

# BUSINESS INTELLIGENCE TOWARDS REVENUE ASSURANCE

Improved Visibility on your Operations

# DRIVERS

Why is it important..

- » **Energy prices** are and will continue to **increase**.
- » This will require:
  - Better control with increased efficiency
  - Conservation of energy and a lowering in peak demand
  - Reduction in Non-Technical Losses





# CHALLENGES

Why is everybody not doing it

- » With large volumes of data generated from numerous systems and operations, it can be difficult to get an overall picture
  - Information distributed over multiple “Isolated” Software solutions & Databases – makes a global view challenging
  - Large volumes of data can be overwhelming & sophisticated analyzing techniques limited to small group of data specialist – not necessarily the decision makers
  - Data must be available in a summarized format for easy interpretation; without losing drill down functionality.



# OPPORTUNITIES

Why is it becoming a reality

- » Software design & deployment strategies are increasing towards maximizing the availability of information:
  - Web based software & cloud computing - accessibility and data sharing between different workstations/systems via internet
  - Web application design includes standard plug-ins (API's is a specification used as an interface by software components to communicate with each other)
  - Mobile Solutions designed for smart devices
- » Key for success will be the ability to utilize the advantages offered by:
  - Spatial data & GIS techniques
  - Energy balancing calculations
  - New generation smart & prepayment meters with AMR capabilities

**A central business intelligence output must be available in a clear online dashboard format which is critical for end-to-end visibility.**

