



remote  
metering  
solutions

# Revenue Enhancement Project

## Naledi Local Municipality

August 2016

# Revenue Enhancement Project - Naledi

(Vryburg/ Stella in the Northwest Province)



Two separate projects

Vryburg – Grant funded

Stella – RMS funded



# Introduction to RMS


## Who are we?



RMS is an **Utility-, Energy- and Revenue Management** company that employs more than **230 people** in South Africa and is currently expanding into Africa, Australia and the USA.

RMS has a **12 year track record** in Utility and Revenue Management and operates in the **Commercial, Corporate, Residential and Municipal Sectors**. RMS is a large player in the **Listed Property Sector** group of companies, with more than a **50% market share**

RMS volumes at a glance:

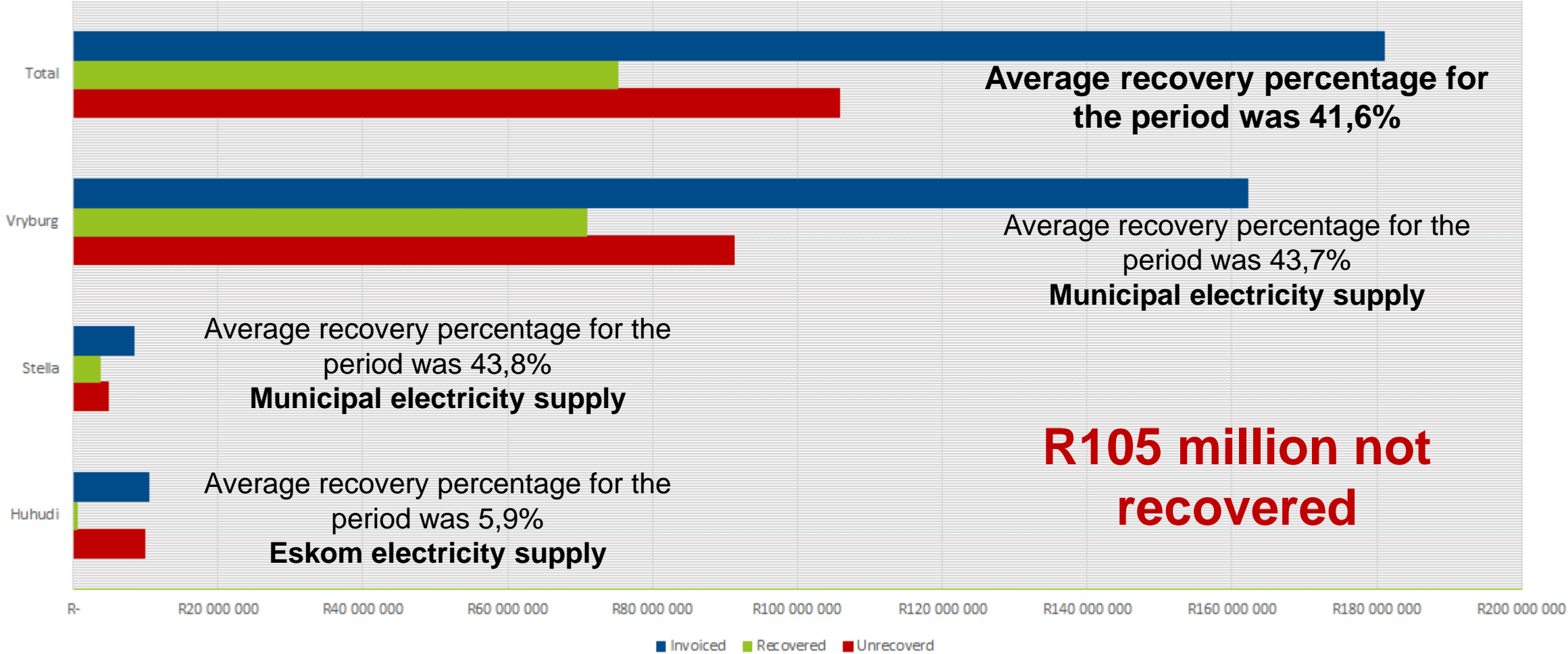


|   |  |
|---|--|
| Pay-as-you-use <b>Smart Meter</b><br>Consumers/ Customers | • > 15 000 prepaid   >15 000 post-paid |
| Value of Invoices Generated                               | • R5,0 billion per annum               |
| Consumer Invoices Generated                               | • more than 250 000 per annum          |
| Meters Managed  | • more than 120 000                    |
|   |  |
|   |  |
|   |  |

*RMS is the largest utility management enterprise in SA, comparable or larger than most Municipalities in the size of its utility undertaking*

