



DATA CLEANSING AND PROTECTION TO ENHANCE REVENUE

CIGFARO ANNUAL CONFERENCE
OCTOBER 2019



Agenda

1

Revenue Maturity Model

- 5 levers including Revenue Analytics

2

Introduction to Data Cleansing and Protection

- The Process

3

Importance of Right Data

- Revenue Value Chain

4

Case Studies

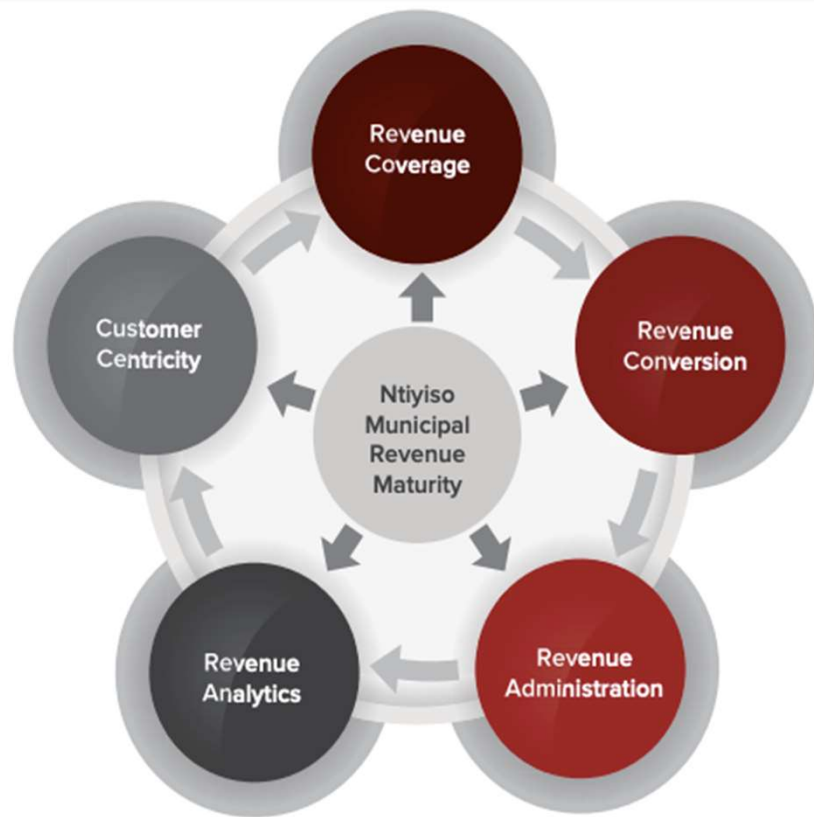
- Metros and Munics

5

Conclusion

- Future Considerations

THE FIVE MAJOR LEVERS TO MEASURE MUNICIPALITIES...



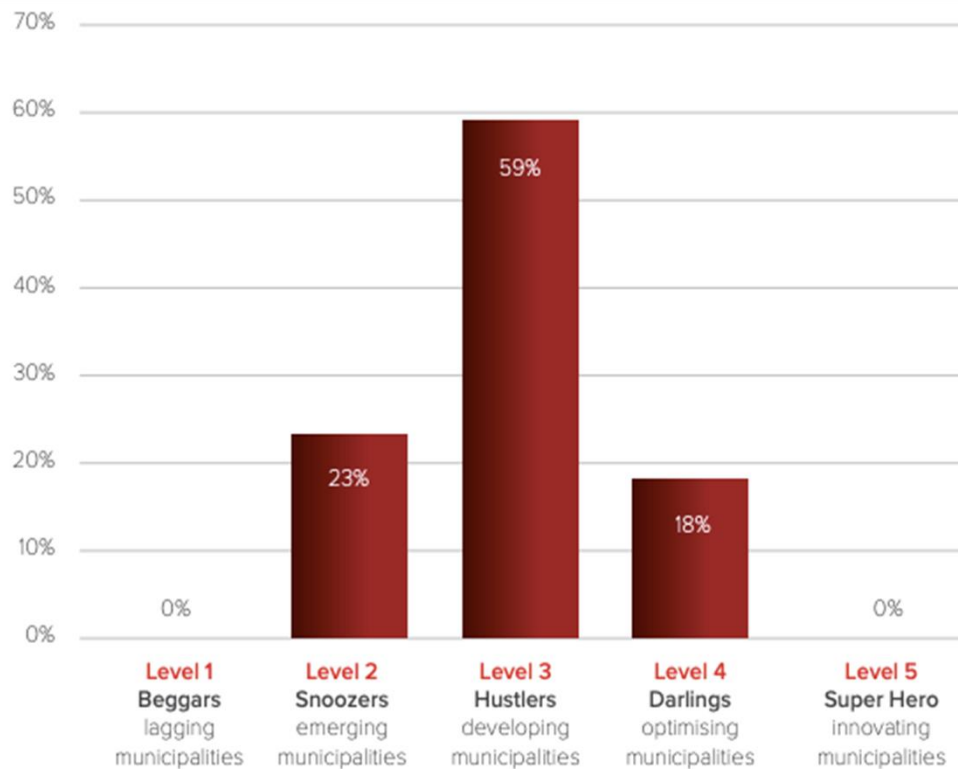
- Municipalities' ability to efficiently generate income
- Municipalities' ability to realise cash flows from billing customers
- Municipalities' organisational ability to administer the revenue management function
- Extent to which the municipality has integrated data analytics to Revenue Management
- Extent to which distinct action has been taken towards customer engagement and management.

