



NATIONAL ADDRESSING SYSTEM (NAS)

Bulawayo – Zimbabwe

Facilitator: Quinto Onyango

NATIONAL ADDRESSING SYSTEM

AFRALTI

COLLABORATING WITH



iPost
mail

Serving communication evolution

e-Commerce, e-Finance, e-Government, e-Navigation, e-Post



Brief Facilitator Details

• Quinto Onyango

- Managing Director of iPost Mail. (Currently)
- Holds Bsc Mechanical Engineering, UoN - 1984
- Worked in senior Management and technical positions in motor industry and engine distribution businesses in
 - Kenya, from 1984: Various Company in Oil and Motor Industry
 - Rwanda 1999-2000 : Group Managing Director, Ramji Group
 - South Africa 2008 -2011: Africa Business Development Manager, Cummins Inc
- Has Written and Published in Field of NAS:
 - Primary addressing
 - Secondary Addressing
 - Postcode design methodology
 - Role of Road Signage and Marking in NAS



Course : National Addressing System: NAS

Day 1	<ol style="list-style-type: none"> NAS Definition Role of NAS Historical and Global Perspective of NAS Legal Mandate <ol style="list-style-type: none"> Current legal mandate Ideal mandate for NAS NAS Components Current addressing system - Zimbabwe
Day 2	<ol style="list-style-type: none"> Primary Addressing Property Numbering & Road Naming Placement of property number signs Maps/ Zoning/Minimum stand (plot) size Secondary Addressing Informal Settlements Urban & Rural, Military/Diplomatic corps/Landmarks Address assignment certificates Postcode : Distribution model Postcode: Delivery area model Designing a postcode system Road Signage and Markings
Day 3	FIELD VISIT
Day 4	<ol style="list-style-type: none"> Case Study: Thika Super-Highway Road Signage Best practices of Road signage Use of Primary/Secondary addresses Proof of Physical Address
Day 5	<ol style="list-style-type: none"> Implementing NAS: Strategy Business from NAS Database management Applications General Review: last 4 Days Work

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DAY I

1. Definition
2. Role of NAS
3. Historical and Global Perspective of NAS
4. Legal Mandate
 1. Current legal mandate
 2. Ideal mandate for NAS
5. NAS Components
6. Current addressing system - Zimbabwe





Let us understand the subject:

Define NAS



WHAT IS



National Addressing System (NAS)?





It is **National**...

- A Nation



It is an **Addressing**...

- an address



It is a **System**...

- a set of connected parts to carry out a specific activity.





It is **National**...

- A Nation = One cohesive unit of people within a territory governed by
 - a legal framework and standards
 - regulator(s) and implementer(s) of service delivery systems





It is an Addressing...

- an address is a delivery point
 - Physical
 - A numbered Box at a Post Office
 - A specific identifiable Home
 - A specific identifiable Office
 - A Place or Space defined by;
 - GPS Coordinates
 - A uniquely marked location (as done by animals)
 - Location defined by Specific defining parameters
 - Digital
 - Email
 - IP (Internet Protocol), etc





It is a **System**...

- more than two unique components that work together to achieve a specific outcome
- a set of connected parts (methods, routines, principles or procedures) to carry out a specific activity.
- A missing part makes the system stop working
- has inputs, outputs, feedback.





A Complete Integrated NAS

Has 4 Component Systems all Governed by Principles, Standards & Laws (National & Local):

1. **System 1:** Primary Addressing - Stands/Plots : **Assigning Property Numbers & Road (Route) Names**
2. **System 2:** Secondary Addressing : **Assigning Identifier Numbers or Names to Sub-divisions within a Primary Address**
3. **System 3:** Postcodes : **Assigning Mail Delivery Area Identification Numbers**
4. **System 4:** Road Communication Devices that enable efficient and effective connection of Addresses: **Road signs and markings**





This is a Primary Physical Address not NAS





Animals Know the Value of a Physical Address !

Rhino



Lion



Dog






...they mark their address and protect it fiercely





ANIMALS have Basic Principles, Standards & Laws that govern addressing in their Territory

- They Enforce basic Principles and Laws;
 1. An address belongs to only one Dominant owner.
 2. It is a Delivery Point for owner's Well being.
 3. Dependants to Address owner are welcome.



... an address is
valuable to People.
... and the same
Principles apply!



An Address delivers goodies and connects ...

Lack of it leads to;

1. Isolation.
2. Difficulty in locating others, places.
3. Difficulty in management of courier services.
4. Limits effective planning .
5. Frustrates and inconveniences customers due to delayed delivery.

Over 90% of the world population no longer uses the P.O. Box system for mail delivery and less than 10% of the world population continues to use P.O. Box system.

African countries dominate the number of these countries that are lagging behind the rest of the world.





Types of Address Owners/Users

- Primary Owners
- Secondary Owners
- Dependants of Address Owners





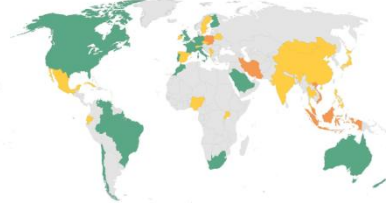
...at a glanceWhat / Why NAS

= Delivery Point



People move
(Address 101 to 117)
& GPS navigation
need NAS

Developed and middle
income Countries have
NAS



E-Commerce
needs NAS



Communicating
with Citizens :
Universal Postal
service
needs NAS



Deliveries



Emergency &
Security response
needs NAS



Service
Providers
need
NAS



MAIL DELIVERY ADDRESSING SYSTEMS

**P O BOX
ADDRESS
DELIVERY
SYSTEM**

Kenya

Postcode

Postcode type and position

5 digits below delivery post office.

Coding method

2 0 1 0 0

→ delivery office
→ regional distribution centre
→ postal region

Mr. John Bwana
P O Box 2784
NAKURU
20100
KENYA

**PHYSICAL
ADDRESS
DELIVERY
SYSTEM**

South Africa

Postcode

Postcode type and position

4 digits below the name of the locality or post office.

Coding method

0 0 8 3

→ locality or post office
→ postal area

Mr J Nel
10 Church Street
COLBYN
0083
SOUTH AFRICA

Source: UPU Website



NAS Convenience = Universal Postal Service



Post Office =
E-commerce Parcels
& **Government**
Notices Mail
to Homes & Offices

Mail Delivery





South African Post Office

2012 Annual Report

Operations

In the financial year ended 31 March 2012, Mail Business rolled out just over 1 199 273 addresses to first-time address owners, exceeding the target of 1 195 690 by 3 583, bringing to just over 10 million the number of households to which the SA Post Office has provided addresses in the past five years. Approximately 74% of these addresses are in rural and peri-urban areas.

The provision of addresses to first-time address owners is the most prominent demonstration of the SA Post Office's commitment to delivering on the mandate of ensuring the right of every citizen to be connected socially and commercially at

an affordable cost. Having an address provides these citizens with an opportunity to have mail securely delivered to their doors and, in addition, it frees them to participate in the economy. Banking, trading, long-distance learning, having a cellphone and access to municipal and emergency services, are some of the activities that can only occur when you have an authentic physical address.

Spin-offs of these additional addresses are the growth in mail volumes due to these communities being able to communicate with the outside world thereby bridging the communication divide as well as opening up new direct marketing customer segments for the direct mail industry. We therefore plan to meet the target to roll out 3.6 million addresses between 2011 and 2013. The format for these addresses complies with national standards set by the South African Bureau of Standards (SANS 1883) and the international standards set by the Universal Postal Union (S42). South Africa is one of 16 countries that meet this UPU standard, once again bringing the SA Post Office close to its vision of being recognised amongst the leading postal operators in the world.





What is the

Zimbabwe

Address System?

- How many delivery boxes? P.O Box and other
- How many households?
- Does an address matter to get services?



Post Offices – Harare, Zimbabwe Source: Internet

#	Post Office Name	Office Contact	Mobile Contact	Physical Address
1	Avondale	(+263)4 335152		21-2 Cornwall Road shopping Centre
2	Belvedere	(+263)4 740054 / 5		1/6961 Montgomery Milton Park
3	Borrowdale	(+263)4 882084 / 882947		2/39 Campbell Rd Pomona
4	Causeway	(+263)4 706861/ 7092 2191		Causeway Building Central Avenue
5	Chisipite	(+263)4 495876 / 497828		82-1 Hindhead Ave Chisipite
6	Chitungwiza	(+263)4 070 / 30851/30674	(+263) 773 639 058	19747 Town Centre New Seke South Zengeza 4
7	Dzivarasekwa	(+263)4 216428 / 216131	(+263) 773 639 042	3856 Parerenyatwa Avenue Dzivarasekwa
8	Glen Norah	(+263)4 613126 / 2910282	(+263) 773 639 062	Stand No :7100-1 Glen Norah
9	Glen View	(+263)4 690158 / 690090		Stand No:104194 Glen view
10	Graniteside	(+263)4 743799	(+263) 773 639 066	Dieppe and Airport Rd
11	Greendale	(+263)4 495275 / 85		189 Arcturus Rd Greendale
12	Harare Main	(+263)4 783585/94		43 Julius Nyerere Way
13	Hatfield	(+263)4 570170 / 570113	(+263) 773 639 064	011 Kilwinning Avenue Hatfield
14	Highfield	(+263)4 662474 / 2920486	(+263) 773 639 043	4809 62nd Steer Zororo/Canaan Highfield
15	Highlands	(+263)4 746124 / 6		1/A/42A Enterprise Rd Newlands Shops
16	Kambuzuma	(+263)4 226229 / 2925663	(+263) 773 639 060	2532 Kambuzuma
17	Mabelreign	(+263)4 305269 / 70	(+263) 773 639 045	399 Sherwood Drive Malbereign
18	Marlborough	(+263)4 332512 / 13	(+263)773 639 059	3 Marlborough Dve



Observations from the Physical Address Column;

1. Mixed numbering system
2. -, / , used in address
3. There an address with 0 as the first digit in the address number!
4. Stand numbers used
5. Does Zimbabwe have an address





• MORNING BREAK



Historical and Global Perspective of NAS



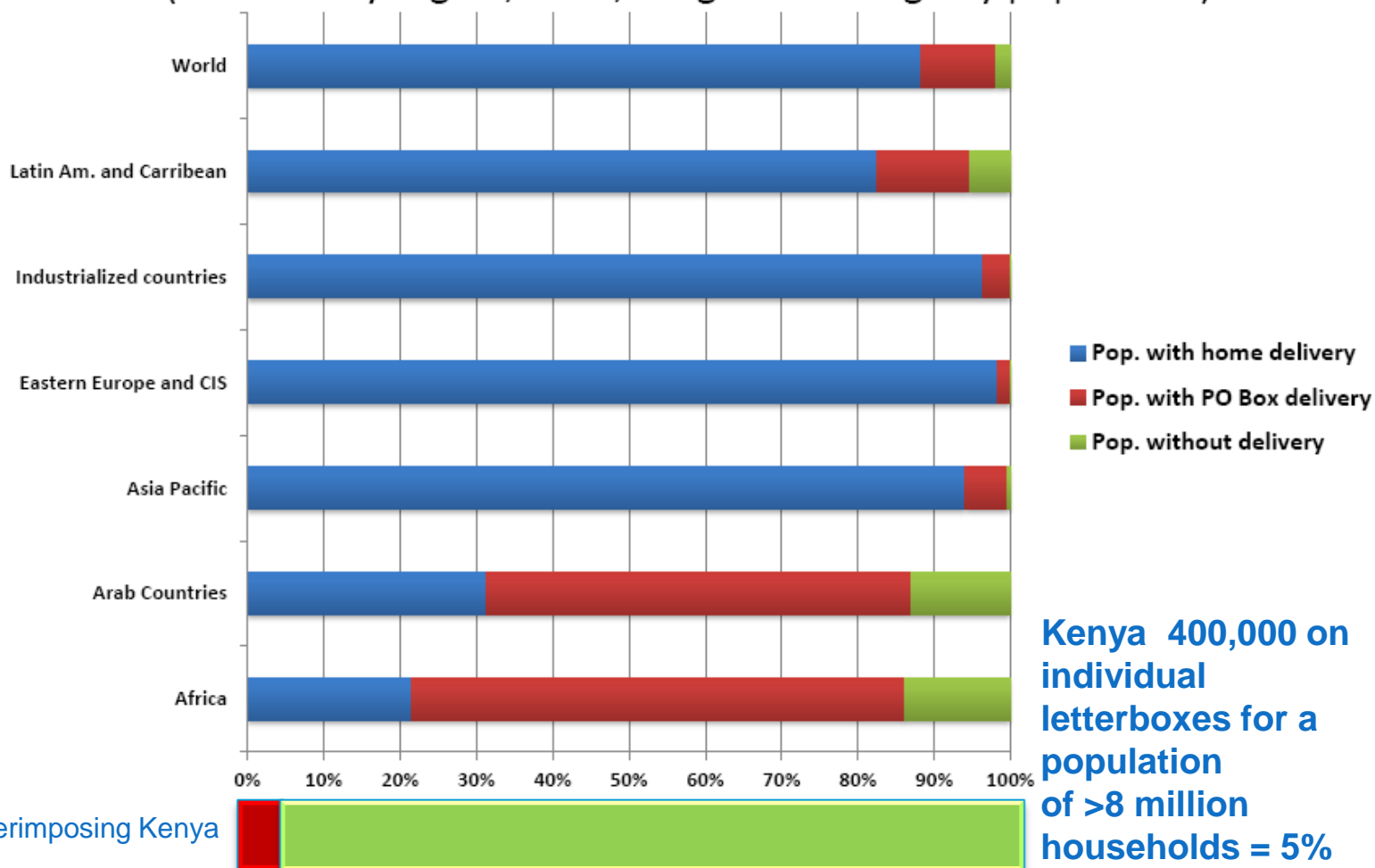


GLOBAL ADDRESSING SYSTEMS



Mail delivery modes by region

(estimate by region, 2012, weighted average by population)



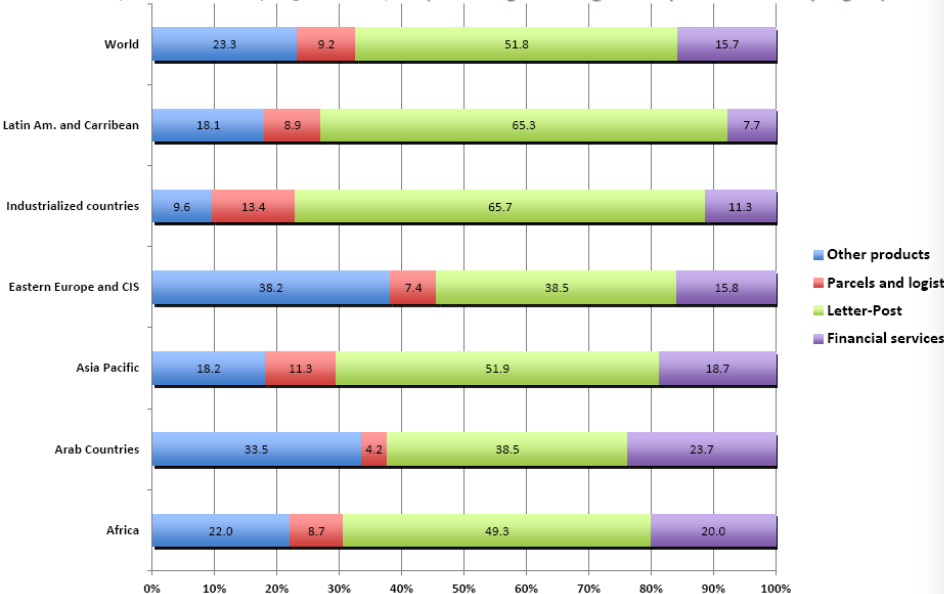
Superimposing Kenya

POSTAL INCOME BY BUSINESS LINE



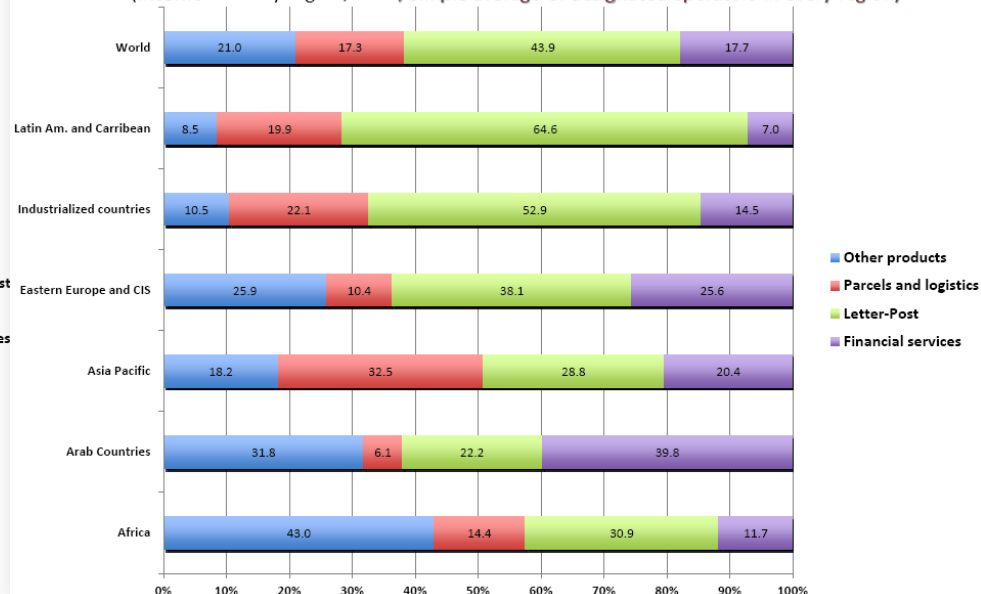
Postal income by business line: 2002

(income share by region, 2002, simple average of designated operators in every region)



Postal income by business line: 2012

(income share by region, 2012, simple average of designated operators in every region)



Letter-Post Service - Green: Africa lost it as the most dominant Business line and replaced it with Other Products.

