



INDEPENDENT COMMUNICATIONS  
AUTHORITY OF SOUTH AFRICA

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## Experience and Challenges in the Integration of (MRS) M2M/IoT into the South African National Numbering Plan

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## **South African National Numbering Plan Overview**

# SA NUMBERING PLAN OVERVIEW

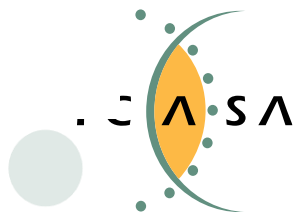
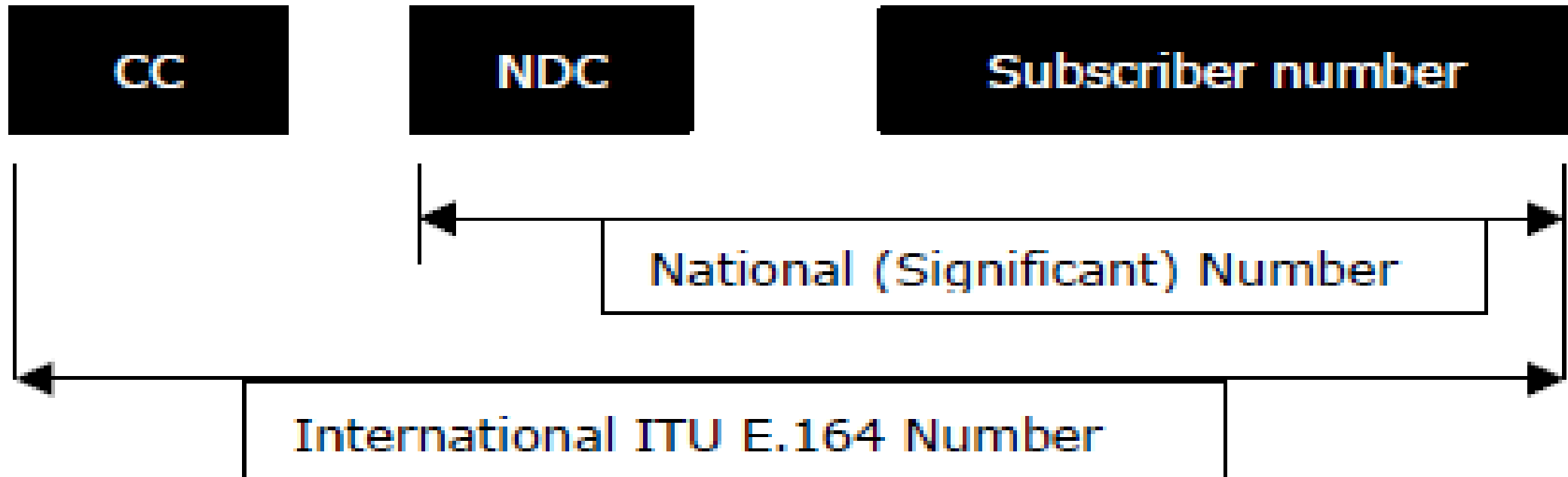
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- ✓ South Africa is a closed numbering system effective 16 January 2007.
- ✓ It is mandatory to dial the full 10-digit telephone number.
- ✓ The format for an international number is guided by the International Telecommunication Union (ITU) Recommendation E.164. It is composed of decimal digits arranged in two code fields: the country code (CC) and the national (significant) number (N(S)N).
- ✓ The national (significant) number (either geographic or non-geographic) is subdivided into the national destination code (NDC) and the subscriber number.



# SA NUMBERING PLAN OVERVIEW- continues

- ✓ The format for international and national numbers is as per figure:



# SA NUMBERING PLAN OVERVIEW- continues

- ✓ National numbers, geographic or non-geographic are set out in Geographic and Non-Geographic Numbers

<b>Digits</b>	<b>Significance</b>
<b>00</b>	International prefix
<b>01</b>	
<b>02</b>	
<b>03</b>	
<b>04</b>	
<b>05</b>	Geographic numbers
<b>06</b>	Geographic and Non-geographic numbers
<b>07</b>	
<b>08</b>	
<b>09</b>	
	Non-geographic numbers