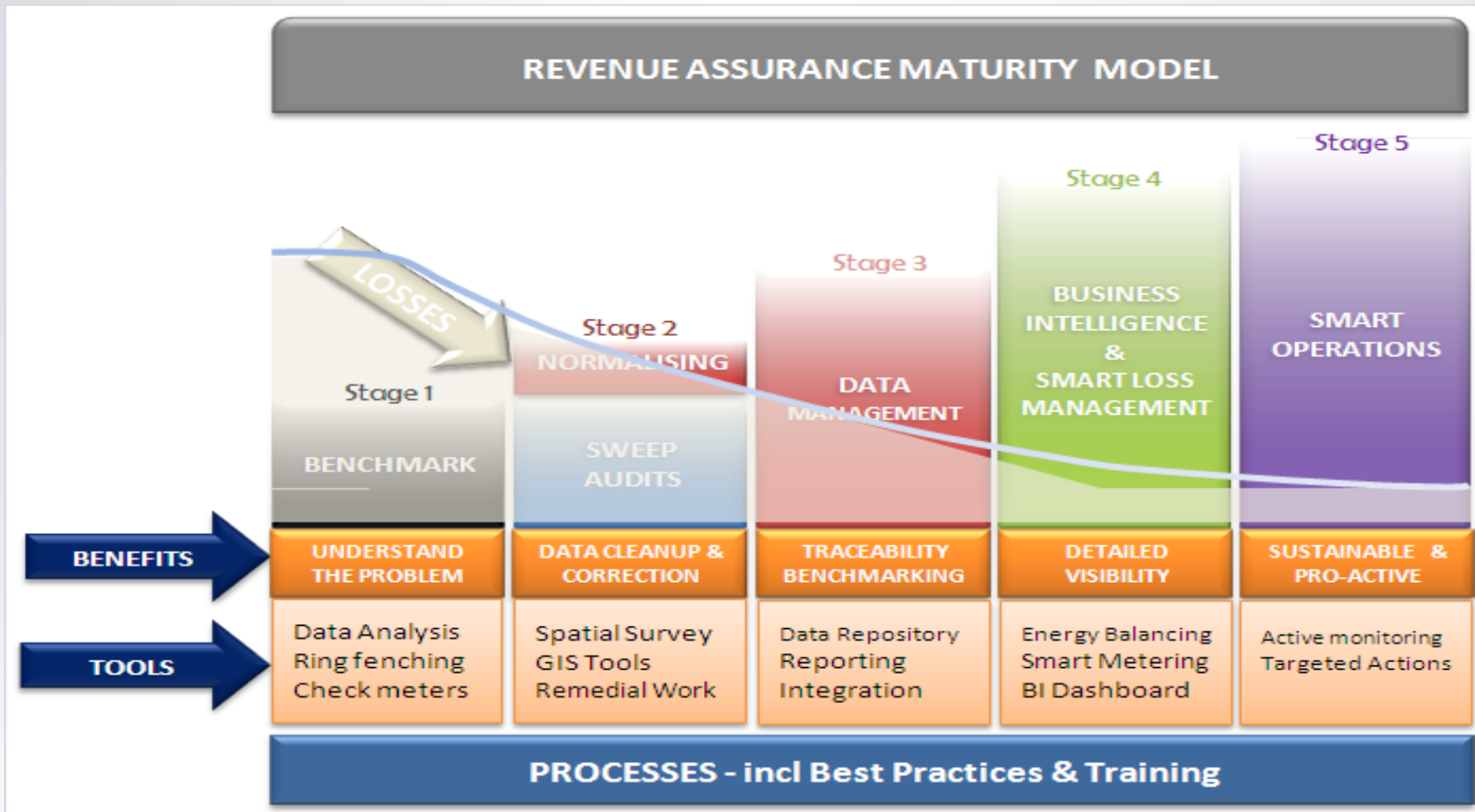
# FROM REVENUE PROTECTION TO REVENUE ASSURANCE

- In the “old days” Revenue Assurance was referred to as Revenue Protection. Its sole purpose was to minimize energy theft and fraud. The activities consisted primarily of:
  - Audit programs
  - Visual inspection of the meters by field teams
  - Anonymous tips
  - Tracking broken meter seals
  - Rudimentary high/low validation of pre-paid sales



**Revenue Assurance is the set of people, processes, and systems focused on identifying, quantifying and eliminating revenue leaks across the enterprise.**

# REVENUE ASSURANCE MATURITY MODEL

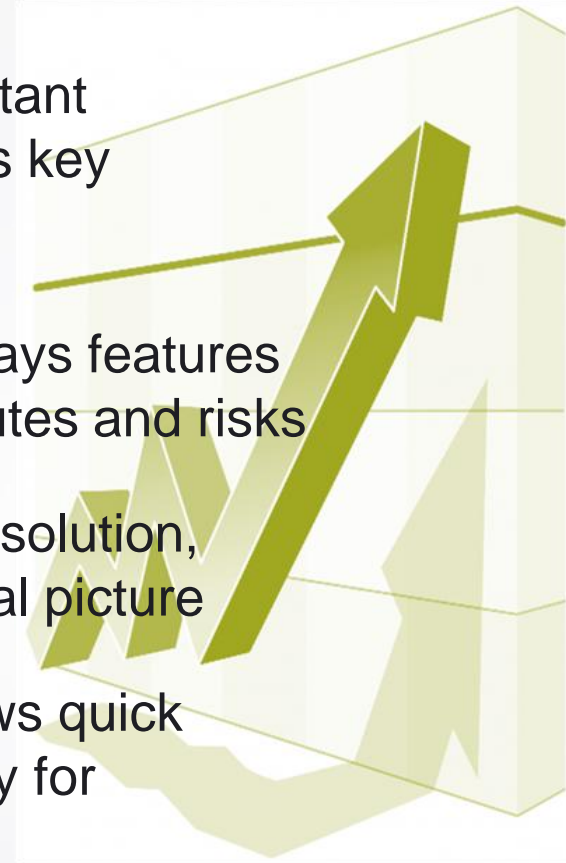


As the maturity of the operations increase, **INFORMATION** that give clear visibility on the bottom line that enable adequate decision making on management strategies, will be crucial to ensure financial success of the utility

# KEY FEATURES

What must a BI solution offer..

- » *Web-based User Interface* – Accessible through a standard internet connection without any local software installation. User log in with a secure user name & password to access information
- » *Clear Graphical Presentation of Information* – Important information in a clear graphical format that highlights key performance indicators, trends and risks at a glance
- » *Spatial Extension* – Handles GIS data inputs. Displays features on spatial maps with legends highlighting key attributes and risks
- » *Multi System* – Not inherent to a particular software solution, incorporates output from various systems for a global picture
- » *Flexible Integration & Customization Options* - Allows quick customization for specific requirements and flexibility for integration updates to third party data sets



# WHY BUSINESS INTELLIGENCE “DASHBOARD”

Information to Optimize your Bottom Line

## » Time Saving

Less time spent maintaining spreadsheets and manual reports

## » Cost Saving

Tracks incomes and costs, revealing exceptions and cost saving opportunities.

## » Early Warnings

Visual output ensures warning signs are picked up early, ensuring a rapid response to critical issues

## » Recognize Trends

Graphical plots of data brings trends to the forefront

## » Clear Communication

The visual output is designed towards easy and quick interpretation, even for non-technical people within your organization.