Other Product Business line – Blue: Only Africa increased it from 22% in 2002 to 43% in 2012!

Africa's Letter-Post Business line contribution fell from 49.3% in 2002 to 30.9% in 2012.
In other regions, other Products have remained at same levels and below World average of 21.0%

By 2022 a Post Office in Africa may be unrecognizable as Post Office!



(Source UPU Website 2012)

Green = Compliant. Yellow = In Development



Historical Demographic Shift

Sub-Saharan Africa Population

- 1950-60
 - Rural over 80%
 - Urban less than 20%
- 2016
 - Rural about 65%
 - Urban about 35%
- 2050
 - Rural 50%
 - Urban 50%

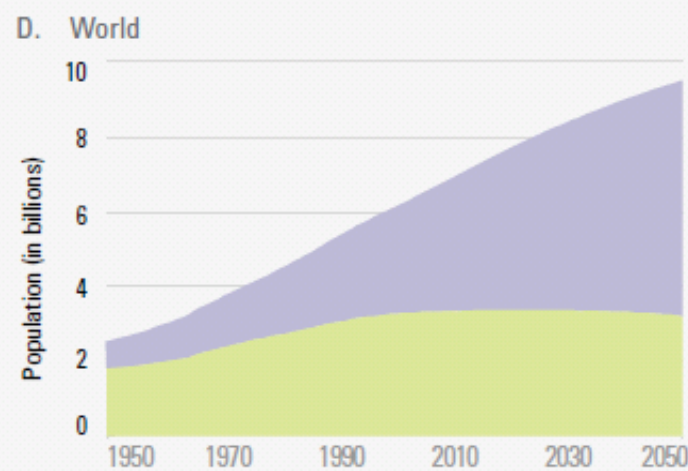
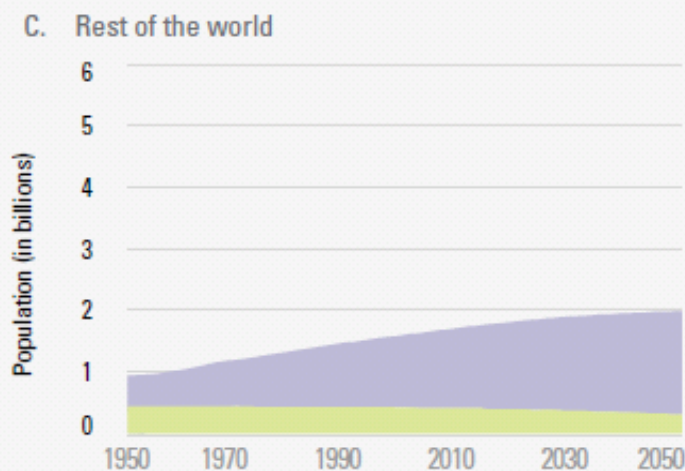
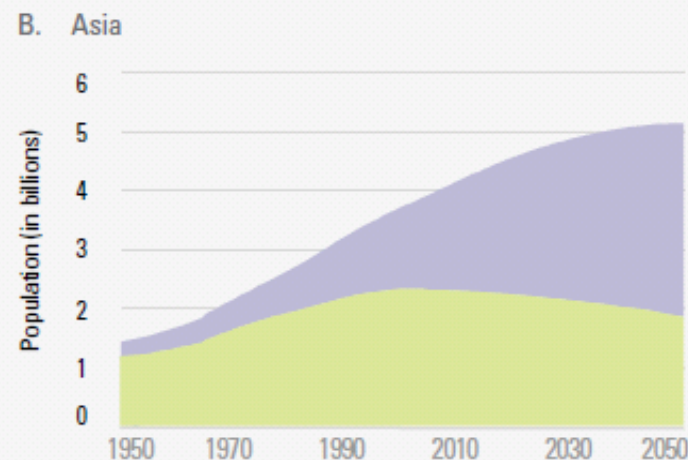
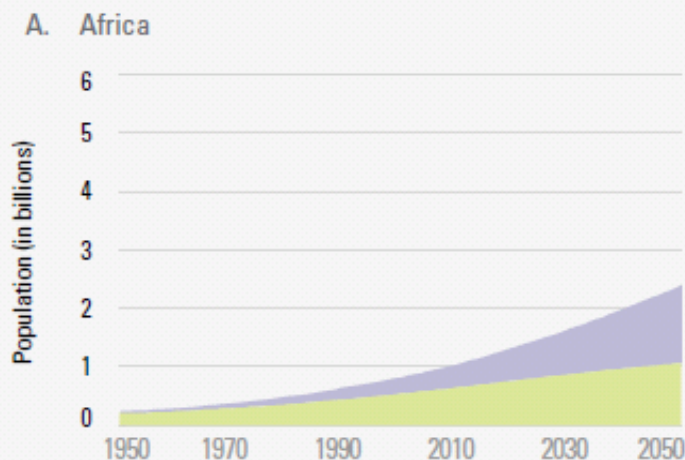




In less than 25 years, the majority of Africa's population will live in urban areas

Rural and urban population by region, 1950–2050

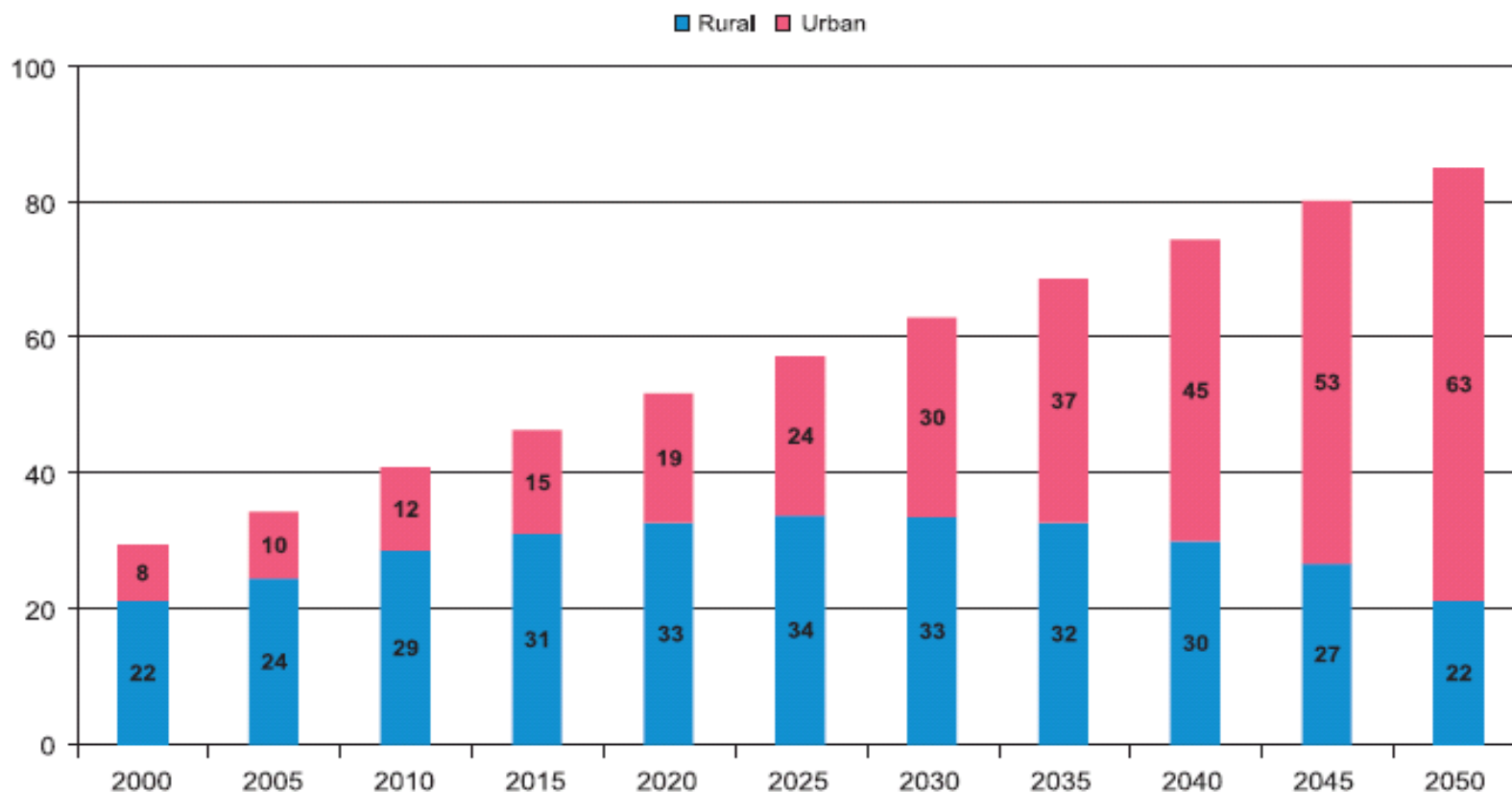
■ Rural ■ Urban



Source: UNICEF analysis based on United Nations, Department of Economic and Social Affairs, Population Division, World Urbanization Prospects: The 2014 Revision (UN WUP), United Nations, New York, 2014.



An urban future: Kenya's population growth



*Includes core- and peri-urban residents.

Note: Population growth projections are World Bank computations based on data from KNBS and UN, DESA (Source: World Bank)

A vision of a smarter city

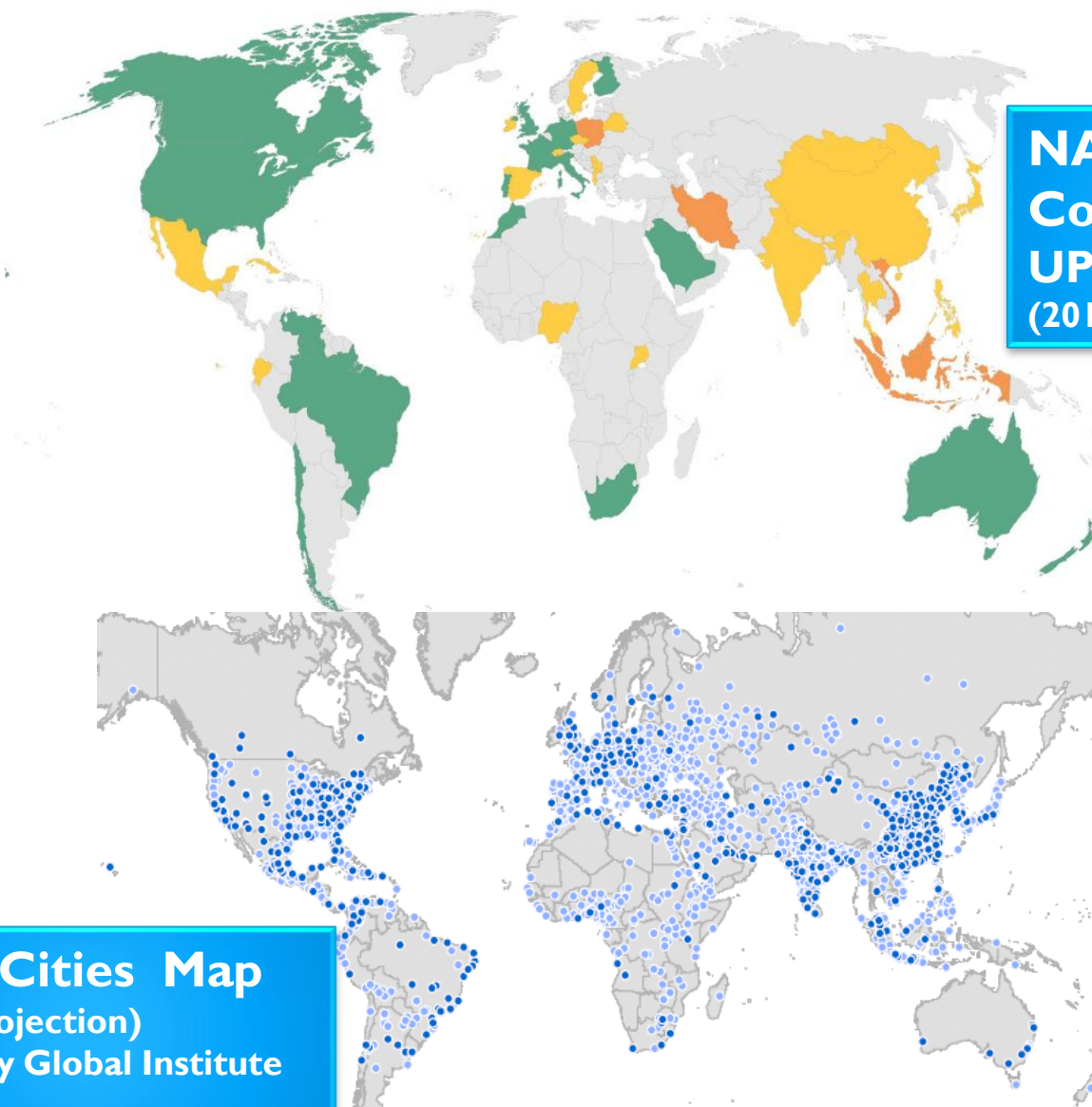
IBM East Africa

How Nairobi can lead the way into a prosperous and sustainable future March 2012





NAS Compliant Countries v Year 2030 Mega Cities Map



NAS
Countries:
UPU S42 Map
(2012)

Mega Cities Map
(2030 projection)
McKinsey Global Institute
2011

Yebo! Yes!

**Everybody, Everywhere is
Communicating Real-time!**

**SMS..Call ..E-mail..Chat..Skype..Tweet!
..Facebook...WhatsApp.....**

Information flow is fast. ...Letters?

The connected generation

Addressing = e-commerce to them!





THE FUTURE OF POST

E-commerce/ Marketplace Platform Partnership

Parcels Mail

E-Post = Digital Alert Services

24/7 Automated Parcel Collection Centres

Direct Mail
Government Local/National
Notices
Fines

Post = NAS
=
E-services

Asia – Pacific Countries : Years back!