5 ARCHETYPES OF MUNICIPALITIES



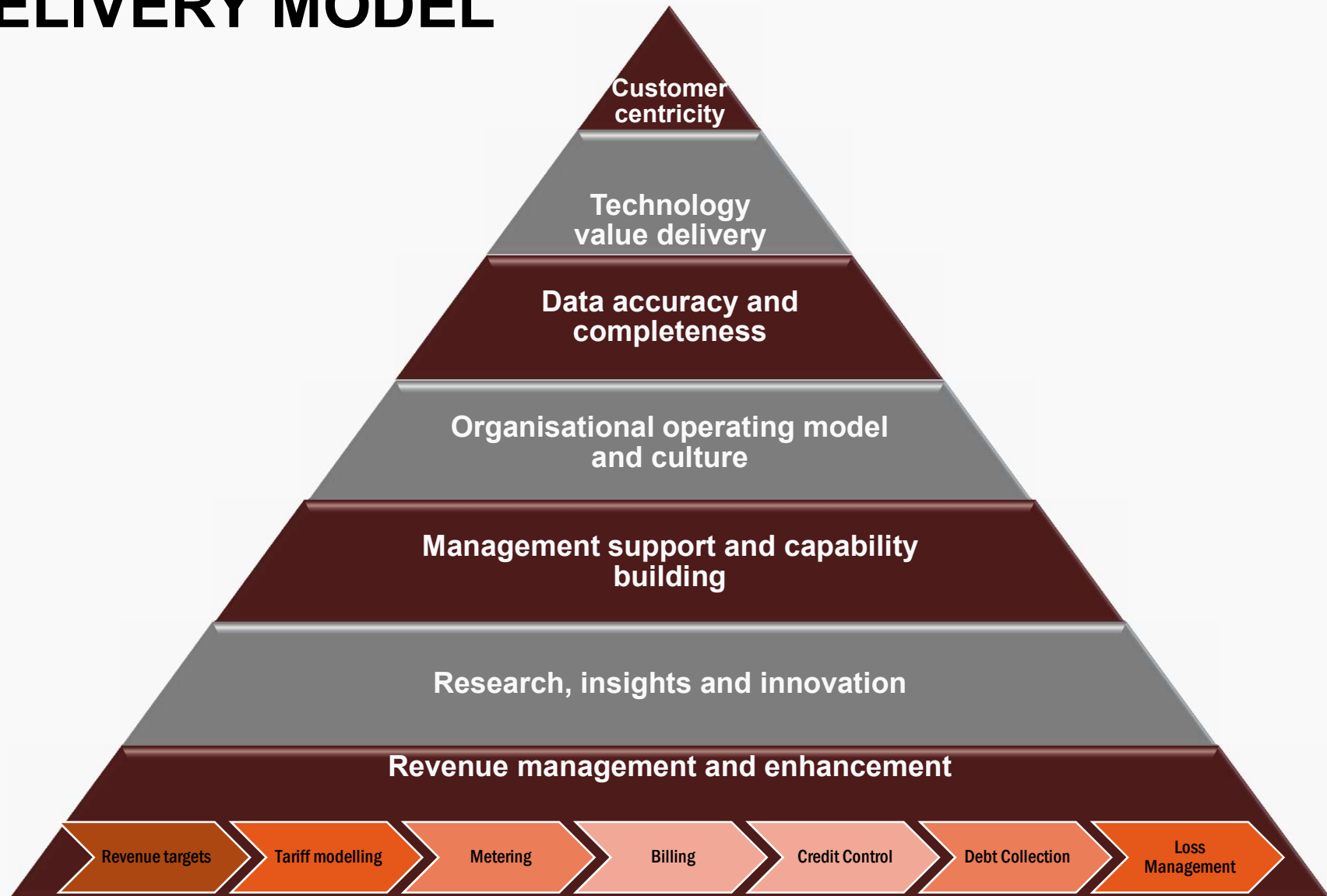
'HUSTLERS' MUNICIPALITIES

Distribution of the overall 2018 Municipal Revenue Maturity Benchmarking results (%)