# Revenue Recovery Problem

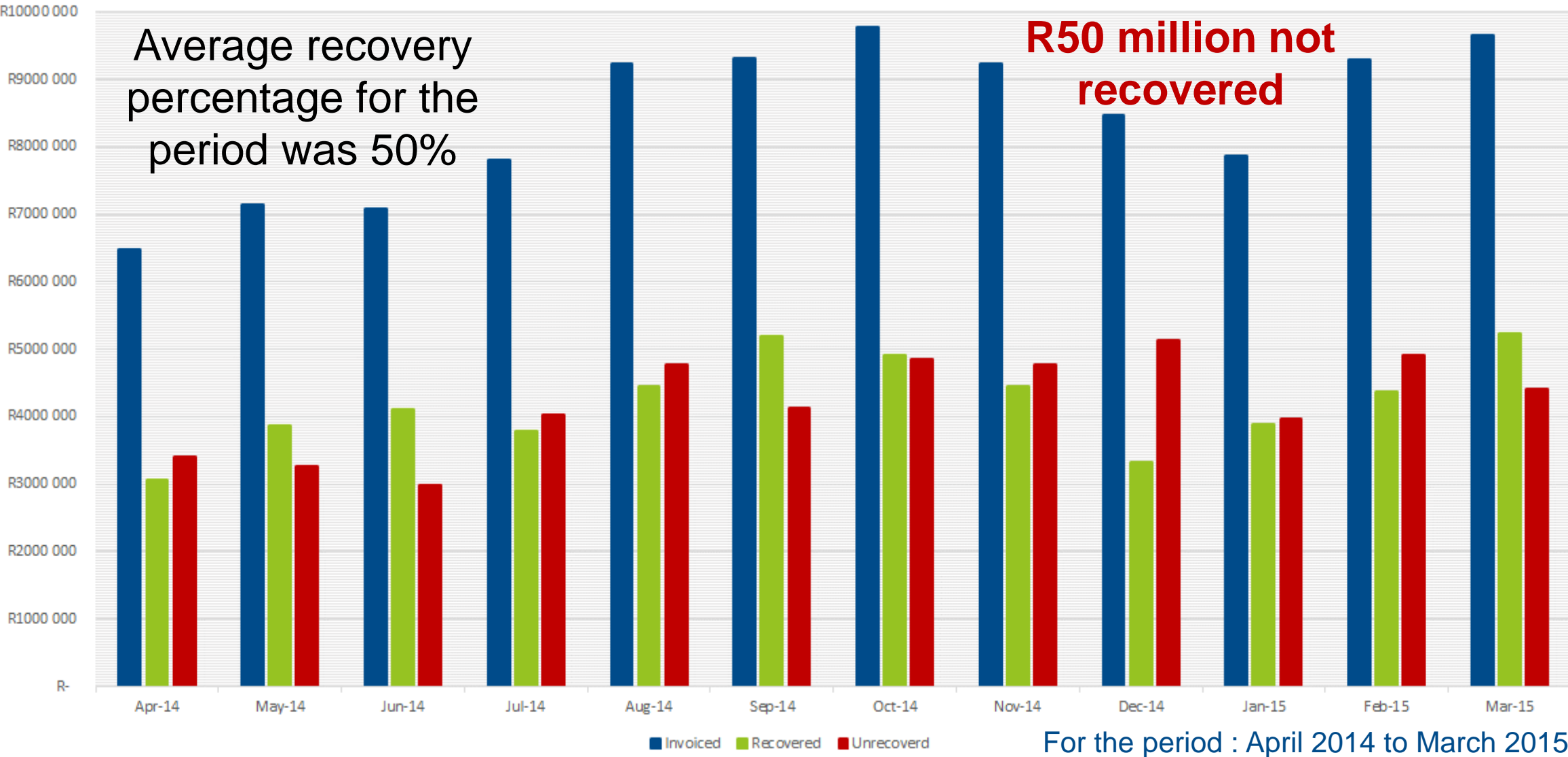
## Naledi Local Municipality **Total (All services)** Collection Rates



For the period : April 2014 to March 2015

# Revenue Recovery Problem

## Naledi Local Municipality Electricity Collection Rates



# Revenue Enhancement Project – VRYBURG (Phase 1)

Majority grant funded



- EU Grant administered by SANEDI
- 10 Municipalities (in distress)
- Tender in July 2014 (Naledi was first)
- Awarded in December 2014
- Appointed two companies
- Project start early 2015





# Revenue Enhancement Project – OVERVIEW (RMS Portion)

Vryburg – portion of residential, all commercial and industrial consumers



**Number of  
Meters  
installed**

|                                |           |                     |       |
|--------------------------------|-----------|---------------------|-------|
| Vryburg Phase 1 (completed)    | Domestic  | Single Phase        | 699   |
| Vryburg Phase 2 (to start)     | Domestic  | Single Phase        | 1 428 |
| Industrial area and businesses | Business  | Three phase         | 218   |
| Bulk meters                    | Bulk      | CT Operated         | 38    |
| Robots & Street lights         | Municipal | Single, Three phase | 34    |

**From a 54%  
to a 99%  
recovery rate**

The total vending fees for Naledi was **R30 million in 12 months** (since June 2015)

R26 million was bought via EFT, Cell Phones and the Online Portal  
Only R4 million was bought at Cash Vending points (13%)

**Incorrect  
metering and  
billing**

In excess of 20% of existing metering or billing points was incorrect

In excess of R6 million recovered in back charges

CT Ratio and Programming problems/ meters outside class specifications/  
no meters at consumption point/ blown fuses/ incorrect CT installations



# Vryburg Phase 1 - CHALLENGES

## Challenges in executing the project



- Existing meters located inside property boundary - difficult to access
- New smart meters are in the street - pole mounted
- Community understanding in moving from old STS based vending
- Two service providers in same municipal area
- Community sceptical of the process & technology
- Cell phone as enabler vs In-home Display
- Buy-in from all stakeholders