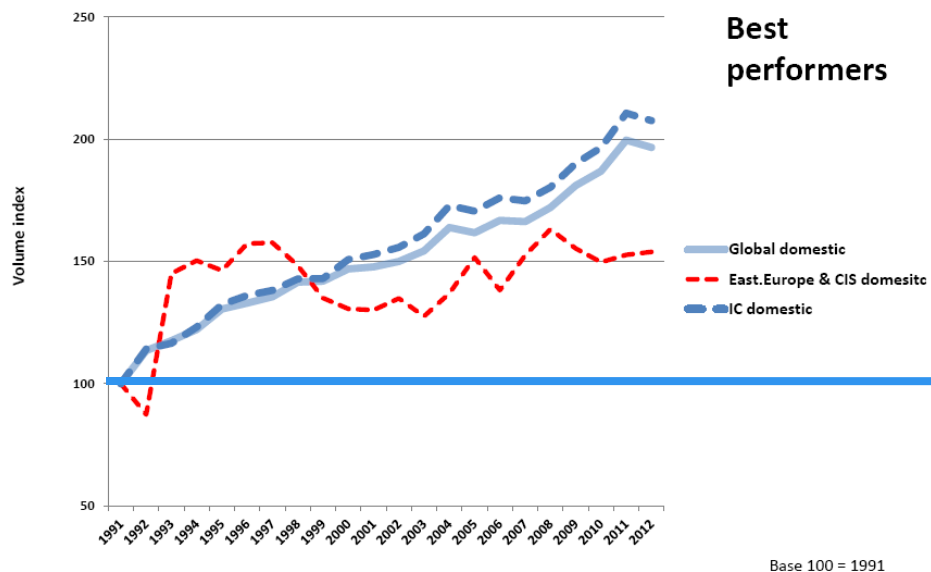




E-Commerce Parcel Mail Delivery Now is the Driver of Postal Traffic



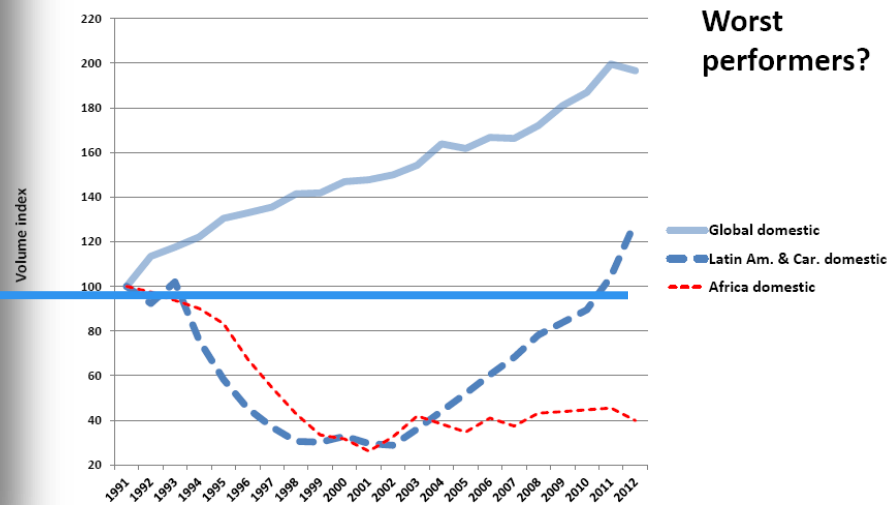
Parcel-post traffic performance



UPU, Bern, October 2013



Parcel-post traffic performance



UPU, Bern, October 2013

Base 100 = 1991

Industrialized Countries and Eastern Europe: Have had steady increase in Postal Parcel Business

Latin America: Declined up to a point they implemented UPU S42 then has registered steady above global average increase.

Africa: Has Declined by 60% since 1991!

Note: Parcel Business in Africa is not declining! ONLY WHAT GOES THROUGH POSTAL SYSTEM IS DECLINING! WHO IS BENEFITING? **Boda Boda, Buses, Courier, Messengers etc**



Influencing factors to e-Services:

1. Country's Innovativeness
2. Country's Development of Regulation
3. Country's Development of infrastructure for ICT Services

E-commerce needs electronic payment:

- Electronic /Mobile money
 1. M-pesa, Equitel, Airtel
 2. Credit cards: MasterCard, Visa, etc



83%

84%

Internet and mobile penetration are expanding commerce beyond the infrastructural limitations of physical retail stores

Governments and public bodies are moving to the web many administrative procedures, encouraging **digital literacy**

Consumers are not constrained by geography over the internet, and they have access to **cheaper goods and a wider choice**

... but does everybody possess an **eCommerce payment mean**? **Yes!**



Source: MasterCard Online Shopping Study 2012





B2C E-commerce sales worldwide by region, 2012-2017 billions

	2012	2013	2014	2015	2016	2017
Asia-Pacific	\$301.2	\$383.9	\$525.2	\$681.2	\$855.7	\$1,052.9
North America	\$379.8	\$431.0	\$482.6	\$538.3	\$597.9	\$660.4
Western Europe	\$276.8	\$308.9	\$342.0	\$374.5	\$404.0	\$432.6
Central & Eastern Europe	\$41.5	\$49.5	\$58.0	\$64.4	\$68.9	\$73.1
Latin America	\$37.6	\$48.1	\$57.7	\$64.9	\$70.6	\$74.6
Middle East & Africa	\$20.6	\$27.0	\$33.8	\$39.6	\$45.5	\$51.4
Worldwide	\$1,057.6	\$1,248.4	\$1,499.2	\$1,762.7	\$2,042.5	\$2,345.0

Note: includes products and services ordered and leisure and unmanaged business travel sales booked using the internet via any device, regardless of the method of payment or fulfillment; numbers may not add up to total due to rounding

Source: eMarketer , Jan 2014

Note: Consumers in Asia-Pacific spent more in e-commerce in 2014 than in North America making it the leading e-Commerce region in the world



NAS Brings e-Post Services: Large Neighbourhood / Home Lockers / Collection Points + 24/7 Secure Access





Sub-Saharan Africans also want Large automated Parcel Collection Lockers



Need for Larger Boxes
At Homes or Nearby or Just go to a
Collection shop centre



• LUNCH BREAK



LEGISLATIVE OBJECTIVE

1. **NAS implementation Mandate.**
2. **NAS Addressing and Naming Standard Act: Enforcement Mechanism as Basis of Law at Local/County & National Governments as Enforcers of:**
 1. Physical address numbering standard
 2. Naming standard - Roads, Estates, Houses
3. **Display of Physical Address to be mandatory and responsibility of owner for both Homes and Businesses on**
 1. Real Estate in Urban Centres must have Street address
 2. Commercial Motor vehicles
4. **Services Transaction and Financial Intelligence (Transactions/Banking/Sim-cards/Land/KRA/Motor vehicle)**
 1. Proof of residence for individuals
 2. Proof of physical address for corporate





NAS Legal Framework/Laws

1. Group 1 Laws: NAS Facilitation Laws

- Laws that facilitate implementation of NAS
 - Mandate to implement NAS
 - Laws that regulate addressing and NAS usage and management in a country to ensure order and fairness.
- **Caution:** Addressing should be regulated and managed by a Government agency or a company delegated by the mandated Government agency. Many global companies are out there in Africa listing GPS addresses of places/entities without regulation. **This should not be allowed.**



2. Group 2 Laws: NAS Management Laws

- Addressing Laws
- Laws that ensure NAS is effectively, efficiently and affordably implemented
- Laws that enforce NAS standards and processes



3. Group 3 Laws: NAS Facilitated Laws

- Laws that use NAS
- Laws that benefit from NAS





KENYA'S GROUP 1 NAS LAWS

1. 2010 Kenya Constitution Schedule 4
2. Kenya Information and Communications Act, KICA,
3. Cap 411A (2010) Regulations of KICA
4. Traffic Act: CAP403
5. Roads Authorities Acts



KENYA CONSTITUTION 2010

FOURTH SCHEDULE

(Article 185 (1))

DISTRIBUTION OF FUNCTIONS BETWEEN THE NATIONAL GOVERNMENT AND THE COUNTY GOVERNMENTS

Part 1 – National Government

18. Transport and communications, including, in particular—

(a) road traffic;

Part 2—County Governments

The functions and powers of the county are—

5. County transport, including—

(a) county roads;

(b) street lighting;

(c) traffic and parking;

County Transport:

- County Roads
- Traffic

8. County planning and development, including—

(a) statistics;

(b) land survey and mapping;

(c) boundaries and fencing;

(d) housing; and

(e) electricity and gas reticulation and energy regulation.

County Planning: Land Survey, Mapping & Housing





KENYA INFORMATION AND COMMUNICATIONS (NUMBERING) REGULATIONS, 2010

[L.N. 55/2010.]

Cap 411A

1. Citation

These Regulations may be cited as the Kenya Information and Communications (Numbering) Regulations, 2010.

2. Interpretation

In these Regulations, unless the context otherwise requires—

“communications addresses” means an address determined by the Commission from time to time, for use in communication;

“communication number” means the number, sign or other mark that a licensee uses for identification of communications systems when its delivering communication services in order to connect between the place of transmission and the place of reception, or for the identification of the type of content of transmission the communications system is to deliver;

“licensee” means a person licensed under the Act;

“Maritime Mobile Service Identity” means a number used for the purpose of identification while using Global Maritime Distress Service System search and rescue facilities on board ships;

“National Communication Numbering and Addressing Plan” means the plan for electronic communications numbers and addresses, postal codes and national addressing system established by the Commission under regulation 4;

“Numbering Scheme” means the procedures and criteria for the reservation, assignment, and reclamation of numbering resources.

3. Object and purpose

The object and purpose of these Regulations is to provide a regulatory framework for the control, planning, administration and management of the numbering and addressing of network services, national plan and applications services.

4. Establishment of a National Communication and Numbering Plan

The Commission shall establish a National Communication Numbering and Address Plan and control all communication numbers and addresses to ensure fairness and efficiency by—

- (a) undertaking planning, allocations and monitoring;
- (b) maintaining the national communication numbering and address register for all licensees in respect of resources which have been assigned;
- (c) facilitating maintenance of the national electronic address and users register;
- (d) managing postal codes and national addressing systems;
- (e) assigning call signs to all amateur radio operators in the country; and
- (f) issuing maritime mobile service identity numbers for maritime vessels registered in Kenya.

NCNAP

Regulation

Managing
NAS





5. Administration and planning of numbering and communication addresses

(1) The Commission shall control, plan, administer and manage the numbering and addressing of communications systems and services.

(2) The Commission shall develop a numbering, and addressing plan for the communications systems and services taking into account the numbering plan subsisting immediately prior to the commencement of these Regulations.

(3) In the discharge of its functions under these Regulations, the Commission shall liaise with the relevant international organizations dealing with numbering and electronic addresses.

(4) Prior to the assignment and publication of any numbering plan, the Commission shall ensure that the numbering plan—

- (a) provides for allocation of numbers to licensees in sufficient quantities in the manner determined by the Commission;
- (b) allows for numbers to be allocated without undue delay;
- (c) allows for the inclusion of as few digits as is practicable;
- (d) does not confer an undue advantage on any licensee; and
- (e) minimizes any inconvenience and costs that may be caused by the implementation of the numbering plan to a licensee and to persons using the communication systems.

(5) The numbering scheme of each licensee shall comply with the Commission's guidelines relating to the implementation of the national numbering plan.

(6) The numbering and addressing plan may set out rules which may include—

- (a) the use of different numbers and addresses for different kinds of services;
- (b) the assignment of numbers and addresses;
- (c) the transfer of assigned numbers and addresses;
- (d) the use of assigned numbers and addresses;
- (e) the portability of assigned numbers and addresses;
- (f) the requirements that licensees maintain a plan for assigning and re-assigning numbers and addresses;
- (g) the fees for the assignment and transfer of numbers and addresses which may be determined by the Commission; and
- (h) any other matters that the Commission may, from time to time, prescribe in the Gazette.

(7) The Commission may when assigning or allocating numbers to licensees charge the prescribed fees for the allocation or assignment.

(8) The Commission shall permit any person, upon paying the prescribed fee, to inspect the numbering and addressing plan during working hours.

(9) Notwithstanding paragraph (8), any person authorized by the Commission, in writing, may inspect the numbering plan without paying the prescribed fee.



6. Compliance with numbering and address plans

(1) A licensee shall apply and abide by the numbering plan prescribed by the Commission.

(2) The Commission may, before developing a numbering plan, consult with licensees in respect of—

- (a) arrangements for the allocation and re-allocation of numbers within the initial numbering plan; and
- (b) additions to, or replacement of the initial numbering plan.

(3) The Commission shall, at least six months before prescribing a new numbering plan give notice to licensees and the general public in the *Gazette* and any other media that the Commission considers appropriate.

7. Obligations of licensees

(1) All licensees shall use the communication numbers and addresses assigned by the Commission in accordance with the National Communication Numbering and Address Plan and ensure that the resources are—

- (a) utilized efficiently;
- (b) limited to provision of communication services;
- (c) utilized in a manner that ensures that communications systems and services are identified;
- (d) utilized and paid for as prescribed by the Commission; and
- (e) not transferred without the prior written consent of the Commission.

8. Communications numbering and electronic address plan

(1) The National Communication Numbering and Address Plan shall include communication numbers and addresses used to identify—

- (a) electronic communications networks;
- (b) different carries;
- (c) terminal facilities for cellular phones;
- (d) signaling transmission equipment;
- (e) emergency and inquiry calls;
- (f) terminal transmission line facilities for data communication services;
- (g) electronic mail communications networks;
- (h) types or content of information and communication technologies;
- (i) terminal transmission line facilities for paging services;
- (j) geographical postal points of delivery;
- (k) maritime mobile service identity numbers;
- (l) radio call signs; and
- (m) such other systems and services as the commission may from time to time prescribe in the *Gazette*.



Issue certificate & conditions to use

9. Assignment of communications numbers

Where an application for communication numbers or addresses is submitted to the Commission, the Commission shall, after taking into account the National Communication Numbering and Address Plan and availability of the numbers and addresses, assign and issue a certificate of assignment together with the conditions attached to the use of the communication numbers the numbers required for the communication numbers or addresses, upon payment of the prescribed fee.

10. Cancellation of assignment

(1) Where a licensee fails to use the number or address assigned by the Commission within the prescribed period, fails to pay any prescribed fees or uses the number in a manner contrary to the Regulations, the licensee shall be required to submit to the Commission the reasons for such failure, after which the Commission may take such measures as it deems fit including, among others, cancellation of the assignment.

(2) A licensee who fails to utilize a number or address assigned to it by the Commission within the period prescribed in the assignment may apply, in writing, to the Commission for the extension of the time within which the licensee ought to utilize the number or address.

(3) An application for extension of time under paragraph (2) shall include the reasons for the failure to utilize the number within the time prescribed.

11. Prohibition of generation and use of fictitious numbers and addresses

A person shall not regenerate or use fictitious numbers or addresses.



Database management

12. Delegation of responsibility

(1) The Commission may appoint a person or an organization to manage or maintain an integrated public number or address database.

(2) The Commission, or a person or an organization appointed under paragraph (1) shall provide non-discriminatory commercial access to the database on terms and conditions similar to those it offers itself.

(3) The Commission may prescribe, in the Gazette, the manner in which obligations under this regulation may be undertaken.





Q & A



DAY 2

1. Primary Addressing
2. Property Numbering & Road Naming
3. Placement of property number signs
4. Maps/ Zoning/Minimum stand (plot) size
5. Secondary Addressing
6. Informal Settlements
7. Urban & Rural, Military/Diplomatic corps/Landmarks
8. Address assignment certificates
9. Postcode : Distribution / Delivery area model
10. Designing a postcode system
11. Road Signage and Markings





NAS SYSTEM NO 1:

PRIMARY ADDRESSING:

Plot (Stand) Number + Route (Road)Name + Locality



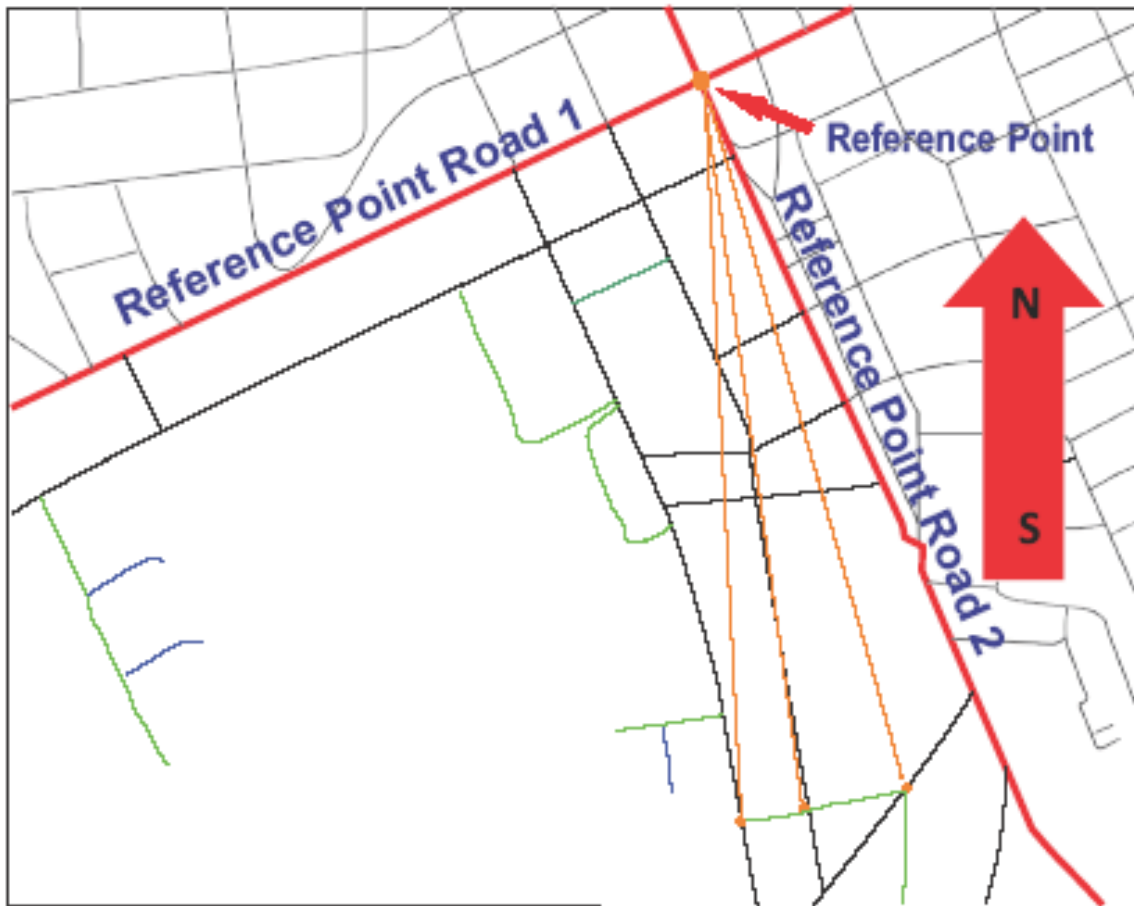
ASSIGNING ADDRESS NUMBERS TO PROPERTIES AND NAMING ROADS SYSTEM:

1. Requires GIS grid maps with list of names of property owners.
2. County (Municipality) addressing law provided for in design
3. Office based allocation exercise with site visits to ascertain driveway position and take GPS Coordinates. **Primary**

Addressee is the Title deed holder.