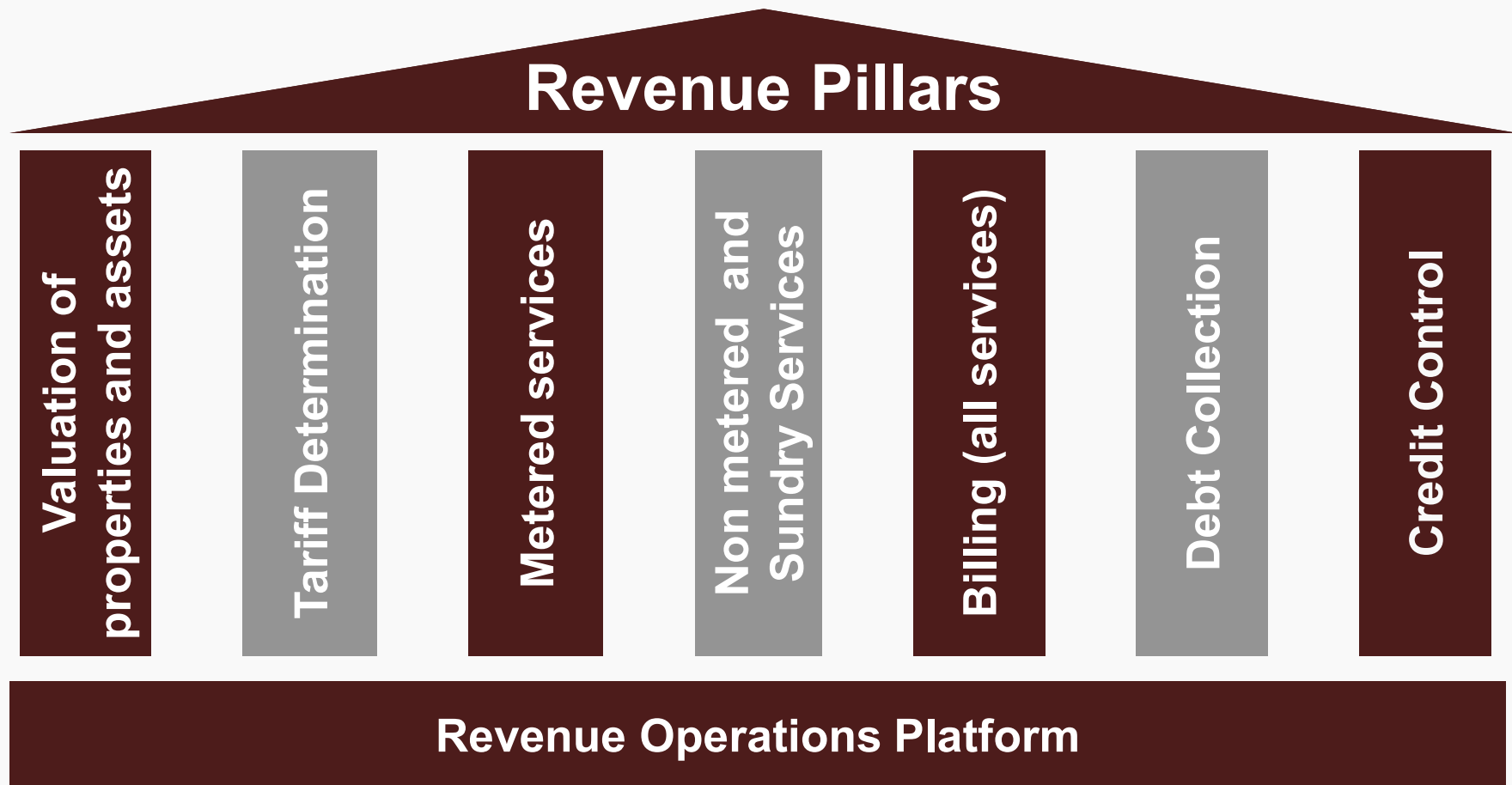


- Majority of utilities fall under 'Hustlers': Stable and repetitive revenue collection approach, with decent revenue sources but poor revenue conversion rates
- We did not find municipality that is performing at the highest level of revenue maturity- in line with global standards.
- South African municipalities have not yet began innovating in areas such as:
 - revenue coverage and enhancement,
 - advanced data analytics,
 - dynamic pricing packages and
 - fully functional e-government service delivery

REVENUE ASSURANCE DELIVERY MODEL



REVENUE PILLARS

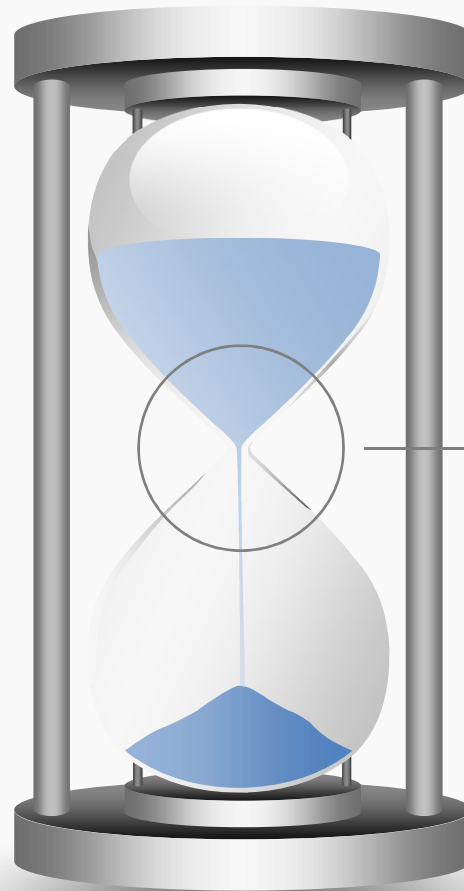


INTRODUCTION TO DATA CLEANSING AND PROTECTION

**Raw Data
(Inconsistent and
Inaccurate)**



**Analysed Data Sets
(Consistent and
Accurate)**



Dimensions of Data Quality:

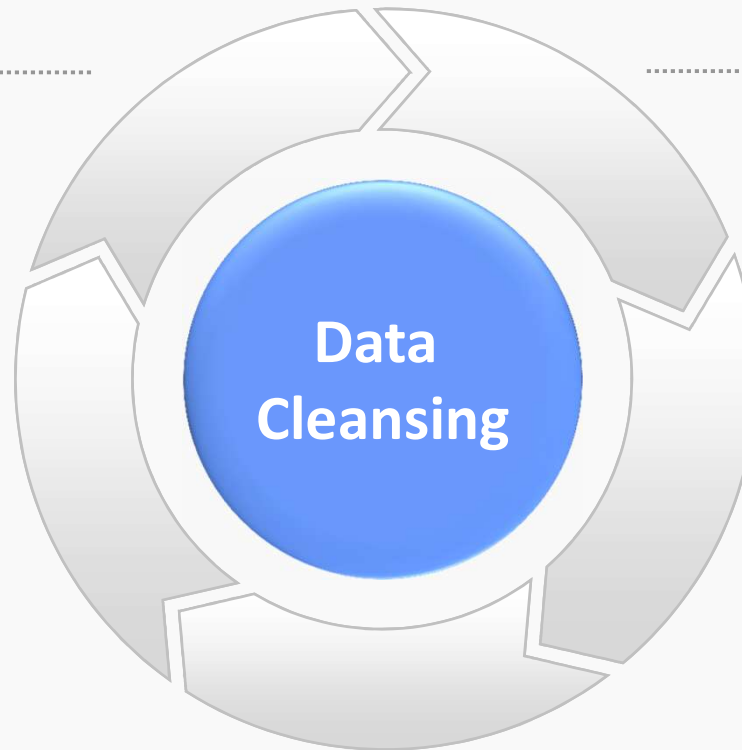
- Completeness
- Consistency
- Conformity
- Accuracy
- Integrity
- Timeliness

“Users of data typically spend 80% of their time cleaning and manipulating data and only 20% of their time actually analyzing it.”