## » Drill Down Functionality

Interactive interfaces and selection options allow you to easily drill down into your data with only a few mouse clicks, without getting lost



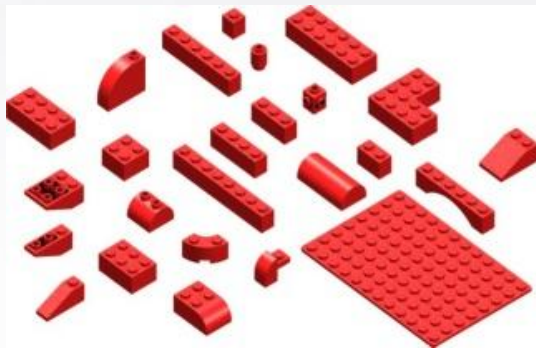
# BRINGING IT ALL TOGETHER

Towards an integrated solution

- » Business Intelligence supported by an online dashboard will become an integral part of the solution suite
- » Presents valuable information retrieved from many systems in a centralized window, allowing the manager to gauge the performance of his operations and identify critical trends at a glance

**In this examples we will focus on incorporating the following applications towards a centralized view:**

- **Energy Balancing Techniques**
- **Vending Patterns**
- **Meter Data**

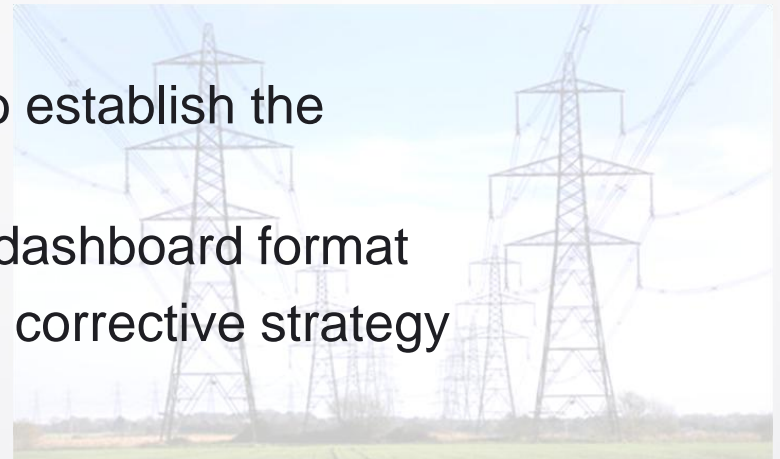


# ENERGY BALANCING OVERVIEW

**Key success factor for Revenue Protection will be the ability to establish the bottom line loss in kWh in a network & then measure the success of any action/program by the degree in which you improve the kWh recovery**