Numbering Reference Point



Note: Reference point includes the intersection roads.

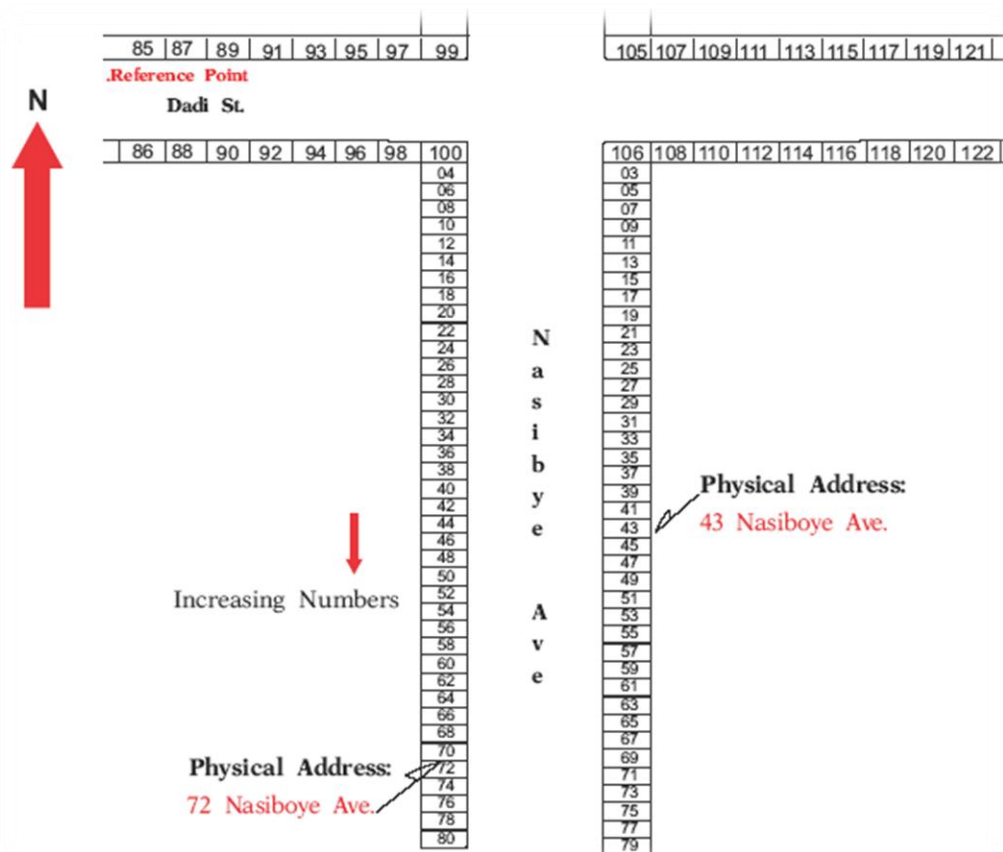
These are the points from which numbering begins in increasing order.

Therefore the term “Point” is not really a point literally.

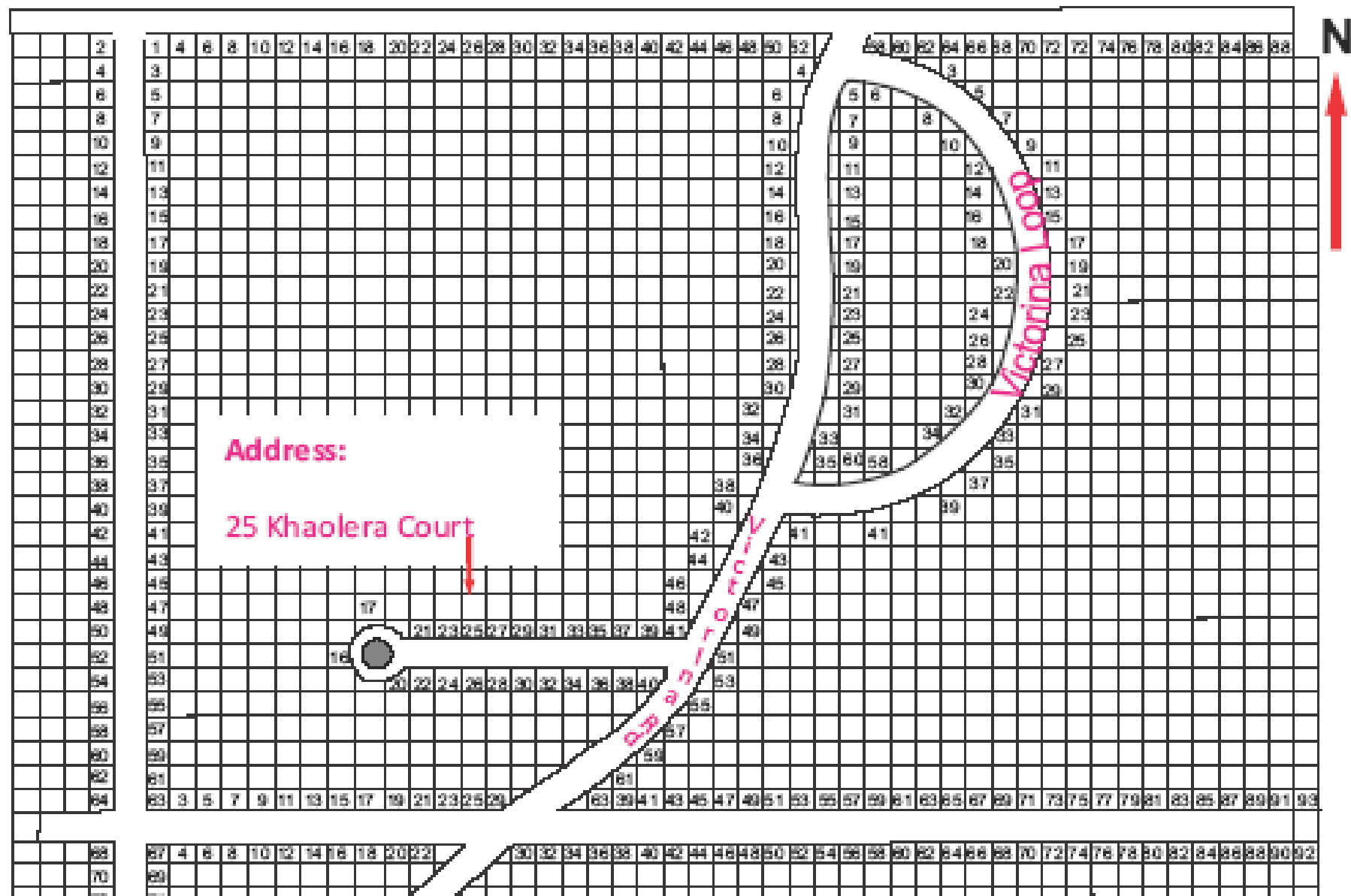
The intersection point indicates the northern direction.

1. Even numbers assigned to plots to the right side of streets as one moves away from the reference point.
2. Numbers increase as you move away from the reference point in clockwise direction.





PRIMARY ADDRESSING - NUMBERING





Extract from Eastleigh, Nairobi County Map





PRIMARY ADDRESS = PLOT NUMBER + ROAD NAME

Road Name = Assigned Name + Designation

Roads Have Distinct Start & End Points

ROAD DESIGNATIONS	COUNTY (MUNICIPALITY) ROADS	MAJOR ARTERIALS	MAJOR COLLECTOR	LOCAL STREET
EAST/WEST	Street	Street	Street	Street
NORTH/SOUTH	Avenue	Avenue	Avenue	Avenue
DIAGONAL	Road	Road	Road	Road
MEANDERING	Road	Road	Road	Road
CUL-DE-SAC	Court	Court	Court	Court
BEGINS AND ENDS ON SAME ROAD	Loop	Loop	Loop	Loop
DEAD END	Place	Place	Place	Place
NATIONAL OR CROSS-COUNTIES	Highway or Freeway	Highway or Freeway	Highway or Freeway	Highway or Freeway



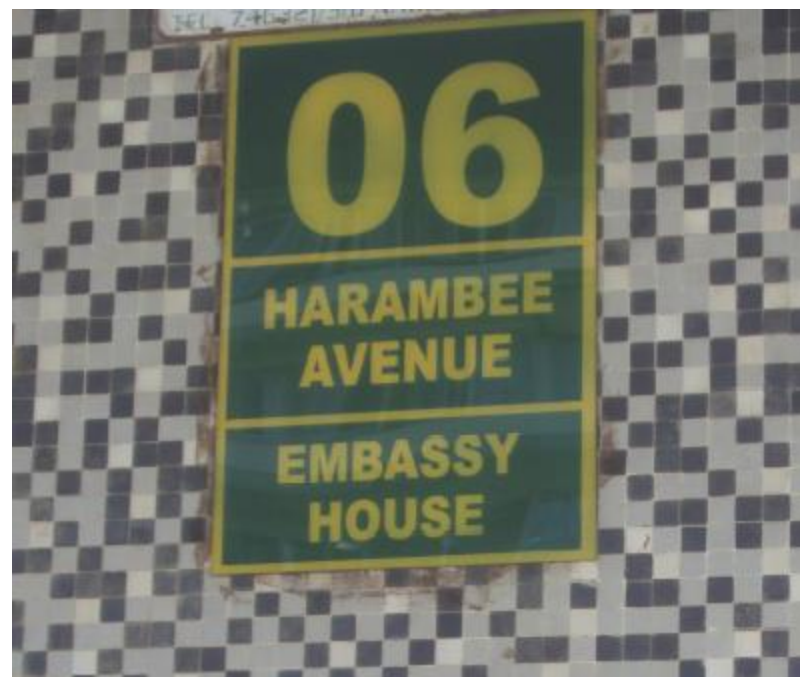
Avoid these in Road Naming

1. **Duplication** : Cosmas Street = Cosmas Avenue
2. **More than one Address** per Property e.g.
 1. 06 Parliament Road, Embassy House & 06 Harambee Avenue, Embassy House
 2. 18 & 20 Kimathi Street, Nation House
3. **Mixing even and odd** numbers on a street unless access is on different road. E.g : 22 Harambee Avenue, Agriculture House and 5 National Bank House
4. **Town/County Names** in Same Country. But foreign country Town/county names can be used. Internet search **Hotel on Mombasa Road, Nairobi** will give mixed results that include **Hotel in Nairobi Road, Mombasa** search!
5. **Single Letter** Names e.g. Road A
6. Roads bearing Road Designation e.g. **Court** Road
7. **Dashes** in Names
8. Names that can mean **abuse** in a different language or cause **anger** to communities
9. **Long names** & Names with more than **two words**
10. **Highway** must not have **several names** e.g Uhuru Highway = Waiyaki Way = Mombasa Road.....
11. **Landmark Names for roads** unless the road leads to it. **ETC.....**





Avoid Assigning Two Addresses to One Property at Junctions



Correct Address = Address on side of Entry to Parking



• MORNING BREAK



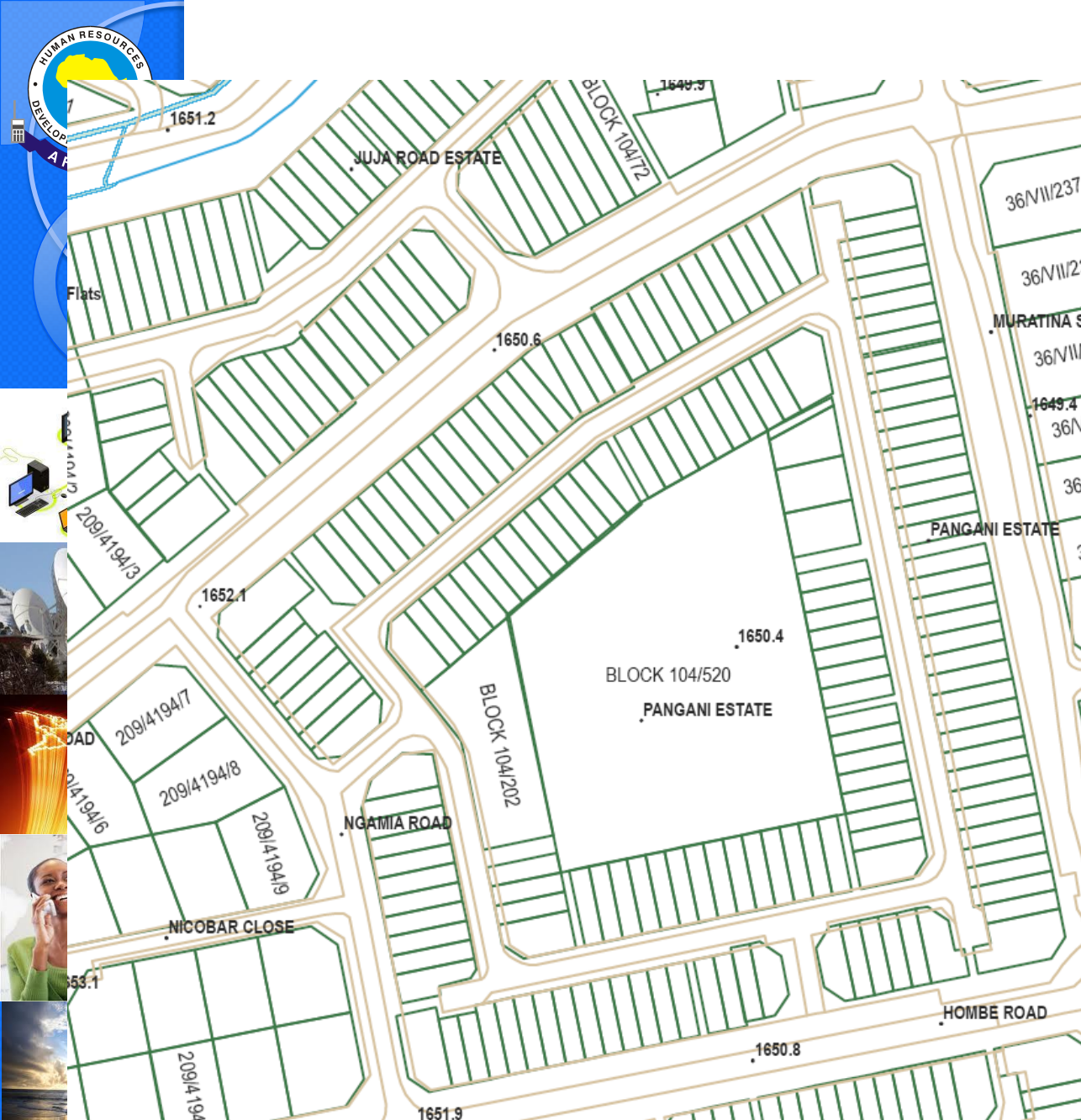
NAS SYSTEM NO 2:

SECONDARY ADDRESSING:

**Number of Occupied Space + Building Name + Plot Number
+ Road Name + Locality**



1. Requires door-to-door (floor-to-floor) registration.
2. Property owners that are listed as **Primary Addressee** will be required by CA & Addressing law to register all property tenants stating the identifier/number of the space occupied.



