, and cultural background found in each.

South Africa's traditional areas show various designs, from the well-structured layout to the undulating and unstructured layouts of villages. These are mainly as a result of topography, and in some cases are the results of the "betterment scheme" projects. The majority of the traditional villages do not have an official numerical address system. Where you may find numbering is in areas where service providers like the electricity suppliers (ESKOM), telephone suppliers (TELKOM), and in many cases the Census done in 1996, assigned numbers as identifiers. The shortcomings of the numbers assigned by these service providers are, among others:

- Numbers may not be sequential
- Numbers are not exhaustive. Numbers are assigned to housing units, whose household heads applied for services, therefore not fully covering the entire village
- Numbers are not fully visible
- Numbers are multiple sets. During the 1996 population census, field-workers spray-painted yellow numbers on rural dwellings to ensure that all households were counted. But many of these dwelling already had a series of different numbers that had been painted by service providers Eskom and Telkom and local authorities at various times.

One other serious problem is the absence of precise delimited cadastre of the traditional settlements. The 1:50 000 topographic map sheets are the closest pictorial representation of South Africa's geography in most traditional areas. These data sets are outdated, and in many instances are not accurate in that different developments may have taken place in the recent past; place names are commonly wrongly placed and misspelled. Due to the scale of these maps, much generalization has been applied, and in the process the detailed information is lost.

2.4 Farm Settlements

Large areas in South Africa are commercial farms. All of these farms are surveyed with the necessary documentation and registration at the Surveyor General. All farms therefore have a registration number, name and exact boundaries. Additional information like ownership and subdivisions also exist.

The challenges exist in that the numbers used are land parcel numbers, which have no chronology at all. The other problem is that the farms tend to be very large and some times the numbers are not visibly displayed making it difficult to identify one farm from the other. In many farms small villages exist within the larger area where several workers and their families live permanently, this should be seen as a separate entity but currently is considered under the parent farm.

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Aerial Photo 3: Traditional Settlement

Aerial Photo 4: Farm Settlement

3. THE WAY FORWARD

The National Address System and Register is a unified spatial framework that assigns one unique identifier to every physical dwelling, site or structure. Our experience thus far shows that attempts were made in the past by various organisations at providing addresses. Comprehensive methods and procedures should be instituted in order to gather and compile

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an effective and efficient address database. Developing a national integrated address database for different residential types entails taking a number of crucial decisions. Work on the evaluation of current data available. Decide whether updating is needed or redesigning the database. Then identify gaps: Use the National Address Database (NAD), Cadastre from the Surveyor General and postal system to draw some intelligence on available coverage. With postal system, capture addresses as they filter into the system and verify their validity. Also use the postal directory to update records. Identify gaps and plan process flow for updating the register. Use current updates from Metropolitan councils. Each residential type may require a different approach even if the data captured is standard.

In the informal and traditional settlements the goal would be to develop and maintain an address system that will be of use to the occupants of the area, as well as service providers, and to establish a continuous maintenance and update system of the compiled datasets. To accomplish this a few things need to be done:

–   Investigate the possibility of capturing a location for each structure, or alternatively, the total or partial area with multiple structures.
–   Ideally capture accurate coordinates of each housing unit or area that it is built on, in the settlements.
–   Capture the popular place names of the settlement areas.
–   Accurately capture the information in a GIS.
–   Have the numbers visibly displayed to mark the individual units: be it a structure or area.
–   Establish and ensure continuous maintenance and update of the address system.

Recent aerial photography will go along way in portraying detailed geography of the country. The traditional areas which mostly lack imagery should be covered entirely and do away with old topographic maps.

Statistics South Africa is leading a team of intergovernmental role-players in an attempt to coordinate all address initiatives and related activities. This detailed geographic unit will improve our data collection for surveys and censuses,emergency response and other services. Key role players are the South African Post Office, a portfolio organisation falling under the Department of Communication, the Local Municipalities and Metropolitan councils, the Departments of Land Affairs, Home Affairs, Housing, Water Affairs and Forestry, Social Development,Treasury, Public Service and Administration, Minerals and Energy, and the State Information Technology Agency (SITA)

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