

# Training Need Analysis & Methodology for Meter Data Collection Device Envisages

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**Abstract:** The acquisition of metered data is critical to the determination of consumption and base data. However, as the meters can be distributed geographically over a wide area, the communication network of meters is a central part of this overall program. CMS provides MDAS with a robust collaboration network for multimeter data acquisition. The network service solutions include GPRS, CDMA, or PSTN. CMS provides the entire product suite (modems, gateways, data concentrators, front-end processors, etc.) for data acquisition from different metres. MDAS acquires meter data from meters within the distribution system and consumer meters for: monitoring of system performance and supporting decision making. Network research and the design of structures. Monitoring and collection of consumer energy usage data, billing, CRM, manipulation, detection and notification of an outage. Monitoring of energy flows within the energy supply chain to provide energy auditing information. Reeling under an average AT & C loss of around 33 percent, keeping the desired economic speed without major reforms in the power sector, particularly in distribution, is very unlikely for the power distribution sector. System Integrator worked closely in the power distribution sector to tackle the reduction of AT & C losses, introduce accountability, boost customer loyalty and increase employee efficiency through proper IT & Automation convergence. Innovation in technology can only help the sector and convergence of systems has a significant role to play in motivating power delivery utilities. There is an immense need for advanced, tailored and updated system solution for the power sector and systems integration technology solutions will help utilities make a major leap in field automation and reduce their technological and commercial aggregate losses. Meter Data Acquisition Solution Provider's aim is to remotely capture meter data from DT and customer meters at appropriate frequencies and make them usable for DISCOM operations.

## 1. Introduction

The collection of meter data is important for evaluating usage and baseline data. However, the metres, and the meter communication infrastructure, are geographically dispersed. For the collection of data from different single- and three-stage products, Inesh provides MDAS with a comprehensive contact network. Throughout his work with Boeing in Huntsville, Alabama, Theodore George "Ted" Paraskevakos built in 1972 a sensor control device that used digital transmission for the health, fire and medical warning systems, and testing readability for all utility applications. This technology was a spin-off of the automatic caller ID system. Caller ID is now known.

This invention was granted Mr Paraskevakos a U.S. patent in 1974. In 1977 Metretek, Inc. was launched to build and manufacture the first completely automatic controlled reading and load control device that is currently accessible. Metretek used the IBM Series 1 mini machine, as this device was built before the Internet. Mr. Paraskevakos and Metretek obtained many patents for this method. [1]

The main reason for automating meter readings is to obtain hard-to-reduce data rather than to decrease labour costs. Most water meters, for example, are placed in areas that allow a service company to make an appointment with the user to reach the meter. In multiple regions, customers have demanded their monthly water payment to be focused on a true reading, rather than on the average annual consumption of only one meter per 12 months. The early AMR networks also composed of AMR for residential consumers and AMRs for industrial and business consumers on the mobile. When a monthly data requirement was needed, did the meters need regular and even hourly reading? As a result, drive-by and AMR revenues have dropped in the US, while fixed network revenues have risen. The 2005 U.S. Power Policy Act encourages policymakers to look at funding for a "time dependent rate structure that helps electric customers to control electricity use and expense through innovative calculation and communications technology"[7].

The trend is to take advanced meters as part of an infrastructure into consideration. Remote meter reading and loading control system, which is first commercially usable-Metretek, Inc. (2007). (1978). In late 1999, the University of Alabama at Auburn started a project named Vehicles, Auburn University's School of Electrical and Computer Engineering. Twenty seniors finished this experiment in March 2000, completing an electrical engineering tutorial. The system is therefore able to read seventeen analog differences and transmit the converted data in digital format to a PC for monitoring purposes via wireless communication in a minimum of 800 m. This project uses a 16-channel analog or digital converter ADC116 and a microcontroller MC68HC11 to monitor the switching between sensors and also to coordinate data before it is sent as an analog or digital converter in hardware configuration to a wireless modem. Use the 7473 Flip Chip the microcontroller produces 2MHz to halve the ADC0816's processing capacity.