# Revenue Enhancement Project - PROCESS

## Recovery Balancing

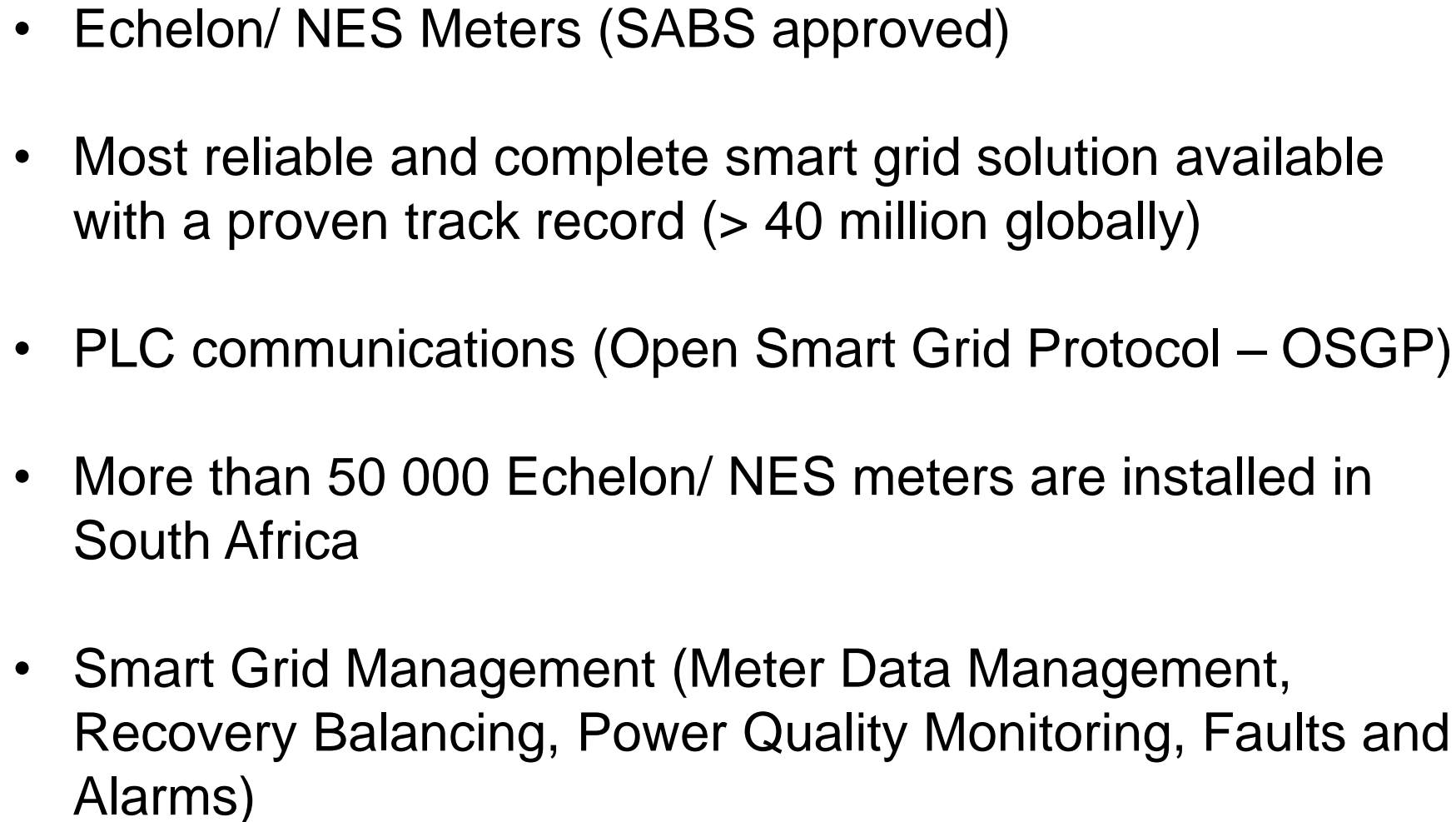


- Audit, reticulation drawings
- Transformer bulk check meters
- Meter all streetlights, traffic lights etc.
- Sub-meter total balancing

The screenshot shows the rmsMeterTree web application. The interface includes a header with the rms logo and 'rmsMeterTree' text, and navigation links for Home, About, and Contact. Below the header, there are input fields for 'Start Date' (2015/09/01) and 'End Date' (2015/09/02), a 'Property' dropdown menu set to 'Globe 1', and a 'Go Fetch' button. There are also buttons for 'Export to Excel' and 'Export to PDF'. The main part of the interface is a table with the following columns: MeterSerial, Rx, MeterCons, ChildCons, and DayCount. The table contains 17 rows of data, with the first row expanded to show a tree structure of meter readings.

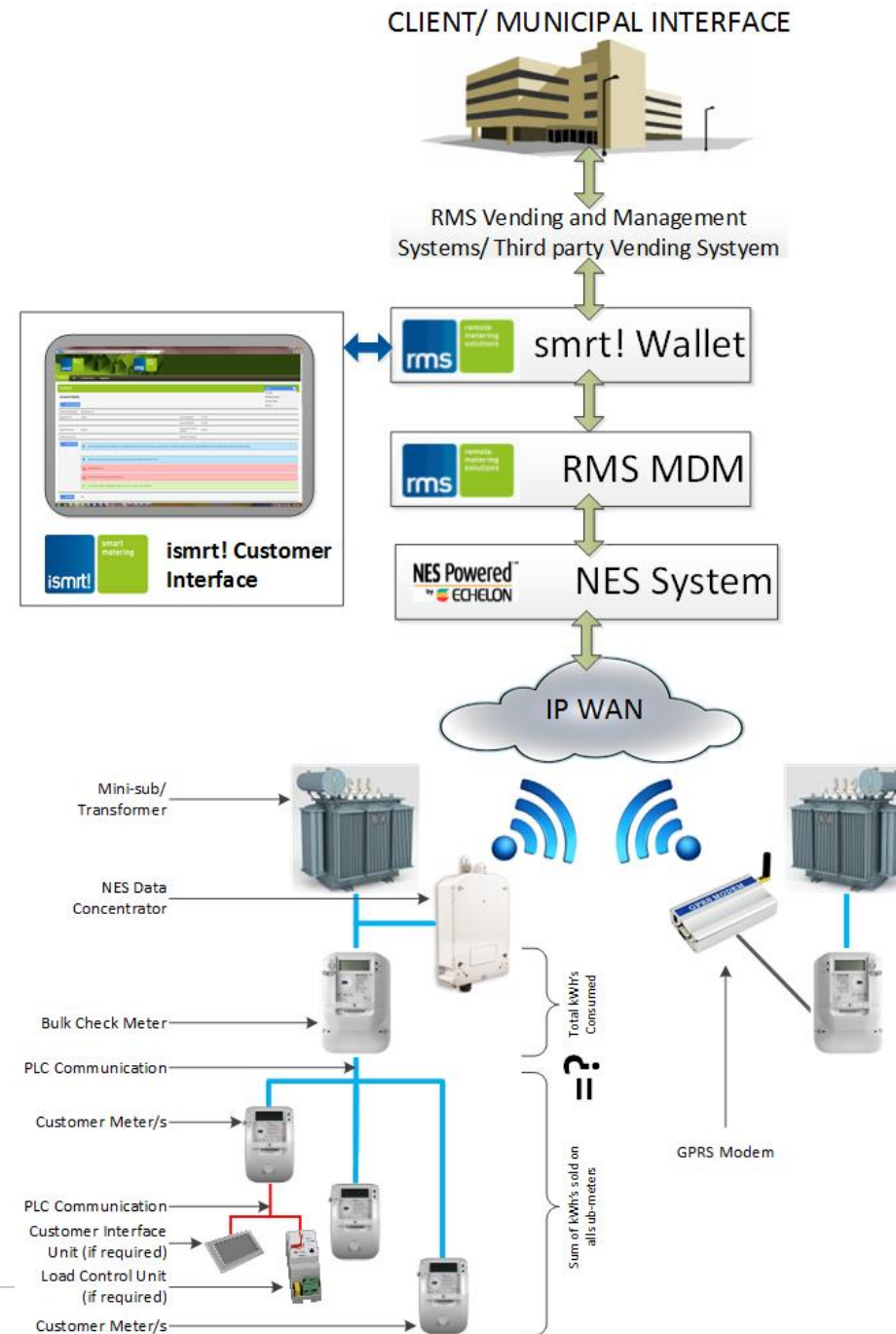
| MeterSerial | Rx  | MeterCons | ChildCons | DayCount |
|-------------|-----|-----------|-----------|----------|
| ELON034520  | 100 | 1787.1    | 1775.091  | 2        |
| ELON030905  | 1   | 11.441    |           | 2        |
| ELON025157  | 1   | 12.118    |           | 2        |
| ELON025069  | 1   | 48.727    |           | 2        |
| ELON030931  | 1   | 16.743    |           | 2        |
| ELON030897  | 1   | 26.513    |           | 2        |
| ELON030919  | 1   | 25.318    |           | 2        |
| ELON025066  | 1   | 19.615    |           | 2        |
| ELON025059  | 1   | 24.401    |           | 2        |
| ELON025079  | 1   | 35.632    |           | 2        |
| ELON025196  | 1   | 18.863    |           | 2        |
| ELON025089  | 1   | 24.275    |           | 2        |
| ELON025083  | 1   | 26.497    |           | 2        |
| ELON025190  | 1   | 15.509    |           | 2        |
| ELON030929  | 1   | 17.052    |           | 2        |
| ELON017603  | 1   | 15.218    |           | 2        |
| ELON025114  | 1   | 13.678    |           | 2        |