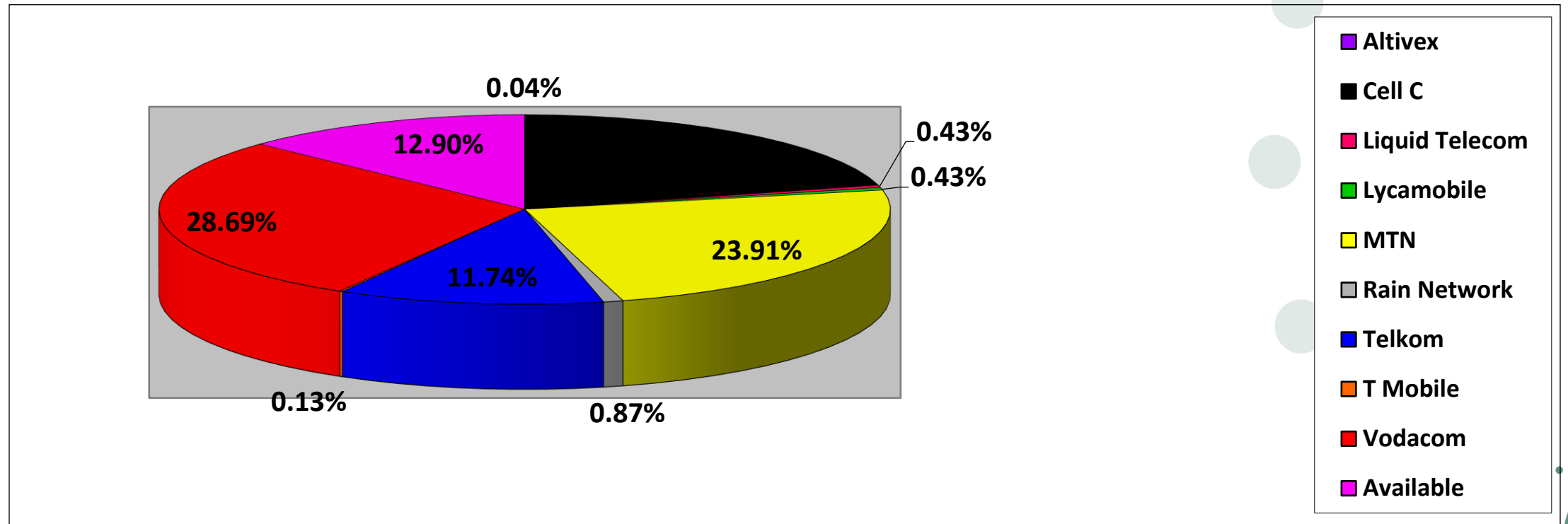




## **Numbering Review Framework (MRS/ M2M.) and Implications**

# MACHINE RELATED(M2M) NUMBER CHANGES AND MIGRATION

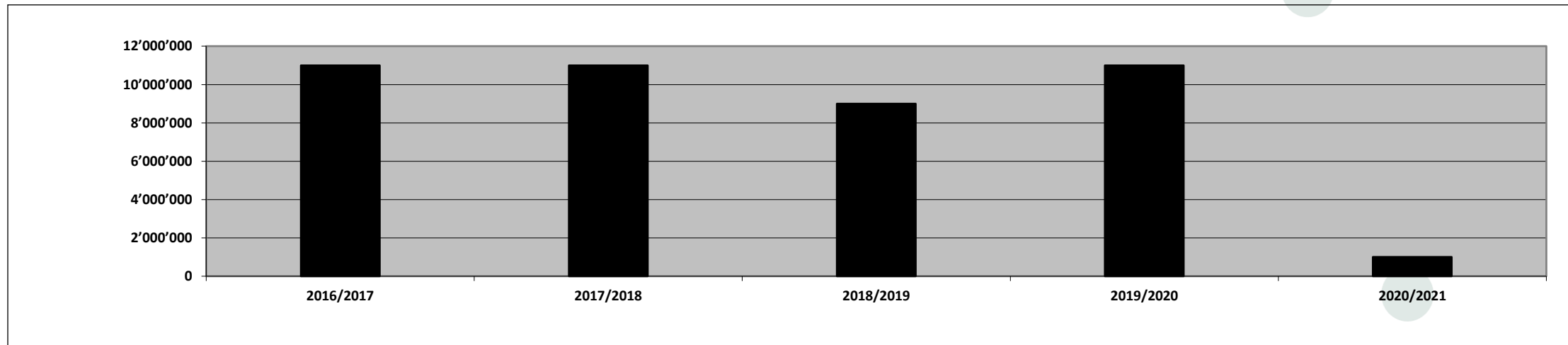
- ✓ **Motivation for the changes:** To ensure that there is scalability to cater for growth in the Telecommunication Industry, Population growth, Evolution of technology, Consumer Choice, Sustainability to avoid depletion, and Catering to future demands.





# MACHINE RELATED(M2M) NUMBER CHANGES AND MIGRATION- continues

- ✓ The 2016 regulation introduced a number of changes to the number plan including the consolidation of the release of an additional 140 million mobile numbers 2016 and has since allocated 200 400 000 mobile numbers, **amounting to 87% of the total provisioned mobile numbers.**
- ✓ In 2022 South Africa continued to experience insufficient capacity of 13% for mobile numbers and she, consistently, allocated over 8 million numbers annually except for the 2020/ 2021 due to COVID-19.