WHAT DOES DATA CLEANSING ENTAIL?

Identifying and removing
(or correcting) inaccurate
records from a dataset,
table, or database

Ensuring uniformity with
other related datasets in
the operation

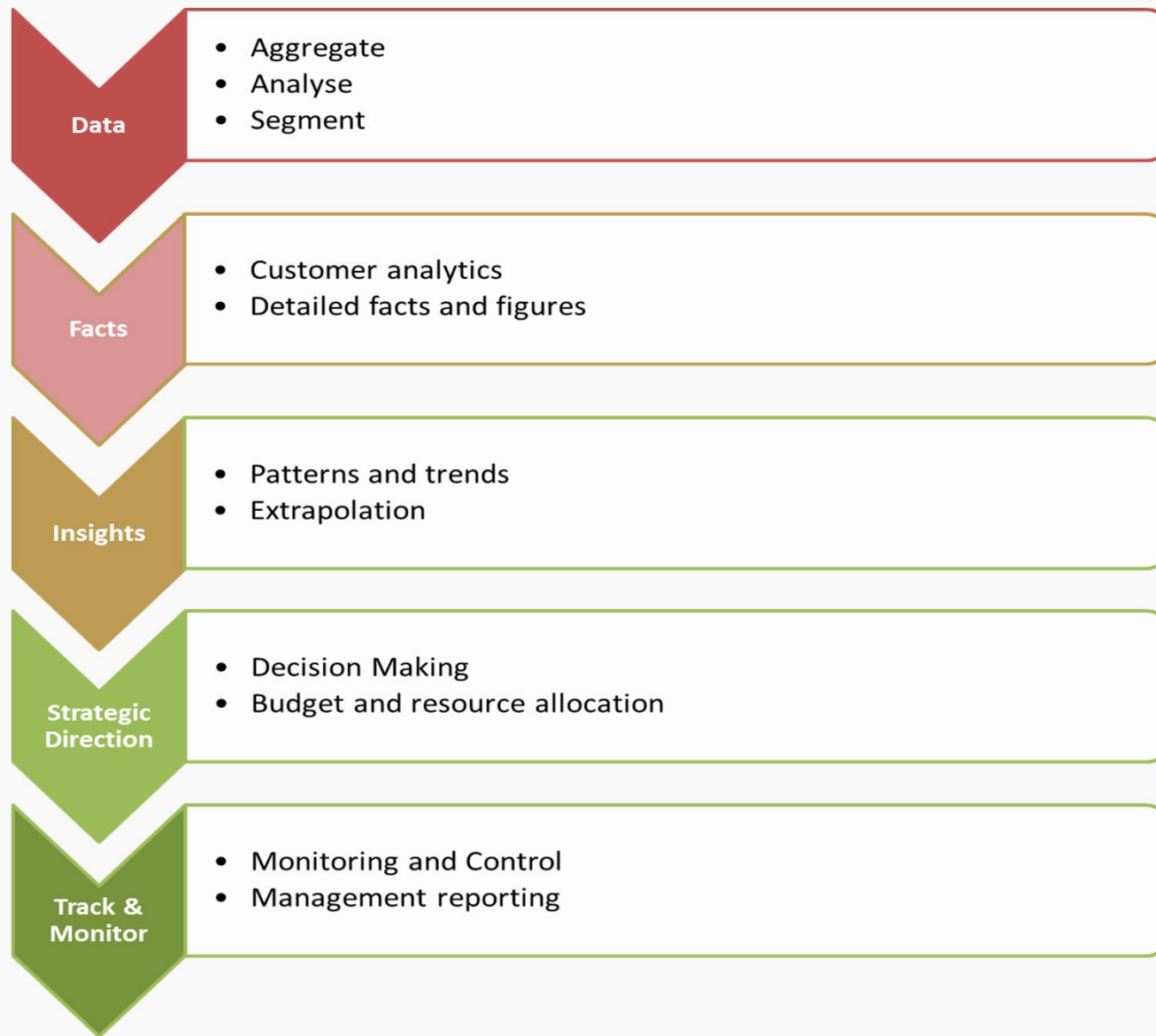


Recognising unfinished,
unreliable or
non-relevant parts of the
data

Restoring, remodelling,
or removing the dirty
or crude data

*May be performed as batch processing through scripting
or interactively with data wrangling tools*

IMPORTANCE OF RIGHT DATA?