## Smart Meters



# Technology Used – SYSTEMS

## High Level System Architecture

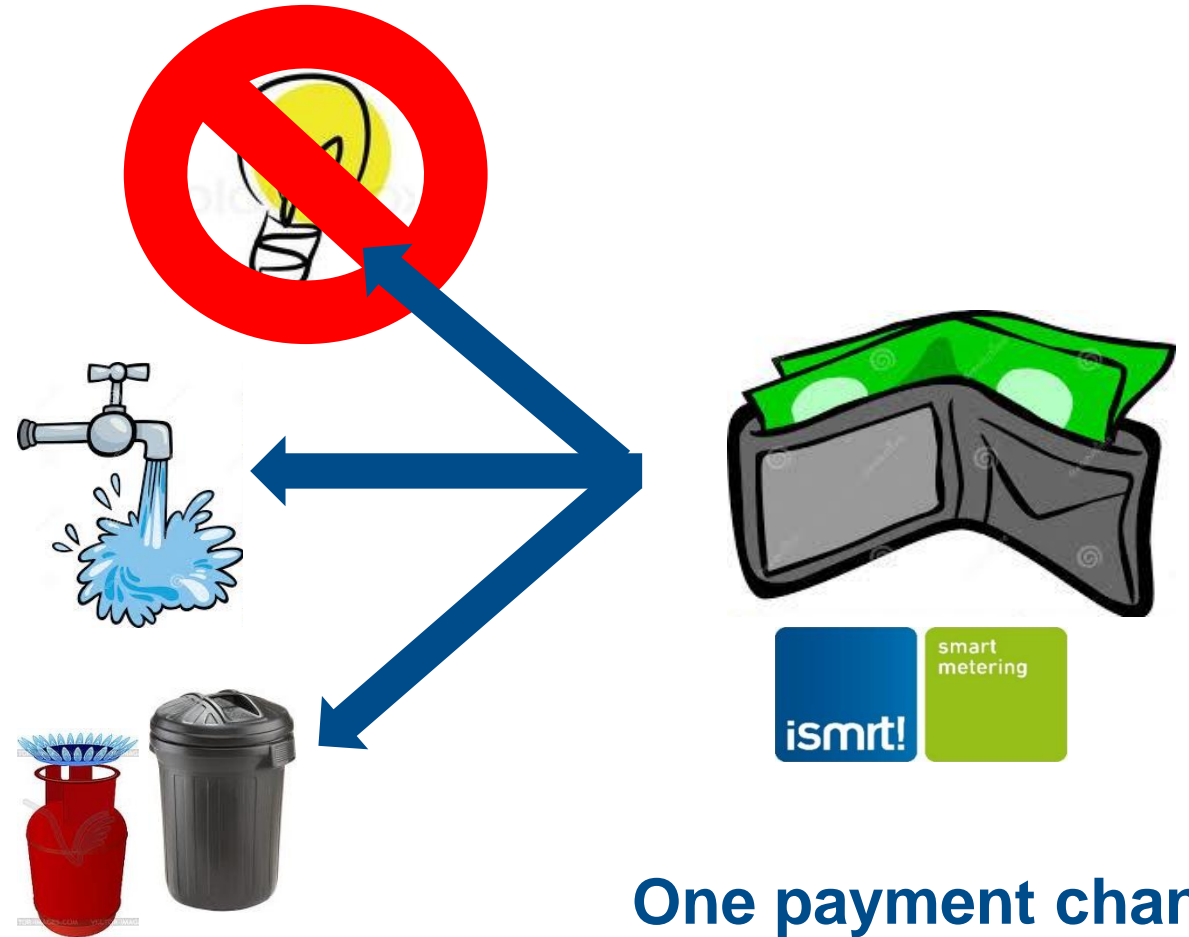


# Technology Used – SYSTEMS

## Smart Wallet Concept



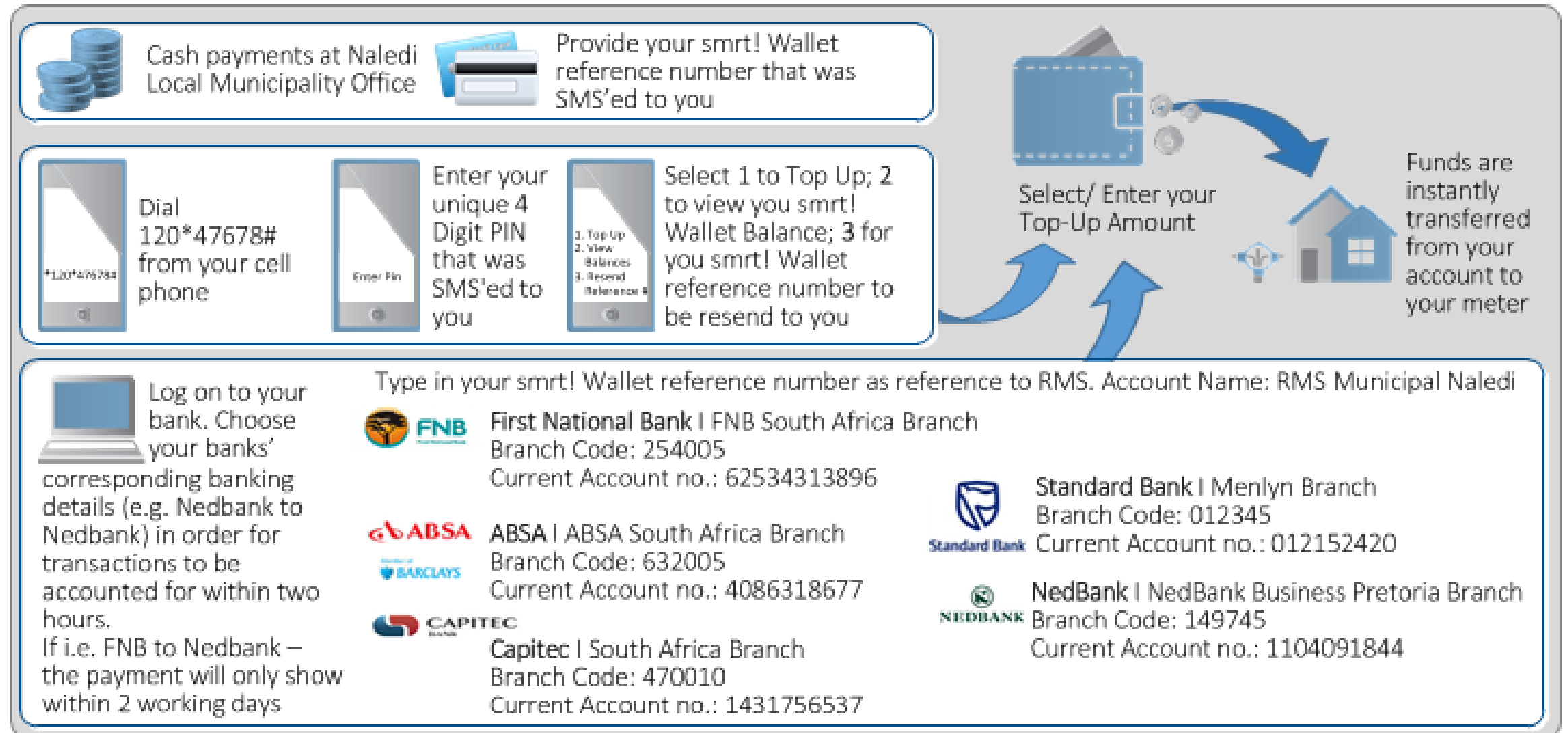
- Centralised Wallet collection system
- Cell Phone Payments/ USSD
- Cash Payment and automated bank allocation
- Wallet for multiple service vending