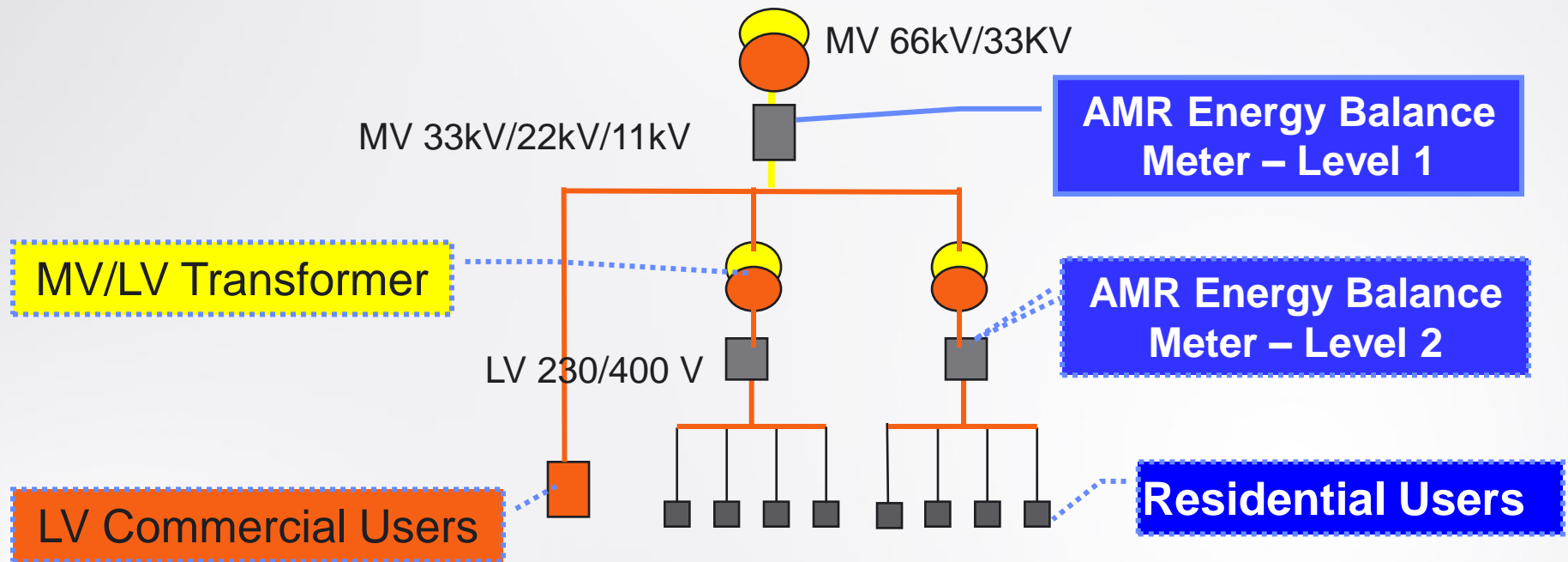
## Energy Balancing Objectives

- » Measuring the total energy dispensed at selected feeding point and comparing this to the total sum of energy measured at the consuming endpoints.  
The difference = **LOSSES**
- » Balance metering at start of program to establish the bottom line
- » Process & display information in clear dashboard format
- » Pin-point high risk areas and formulate corrective strategy



# ENERGY BALANCING PRINCIPLE

Figure 1. Basic principle for Energy Balancing metering for Prepaid Meters



# Elements Towards Energy Balancing

## » Network details to include:

- Types of Feeders (Transformer, mini-sub)
- Relationship between points identified
- GPS position of all network points mapped

## » Statistical balance meters:

- Meters installed at selected feeding points
- Start automatic reading of meters
- Data logged to identify bottom line