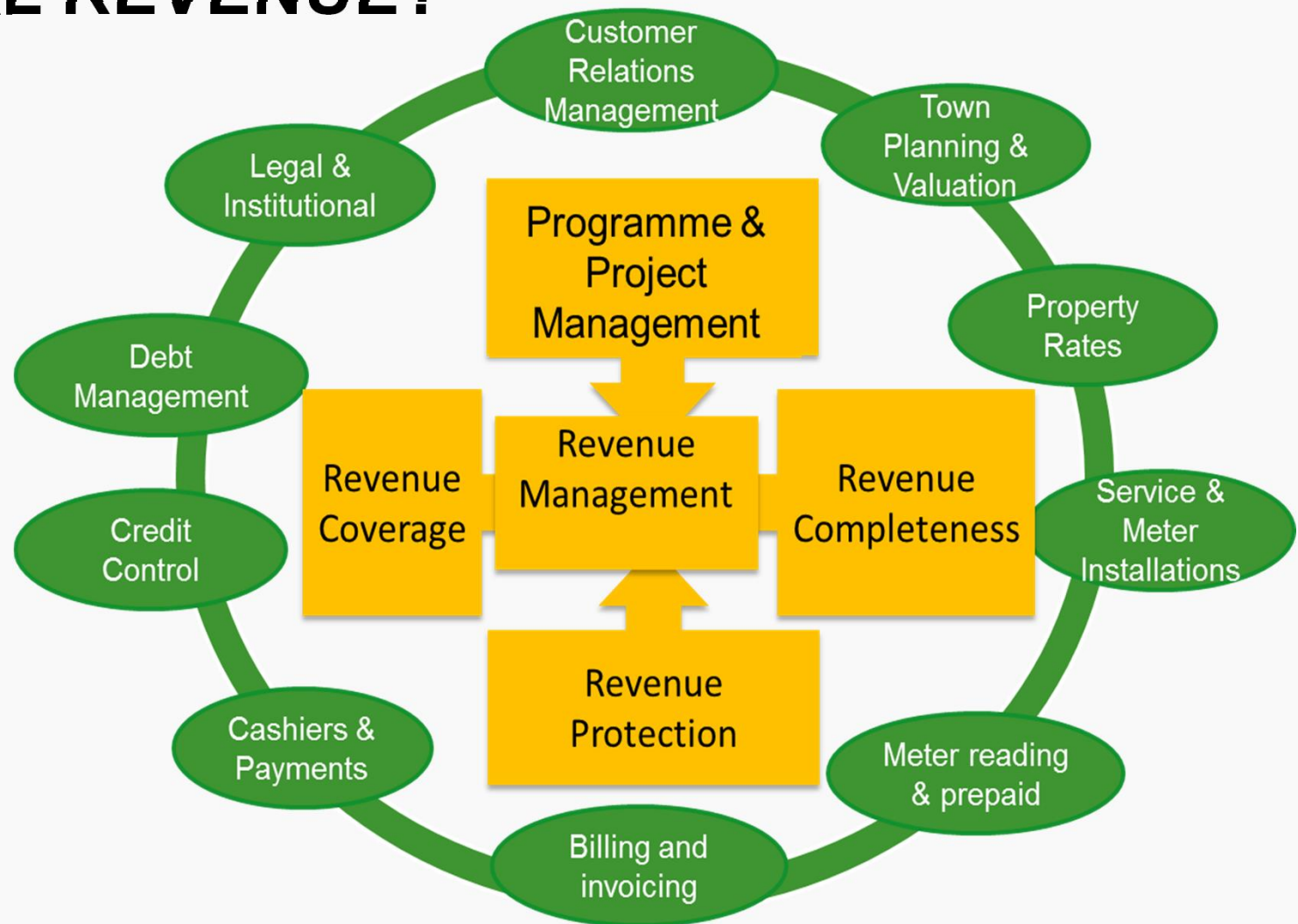


*To ascertain facts
in order to obtain
insights that assist
in determining the
strategic direction*



IMPACT OF RIGHT DATA ON MUNICIPAL REVENUE?

- State of 'data' at the municipality
- Clean data plays a vital role through the revenue value chain of the municipality
- Data sets across revenue value chain are interrelated



IMPACT OF RIGHT DATA ON MUNICIPAL REVENUE?