ESTATE SECONDARY ADDRESSING:

Pangani Estate
Nairobi

Developer:
Nairobi City
County

It will have One Primary Address
+
Secondary Addresses for individual
houses with details provided by
developer
For
Gated Community

Note: The Developer
or
Resident's Association
or
Nyumba Kumi Cluster

is the Primary Addressee (who shall
be involved)



SECONDARY ADDRESSING

FORMAL - URBAN

Mr John Juma
1023 Jenga House
7 Diani Close
Off Ole Dune Road
Kilimani
75
Nairobi



Recipient
Office Number + Building Name
Plot Number + Street Name
off a well known Street linked to the Street of the address
Locality
Postpode*1 of mailing area Note: This is optional
County Name

Number of Occupied Space
+ Building Name + Plot
Number + Road Name +
Locality

ADDRESSTYPES

1. Urban – Formal
2. Urban – Informal
3. Rural
4. Police
5. Diplomatic
6. Military
7. Universities
8. Government
Offices
9. Landmark

INFORMAL – URBAN OR RURAL

Mrs Alice Onyango
c/o Mr Joseph Onyango
33 Maendeleo Building , Sakina

Kware
Embakasi
Kware Road
off Outering Road
485
Nairobi



Recipient
c/o Mailee Registered tenant/house owner Name*1
Unit Number + Dwelling Block Identifier +
Nyumba Kumi Cluster Name/Identifier
Locality
Ward or Sub-location or Location or Costituency
Road to Dwelling
off Known Main Road
Postcode*1 of mailing area Note: This line is optional
County Name



Building Addressing

- Single Building
- Gated Complex





Highrise Office Block on Street



One Entry Numbered Blocks





Named Office Blocks in Office Park





Two Entry Office Block from Two Streets: Entry Road Can Be Named But One Address principle Must Be Maintained





Secondary Addressing Must Cover

1. Informal Settlements
2. Urban
3. Rural
4. Military (in and out of the Country)
5. Diplomatic corps (in and out of the Country)
6. Landmarks





Informal and Rural Addresses

- Community Policing (Nyumba Kumi – Kenya) Cluster Identifier Certificate signed by Landlord, Nyumba Kumi Chair and Sub-chief will be used for Informal and Rural Dwelling Proof of Residential Address





Combined: Formal and Informal and Landmark Address





PRIMARY / SECONDARY / ROAD SIGNAGE ADDRESS ASSIGNMENT & CERTIFICATION PROCESS



Note: All Developed Plots/Land and Installed Structural Property in Kenya Must Have An Address and Registered in NAS Database

1. Developed Plots/Land = Numbered Addresses + GPS Coordinates
2. Signs, Billboards, Masts on Road reserves = GPS Coordinate Addresses
3. All Road/Route Names on Road Signage Must Meet NAS Standards



NAS SYSTEM NO 3.

Postcode System for Home/Office Mail Delivery

Kenya Copyright no: 12769



Each Physical Address will belong to a Postcode area.

Mail Delivery Teams may belong to a Postcode area:

1. **County** numbering: Mombasa = 01 to Nairobi = 47
2. **Ward** numbering : Done from 001 in each County

Mailing Regions:

Central – 1, South Rift – 2, North Rift – 3,
Nyanza – 4, Western – 5, Eastern – 6,
Northern – 7, Coast – 8 South/Eastern - 9,
Nairobi Metropolitan - 0

	Symbol	Range
Region Code	R	0 - 9
County Code	Cc	01 - 99
Ward Code	Wc	001 - 999

Delivery Area		Region Code R	County Code Cc	Ward Code Wc	Delivery Postcode R Cc Wc
Port Reitz	Ward			001	8 01 001
Changamwe	Sub-county				
Mombasa	County	8	01		
Kipsonoi	Ward			003	2 36 003
Sotik	Sub-county				
Bomet	County	2	36		



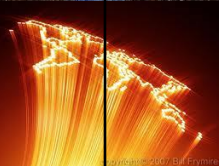
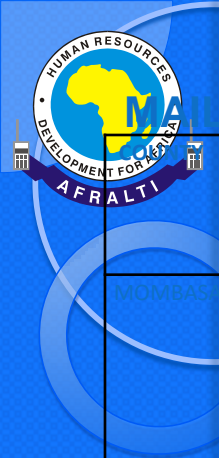
Each Country is Unique

and

requires its

own Postcode template





MAIL DELIVERY POSTCODE FOR MOMBASA COUNTY

	SUB-COUNTY	WARD	REGION CODE	COUNTY CODE	WARD CODE	RECOMMENDED DELIVERY POSTCODE (Ward Based)
	Changamwe	Port Reitz	8	01	001	801001
		Kipevu	8	01	002	801002
		Airport	8	01	003	801003
		Miritini	8	01	004	801004
		Chaani	8	01	005	801005
	Jomvu	Jomvu Kuu	8	01	006	801006
		Magongo	8	01	007	801007
		Mikindani	8	01	008	801008
	Kisauni	Mjambere	8	01	009	801009
		Junda	8	01	010	801010
		Bamburi	8	01	011	801011
		Mwakirunge	8	01	012	801012
		Mtopanga	8	01	013	801013
		Magogoni	8	01	014	801014
		Shanzu	8	01	015	801015
	Nyali	Frere Town	8	01	016	801016
		Ziwa La Ngombe	8	01	017	801017
		Mkomani	8	01	018	801018
		Kongowea	8	01	019	801019
		Kadzandani	8	01	020	801020
	Likoni	Mtongwe	8	01	021	801021
		Shika Adabu	8	01	022	801022
		Bofu	8	01	023	801023
		Likoni	8	01	024	801024
		Timbwani	8	01	025	801025
	Mvita	Mji Wa Kale/Makadara	8	01	026	801026
		Tudor	8	01	027	801027
		Tononoka	8	01	028	801028
		Shimanzi/Ganjoni	8	01	029	801029
		Majengo	8	01	030	801030



• LUNCH BREAK



Road Communication Device Standards:

1. Destination Direction Road Signs & Markings
2. Safety Signs: Regulatory Traffic Signs
3. Sign Information Accuracy, Ability to be seen & Legibility





Mail Delivery Service Measurement Parameters



Additional cost of doing business in terms of:

1. **Communication** - Checking with customers to get accurate location
2. Prolonged **Turn Around Time (TAT)** due to time spent locating actual delivery point
3. **Productivity cost** - Efficiency and utilization of resources



ROAD SIGNAGE AND MARKINGS

Provide:

1. **EFFECTIVELY COMMUNICATE TO ROAD USERS**
2. **ENSURE ROAD SAFETY and**
3. **COMPLEMENT PRIMARY ADDRESSING SYSTEM through:**
 - a. **Safety Guidance - Regulatory and Warning signs**
 - b. **Destination and Direction Information Signs**
 - c. **Command to action from all road users – Temporary Signs**



THIS ROLE DEMANDS HIGH PRIORITY FROM

ROADS MANAGERS AND PUBLIC COMMUNICATION REGULATORS



4. ROAD SIGNAGE AND MARKING

How is signage done for a complicated interchange to ensure efficiency?

Incorporating:

1. Accurate Guide Signs
2. Lack of sign crowding

IF YOU TAKE THE WRONG LANE
you get lost and loose a lot of time!





Roundabout Signage can easily be designed without Lane destination design.



Letter size and structure type signage for walking people. Not for moving cars on dual carriage way highway



ROADS SERVE:

1. **The “stranger”**: First time road user. Does not know the route well
2. **The “local stranger”**: This user wants to reach a new place in his locality for the first time but broadly is familiar with area.
3. **The “local veteran”**: This user knows every part of the road. He regularly uses the road and is familiar with the area
4. **The sharp eyed “Young” and the blurred eyed “Old”**





iPOST ROAD SIGNAGE

CONCEPT:

DESIGN

FOR THE “STRANGER” and THE “OLD”

NOT

THE “LOCAL VETERAN” AND THE

“YOUNG”





DRIVER RESPONSE to a sign depends upon the driver's ability to:

1. **Detect** the sign,
2. **Read the full message** on the sign and
3. **Understand** the message and
4. **React timely** to the sign before the point of action.

THE DRIVER is able to obey the sign depending on:

1. Time he needs to make manoeuvres that may include changing lanes and Reducing speed.
2. This is subject to vehicle speed and weight

Total time needed for driver to react to a sign =

Reading Time + Reaction Time + Maneuver Time



Legibility Distance and Letter Height

American Association of State Highway Transport Officers, AASHTO's *"Manual of Uniform Traffic Control Devices – Millennium Edition"*, in 2000, established a guideline that for every 25 mm of text height, 12 m viewing distance is required.



This takes into account older drivers traveling on highways.

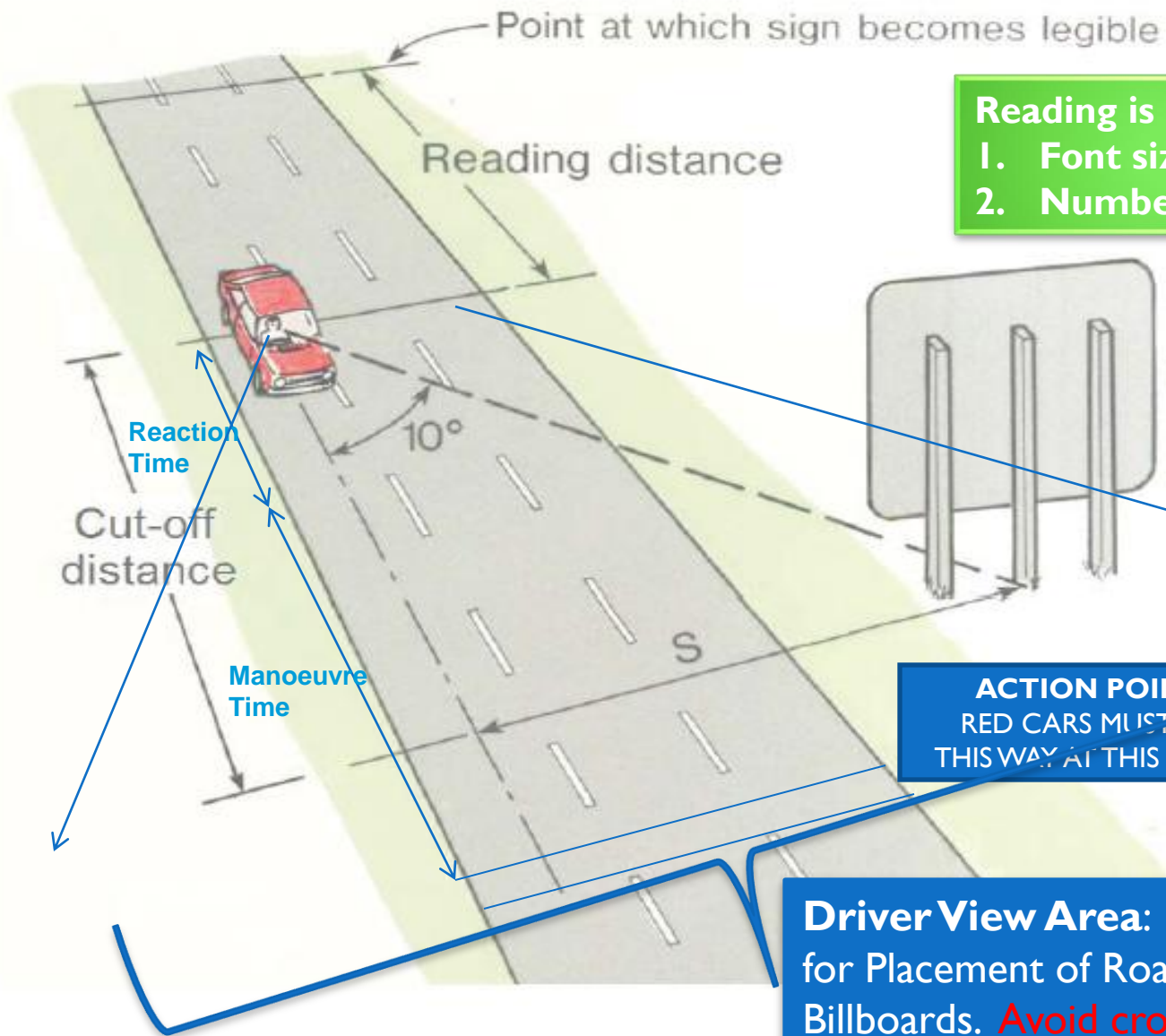


Canada's, TAC's *"Supplemental Guide for Guide and Information Signs"* also adopted these guidelines for legibility distance requirements



In case of Younger people: for every 25 mm of text height, 15 m viewing distance is required.





Reading is subject to :

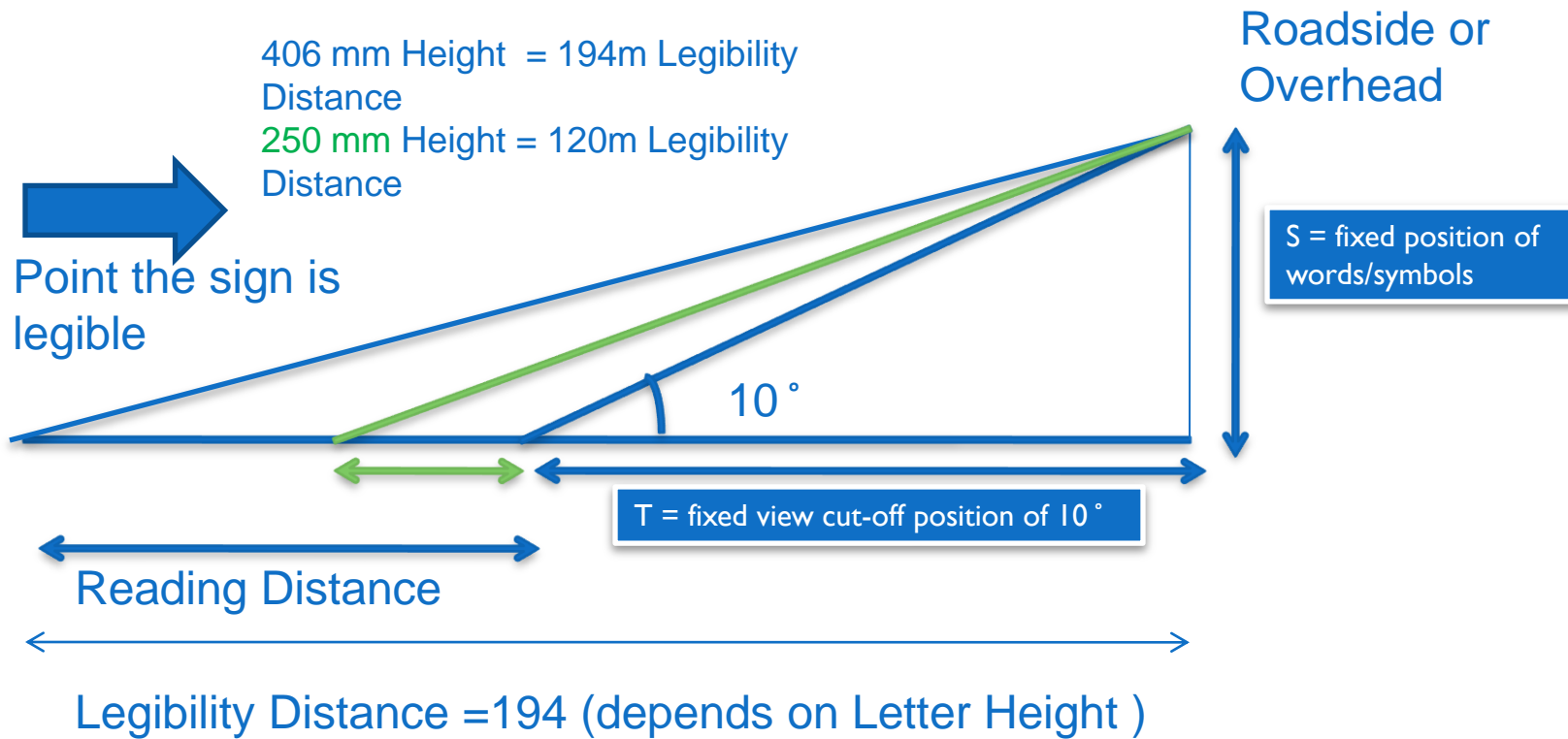
1. Font size & spacing
2. Number of words

ACTION POINT:
RED CARS MUST GO
THIS WAY AT THIS POINT

Driver View Area: Control Area
for Placement of Road Signage and
Billboards. **Avoid crowding signs**



READING DISTANCE



Driver should be able to read without moving the head by more than 10° either:-

1. sidewise (Roadside) or
2. upwards (Overhead)