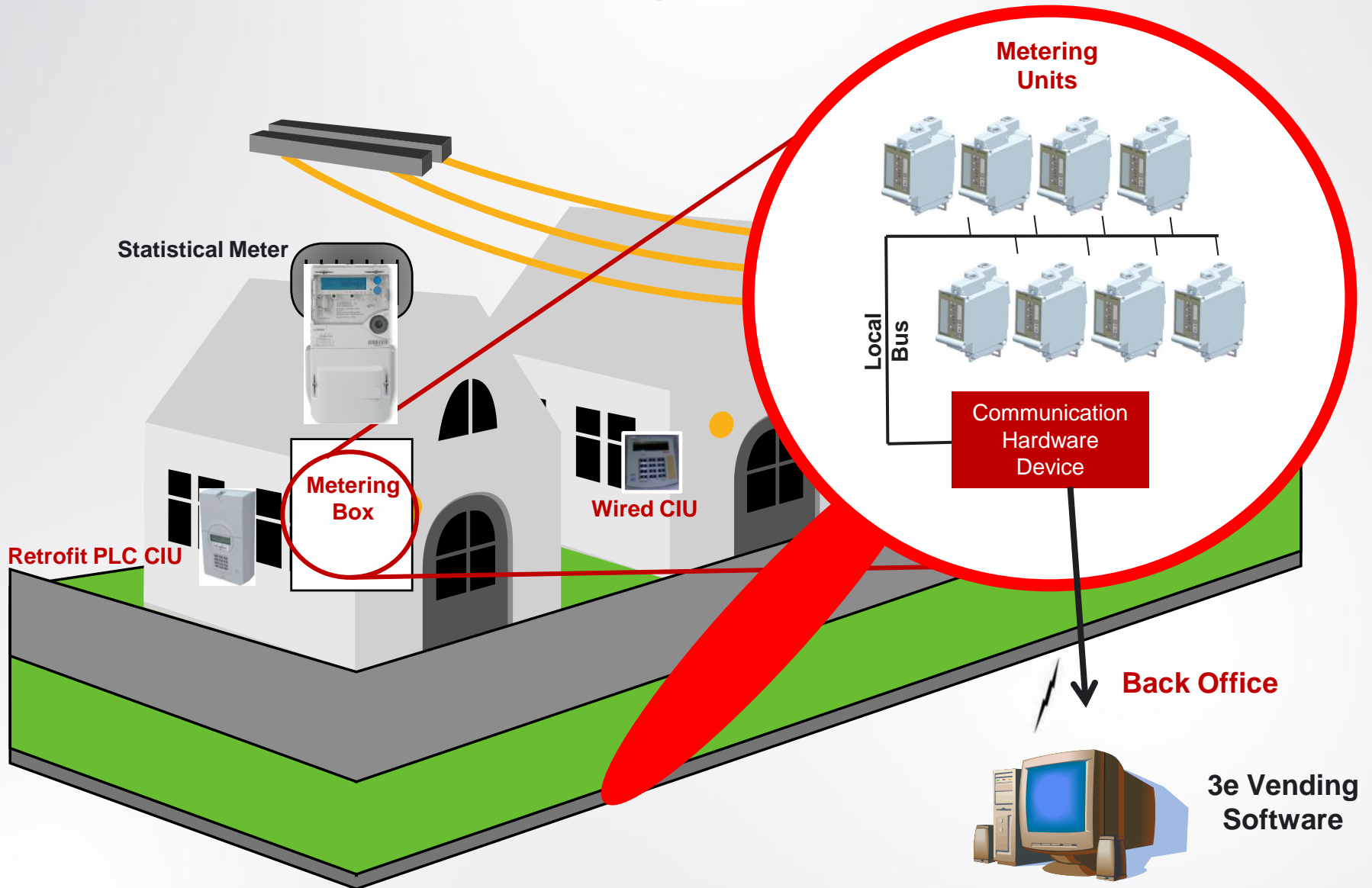
## » Survey metering end-points

- Capture GPS coordinate
- Capture meter, address & account details
- Link endpoint to supply transformer/network





# Split Pre-Paid Metering with AMR



# PREPAYMENT SPLIT METERING

## » Why Split metering

- Meter Units in secure enclosure removed from end user
- Access to meter for Field Inspector

## » Prepayment with AMR for Revenue Assurance

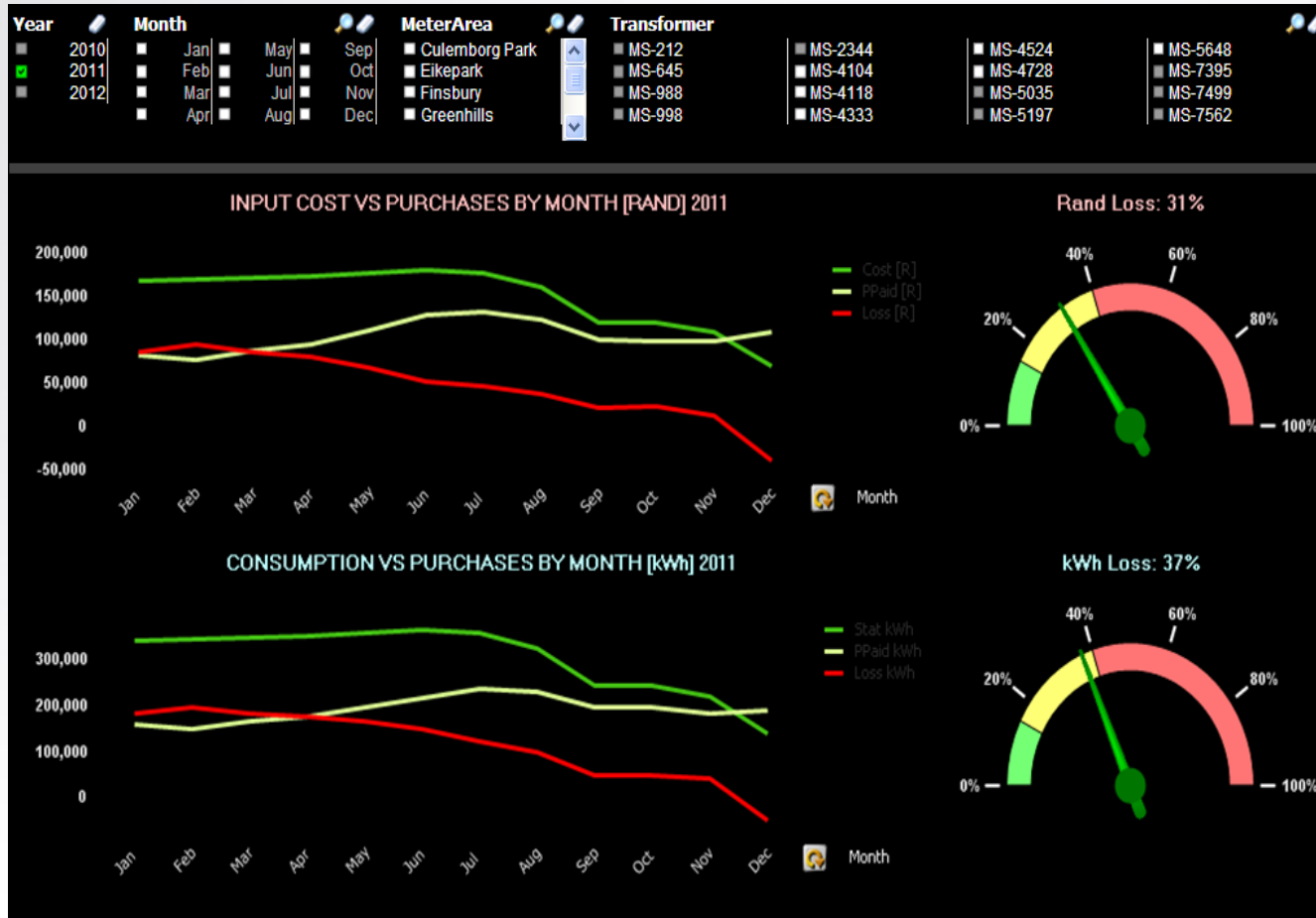
- Meters ready for 2 way communications
  - Designed for high density installation – multiple meters in an enclosure
  - Supports the Revenue Assurance program of the Utility
  - Detailed credit register & kWh usage data directly from meter. Allows for advanced energy balancing & smart tamper identification
  - Combats Ghost Vending
  - Faster reactivity & pro-active monitoring
  - Permanent tamper proof sealing of the MCU
  - Improved visibility on bottom line & KPI's
- 