## 2. Experimental Setup

### A better way to access interval meter data

The Integrated Design Environment (IDE) by Microsoft is a Windows Visual Studio. The program can be employed as console- and graphic user interface application for all platform-based systems supported by Microsoft Windows, Windows Phone, Windows CE, .NET framework, .NET compact framework and Microsoft Silverlight, alongside Windows format applications, web sites, Web applications and web services in both native code. Microsoft Visual Studio is a multi-vendor digital data collection platform for energy providers, which enables and promotes fast and easy data transfers through IT systems of corporate billing. But it is not only the broad acquisition of commercial and industrial (C&I) data metering devices that Microsoft Visual Studio software offers. It offers scalable messaging network, configurable testing of data and a full GUI with Windows. Microsoft Visual Studio software provides a multi-network metering engine which complements the latest communications network technology and helps the development of new networks. The software offers high-performance, highly reliable and open migration paths previously not available to keep pace with the advancements of communication technology. The design at many layers makes applications modular and scalable. The open architecture enables both on-demand and scheduled exports through SQL queries or web services. Microsoft Visual Studio Software also offers perfect complements to other applications such as Power Logic metering programs and Schneider Energy Management.

### MS Visual Studio

Visual Studio has many models, such as Community Visual Studio, Visual Studio Specialist, Paid Digital Studio and Eventually Visual Studio.

### Integrated Development Environment (IDE)

A common fundamental creation (IDE) framework is shared by the Design Studio software family and multiple components: the menu bar, Basic toolbar, the left, bottom and right-hand side of different tool windows, and editor field. Depending on the type of project or file you're operating on the program, menus and toolbars available.

## 3. New Project

When you create a new application, the first thing you do is to create a new project. Figure Start Page of MS Visual Studio 2010.



This window lists a appropriate prototype based on which program you choose to build and on your project and solution name and place.

The most used features are:

- Application Windows Form
- Application console.
- Use of WPF
- Software server ASP.NET
- Application Silverlight

## Solution Explorer

Solutions and projects include the elements you need to build the application that reflect the sources, data connections, directories, and files. A container solution may contain several projects and a product container normally contains several items.

### Meter data acquisition system implementation

Initially, the emphasis was on structural changes, such as the dissolution of government power boards and the formation of independent companies and distributors for generation and transmission. Earlier, the emphasis was on producing electricity. However, power production has been seen in recent years as the lowest link within the entire supply chain, and the electricity sector cannot attain sustained development and economic prosperity unless goals are met. Problems related to power availability. In search of these targets, a rapid energy generation and transition cycle has been launched by the Ministry of National Energy of India.

The topic addresses basically the use of IT in delivery systems around the world. The scheme includes the following:

- Indexing and mapping of assets based on GIS.
- Data acquisition device meter (MDAS) for transformers and feeders of delivery
- Baseline evidence formation
- IT applications for enterprise operations approaching consumers and combining tracking downloading, charging and compilation. The aim of this exercise is to create a benchmark and a delivery service data collection framework for the specific collection of aggregated technological and commercial losses (AT&C) without manual interference and for the preparation and execution of corrective measures in section B.

To insure that a portion of AT&C's financial incentives are passed to the consumer in the field, the facilities must also collaborate through their own legislative commissions to insure this. Concentrate on:

- A formal method for the processing of knowledge
- With 15 per cent AT&C downtime preventing power outages and service outages, increasing quality and reliability of customer connectivity.

MDAS is an R-APDRP Mainboard. Includes automated tracking of contact transformers, substation feeders and customers for further information like meter info.

