

THE ADVANTAGES OF UTILISING VENDOR INDEPENDENT AUTOMATED METER READING SYSTEMS



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1. Introduction

Living in an era where **revenue protection**, **timely availability of valid data** and auditable processes are some of the buzz phrases, the method of obtaining data and displaying it on a high level needs to be evaluated and tested to be future proof and make a real contribution to the bottom line. The aim of this paper is not to give an academic and theoretical explanation

of the topic, as AMR, AMI and various other electrical metering topics have been the centre of discussion for a number of past AMEU Conventions. The aim is rather to share experience and ignite a chain of thought that can be taken further on branch level to evaluate the past, present and future, so you can embark on a route of sustainability in revenue streams but also gaining from previous asset investments.

2. Overview of AMR Systems

A basic definition of Automated Meter Reading Systems can be given as: A system that retrieves metering data from remote metering devices without manual intervention, storing the data in a central database and giving high level access to the data for billing, reporting and monitoring actions. A multitude of similar definitions can be obtained – the focal area in defining AMR should be **the minimization of manual interventions**.

Where AMR systems previously mainly focused on the retrieval of billing data, the implementation of complex tariff structures on

lower level consumption points, the introduction of smart metering etc. puts more emphasis on retrieving more data, making data available to customers and expanding high level reporting tools.

The fact that huge financial investments have been made during the past decade or more on upgrading electricity metering devices, should also be kept in mind when looking at implementing or expanding AMR systems.

Figure 1 shows a typical AMR system layout; this layout could easily be expanded to include smart metering and control.