**One payment channel**  
**Least cost solution**

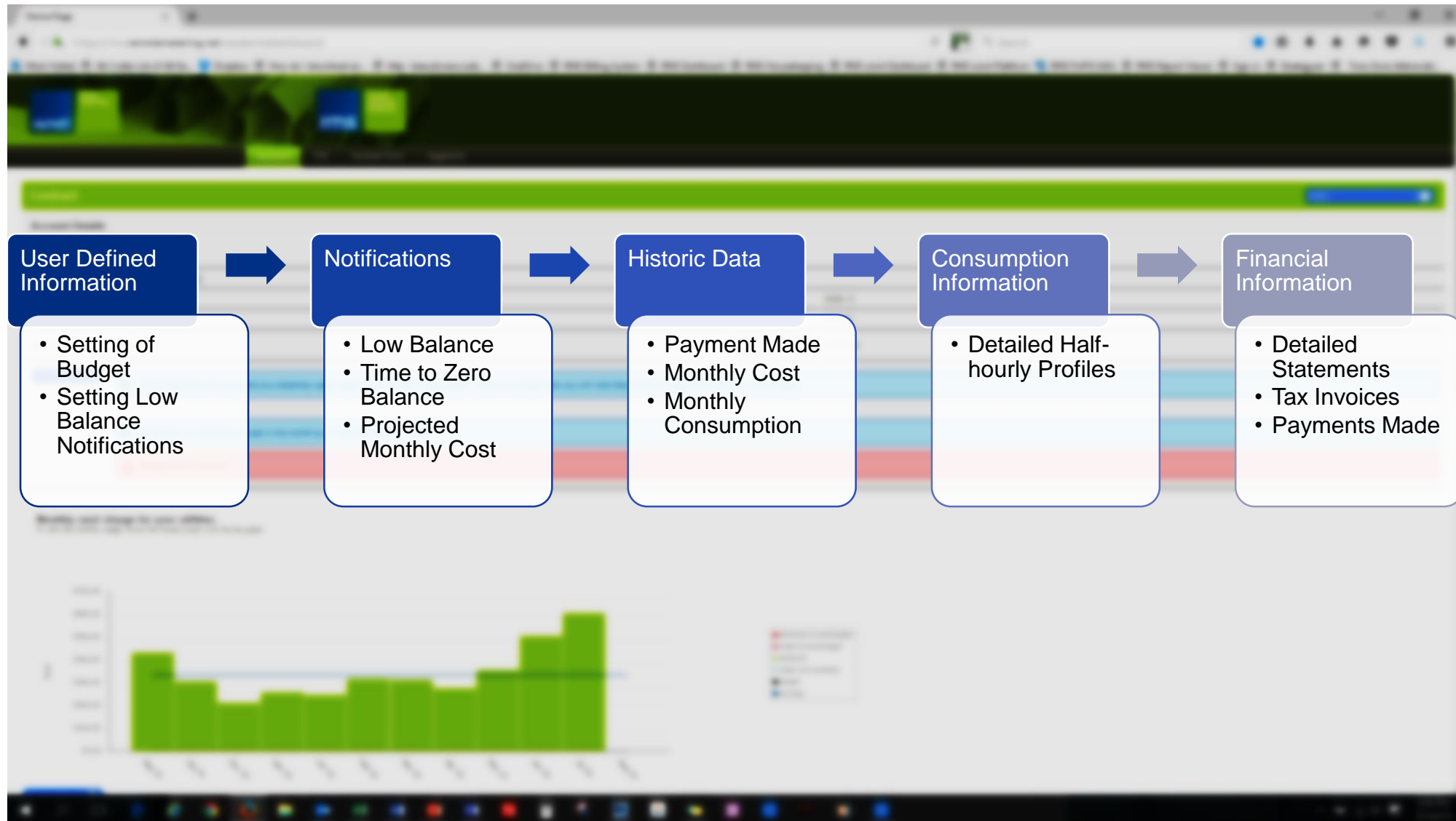
# Technology Used – SYSTEMS

## Smart Wallet Concept



# Technology Used – SYSTEMS

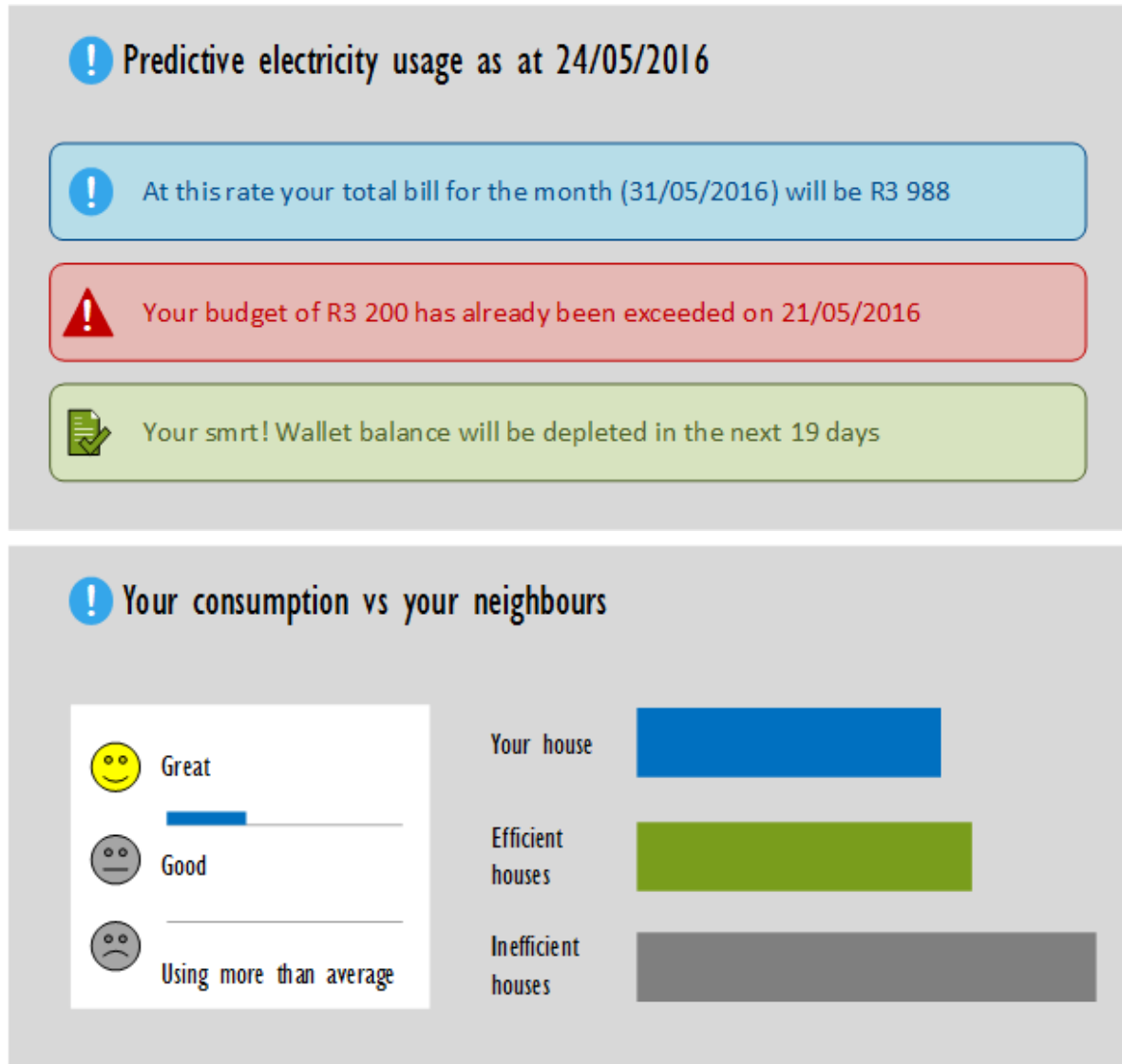
## Consumer Dashboard





# Technology Used – SYSTEMS

## Consumer Dashboard



- Functionality to set and track budgeted expenses
- Pre-warn if expected budget will be exceeded
- Give context to usage by comparing with other relevant consumers

# Revenue Enhancement Project – Vryburg Phase 1

## Capital Cost



| Item   | Quantity    | Amount             | Amount/<br>Item | Amount/<br>Consumer | % of<br>Total |
|--|-------------|--------------------|-----------------|---------------------|---------------|
| <b>Meter Panels</b> (Including consumables, wiring, breakers, locks etc.)                        | 764         | R 1 772 555        | R 2 320         | R 757               | 16%           |
| <b>Overhead Line to Meter Panels</b> (including Bi-metal clamps, T-taps, cables and wiring etc.) | 764         | R 616 417          | R 807           | R 263               | 6%            |
| <b>Meters and DC's</b> (Including consumables and CT's)  | 2427        | R 4 293 150        | R 1 769         | R 1 834             | 39%           |
| <b>Labour</b> (Decommissioning, Installation, commissioning)                                     | 2427        | R 1 862 875        | R 768           | R 796               | 17%           |
| <b>Other</b> (Project management, Training, Community participation, Travel etc.)                | 2427        | R 2 462 326        | R 1 015         | R 1 052             | 22%           |