# MACHINE RELATED(M2M) NUMBER CHANGES AND MIGRATION- continues

- ✓ Sub regulations 1 of the South African Numbering Regulations defines “machine-related number” means a non-geographic number that is used to provide a machine-related service and: “machine-related service” means a service whereby,
  - (a) communications between two or more machines that require no direct human intervention; or (b) communication originating from a device or machine to a person and vice versa.”
- ✓ Sub regulation 16 (3)A machine-related number must have a length of fourteen (14) digits. Table 4. MRS
- ✓ There are 100 trillion unique combinations for 14 digits [ 300 trillion resource].

<b>096</b>	Released	Machine related services
<b>097</b>	Released	
<b>098</b>	Released	

# MACHINE RELATED(M2M) NUMBER CHANGES AND MIGRATION

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- ✓ Sub regulations 22 (1) (2) (3) of the South African Numbering Regulations, 2016 stipulated that:
  - All machine-related number changes must **be migrated** to the new number range **within a period not exceeding 12 months** from the date of the Regulations coming into force;
- ✓ Bulk SMS/MMS services, which are provided within the previously allocated numbers are exempt from the MRS migration; and
- ✓ Future assignments for bulk SMS/MMS services, that extend beyond the numbering capacities provisioned by licensees as submitted to the Authority, must be in the designated numbering range for MRS.
- ✓ The Numbering Rregulation: <https://www.icasa.org.za/pages/numbering>



## **Challenges and Implementation Process**

# CHALLENGES, MITIGATION STRATEGIES AND IMPLEMENTATION

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*The first challenge was defining services that were to be classified as M2M) and given many explanations, the term was amended the name from M2M to MRS as can be seen in the regulations.*

*Secondly, another difficulty was the appropriate digit length as well as the needed capacity (14-digit vs. 11 or 12-digit) **and migration timeline** from the mobile ranges to the dedicated range for MRS.*

*3rdly licensees requested an exemption not to migrate services that were provisioned for Bulk SMS/MMS due to a unique functionality called "tagging" .*

# CHALLENGES AND IMPLEMENTATION

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- ✓ The process became driven by a lot of frustrations from the service provider and was chaotic due to real impediments.
- ✓ Service providers/ licensees in some instances stopped engaging ICASA and used their customers to directly speak to the regulator.
- ✓ The initial migration period envisaged was twelve (12) months.
- ✓ Delays were motivated by system changes on the site of service providers, and vendors, and their impact on the public at large.
- ✓ Multiple extensions were requested by services providers and the implementation period took just over 2 years (2016 to 2018+months).
- ✓ The complexity of the migration was generally underestimated by the industry and the regulator during consultation processes.





## **Lessons Learned from the Implementation Process**

# Lessons learned from the implementation process

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- ✓ Three significant key issues amongst many.

<b>Key Issues</b>	
<b>The Scale of Existing Networks</b>	Deployment of M2M for small networks and larger networks varies in reconfiguration times. Large Networks may involve millions of devices to be reconfigured and tested before being commissioned which may need more time and planning. This is important information for regulatory decisions on the migration period.
<b>Preparedness of Existing Networks</b>	Some networks that are designed to handle data communications may easily integrate M2M. In contrast some networks in your country that need reconfiguration may take longer periods.
<b>Manufacturers</b>	The need to consider that manufacturers will have sufficient time to reconfigure and test the M2M devices is important to the migration period decision by the regulatory. It was not necessary to exempt the some of M2M services from migration services.

# Recommendations for the Integration of (MRS) M2M/IoT into the National Numbering Plan

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- ✓ The Integration of (MRS) M2M/IoT into the National Numbering Plan based on your country's environment may include conducting an impact analysis focusing on:
  - A comprehensive process that includes all scenarios that exist in your country.
  - Extensive consultation- that includes, operators, vendors, and the public at large.
  - Development of technical standards, particularly, those that should be for certification/ Type approval.
  - Reconfigurations of existing network infrastructure time and cost.
  - Provision for time to conduct proof of concepts on the upgraded network.
  - Awareness programs time and cost.
  - Compliance and enforcement mechanism.

# Recommendations on best approaches (key issues)

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A distinct Numbering Plan Structure for M2M which provides block allocation within a specified range

Consultation-  
The Regulator,  
Operators and Vendors

Distinct M2M  
Regulatory Framework  
specifying the use of  
the resource within  
the national border

Develop process for  
assignment of the  
M2M resource

Mechanism for  
Compliance and  
Enforcement

Awareness programme  
to business, operators  
and subscribers



**Thank You**

<https://www.icasa.org.za/pages/numbering>