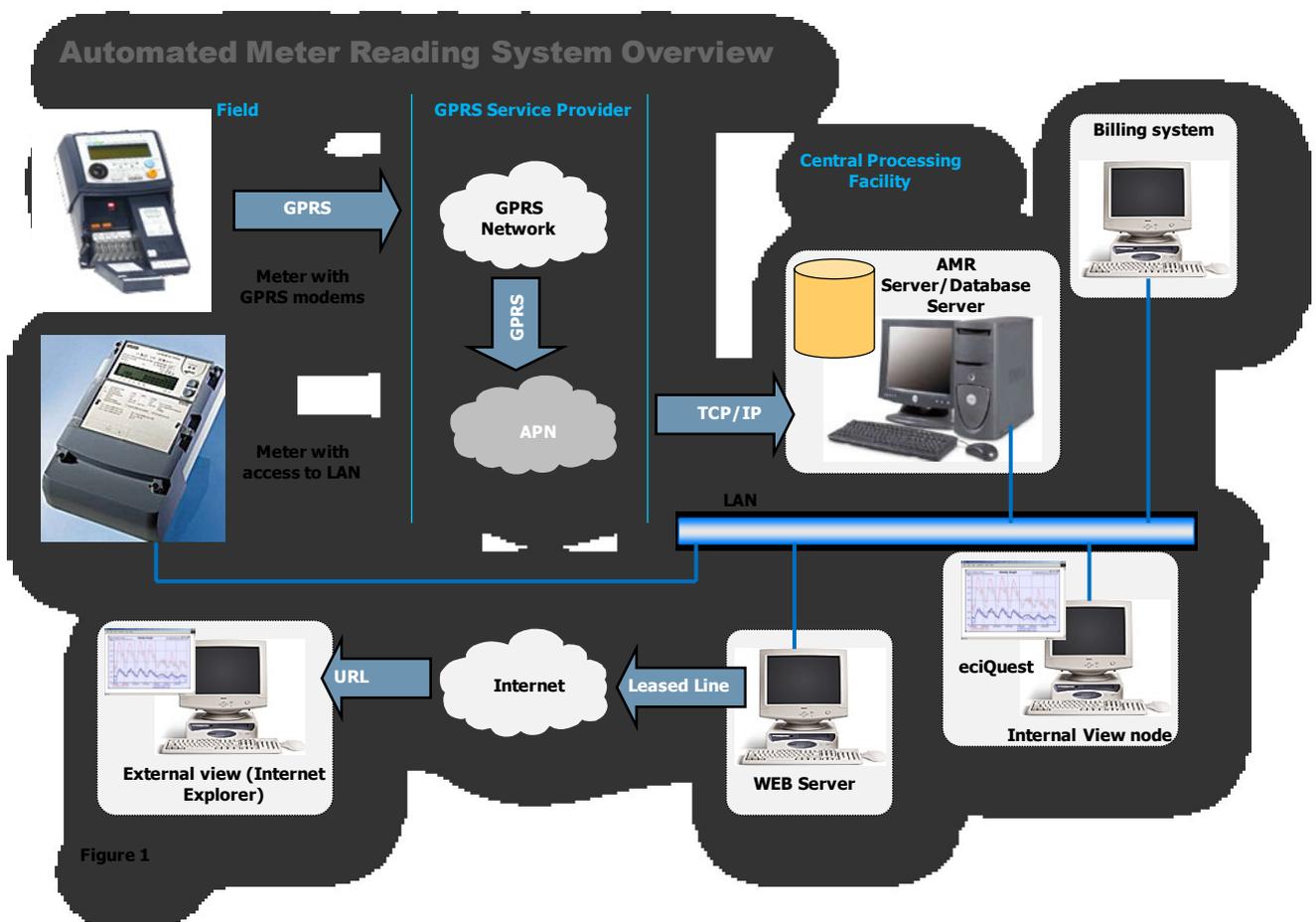


Figure 1

3. Vendor Independence

Looking from the software side of Automated Meter Reading Systems, vendor independence can also be called **meter independent software** – in other words, the software must be able to communicate to different brands of electricity metering devices. Why vendor independence? Looking firstly at the past, large financial investments have been made in various different electricity metering devices – as far as possible these asset investments must not be nullified and secondly looking at supply chain processes, standardisation on a hardware level is not always possible.

With smart metering, there is also a lot of talk about standardised metering device protocols, this concept highlight inter-changeable metering devices. It also touches the concept of meter independent software – inter-changeable hardware with one software platform.

4. Advantages to Municipalities and their customers.

If looked at from an income point of view, the bulk of the municipal electricity sales income comes from their large and medium power users. The 80/20 principal is probably true for

a majority of municipalities, where 80% of their electricity sales income, comes from the 20% largest power users (this will be more so where there is a substantial industrial and commercial customer base).

For a start it will thus make business sense to implement an AMR system on large power users – with the system implemented up to bill-on-the-web phase. This will give large power users access to meter data via the web – with high levels of data integrity this can be a value added service to these customers. On this first level one will normally find two or more electronic electricity (also referred to as tariff meters) metering devices already installed. To utilise the existing assets, one needs vendor independent AMR software.

At this stage in South Africa, expanding to lower levels including medium, small and residential customers will probably include the replacement of old “mechanical” meters with electronic electricity metering devices. If a meter independent software platform is already in place, this expansion will be simplified immensely.

Going one step further, smart metering/automated meter infrastructure roll-outs will have its own unique challenges. With an AMR system that can either interface on

data concentrator level or network management software level will give the advantage of being able to keep the existing large power user portion of the system – including software and hardware – and just adding the smart metering portion. The enormous advantages related to implementation and capital expenditure should be clear at this stage.

Regarding the possibility of giving customers access to their electricity data also opens doors for energy conservation, not only can customers see and evaluate energy conservation initiatives, from a municipal point certain conservation targets and incentives can be implemented – with the most important component in place – electricity data being measured and readily available for customers.

A further advantage to the municipality is the possibility of energy balances – measuring from substation level to minisub level and being able to quantify technical losses and recovery thereof. High end bill verification is also included in AMR systems.

The high end capabilities of the vendor independent automated meter reading system will also add value if metering data and power quality data can be retrieved – this will enable more comprehensive reporting on electrical

energy supply. Numerous electronic tariff meter device suppliers are these days capable of supplying a single device doing energy metering and power quality recording – with meter independent software platforms capable of retrieving and reporting on both sets of data.

5. What does the future hold?

One front-end that – depending on the user – **shows all relevant data**, retrieved from multiple data sources?

Some utilities in Europe, with smart meter roll-outs, use SAP as a front end, interfaced to the smart meter network management software for billing, on demand reads etc together with all the business interfaces and other modules as a complete solution. From a maintenance point of view these types of interfaces are utilised with Smallworld – where the GIS facility, outage management, network design and maintenance features – forms part of the unified front-end.

Figure 2 shows the MDUS (meter data unification system) layer forming part of the SAP Utilities package – this layer can either be seen as multiple, product specific data retrieval, packages retrieving data, the data then being unified and made available for SAP



Figure 4

6. Conclusion

Vendor independent Automated Meter Reading Software should make a lot of sense within the municipal arena – taking into consideration assets acquired in the past and future expansions, as well as limited manual intervention for a single point of data access and reporting, with interfacing to existing systems. The trend of the unified front end also implies a more seamless implementation with some of the unification already done in the background by the AMR system.

7. References and acknowledgements.

SAP AMI Integration for Utilities documentation.

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