The proposed data monitoring program is anticipated to include electronic surveillance and tracking. The following criteria extend in real time for all feeders collected and released, manufacturer transformers and consumers:-

- (a) Voltage, Step by Step and Positive Phase by
- (b) Single step current b)
- (c) Element of strength
- (d) Frequencies;
- (e) Passive / sensitive / evident control
- (f) Powerful, sensitive and appearing capacity

The proposed system should track and document the parameters on an ongoing basis, and will generate spreadsheets and MIS reports as seen below: The proposed system is supposed to provide

- a) Information on the Nameplate
- b) Results instantly
- c) Details of the accounting
- d) ALL info. Info.
- e) Screen ready.
- f) Analysis of loads
- g) Pads.
- e) On / off control and activities
- f) Checks basic details

## Conclusion

Meter Data Collection Device envisages automated data readings of various energy meter points mounted. This module gathers data from the metering system network mounted in sub-station on input and output feeders. The system NG-9601 is a stable and consistent solution to process data through Modbus communication protocols from the metering unit. It can operate various interfaces on a single FPGA chip which allows real-time data processing.

- Control and judgment help for device success
- Evaluation and program preparation of the network
- Tracking and compilation of customer energy demand statistics, accounting, CRM, exploitation, identification and notification of loss
- Track energy movements across the power supply chain and provide energy audit information.

Advanced measurement and EIS equipment is well known, and new technologies can be used for simple and benchmarking output tracking. The ultimate aim of the system is to provide stakeholders, program supporters and policy makers more open and practical input on building energy efficiency. The following actions may increase the likelihood of achieving this goal in light of the above discussion of drivers and obstacles:

- Statistical evaluation solutions can be viewed as optimization systems that offer more and more timely input on system performance, while at the same time allowing participants more input. Advanced metering costs and EIS systems can decrease by raising quantities, so a reduction in cost may be rendered by general specifications or bulk sales for a commonly utilized product. The USGBC has confirmed that it plans to focus on LEED-NC buildings efficiency data following 2010. Specific standards may offer similar benefits to competency systems or certain state and local codes.
- A nationwide cost standardization program will simplify the costs of upgrading service meters to the pulses and enable owners to calculate local fuel frequency without allowing the operators to hold meters or to collect data from a safe database.
- To enable small building owners in particular to benefit from input from advanced measurement and EIS, a clear and efficient software platform for data collection and administration is required.
- The EIS equipment may carry out several analyses within an application and would foster energy separation to enable more types of energy research, such as energy management processing and benchmarking at a device stage. EPA might want to create software to promote building qualification based on these enhanced methods.

## Future Scope

According to a survey, India's existing 600 TWh annual power demand is projected to double by 2020. So India should have defeated Russia if it did. While it is not denied that more power generation capacity would be required for India, at Stelmec we consider this from a more holistic standpoint. India will also have to take very serious action in order to meet this new demand and to implement strong reforms on electricity transport and distribution (T&D) aspect.

- (1) Loss caused by pilferation and theft of electricity is India's present problem with T&D.
- (2) Sub-transmission and delivery networks unreliable and ineffective
- (3) In fact, the government would have to look into issues that would enable power providers to take care of the problems of bad debt, generation and fraud, thus implementing a whole new system for the delivery of electricity.

At the same time, the users must be compensated with programs that allow them to consider their habits of energy use and thus to the electricity usage. The 'star rating' system which is adopted by all consumer sustainability's will be an example in this analogy. Since then, the user has been conscious of increasing product's energy use. Unfortunately, though, such a 'star ranking' scheme is not common for all electrical devices, so a customer often does not have an understanding as to what kind of strength it receives from devices such as fans, mixers, televisions, computers etc. Technologies such as smart meters will allow customers more conscious of their energy use in real time. The intelligent network guarantees that the need for electricity in a system is met without exhaustion automatically. We are both excited to launch this new technology at Stelmec. As of now, our EPC team is focusing on programs concerned with transmission losses. Our insightful IT systems for infrastructure and electricity allow utility providers to deal with crime problems. Finally, we make the whole delivery of energy more efficient and secure for everybody across our personalized utility device collection.

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