Revenue Planning / Valuations

Valuation Roll Integrity

Deeds File Completeness

Billing and Metering Data

Metering completeness and correctness

Billing completeness and correctness

Receipting and Credit Control

Cashier receipts

Sundry income transaction listing

Ageing Data

Asset / Infrastructure data

Metering assets

Asset register

Tariff Modelling

Municipality's Cost of Supply data

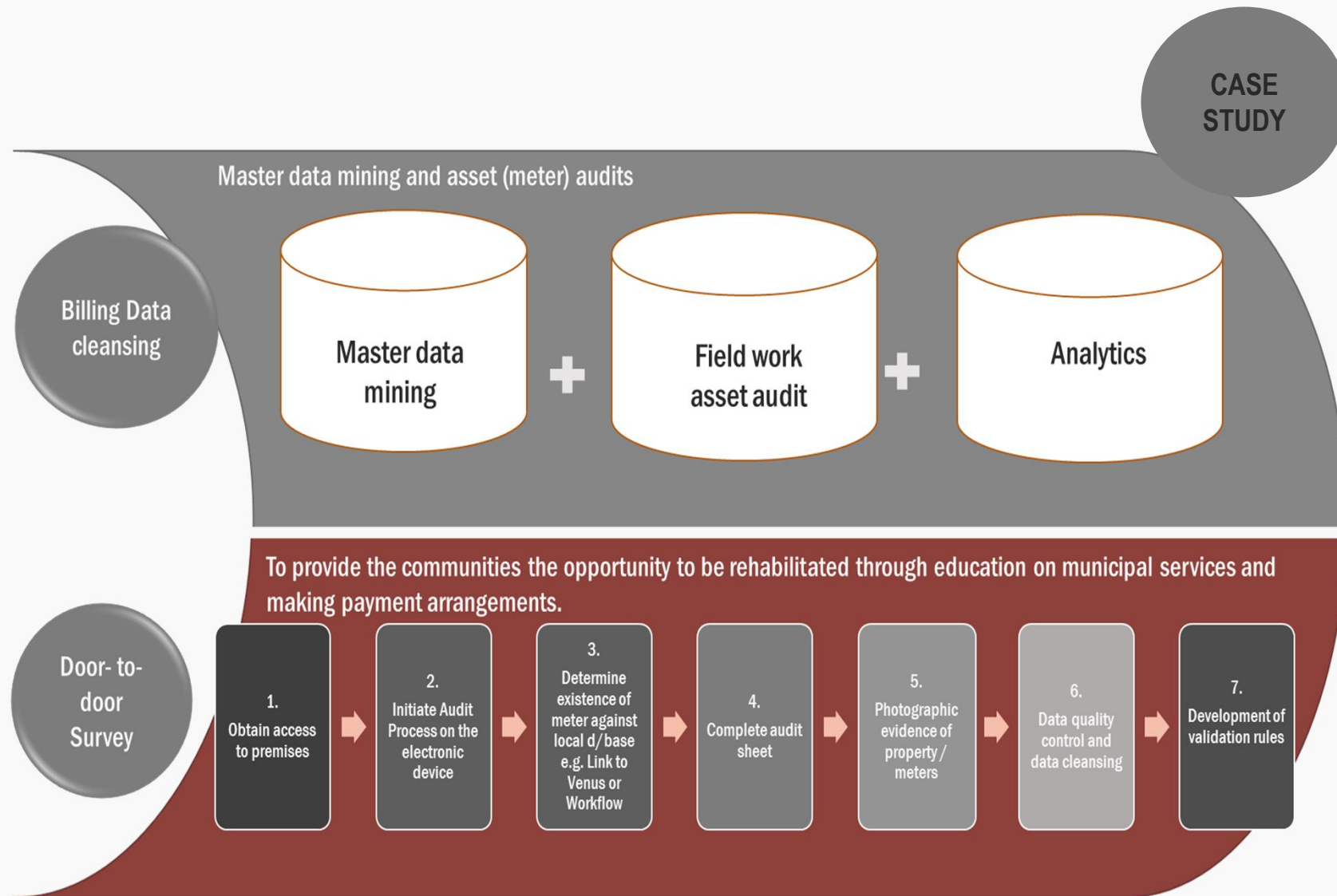
Tariff categories and customer segmentation

DATA CLEANSING AND PROTECTION

- Data Cleansing involves a desktop and field exercise in parallel
- 'Not to regress' is the key to data cleansing by implementing robust and continuous monitoring and updates
- Importance of data protection (or safeguarding) increases as the amount of data created and stored continues to grow at unprecedented rates



CASE STUDY – DATA CLEANSING



FIELD WORK AUDIT

High technology oriented devices issued to each fieldworker, as well as the identity cards for usage at all times

CASE STUDY



FIELD WORK AUDITS (CON'T)

Key features

- Photos
- GPS Deviation
- Reading History
- Meter Location
- Meter No
- Meter Reading
- Penalties

Inspection Assessment

Insp Ref: 3978050 Created: 2018-08-27 Closed: 2018-09-03 Status: Completed
 Account: 2100965851 Acc. Name: VAN DER SANDT JM Bill Month: 2018/09/01 Cycle: 123
 CCC: ALBERTON Suburb: BRACKENDOWNS Unit No: A15000000015400000000000000000000

Last BG505 Reading
 Meter No: 171117598 Type: MW/08 Lat: -26.317
 Size: 4 Dials: 4 Long: 28.0863
 Reading: 716 Read Type: 02 Date: 2018-07-20 Avg. Cons: 114

MRC Reading Info
 Meter No: 171117598 Type: MW/08
 Reading: 765 Read Type: 03 Date: 2018-08-13
 BP421 Code:
 Notes:

Inspection Findings
 Meter No: 171117598 Type: MW Size: 15 Dials: 4
 Reading: 790 Date: 2018-09-03 Meter Location: Outside Property
 Device Lat: -26.31705000 Device Long: 28.08642833 GPS Deviation: 14 mtrs
 Device Lat 1: -26.31705000 Device Long 1: 28.08642833 GPS Deviation 1: 14 mtrs
 Device Lat 2: Device Long 2: GPS Deviation 2:
 Code: 000 NORMAL ☐ Change
 Remarks:
 Exception Reason: Could not handled by any Auto checks
 GPS Deviation Remark: Max Allowable Deviation=66 m

Reading History

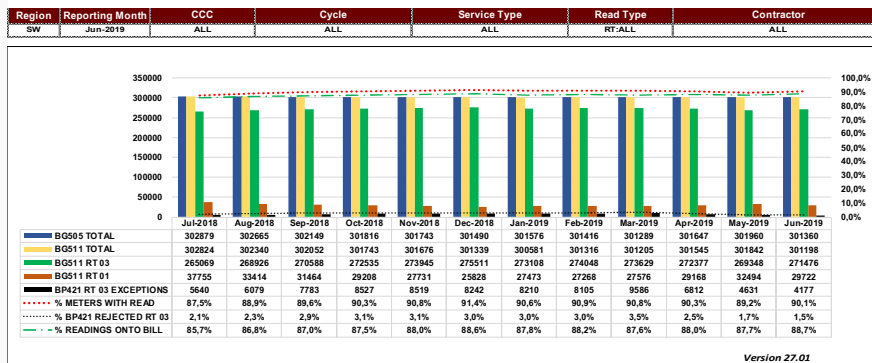
MeterNo /	Type	MeterGroup	Date	Reading	ReadType
171117598	MW	08	2018-08-20	773	03
171117598	MW	08	2018-07-20	716	02
171117598	MW	08	2018-07-20	716	00
171117598	MW	08	2018-06-12	631	03