EXTRACT: TAC'S : SUPPLEMENTARY GUIDE FOR GUIDE AND INFORMATION SIGNAGE IN CANADA

TABLE 2.1 – 2.4

Table 2.1 – Reading Distance (m)

No. of Words*	Speed (km/hr)							
	40	50	60	70	80	90	100	110
2	11	14	17	19	22	25	28	31
3	17	21	25	29	33	38	42	46
4	22	28	33	39	44	50	56	61
5	36	45	54	63	72	81	90	99
6	42	52	63	73	83	94	104	115
7	47	59	71	83	94	106	118	130
8	53	66	79	92	106	119	132	145
9	67	83	100	117	133	150	167	183
10	72	90	108	126	144	163	181	199
11	78	97	117	136	156	175	194	214
12	83	104	125	146	167	188	208	229
13	97	122	146	170	194	219	243	267
14	103	128	154	180	206	231	257	283
15	108	135	163	190	217	244	271	298

Notes:

- * 1 symbol is equivalent to 2 words
- Reading Time: 0.5 s per critical word or 1.0 s per critical symbol
- Minimum Reading Time: 1 s
- Glance Time: 0.75 s after every group of 4 words or equivalent

Table 2.2 – Reaction Distance (m)

Complexity of Environment *	Speed (km/hr)							
	40	50	60	70	80	90	100	110
Low	11	14	17	19	22	25	28	31
Medium	14	17	21	24	28	31	35	38
High	28	35	42	49	56	63	69	76

Notes:

- * Reaction Times: 1.0 s for low complexity, 1.25 s for medium complexity, 2.5 s for high complexity





Table 2.3 – Lane Change Distance (m)

Road Type *	Speed (km/hr)							
	40	50	60	70	80	90	100	110
Non-Freeway	62	78	93	109	124	140	156	171
Freeway	80	100	120	140	160	180	200	220
Notes: 1. * Gap Search Times: 1.8 s for non-freeway, 2.7 s for freeway. 2. Lane Change Time: 3.8 s for non-freeway, 4.5 s for freeway to account for heavier truck traffic								

Table 2.4 – Speed Reduction Distance* (m)

Initial Speed (km/h)	Final Speed (km/h)										
	100	90	80	70	60	50	40	30	20	10	0
110	33	63	90	114	134	152	166	177	185	189	191
100		30	57	80	101	118	133	144	152	156	158
90			27	51	71	88	103	114	122	126	128
80				24	44	62	76	87	95	99	101
70					21	38	52	63	71	76	77
60						17	32	43	51	55	57
50							14	25	33	38	39
40								11	19	24	25
Notes: 1. * Deceleration speed: 8.8 km/(hr*s)											

Note: Tables 2.1 to 2.4 are from TAC's "Supplementary Guide for Guide and Information Signage in Canada".

Table 3.3 – Letter Sizes for Overhead and Ground Mounted Urban Freeway Guide Signs

Message Detail	Urban Freeway & Expressway mm (inches)		Arterial mm (inches)		Collector Road & Service Road mm (inches)	Interchange Ramp & Access Road mm (inches)
	Overhead	Ground Mount	Overhead	Ground Mount	Ground Mount	Ground Mount
Main Destination / Name (i.e. Community Name, Route Name, Cross Street, Major Airport)	406 (16")	330 (13")	330 (13")	254 (10")	254 (10")	254 (10")
Secondary Information (i.e. Shopping Centre, Zoo, Stadium, Other Major Trip Generator)	330 (13")	-	254 (10")	-	-	-
Cardinal direction	330 (13")	254 (10")	254 (10")	203 (8")	203 (8")	203 (8")
Distance units (i.e. "km", "m")	330 (13")	254 (10")	254 (10")	203 (8")	203 (8")	203 (8")
Exit number	330 (13")	254 (10")	-	-	-	-
Route number in shield	330 (13")	254 (10")	254 (10")	203 (8")	203 (8")	203 (8")
Notes: 1. For complex situations where there are non-standard offset distances, clearance heights or large messages, refer to the TAC Supplemental Guide for Guide and Information Signage in Canada.						



DAY 3

Field Visit: (agree on
SCOPE / ARRANGEMENTS
with AFRALTI)



Make Visits : Separate Groups to:



- Post Office (P.O. Box)
 - I. Delivery for e-commerce business
 - I. Current system
 - II. Challenges
- Courier company operations office
 - I. Delivery for e-commerce business
 - I. Current system
 - II. Challenges
- Streets with Physical Addresses/Names
 - I. Numbering & Road naming & Route code
 - I. Current system
 - II. Display of signs; any obvious standards? Who is responsible?
 - III. Challenges
- Roads with traffic signs & billboards
 - I. Overhead
 - I. Drive at legal speed and read the sign. How many words are read? Is the message clear? Are they crowded? Letter height? Legibility Distance? Reading Distance allowed? Advance signage? Sequenced?
 - II. Challenges
 2. Road side Signs
 - I. Are they visible?
 - II. Drive at legal speed and read the sign. How many words are read? Is the message clear? Are they crowded? Letter height? Legibility Distance? Reading Distance allowed? Advance signage? Sequenced?
 - III. Challenges
- Road Junction & intersection
- Slum /informal settlement



• Assemble

- Prepare for visit

- To List during the visit ;

1. What is seen/established to Addressing Principles, Standards and Laws
2. What requires to be improved/changed



• LUNCH BREAK



Discuss the Visit:

➤ Group Reports

➤ Q& A



DAY 4

- **Case Study: Thika Super-Highway Road Signage**
- **Best practices of Road signage**
- **Use of Primary/Secondary addresses**
- **Proof of Physical Address**





South African National Rural Road. This is not a new road!

Just well maintained through routine maintenance contracts awarded by SANRAL on a point system that rewards skills development and use of local SMMEs and labour. SANRAL provides skills training and development training to the contracted SMMEs.



Example of Poorly Maintained Signs



THINK OF A STRANGER

1. What is the message?
2. Can one see Ruiru?
3. How about cleanliness?
4. Illegal signs on the road?
5. Have since been removed/ Vandalized.



Example of Interference to Driver's Attention in Driver's View Area to see critical Traffic road signs



Remember :

1. Does not conform to restricted number of words and symbols in driver's view
2. Increased items demanding driver's attention





ROUTINE ROAD MAINTENANCE: SANRAL EXAMPLE

The South African national road network = 21,403km managed by SANRAL (South African National Roads Agency Limited). Total South African road network = 750,000km .

SANRAL has operational **routine maintenance contracts for every kilometre** of the **national road network**. Contract work for routine maintenance includes:

1. patching potholes;
2. sealing open cracks;
3. repairing and cleaning existing drainage systems;
4. repairing and renewing fences,
5. **road signs,**
6. **road studs and guardrails;**
7. burning firebreaks;
8. maintaining trees and shrubs to protect
9. controlling weeds and litter; and
10. assisting in an emergency.

Imagine jobs **THAT** can create in rural areas, lives that can be saved, **CONTROL** of Potholes, and **CONTROL** of vandalism?

At least 80 percent of this work is allocated to SMMEs, of which 90 percent are black-owned firms. **The routine road maintenance contracts** are allocated on a point system that rewards skills development and the use of local SMMEs and labour. **Source Page 40: SANRAL Annual report 2015. www.sanral.co.za**





SOUTH AFRICAN SPACING STANDARDS FOR ADVERTISING BILLBOARDS

Large billboards must be spaced as follows:

On a national road where a speed limit of more than 80 km/hour has been imposed	At least 250 metres apart and at least 250 metres from any product replica or three dimensional advertisement when in view of each other or of such product replica or three dimensional advertisement and on the same side of the national road, and at least 200m from any road traffic sign.
On a national road where a speed limit of more than 60 and up to 80 km/hour has been imposed	At least 200 metres apart and at least 200 metres from any product replica or three dimensional advertisement when in view of each other or of such product replica or three dimensional advertisement and on the same side of the national road, and at least 100m from any road traffic sign.
On a national road where a speed limit of 60 km/hour or less has been imposed	At least 120 metres apart and at least 120 metres from any product replica or three dimensional advertisement when in view of each other or of such product replica or three dimensional advertisement and on the same side of the national road, and at least 50m from any road traffic sign





Table 3.3 –Letter Sizes for Overhead and Ground Mounted Urban Highway Signs

Message	Urban Highway Road		Arterial Road		Collector & Service Road	Interchange Ramp & Access Road
	Overhead mm(inches) Used on Multi-Lane Roads	Ground Mounted mm(inches)	Overhead mm(inches)	Ground Mounted mm(inches)	Ground Mounted mm(inches)	Ground Mounted mm(inches)
Main Destination/ Name (Area name, Road Name, Crossing Road, Airport/Railway/Bus park)	406(16")	330(13")	330(13")	254(10")	254(10")	254(10")
Secondary Information(Shopping centre, Stadium, Game park, Other trip Generators)	330(13")	-	254(10")	-	-	-
Cardinal direction (EXIT NORTH etc are written in uppcase letters only	330(13")	254(10")	254(10")	203(8")	203(8")	203(8")
Distance (km,m)	330(13")	254(10")	254(10")	203(8")	203(8")	203(8")
Exit number	330(13")	254(10")	-	-	-	-
Road number (Road Marker)	330(13")	254(10")	254(10")	203(8")	203(8")	203(8")

By Adopting Canada 's Standard



MESSAGE TYPE: Main Destination/ Name (Area name, Road Name, Crossing Road, Airport/Railway/Bus park)



ROAD CATEGORY	MOUNTING	SPEED LIMIT Km/h	LETTER HEIGHT mm	READING DISTANCE m	MAXIMUM NO OF WORDS	Placement Sides
Urban Highway Multi-Lane	Overhead	50	406	195	22	
	Overhead	100	406	195	11	
	Ground	50	330	158	17	Left and Right Sides of Road
	Ground	100	330	158	9	
Arterial Multi-Lane	Overhead	50	330	158	17	
	Overhead	100	330	158	9	
	Ground	50	254	122	13	Left and Right Sides of Road
	Ground	100	254	122	7	
			200			
			200			

NOTE:

1. One symbol = Two Words
2. Always place an advance sign 1 km away plus a confirmation sign.



Designing Direction Signs at Interchanges



Multi-lane Interchange Signage is governed by **lane destination plan** controlled by road markings of the approaching lanes .

Unlike Roundabouts Signage that use the roundabout overall plan on signs, in the case of interchanges, the interchange overall plan cannot be used.

TAKING A WRONG LANE AT THIS TYPE OF INTERCHANGE ON A FREEWAY CAN LEAD TO 30 minute or longer time wastage!



Limit distraction to regulatory signs:

1. No Advertising signs to be within 1.2 km from a Multi-Lane Intersection or Interchange from any direction.
2. No advertising sign to be 200m in vicinity of Regulatory, Warning, Direction/Destination Signs from any direction





• MORNING BREAK

CASE STUDY: THIKA SUPER-HIGHWAY SIGN



Observation: Fig 4

1. The fonts appear small.
2. The signage is crowded. 52 words = (2x 6 symbols + 40 words)
3. Lane 3 and Lane 4 has a **Commercial Vehicle Prohibitive sign** but may not be seen by drivers!
4. A1 and A109 routes are not immediately accessible from A2.
5. "Stranger" or foreign Drivers on this route, are likely to look out for A1: Kisumu and A109: Mombasa routes when they leave the route A2

Fig4

Photo taken when the road was newly opened





Design Analysis: Thika Super-highway Sign

Using sign conditions when the road was new = **6 symbols (6*2=12words)** and **40 words**, **100 km/h speed**, **medium complex environment**, requires **3 lane changes** from the **furthest lane**, and the **exit is traveling at approx 30 km/h speed** (to be able to stop at give way sign on service road considering the distance provided).



Total Distance Required to inform the driver for a sign placed at the exact turning point = (**Reading Distance** = $100/100 \times 181 \times 52/10 = 941.2$ m (Table 2.1) + **Reaction Distance @ 100Km/h** = 35m (Table 2.2) + **3 Lane Changes Distance** = $200 \times 3 = 600$ m (Table 2.3) + **Deceleration Distance 100 to 30 Km/h** = 144 m (Table 2.4)) = **1720.2 m**.



Based on the practice of using **25 mm text height for every 12 m** of viewing distance, the required text height would need to be $1720.2 \text{ m} \times 25 \text{ mm} / 12 \text{ m} = \mathbf{3583.75 \text{ mm}}$ in size to be viewed at a distance of **1720.2 m**.





TEXT HEIGHT = 3583.75mm IS NOT PRACTICAL

Alternative:

1. Introduce an Advance sign having smaller text at a location upstream of the exit.
2. Reduce number of words to conform to known international standards and practice for ability to read fixed words on roadside while in a moving vehicle.

Design 1: Use 250mm LETTER HEIGHT

Viewing distance will be: $250 \text{ mm text} * 12 \text{ m}/25 \text{ mm text} = 120 \text{ m}$ for “Aged” but 150 m for “Young” people. But our design principle is to design for “Aged” .

Using Table 2.1: Maximum Number of words Read over 120 m range at 100km/h = 7 words

WITH ADVANCE SIGN OF 7 WORDS

Total Distance to Exit 7 from the point of viewing a sign of 7 words = Reading Distance of 120m + Reaction Distance of 35m (Table 2.2) + 3 Lane Changes Distance of 600m (Table 2.3) + Deceleration Distance of 144 m (Table 2.4) = 899m.

The exit cannot be closer than $899\text{m} = 0.899 \text{ km}$ from sign viewing point.

Rounded to the nearest full digit km = 1km





Design 2: Use 406 mm (16") LETTER HEIGHT

Viewing distance will be: $406 \text{ mm text} * 12 \text{ m/25 mm text} = 194.88 \text{ m}$.

Using Table 2.1: Maximum Number of words Read over 194m range at 100km/h = 11 words

WITH ADVANCE SIGN OF 11 WORDS

Total Distance to Exit 7 from the point of viewing a sign of 11 words = **Reading Distance** of = $194.88\text{m} + \text{Reaction Distance of } 35\text{m (Table 2.2)} + 3 \text{ Lane Changes Distance of } 600\text{m (Table 2.3)} + \text{Deceleration Distance of } 144 \text{ m (Table 2.4)} = 973.88\text{m}$.

The exit cannot be closer than $973.88\text{m} = 0.97388 \text{ km}$ from sign viewing point!

Rounded to the nearest full digit km = 1km

Note: Increasing the letter height increases the number of words. Many countries including, Canada, use 406 mm letter height to maximize the number of words.

406mm letter height puts the advance distance to 1Km almost at the exact point! It however limits the number of words to 11.