# UTILIZING YOUR INFORMATION

## » Bottom Line Information in Dashboard for Easy Interpretation

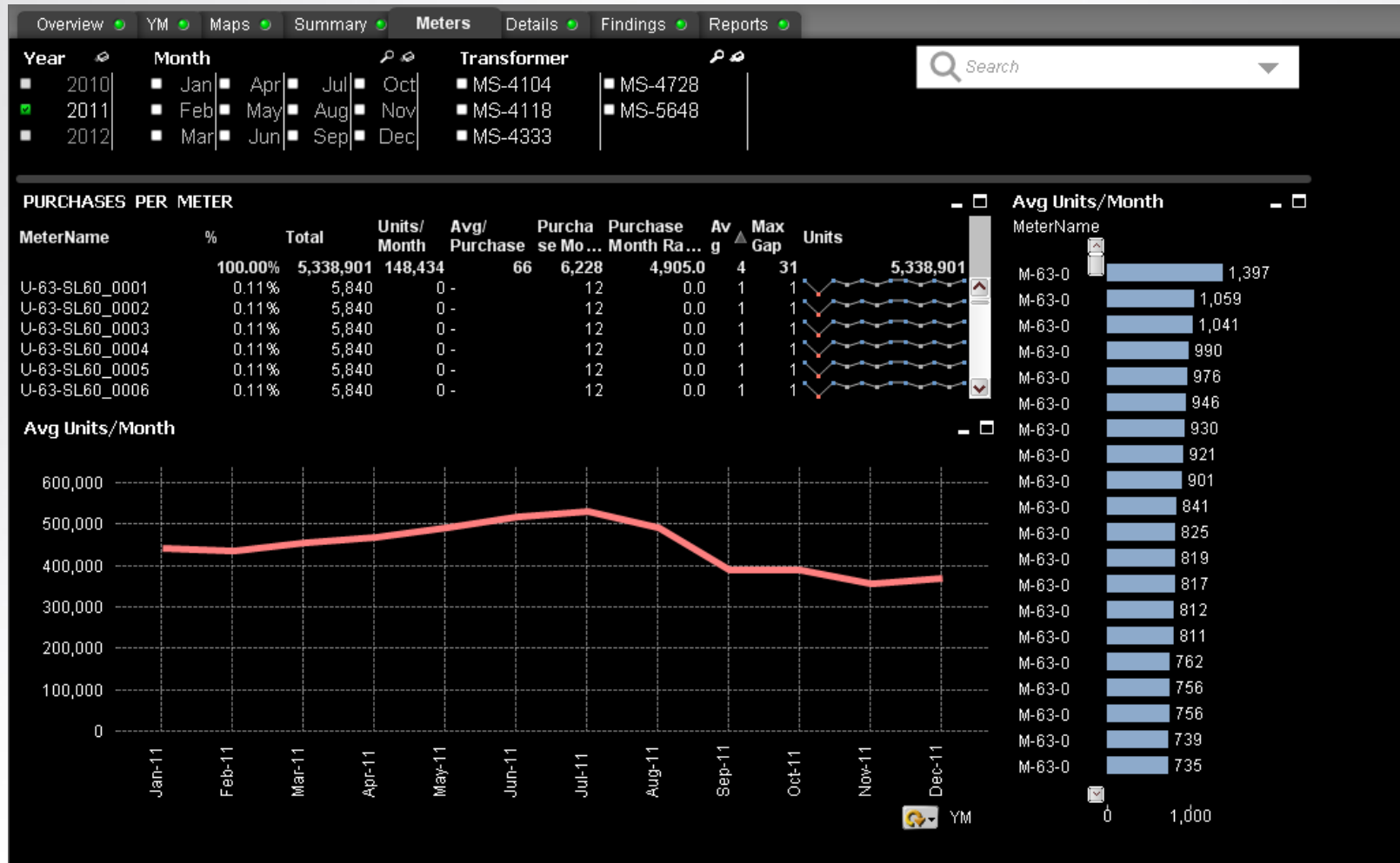
- Information from various sources in a single view
- Web based access