Inspector: Device: Ntiyiso135 8 of 290

4 - Inspection Photo(s) Zoom
 Sep 3, 2018 12:49:41 PM

CASE STUDY

METER READING PERFORMANCE



Completed Jobcard

Contractor: EDE Syster Batch: RECON_05Jun2019_514 Date Issued: 05 Jun 2019
 Notice Date: 05 Jun 2019 Time: 17:11 Notice Placement:
 Info Code: Box Level 2 Work Done: Box Level 2 Reconnection
 MeterNo: Reading: GPS Lat: -26.15324667 Long: 28.15896333 Deviation: 31.00 m
 Seal No: Executed by: Device: Ntiyiso57

Photo of Property
 Jun 5, 2019 17:08:41

Photo of Seal
 Jun 5, 2019 17:08:55

Photo of Before Reconnection
 Jun 5, 2019 17:09:32

Photo of After Reconnection
 Jun 5, 2019 17:11:11

Remarks: Rand Value:
 Applied Penalty: NOT Assessed

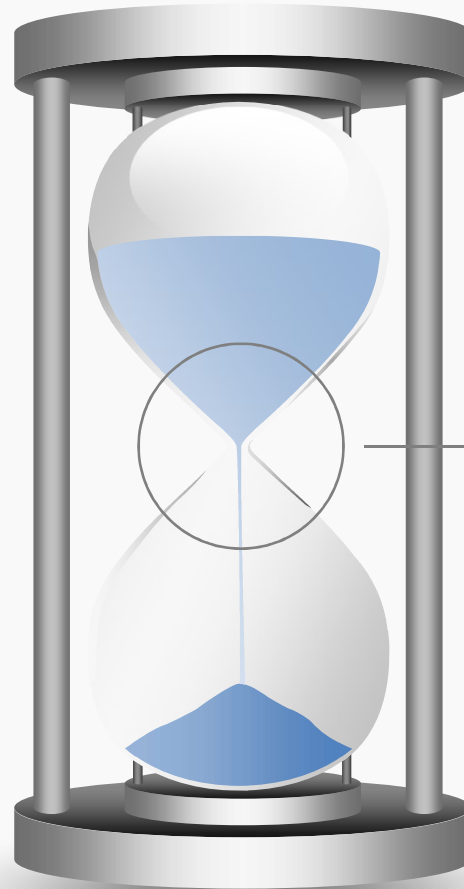
File Serial No: Printed by: TREVOR T. MUPETI - Jun 7 2019 9:01AM Page 1 of 1 eesoft rpt ver 1.03

CASE STUDY – RESOLVING SMART METERING ASSETS DATA ANOMALIES

Old Meters
(manual reading, once in a month)



Smart Meters
(real time / 30 min data)

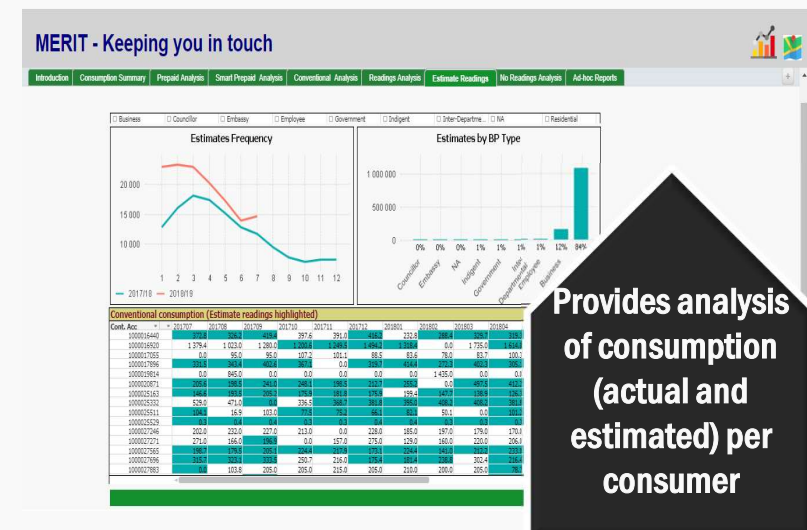
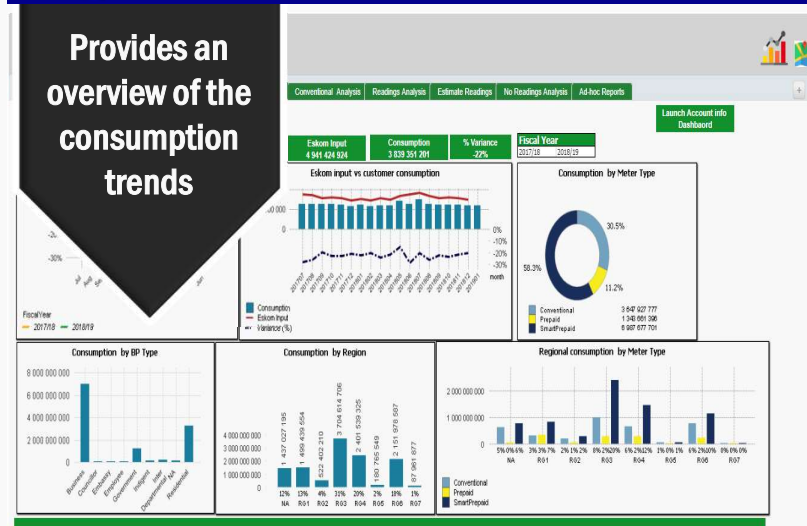
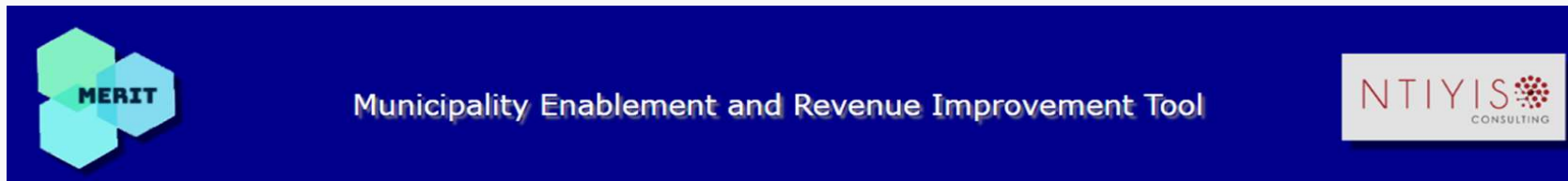