Sign 1: Sited 1.2 km from Exit 7



Total words =
 I symbol (1*2) + 9
 =
 II Words
 (Company Logo = 1 word)



Total words =
 I symbol
 (1*2) + 9 =
 II Words

Sign 3: Sited 500 m from Exit



Total words =
 I symbol (1*2) + 9 =
 II Words



A2

Sign 4: Sited
200 m from Exit

Exit 7
Garden Estate

Kasarani

140

Nairobi 9 Km
Nakuru
Mombasa

Total words =
1 symbol (1*2) +
9 =
11 Words

Sign 4: Sited
At Gore of Exit

Exit 7

A2

Sign 5: Sited
200 m after Exit

A104

Nairobi 8
Km
Namanga

Kasarani

140

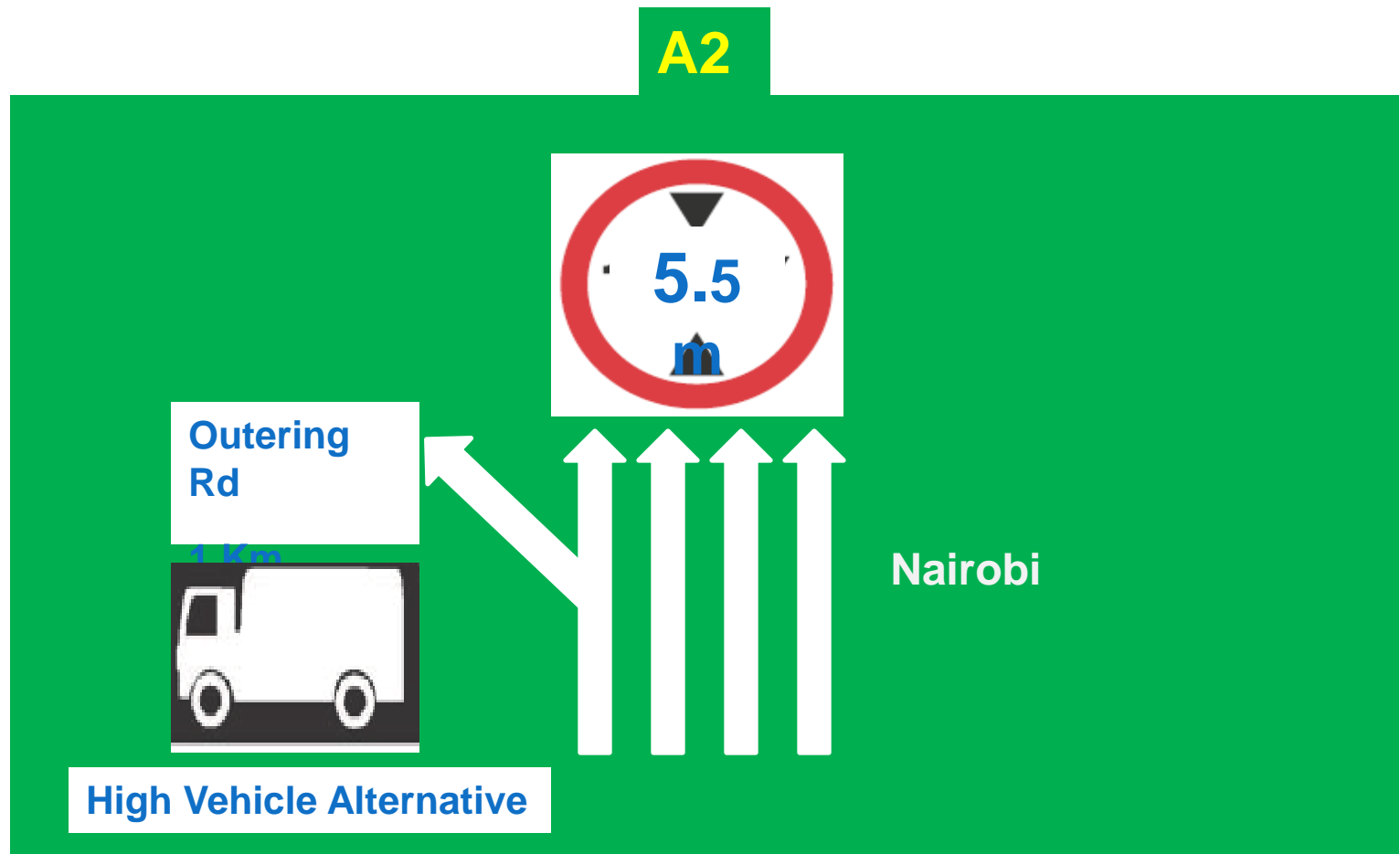
A104

Nakuru
Kisumu
Eldoret

Total words =
1 symbol (1*2) +
9 =
11 Words



Placed 1 Km from All Alternative Exit Points



Truck Speed 80 Km/h, Maximum words = 14

Placed 1 Km from Outering Rd Exit Total words = 3 symbols (3*2) + 8= 14 Words

Note: These sign is for commercial truck drivers whose maximum speed is 80 Km/h



• LUNCH BREAK



Example of Sequenced Road Signs with information flow and a un-Crowded Driver's View



Source:
SANRAL Report 2015
Page 95

**Notice
Adherence to
Limiting
Number of
Words**



Note: Reading distance dictates positioning of exits or mergers!



SIMILAR DESIGN: N1 FREEWAY (PRETORIA TO JOBURG)

NOTE:

1. Exit to R101 is 1km away. But they use same structure to confirm Brakfontein Rd
2. A confirmation sign for R 101 can be seen ahead
3. Midrand Industrial Town is on the way but not listed!
4. Soweto.....Durban are South after Joburg but not listed.
5. Information in white "CENTURION" confirms the area and Road section code





ROAD vs ROUTE

Due to lack of NAS in Kenya.
Road Signage has made



ROUTE = ROAD
and



ROAD NUMBER = ROUTE NUMBER.



This is not the Case.





Road /Route Classification and Function

Function	SA		USA	GREAT BRITAIN
POLICY MANUAL	RCAM 2010 [COTO 2010] Road Class	Route No & Limitations	Highway functional classification [AASHTO 1964, FHA 1989]	Great Britain ordnance survey [DfT, HA]
Mobility	Class 1: Principal Arterial, Freeway, motorway, expressway, highway, national road, trunk road, primary level road (4 / 6 / 8 lane freeway)	N Speed: 120 km/h Interchange only No Parking/Bus off-load, emergency lane. No access to property.	Class 1: Principal arterial system, interstate highways, Freeway, expressway,	Motorway, Trunk roads
	Class 2: Major Arterial, secondary roads, primary distributors, regional distributor, provincial road, super street, principal / strategic / primary arterial, highway, (4 / 6 lane divided, kerbed)	R/N Speed: 120 km/h Co-ordinated traffic signal, Interchange No Parking/Bus off-load at intersections, emergency lane. No access to property.	Class 2: Strategic arterial, primary arterial, Roadway of statewide importance	A-road, Principal road
	Class 3: Minor Arterial, tertiary route, link road, district distributor, main road 4 lane divided or undivided, kerbed	R/M Speed: 100 - 120 km/h Co-ordinated traffic signal, roundabout No Parking/Bus off-load at intersections, emergency lane. No access to property.	Class 3: Minor arterial, Secondary arterial, Roadway of regional importance	B-road
Access/ Activity	Class 4: Collector road-street system, major / minor collector, local distributor, street, district road, rural secondary road	No Route number. Speed: 80 - 100 km/h Traffic signal, roundabout or priority Parking allowed/ Bus stops allowed. Access to property okay.	Class 4 or 5: Collector road-street system, major (4) and minor (5) collector roads, District roadways	C-road, minor roads
	Class 5: Local road-street, local residential street, residential road, rural tertiary road, rural access road 1 / 2 lane Plus parking, mountable kerbs	No Route number. Speed: 60 - 80 km/h mini-circle or priority Parking allowed	Class 5 or 6: Local road-street system,	Local street, alley, private road with or without public access
	Class 6: Terminal and transfer facilities, Pedestrian priority / pedestrian (only) street, parking lot, pedestrian walk, mall road, path	No Route Number, No vehicles, pedestrian signal	No comparison	Pedestrianized street with restricted access



DIFFERENTIATOR

ROUTE

ROAD

1. Publicly Known Destinations - Specific	Yes. Start and end points always have a name	Not Necessarily. Start and end points may not even have a place name!
2. Has a Distinct and Discernable Start Point Feature	Yes. The feature always has a name or word for it	Not necessarily. It can have GPS Coordinate start point not discernable visually.
3. Has a Distinct and Discernable End Point Feature	Yes. The feature always has a name or word for it	Not necessarily. It can have GPS Coordinate start point not discernable visually.
4. Can have more than two distinct and discernable roads that are not linked continuously but have the same Number or identity	No.	Yes.
5. Always numbered	Not all routes should be numbered. For numbered ones, the numbers are linked to whether it is National, Regional, or Urban route	Always numbered. The identification number is linked to its technical class
6. Name can be coined by combining Start and end point position names	No. Route names are governed by NAS Road naming standards.	Yes.



The table below shows a summary of road classification in Kenya:

Functional Class	Rural Roads			Urban Roads	
	Road Class	Administrative level Indicator	Functional Class	Road Class	Functional Class
Arterial or Trunk	A	International	Major Arterial	H	Major Arterial
	B	Inter-Provincial	Minor Arterial	J	Minor Arterial
Collector	C	Inter-District	Major Collector	K	Major Collector
	D	Inter- Divisional	Minor Collector	L	Minor Collector
Local	E	Inter-Location	Major Local	M	Major Local
	F	Inter-Sub-location	Minor Local	N	Minor Local
	G	Intra-Sub-location	Local Access	P	Local Access

Note: In addition to above classification, a new future class of road, Named Rural Class S (Super highway) has been introduced. Traffic signs associated with this class are discussed in detail in chapter 3 of this manual (Motorway).



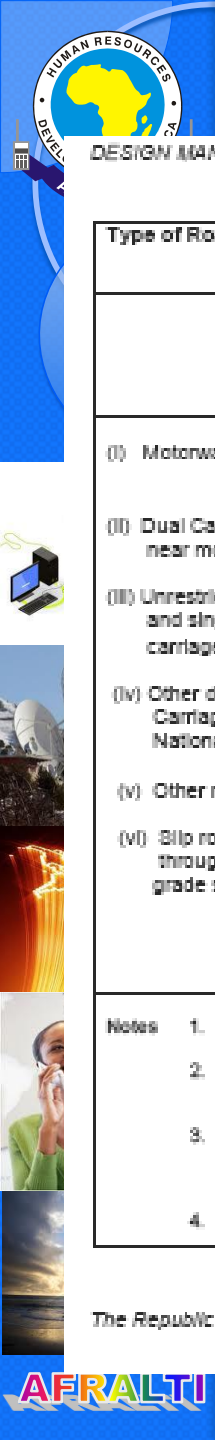
Table 2.1 - Colour Schemes for Directional Signs

Route Indicated (Functional Class)	Background Colour	Colour of Text, Borders, Arrows and Chevrons	Colour of Route Number
Arterial or Trunk	GREEN	WHITE	YELLOW
Collector	WHITE	BLACK	BLACK
Local	WHITE	BLACK	BLACK



Traffic Act, Cap403; Part V: 42(3);
(50 km/h Blanket Speed Limit) *No person shall drive, or, being the owner or person in charge of a vehicle, cause or permit any other person to drive, any vehicle at a speed exceeding fifty kilometres per hour on any road within the boundaries of any trading centre, township, municipality or city:*

There is Need to review this clause if we have to build By-passes and freeways through Nairobi and other Cities.



Type of Road	Advance Directions signs			Direct signs		Route Confirmatory signs	Route Directions signs	Route Marker signs	Town and Village signs
	x-height(mm)	Distance of signs from intersection (m)	Clear minimum visibility distance of sign(m)	x-height(mm)	Clear minimum visibility of sign (m)	x-height (mm)	x-height (mm)	x-height (mm)	x-height (mm)
(i) Motorways	250 (200)	Standard siting	180	200 (150)	140	200 (150)	–	–	–
(ii) Dual Carriage roads built to near motorway standards	200(150)	Standard siting	180	200 or 150	110	150	–	120(150)	–
(iii) Unrestricted dual carriageways and single three-lane carriageways	200(150)	230 (note 1)	140	(note 2) 150 Or 100	110 (75)	150	–	120(150)	–
(iv) Other dual and single Carriageway roads on National Routes	150(120)	150 (Note 1)	110	100 (Note 3)	75	120 (150)	100 (80)	120 (100)	100
(v) Other roads							100 (80)	–	100 (80)
(vi) Slip roads leading from the through carriageway at grade separated junctions	100 (80) 100 (80)	50 50 or halfway along slip road/which ever is less	60	100 (80) (50)	30	100 (80)			
<p>Notes</p> <ol style="list-style-type: none"> 1. These distances apply to level roads: they should be decreased on uphill gradients and increased on down hill gradients 2. The smaller sizes may be used at junctions where traffic speeds are generally less than on the open road, for example at roundabout exits or where there is real difficulty in siting the larger size 3. In lieu of the 100mm x-height a specially reduced 80mm x-height can be used if lack of space forbids the use of the larger Size: for advance direction signs other than roundabout signs if a map type sign with 100mm x-height is too large a 100mm stack type sign is to be preferred to a 80mm x height map type sign. 4. The route marker sign follows the normal rules for route confirmatory sign: height at 50 mm should only be used at Local road junctions or restrictive junctions. 									

Table A2.1- Letter Sizes and Siting Details of Directional Information Signs

Table 6.1 - Sizes of Warning Signs and Their Siting Details

85%ile Approach Speeds of Private Cars	Type of Road	Dimensio n of Side	Siting Distance of Sign From Hazard	Advisable Clear Visibility Distance of Signs	Advisable 'x' – height for Supple- mentary Plates
(Km/h)		(mm)	(m)	(m)	(mm)
<50	Urban & Rural Single Carriageway Roads	600 (900)	50-100	60	60
50-65	Urban Motorways & Urban Dual Carriageways	900	100-200	75	75
>65	Rural Motorways& Rural Dual Carriageways	1200	200-300	100	100

Where the geometry of the road dictates it, opposite hand versions of the signs may be used.

7.2 SITING

1. Need to read and understand sign in sufficient time to react .
Do not obscure

Drivers must be able to read and understand a sign in sufficient time for them to safely react to its message. In order that this can be achieved, signs should be sited at the correct distance before the hazard, junction or other site to which they relate. It is also essential to ensure that signs are in fact visible from these distances and not obscured by intervening obstructions.

2. Need to adhere to standard siting distance

In siting signs, the advice given in individual chapters should be closely followed although it will not always be possible to adhere precisely to these standards due to site limitations. Variations from the standard siting distance of up to 10 percent are generally acceptable. Variations greater than 10 percent are only permissible if no other option is available.

3. Deal with obstructions to clear visibility

Steps should be taken to deal with obstructions to the clear visibility of signs. Overhanging trees and shrubs should be cut back and bus stops moved if necessary. Standing vehicles that continually mask a sign may have to be prohibited. Subsequent building development and other features such as shop signs and blinds should not be allowed to obscure traffic signs once they are erected.

4. Advertisements behind or near signs prove distracting

Signs may lose their effectiveness because of their setting. Smaller signs may fail to stand out against a background which is variegated and colourful and others may be overpowered by a stronger background. Advertisements behind or near signs may prove distracting. Poor and distracting backgrounds should be partially screened in an appropriate manner e.g. planting or the provision of backing boards on signs.



Q&A



DAY 5

- **Implementing NAS: Strategy**
- **Business from NAS**
- **Database management Applications**
- **General Review: last 4 Days Work**





NAS Project Launch

National Addressing System for Kenya



**There will be
surmountable
teething issues
early stages.**



Launch the project in phases



NATIONAL ADDRESSING SYSTEM PROJECT



FACILITATE PARTNERSHIP RELATIONSHIPS :

1. **CA + NCNAP Compliant Addressing Systems (Private Sector)**
2. **Counties + CA licensed Compliant Addressing Systems (Private Sector)**
3. **Postal Corp + CA licensed Secondary Address Systems (Private Sector) + Postcode system = Mail Delivery to Physical Addresses**



KEY FEATURES FOR SUCCESSFUL IMPLEMENTATION

1. National Compatibility across THE COUNTRY : NAS

2. Sustainability:

1. Are all parts of the country ready (Maps + Personnel + Addressing Law) to implement the work?
2. Can the project self finance itself?

3. Flexibility:

1. Is the system flexible to changes that may be made after address assignment?
2. Can it be implemented piecemeal?

4. Affordability:

1. Can the public afford the fees?
2. Can all communities in the Country afford it immediately?

5. Participation by Stakeholders in Implementation Plan





After NAS ;

Put in place processes and capacity to manage / provide the following:



eCommerce Technology



Warehousing Solutions



Delivery & Returns



Regional Customer Care Platform



Digital Marketing

Digital technology has changed the way people relate to each other and do business.

Postal and courier organizations must embrace e-commerce Technology with the above services to support it.