# CONSUMPTION ANALYSIS

## Drill down to detailed consumption patterns

- » View consumption patterns at feeder & endpoints

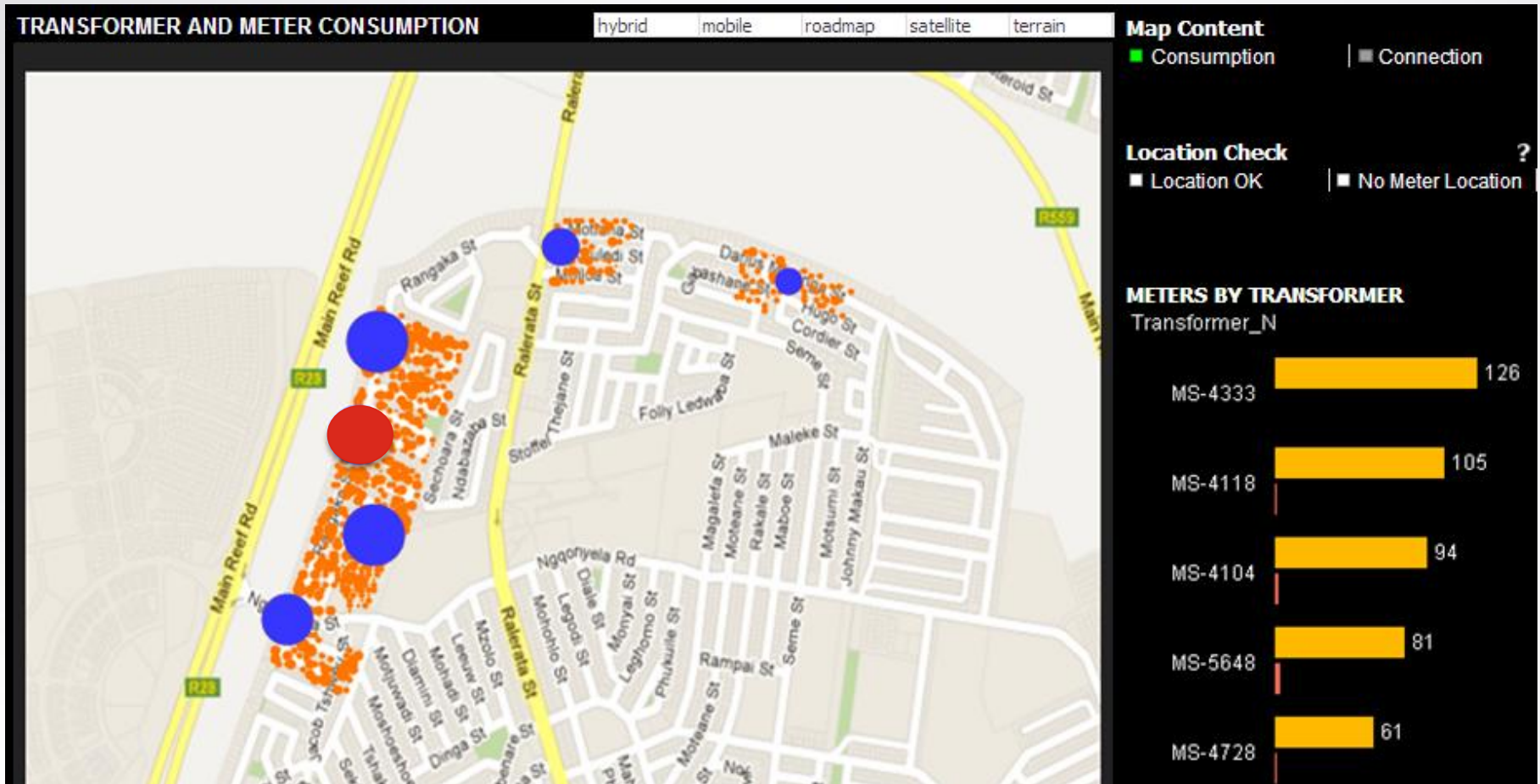




# SPATIAL MAP VIEW 1

## Spatial views of consumption points

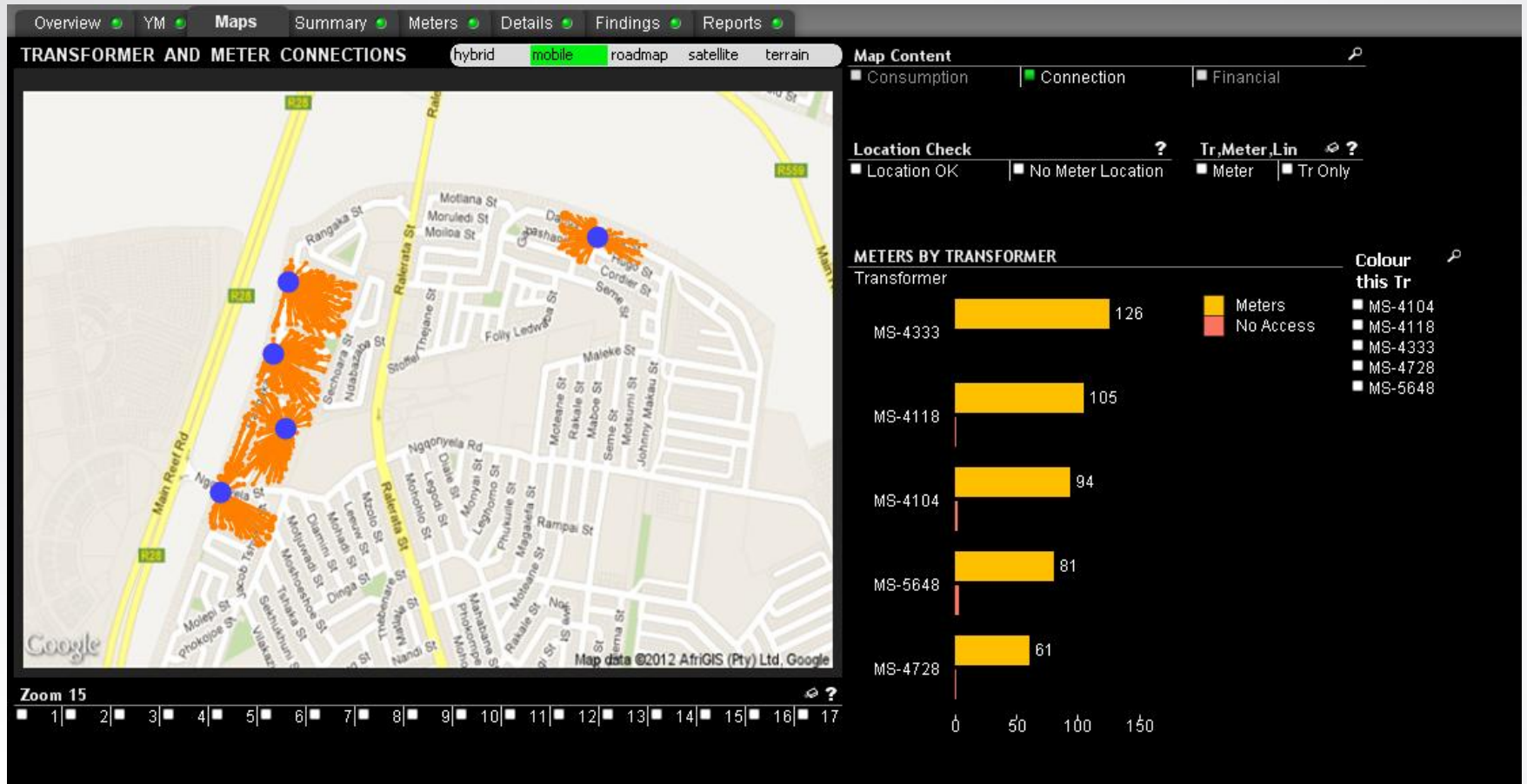
- » Display balance points & consumption points
- » Update legend to show relative consumption & losses



# SPATIAL MAP VIEW 2

## Link between feeder points & consumption points

» Visual validation of links between feeders & consumption points



# LAST NOTES

## » **Communication Infrastructure**

Improving, but still limiting in areas.

## » **Quality of Data**

The information is only as good as the data it is based on.

## » **Experience & Skills**

Evaluating, extracting & processing data towards an optimal Business Intelligence output which still requires skill.

# THANK YOU



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