| <b>Total</b>   | <b>2341</b> | <b>R11 007 324</b> | <b>R4 702</b>   |                     |               |
| <b>Total (Including VAT)</b>   | <b>2341</b> | <b>R12 548 350</b> | <b>R5 360</b>   |                     |               |

- R10 million grant funded
- Balance (±R1 million) RMS loan finance

# Revenue Enhancement Project – Vryburg Phase 1

## Operating Cost and Expenses



| MONTHLY COST (Average per meter)                   | Amount/<br>Item |              |
|--|-----------------|--------------|
| APN/ Data Fees                                     | R               | 2.00         |
| Data Hosting Fees                                  | R               | 2.50         |
| Maintenance and Warantees                          | R               | 0.50         |
| Firmware Upgrade Licenses                          | R               | 1.50         |
| MDM License Fee                                    | R               | 7.50         |
| Hardware Lease/ Rental                             | R               | 2.50         |
| Wallet Platform and Vending License Fee            | R               | 12.50        |
| Vending Fees (Average/ month/ customer)            | R               | 16.00        |
| Meter Data Management                              | R               | 14.00        |
| Consumption/ Smart Grid Management                 | R               | 14.00        |
| Bank and vending fees                              | R               | 6.00         |
| <b>Average cost per meter installed (excl VAT)</b> | <b>R</b>        | <b>79.00</b> |