NAS DATABASE

All addresses must be in
a National Address Database register
for owners to get
“Proof of Physical Address” Certificates;

1. Primary Address Owner
2. Secondary Address Owner
3. Dependant to Address Owner





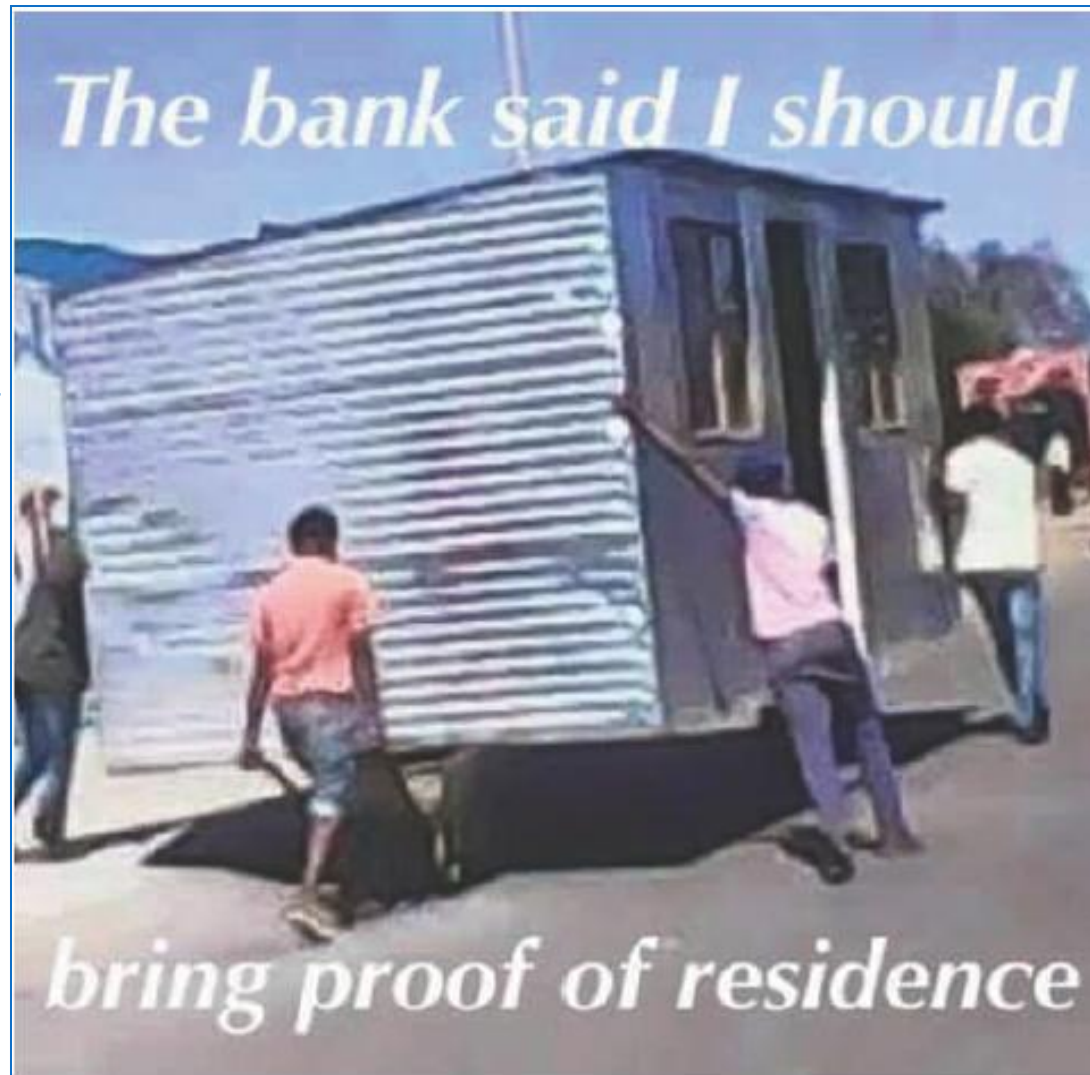
Data Visualization & Data Analytics





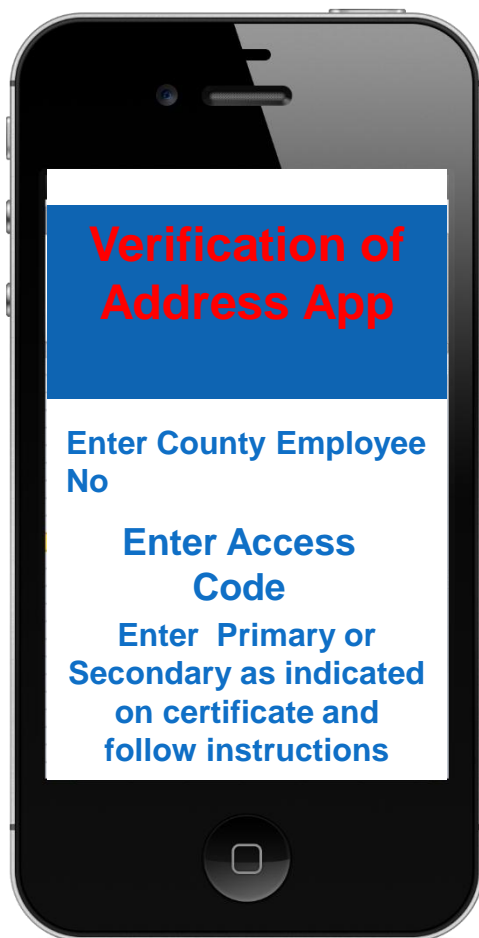
Proof of Physical Address by Informal and Rural Area Dwellers

Residence is Here





Verification of Address App



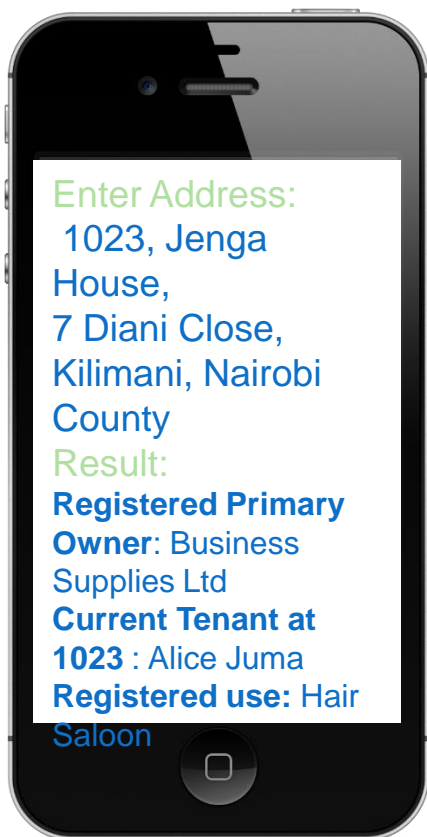
Features

1. Apps will be specific to User Organization who will pay for an annual License for use.
2. All access is logged for reference.
3. Un-authorized officers cannot access the database.
4. Only Authorized Officers access the Database with Specific Address to verify details of owner.



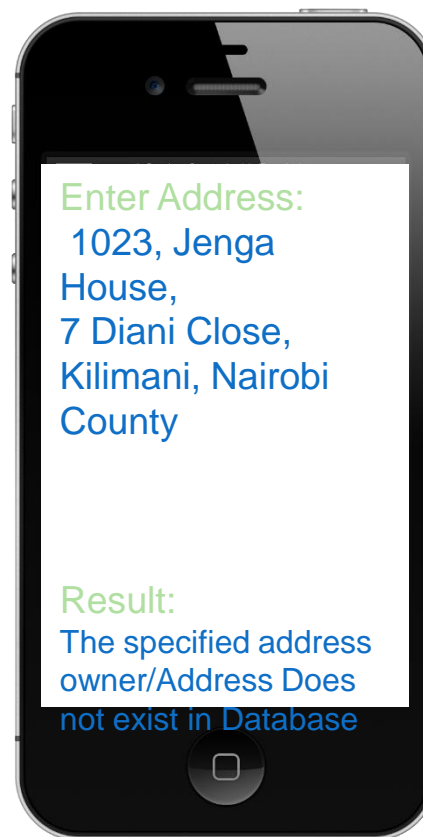
Verification Search Results

Result 1



OR

Result 2





Access to Address Details of Vehicle Owner By Police

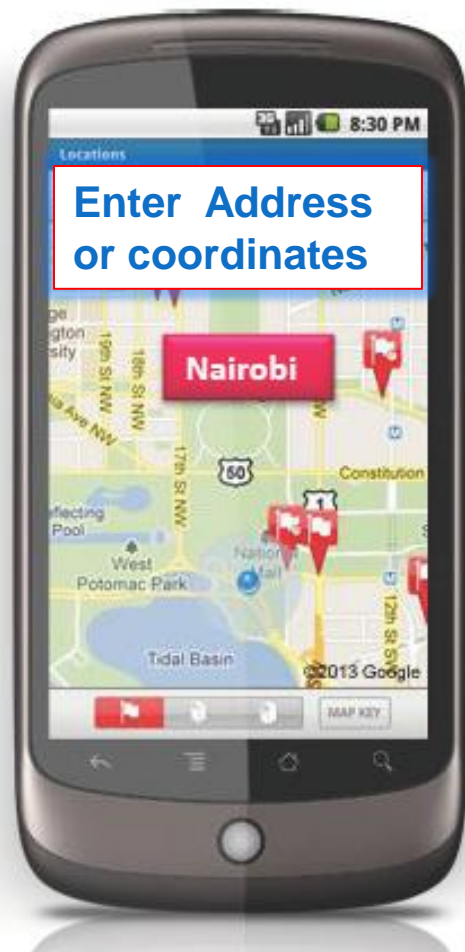


Features

1. **All access is logged** for reference
2. **Un-authorized officers** cannot access the database.
3. **Authorized Traffic Police Officers** only access the Database with Specific Vehicle Number to obtain details of owner
4. **Authorized Investigating Police Officers** can access using both Vehicle Number and Name of Persons/Organizations

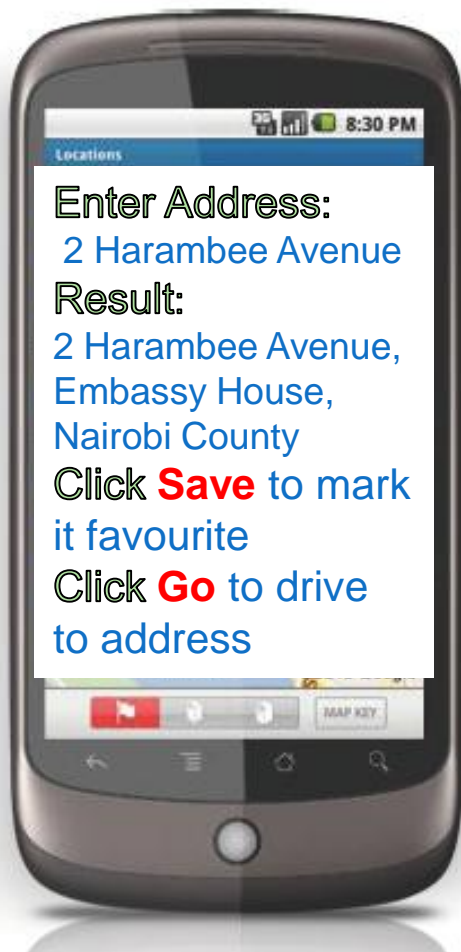


Address Finder on Map App





Search Result Display



Features

The App will prompt users to several search options

1. Enter Address
2. Enter Corner roads
3. Enter Brand/Product + Area
4. Enter Landmark





• MORNING BREAK



Terrorists exploit Lack of “Proof of Physical Address” Vehicle with Explosives in Mombasa



News Media reported that:

The Toyota Hilux Surf, with registration number KAN 410E, registered under one Barnabas Kipkoskei Kiprono of PO Box 1459 Eldoret according to registrar's office.

Nation Newspaper reported that Inquiries by a Nation reporter from the Eldoret Post Office revealed that Barnabas Kipkoskei Kiprono had no much personal physical residential location detail in connection with the postal address.

The Vehicle had Insurance and Registration!

[Evywaff](#) • posted a comment on the Online Nation article:

How can you trace some one using the postal box number to be honest?.I could open a box number in Eldoret, but I live in Mombasa.

I think they need to start using physical address, like plot numbers, villages etc. It's easy to trace.



AFRALTI

Terrorists exploit Lack of “Proof of Physical Address” Westgate Mall Terrorist Attack



**A Terrorist
is seen here in
TV footage
talking on
mobile phone**



Uses For Secondary Addresses

- Eases Citizen Mobilization & Communication
 - Use Post Office instead of using Funerals, Barazas, Chiefs, County Administrators, Boda Boda to pass messages
 - Elections, surveys, etc: Politicians can send direct mail
- Eases Tax, Rates Collection, Management of Fines, etc
 - Efficiency in county licensing since all addresses must register in NAS
- Internal Security (Efficiency in use of CCTV systems)
- Registration of Persons, Motor vehicles etc
- Emergencies
- Services: Electricity, Water, Telecoms, Banking, etc
- E-commerce (Efficient internet search for Services/Products in County)
- Postal & Courier Services





LICENSING CLIENTS

- Mail Delivery License Fees:

- Postal Operator licensed to use Physical Addresses for mail delivery
- Courier Companies Licensed to deliver Mail to Physical Addresses

- Direct Mail Licenses

- License to deliver one-off direct mail or flyers

- NAS Data User Licenses

- All users of NAS Database
- E-Navigation operators
- Directory Entry





LICENSING: NAS MAILBOX & SIGNAGE INSTALLERS: MAKERS, SUPPLIERS AND INSTALLERS





South Africa: NAS Based Legislation

Note: P.O. Box Addresses are not recognized for official transactions in South Africa

The Physical Addressing system is Supported by two national acts that require verification of physical addresses by citizens and organizations for all official transactions :



1. **FICA** (Financial Intelligence Centre Act) 2001

- This act Regulates Money Laundering/Fraud
- Bank accounts can only be opened and operationalise after verification of proof of physical address document by FICA.



2. **RICA** (Regulation for Interception of Communication Act)

- This act regulates communication including SIM card activation.
- SIM registration is only complete and cleared for activation after verification of the Proof of Physical Address document by RICA.





Extract from South FICA (Financial Intelligence Centre Act) 2001

PART 2

NATURAL PERSONS

3. Information concerning South African citizens and residents

- (1) An accountable institution must obtain from, or in respect of, a natural person who is a citizen of, or resident in, the Republic, that person's—
- (a) full names;
 - (b) date of birth;
 - (c) identity number;
 - (d) income tax registration number, if such a number has been issued to that person; and
 - (e) residential address.
- (2) In the case where the accountable institution is aware or ought reasonably to be aware that the person referred to in subregulation (1) does not have the legal capacity to establish a business relationship or conclude a single transaction without the assistance of another person the accountable institution must, in addition to obtaining the particulars referred to in subregulation (1), obtain from, or in respect of, of that other person—
- (a) his or her full names;
 - (b) his or her date of birth;
 - (c) his or her identity number;
 - (d) his or her residential address; and
 - (e) his or her contact particulars.

4. Verification of information concerning South-African citizens and residents

- (1) An accountable institution must verify the full names, date of birth and identity number of a natural person referred to in regulation 3(1)(a), (b) or (c), or 3(2)(a), (b) or (c) by comparing these particulars with—
- (a) (i) an identification document of that person; or
 - (ii) in the case where that person is, for a reason that is acceptable to the institution, unable to produce an identification document, another document issued to that person, which, taking into account any guidance notes concerning the verification of identities which may apply to that institution, is acceptable to the institution and bears-
 - (aa) a photograph of that person;
 - (bb) that person's full names or initials and surname;
 - (cc) that person's date of birth; and
 - (dd) that person's identity number; and
 - (b) any of these particulars with information which is obtained from any other independent source, if it is believed to be reasonably necessary taking into account any guidance notes concerning the verification of identities which may apply to that institution.
- (2) An accountable institution must verify the income tax registration number referred to in regulation 3(1)(d) by comparing this number with a document issued by the South African Revenue Service bearing such a number and the name of the natural person.
- (3) An accountable institution must verify the residential address referred to in regulation 3(1)(e) or 3(2)(f) by comparing these particulars with information which can reasonably be expected to achieve such verification and is obtained by reasonably practical means, taking into account any guidance notes concerning the verification of identities which may apply to that institution.



South Africa FICA Registered Institutions That Must Obtain Proof of Physical Address and Keep Client 'Proof Documents'

FICA Supervisory Bodies

- 1. South African Reserve Bank**
- 2. Financial Services Board**
- 3. National Gambling Board**
- 4. Estate Agents Board**
- 5. Law Society of South Africa**
- 6. Companies and Intellectual Property Registration Organization**
- 7. Independent Regulatory Board of Auditors**
- 8. JSE Securities Exchange**



FICA Accountable Institutions

- 1. Attorneys (Lawyers)**
- 2. Trust Companies**
- 3. Estate Agents (and Landlords)**
- 4. Authorized users of an exchange**
- 5. Unit trusts (collective investment scheme managers)**
- 6. Banks**
- 7. Mutual banks**
- 8. Long-term insurers**
- 9. Casinos**
- 10. Foreign exchange operators**
- 11. Money lenders against securities**
- 12. Investment advisors or intermediaries**
- 13. Issuers of traveler's cheques and money orders**
- 14. Stock exchange**
- 15. Stock brokers**
- 16. Money remitters**
- 17. Motor vehicle dealers**



• LUNCH BREAK



OPEN REVIEW of last 4 days



- Sub-Saharan Africa requires NAS
 - E-commerce
 - Post Offices to survive
 - Courier/Logistics Efficiency
 - Security
- We want to partner with Local Businesses/Individuals, Regulators / Government to implement NAS
- Contact me. Take my details



iPost WILL PROVIDE

- Joint Venture value in Partnership with Local businesses/individuals
- NAS integrated Systems
- Consultancy services to guide implementation
- Assist in Management of NAS Database
- Provide NAS apps for user access



End of NAS Training by:

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iPost
mail

Serving communication evolution

e-Commerce, e-Navigation, e-Post, e-Security