Advantages:

- Metering is Next Gen 'smart'
- Control / Monitor via remote system @ utility premises
- Enables load limiting and monitoring NMD
- Better utility & customer control; Mock Billing
- Bi-directional metering (PV)

Theoritically, smart meters are intended to ready the utilities for the business of tomorrow (including adoption of distributed generation)

'MERIT' SOLUTION PREVIEW



Categories consumption for the City, Region, Suburb and Market value

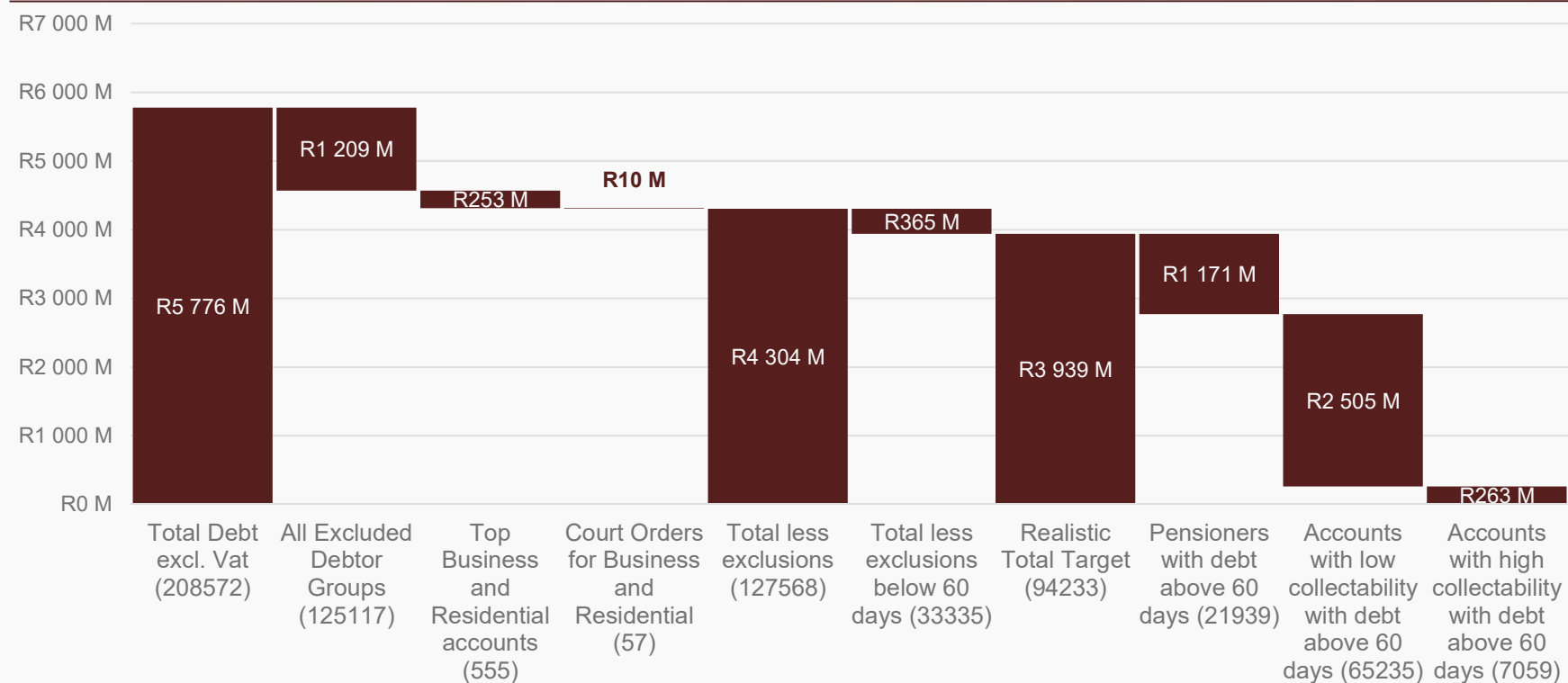
Provides analysis of consumption (actual and estimated) per consumer

Categories consumption per household - heat maps

CASE STUDY – AGEING BOOK ANALYSIS

Breakdown of handover ageing book

As at September 2017



FUTURE CONSIDERATIONS?

- **Smart Cities**
- **4th Industrial Revolution**
- **The common data model**
- **Economic Outlook**

CONCLUSION

- Data Cleaning is a critical requirement for any municipality to ensure Revenue sustainability
- Vital to have correct information of residents and businesses
- Such projects help tremendously in analysing your debt book – identifying inactive debtors, deceased debtors, even indigents if the scope requires it, etc.
- It helps the municipality to create confidence in their residents if their information is correct.
- It helps enormously with debt collection process – you have less disputes, less wasted expenditure in chasing wrong debtors (or finding the responsible debtor)

About Ntiyiso

OVERVIEW



- Management consulting firm
- 100% black owned and managed
- Over 10 years in existence
- Over 70 consultants
- 15 projects across 9 municipalities just in 2018

LOCATIONS



- Centurion
- Bedfordview
- Durban
- Malamulele

SERVICES



- Revenue enhancement and management
- Data Management and Analytics
- Governance and strategy
- Performance and Risk Management
- Organisation Design
- Business Process Engineering
- Fundraising and development of catalytic projects

THANK YOU

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