- For low volumes <5 000 meters
- Very much scale dependent

# Revenue Enhancement Project – Stella

## RMS Financed Project



| Item  | Quantity   | Amount             | Amount/<br>Item | Amount/<br>Consumer | % of<br>Total | % of<br>Total |
|---|------------|--------------------|-----------------|---------------------|---------------|---------------|
| <b>Meter Panels</b> (Including consumables, wiring, breakers, locks etc.)         | 433        | R 877 284          | R 2 320         | R 1 215             | 21%           | 16%           |
| <b>Ready Boards</b> (including installation)                                      | 421        | R 329 222          | R 807           | R 456               | 8%            | 6%            |
| <b>Meters and DC's</b> (Including consumables and CT's)                           | 778        | R 1 492 616        | R 1 919         | R 2 067             | 36%           | 39%           |
| <b>Labour</b> (Decommissioning, Installation, commissioning)                      | 778        | R 533 643          | R 686           | R 739               | 13%           | 17%           |
| <b>Other</b> (Project management, Training, Community participation, Travel etc.) | 778        | R 932 376          | R 1 198         | R 1 291             | 22%           | 22%           |
| <b>Total</b>  | <b>722</b> | <b>R 4 165 141</b> | <b>R5 769</b>   |                     |               |               |
| <b>Total (Including VAT)</b>  | <b>722</b> | <b>R 4 748 261</b> | <b>R6 577</b>   |                     |               |               |



# Revenue Enhancement Project – STELLA

## Return on Investment



| Historic Averages                       |                  |                  |                     |
|---|------------------|------------------|---------------------|
|   | <i>Eskom</i>     | <i>Invoiced</i>  | <i>Gross Profit</i> |
| Summer                                  | R 370 305        | R 564 146        | R 193 842           |
| Winter                                  | R 679 314        | R 687 019        | R 7 705             |
| <b>Monthly Average (Over 12 month):</b> | <b>R 447 557</b> | <b>R 594 864</b> | <b>R 147 307</b>    |

| Current Recovery Ratio: |              | 54.0%            |                   |
|-------------------------|--------------|------------------|-------------------|
|                         | <i>Eskom</i> | <i>Recovered</i> | <i>GP</i>         |
| Summer                  | R 370 305    | R 304 639        | -R 65 666         |
| Winter                  | R 679 314    | R 370 990        | -R 308 324        |
| <b>Profit/(Loss)</b>    |              | <b>R 321 227</b> | <b>-R 126 330</b> |

| Projected Recovery Ratio: |              | 94.0%            |                  |
|---------------------------|--------------|------------------|------------------|
|                           | <i>Eskom</i> | <i>Recovered</i> | <i>GP</i>        |
| Summer                    | R 370 305    | R 530 297        | R 159 993        |
| Winter                    | R 679 314    | R 645 798        | -R 33 516        |
| <b>Profit/(Loss)</b>      |              |                  | <b>R 111 616</b> |

|                   |                  |
|-------------------|------------------|
| <b>Turnaround</b> | <b>R 237 946</b> |
|-------------------|------------------|

# Revenue Enhancement Project – STELLA

## Return on Investment



| Expenses                            |                   |                    | R 237 143  |
|-------------------------------------|-------------------|--------------------|------------|
|                                     | <i>Cost/ Unit</i> | <i>Nr of Units</i> |            |
| Equipment Finance                   | R 249             | 722                | R 180 105  |
| Management and Vending              | R 79              | 722                | R 57 038   |
| Net Improvement (first three years) |                   |                    | R 803      |
| Net Improvement (after three years) |                   |                    | R 180 908  |
| Cash Position (first three years)   |                   |                    | -R 125 528 |
| Cash Position (after three years)   |                   |                    | R 54 578   |



# Naledi Revenue Enhancement Project – SUCCESES

## Major Achievements



- Reduced non-technical losses to less than 1% (Improved recovery ratio from 54% to 99%)
- Technical and non-technical losses on the LV side less than 2,5%
- Local employment – technical and administrative
- All commercial and industrial consumers on 'Pay-as-you-go' daily billing (prepaid)
- Accurate block tariff billing on 'Pay-as-you-go' daily billing (prepaid) resulting in effective lower cost to consumers
- Asset register
- Back billing
- Additional cash vending stations (merchant/ vendor)
- Buy-in from community and all political parties (Stella)

# Naledi Revenue Enhancement Project – LESSONS LEARNED

(and applied at Stella)



- Need for detailed community communication/ participation process
- Need for inclusion of all stakeholders from the start of the project
- Value of Community Liaison Officers (CLO's)
- Registration processes
- After care with local person

# Naledi Revenue Enhancement Project - STRATEGY

How to gain control again



- Step 1: Stabilise and correct electricity recovery
- Step 2: Include arrears collection as part of recovery process
- Step 3: Include water and sanitation billing as part of the smrt! Wallet
- Step 4: Install/ upgrade bulk water meters to AMR meters
- Step 5: Convert manual water meters to AMI meters
- Step 6: Street lights/ Transformers
- Step 7: Smart grid management



# Revenue Enhancement Projects - FUTURE Technologies



- It is not about the hardware
- Will have a range of different meter types
- Meter Data Management System (MDMS) capabilities and technology
- Cloud based services vs locally hosted
- In-home Displays (IHD) or not??
- Ability to include all services not just electricity
- Multiple vending platforms (STS2 and other Rand based systems)

# Revenue Enhancement Projects - FUTURE

Look out for:



- Percentage based fees!!!
- Proven ability to bill Maximum Demand (kVA) charges accurately
- Proven ability to bill TOU and Block/ Inclining Block Scales accurately
- Proven ability to include water, sanitation, refuse etc. as part of wallet
- Tender specifications (Emalahleni/ Umngeni) – Kiosks and enclosures
- Low cost vending platforms (no middle man)

