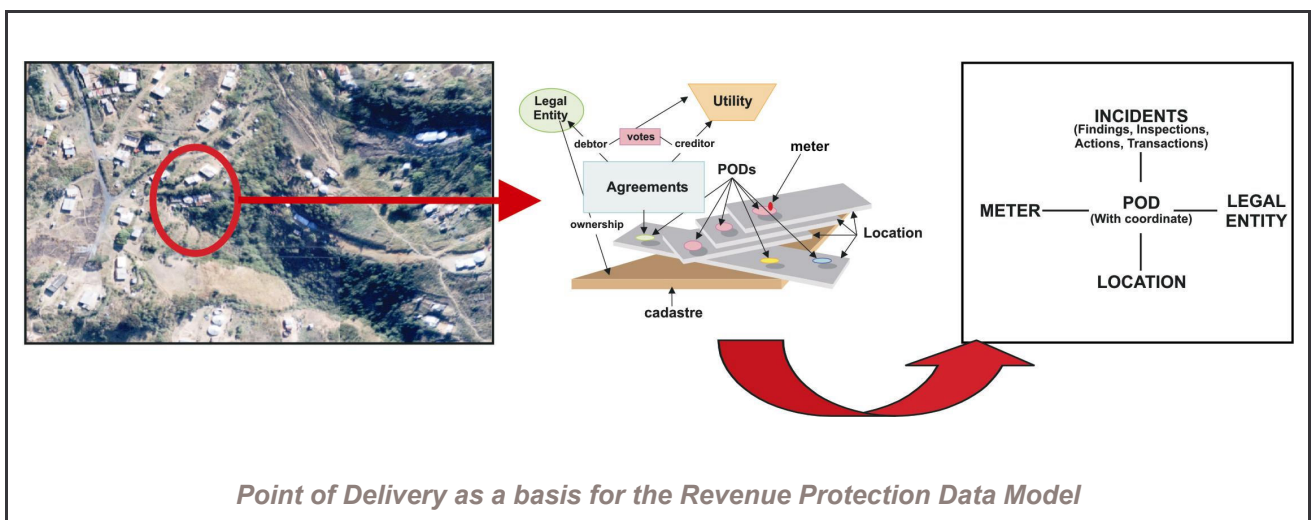


Point of Delivery (POD) Measurement and Analysis as a method of Revenue Protection

Authors: Erik Saayman, Revenue Protection Product Manager & Jani Pretorius (Mrs.), Revenue Protection Project Manager – Actaris Measurement & Systems (Pty) Ltd.