# Revenue Enhancement Projects - FUTURE

Aspects that would have a cost impact:



- Position of existing meters (in premises, kiosk or pole mounted)
- Position of new meters (in premises, kiosk or pole mounted)
- Specification of kiosks/ meter panels/ enclosures
- Number of meters per enclosure
- State of existing breakers (and reusability thereof)
- Scale and size of implementation
- Local content requirements
- Status of the existing grid and infra structure



# Thank You!

# Questions?



# Revenue Enhancement Project – Vryburg Phase 1A and B

## Return on Investment



### First Phase (1A - Town)

| RECOVERY RATIO PRIOR TO RMS               |             |            |            |              |
|---|-------------|------------|------------|--------------|
| Description                               | Type        | % of Total | % Recovery | Rand Value   |
| Recovery Ratios                           | Residential | 21.19%     | 46.00%     | R 257 677    |
|   | Business    | 78.81%     | 56.15%     | R 1 170 066  |
|   | Total       |            | 54.00%     | R 1 427 743  |
| Recovery Expenses (External Vending Only) | Monthly     |            | 2.00%      | R 5 154      |
|   | Annually    |            |            | R 61 843     |
| Net Income                                | Monthly     |            |            | R 1 365 901  |
|   | Annually    |            |            | R 16 390 810 |

| RECOVERY RATIO AFTER RMS                    |             |            |            |              |
|---|-------------|------------|------------|--------------|
| Description                                 | Type        | % of Total | % Recovery | Rand Value   |
| Recovery Ratios                             | Residential | 21.19%     | 97.50%     | R 546 164    |
|   | Business    | 78.81%     | 100.00%    | R 2 083 801  |
|   | Total       |            | 99.47%     | R 2 629 965  |
| Recovery Expenses (RMS Fee + Vending Costs) | Monthly     |            |            | R 77 973     |
|   | Annually    |            |            | R 935 676    |
| Net Income                                  | Monthly     |            |            | R 2 551 992  |
|   | Annually    |            |            | R 30 623 904 |

### First Phase (1B - Colridge)

| RECOVERY RATIO PRIOR TO RMS               |             |            |            |             |
|---|-------------|------------|------------|-------------|
| Description                               | Type        | % of Total | % Recovery | Rand Value  |
| Recovery Ratios                           | Residential | 80.00%     | 53.46%     | R 504 605   |
|   | Business    | 20.00%     | 56.15%     | R 132 494   |
|   | Total       |            | 54.00%     | R 637 100   |
| Recovery Expenses (External Vending Only) | Monthly     |            | 2.00%      | R 10 092    |
|   | Annually    |            |            | R 121 105   |
| Net Income                                | Monthly     |            |            | R 515 994   |
|   | Annually    |            |            | R 6 191 934 |

| RECOVERY RATIO AFTER RMS                    |             |            |            |              |
|---|-------------|------------|------------|--------------|
| Description                                 | Type        | % of Total | % Recovery | Rand Value   |
| Recovery Ratios                             | Residential | 80.00%     | 97.50%     | R 920 255    |
|   | Business    | 20.00%     | 100.00%    | R 235 963    |
|   | Total       |            | 98.00%     | R 1 156 218  |
| Recovery Expenses (RMS Fee + Vending Costs) | Monthly     |            |            | R 112 812    |
|   | Annually    |            |            | R 1 353 744  |
| Net Income                                  | Monthly     |            |            | R 1 043 406  |
|   | Annually    |            |            | R 12 520 872 |

# Revenue Enhancement Project – Vryburg Phase 1A and B

## Return on Investment



### INVESTMENT ANALYSIS

|                         |          |              |
|-------------------------|----------|--------------|
| Net Improvement         | Monthly  | R 1 186 091  |
|                         | Annually | R 14 233 094 |
| Capital Cost (Phase 1A) |          | R 5 527 200  |
| SPB (months)            |          | 4.66         |
| ROI (year 1)            |          | 258%         |

### INVESTMENT ANALYSIS

|                         |          |             |
|-------------------------|----------|-------------|
| Net Improvement         | Monthly  | R 527 412   |
|                         | Annually | R 6 328 939 |
| Capital Cost (Phase 1A) |          | R 5 997 600 |
| SPB (months)            |          | 11.37       |
| ROI (year 1)            |          | 106%        |

# Smart Metering – the RMS way

## How does Smart Metering work?



**A**  
A smart meter for electricity is installed outside your home (no physical interaction required - no keypad).



**B**  
The meter communicates and records information to a central server and stores it for up to 3 years.



**C**  
The consumer obtains and manages information (balances, statements, consumption reports, usage targets) from server via internet dashboard.



**D**  
The meter communicates to the consumer, via sms/email, when credits are low and it is time to top-up.

## How does my smrt! Wallet work?



You can load your smrt! Wallet with funds via Cash (ponte/ vending) or your cell phone or EFT.



All utility billing happens inside your smrt! Wallet from funds transferred to it.



**Pay as You Use**  
Your smrt! Wallet is billed every morning with the utilities you used the previous day.



## How do I register?



**A**  
Complete the application form onsite and or hand it in at RMS offices, Vryburg or send it to m: nalediaccounts@ismrt.net f: 086 2729462



**B**  
Once received, your details are loaded onto the system and a **four digit pin and your smrt! Wallet reference no.** is sent to the registered cell phone number and email address



**C**  
Start with payments via EFT or Cash to your smrt! Wallet within 24 hours upon receiving your **four digit pin and your smrt! Wallet reference no.**

*Please ensure RMS has your correct banking details to enable you to utilise the smrt! Wallet as per the payment methods.*

# Revenue Management in context – Naledi Municipality



What ~~do~~(did) we ~~try to~~ achieve

- Problem – Traditional Revenue Management methods historically only recovered on average between 5% and 45% of revenue billed. Electricity revenue had the highest recovery rate BUT still only recovered 54% of revenue billed.
- Outcome – 100% of revenue recovered with the least possible disruption of service to the community. This is only possible if you have a smart revenue billing mechanism that allows one payment channel for multiple service offerings.
- Solution – It is not about the meters but rather about a system that not only offers accurate consumption data, but also allows you to bill and collect revenue for all services on one platform.
- Evidence – The RMS smrt! Wallet solution provided a smart grid electricity billing platform that increased electricity revenue recovery from 54% to 99%. It also has the functionality to bill and recover all other services via the same solution.