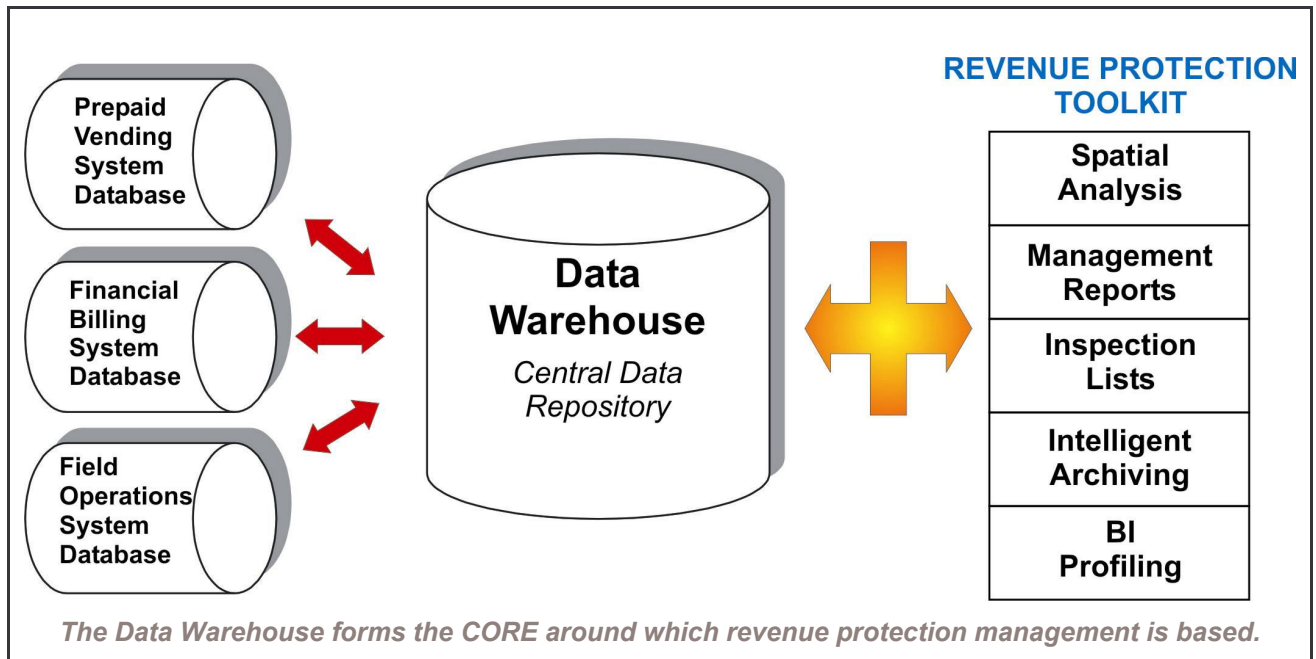
The electricity utility aims to provide electricity to all communities at a competitive cost. Sustainable energy distribution necessitates the innovative and highly cost-effective management of metering systems. A smart approach is to focus on optimising utilization of power by reducing non-technical losses in particular. Historically Prepaid meters were installed “Blind” to save time & cost. In many rural or informal areas there are also neither road names nor stand numbers. This lack of decent addressing inhibits meter management as well as Revenue Protection.

The first step towards addressing this shortcoming is expanding your knowledge of what happens at the Point of Delivery (POD), the place where the meter is installed. This POD is the spill around which the whole data model is built. The POD is a data link identified by a GPS coordinate. The physical address will be added as an attribute if available. The meter, the agreement, the legal entity (customer) as well as all findings, incidents and transactions are linked to the POD. This arrangement ensures a complete history is kept of the distribution point, unaffected by meter change-outs, customers moving, or even new accounts. Knowing what happens at the POD, where the meter is installed, provides Revenue Protection managers with insight into consumer behavior. The measurement and analysis of consumption, peak demands and incidents (such as power up and power down) can highlights patterns indicating possible fraud at the meter installation.



The cost of detecting revenue losses in a prepayment system can be greatly reduced through accurate record keeping and by maintaining data integrity. Efficient revenue protection procedures require that

various sources of data relating to the address, the meter and the customer must be tied together by a common geographical location. The data that makes up this complete picture is normally stored in various operational systems and databases; examples include the financial billing system, vending systems, CRM systems and even geographical information systems. Managing of all these datasets therefore requires an advanced Resource Information System (Central Data Repository/Data Warehouse). Such a core relational database allows for the effective profiling of customers, integration into various operational and financial systems as well as centralized visibility and reporting. It furthers the utility to make informed and intelligent decisions based on accurate and time series information.



Once a central data repository is in place, effective Data Management can be conducted. “Unintelligent audits” are very costly and often has minimal impact as a Revenue Protection solution. These audits are normally sweep actions or inspections based on Low and No Consumption lists, generated from the Vending system. The effectiveness of these operations are hampered by many factors:

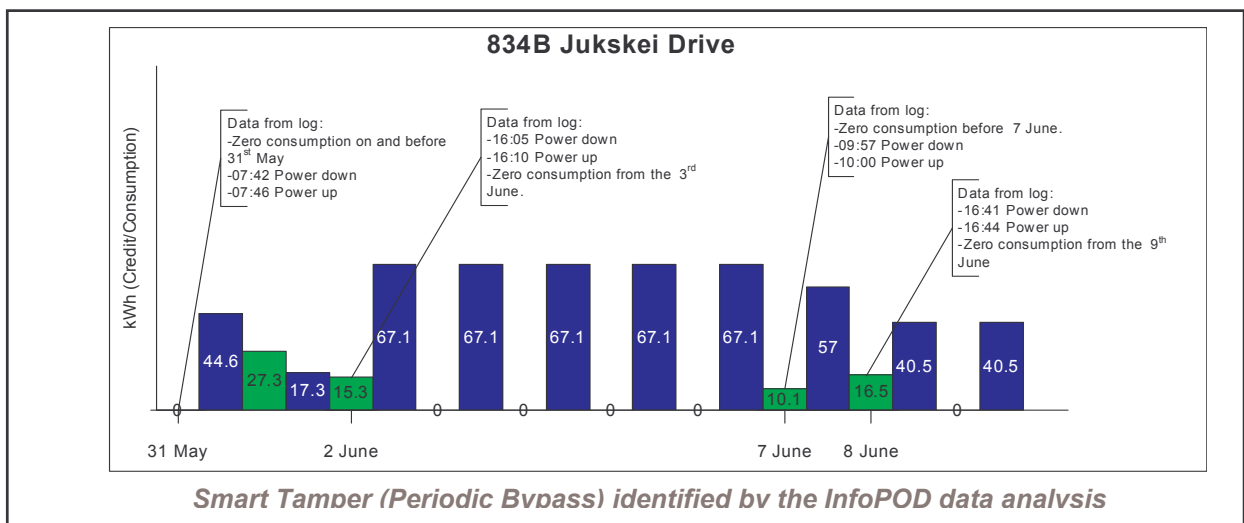
- Sophisticated partial or periodic tamper bypasses are not picked up by the Low & No Consumption queries.
- A sweep action is only effective in picking up most of the illegal connections for the first couple of days. The presence of inspectors for consecutive days gives warning and enough time to remove incriminating evidence.
- No access to houses is used as a strategy to prevent inspection of a meter.

Implementing “intelligent” tools as part of revenue protection solutions can control the operational cost and improve the overall efficiency by focusing the effort on high-risk POD locations.

A Business Intelligence Profiling model can be applied to the Central Data repository, thereby generating intelligent inspection lists. The inspection list is based on a statistical analysis of purchase patterns over a period of time. The result is a smaller but more accurate inspection list including all but the most sophisticated tamperers. The field audits are now targeted and concentrated, resulting in a much higher success or hit rate for the inspections.

Besides high operational cost evolved in field audits, the issue of not getting access at the Point of Delivery presents a problem. The analytical methods discussed also rely on transaction records to estimate the overall and average electrical consumption figures. Knowledge of the exact (daily) electrical consumption at the meter will give a complete picture. InfoPOD is a data logger with radio frequency (RF) communication that fits onto new and certain existing STS prepayment meters. This unit logs the actual electrical consumption as well as many of the engineering parameters of the meter and it also allows for remote connectivity. This presents an elegant solution to the difficulties mentioned earlier. The information can be downloaded remotely with its short range RF system, enabling the inspector to perform a data audit undetected and without the need to enter the house. Analysis of the data collected allows for accurate energy balancing and advanced tamper detection. The “clever tamper” can now be eliminated by advanced analytical queries, pinpointing irregularities.

The statistical analysis of prepayment meter transactions and actual consumption, as logged by InfoPOD, provides a method of determining which meters are likely being tampered with. It provides a more cost-effective method of performing targeted inspections.



The data collected from the field must be imported back into the Data Warehouse. Keeping the master data repository up to date and relevant is the last step in the overall process of maintaining an end-to-end Revenue Protection program. It is very important to “close the loop” in terms of data collection in the field by updating the data master with inspection findings. This allows effective data management and prevents the inefficient cycle of re-inspecting the same locations time and again, while other distribution points slip through the net.

By investing in Business Intelligence, technology and performing data management and analysis at the Point of Delivery (POD) your revenue protection program is optimized and the maximum return is realized for the expenditure in time and resources.