1.Yosra MLOUHI, 2.Mohamed Najeh LAKHOUA, 3.Jamel BEN SALEM,
4.Imed JABRI, 5.Taher BATTIKH

METHODOLOGY OF ANALYSIS AND INFORMATION SYSTEM DEVELOPPMENT OF ENERGY METERS CONSUMPTION

1.Research Laboratory Information and Communication Technologies & Electrical Engineering, LATICE, National Superior School of Engineering, University of Tunis, TUNISIA
2.,3Research Laboratory Smart Electricity & ICT, SEICT, National Engineering School of Carthage, ENICarthage, University of Carthage, TUNISIA
4.,5.Research Laboratory Information and Communication Technologies & Electrical Engineering, LATICE, National Superior School of Engineering, University of Tunis, TUNISIA

Abstract: Because of the difficulty and kindliness of the analysis and modeling of reading of the energy meters consumption of the Information System (IS) will use the OOPP technique (Oriented Objectives Project Planning), that is a comprehensive system modeling tool to analyze a difficult condition by breaking it down from and decreasing it to elementary conditions leading to elementary operational planning. The aim of this work is to offer a methodology of analysis of the energy meters consumption and to develop an IS of reading of the energy meters consumption. Then, we present an applied operation for the reading of the energy meters consumption. This operation will permit energy dispensers to advance the business service by offering an exact and an instantaneously billing.

Keywords: Energy consumption, energy meters, reading techniques

INTRODUCTION

Toward to manage the reading of the energy consumption, energy suppliers have realised a lot of reading tools allowing to follow-up the energy consumption by offering an exact and an instantaneously billing. Then, these tools can decrease appreciated reading exclusion faults of billing, complaints regarding the exalted invoices and invoices arrangements [1-3].

The concept of this paper deal with in a proposal of an applied operation let energy dispensers to advance the clientele business by offering an exact and an instantaneously billing [4-6].

In this situation, we accomplished an applied operation allowing the automatic reading of the index of meters on the basis of a Datalogic Portable Terminal providing mobile professionals by the better applicable aspects required to act in critical status [7-11].

The aim of this article consists in a proposal of a methodology of analysis and IS development of the energy meters consumption by reading the meters index of electric energy and gas, the habilitation and the constructed knowledge administration.

PRESENTATION OF THE ENERGY METERS TECHNOLOGY

A meter is an element allowing to determine the capacity consumed of electric energy or gas. The electricity suppliers and gas use it to note the energy consumption to the customer. Then, a meter can be electromechanical, electronic nature or gas [12-16].

The electronic meters measures the current and tension, and resolve through an intern analysis the comparable energy. They are in durable evolution, contributing regularly increased performance. The elemental fundamental consists in promising the communication of information iconcerning to act a management of the efficient load.

The electronic meters replace the older electromechanical meters as they are used in the numbering of fluids (electricity, gas, water) [17-20]. In fact, many different designs of gas meters are in familiar use, depending on the volumetric flow rate of gas to be measured, the range of flows anticipated, the type of gas being measured and other factors.

RESULTS OF THE ANALYSIS AND MODELING OF THE IS DEVELOPMENT

The model [21-26] presented on the following table illustrates eight SO for achieving the GO: IS of reading of the energy meters consumption developed.

TABLE I: OOPP model of is reading of the energy meters consumption

Code	Activity
OG	IS of reading of the energy meters consumption developed
OS1	Management of the IS of reading of the energy meters consumption developed
R1-1	Improvement of the IS of reading of the energy meters consumption determined
R1-2	Assessment of the IS of reading of the energy meters consumption determined
R1-3	Control of the IS of reading of the energy meters consumption determined
R1-4	Maintenance of the IS of reading of the energy meters consumption determined

R1-5	Functioning of the IS of reading of the energy meters consumption determined
OS2	Security of the Information System of reading of the energy meters consumption developed
R2-1	Security of the information of reading of the energy meters consumption determined
R2-2	Confidentiality of the information of reading of the energy meters consumption determined
OS3	Circulation of the information of reading of the energy meters consumption developed
R3-1	Implementation of a secure information flow circuit of reading of the energy meters consumption determined
R3-2	Availability of timely information of reading of the energy meters consumption determined
OS4	Appropriate information media of reading of the energy meters consumption developed
R4-1	Operation of information media of reading of the energy meters consumption determined
R4-2	Conviviality of supports of reading of the energy meters consumption determined
R4-3	Availibility of supports of reading of the energy meters consumption determined
R4-4	Supports of the information of reading of the energy meters consumption determined
OS5	Analysis of effective information of reading of the energy meters consumption developed
R5-1	Actions of Improvement of reading of the energy meters consumption determined
R5-2	Causes of failure of reading of the energy meters consumption determined
R5-3	Failures of reading of the energy meters consumption determined
R5-4	Information traited of reading of the energy meters consumption determined
OS6	Efficient information processing of reading of the energy meters consumption developed
R6-1	Efficiency of the treatment system of reading of the energy meters consumption determined
R6-2	Information of reading of the energy meters consumption determined
R6-3	Information of reading of the energy meters consumption determined
OS7	Archive information of reading of the energy meters consumption developed
R7-1	Security of archived information of reading of the energy meters consumption determined
R7-2	Locations of archival information of reading of the energy meters consumption determined
R7-3	Supports of archival information of reading of the energy meters consumption determined
R7-4	Duration of archival information of reading of the energy meters consumption determined
R7-5	Archival information of reading of the energy meters consumption determined
OS8	Characterization (properties / elements) of the information of reading of the energy meters consumption developed
R8-1	Information need of reading of the energy meters consumption determined
R8-2	Information source of reading of the energy meters consumption determined
R8-3	Destinations for the information of reading of the energy meters consumption determined

READING OF THE ENERGY METERS CONSUMPTION

In this part, we propose a case study of the reading of the energy meters consumption. Then, the reading of the index of the electric energy meters, to identify and to manage the constructed data, we used a Datalogic Portable Terminal based on an operating system Windows CE.

In this applied operation, the Datalogic Potable Terminal perhaps exploited for the manual either the automatic reading of meters consumption. Then, the mobile terminal consists of an automatic description system that collects distinct integral tools. Opposed to the majority of the alternative tools of reading, these terminals are portable and mobile. Their limited size and the use of batteries enable more autonomous automatic identification.

A Datalogic is constituted of a screen with liquid crystals and an alphanumeric keyboard allowing to visualize the regrouped information and to catch a few variable data. The constructed data security was notably considered by the memory flash giving back impractical the damage of data; the existence of a rechargeable emergency battery; the automatic safeguard of the last tour.

In this applied operation, we exploited the model of the Datalogic Portable Terminal Kyman-NET™. It is one of the key elements of the terminal range portable mobile@works. It is quite robust and represents the solution of applications of the transport and the logistics.

In the next, we present the different function specifications by giving organization based on charts also architectures of the data and the interfacings.

The preliminary phase in the realization of the applied operation is the choice of the development environment (material and software) enabling to do the established specifications.

The applied operation presented has been developed by the operating system Microsoft Windows XP Sweet while using for the implementation of the information system, the database management system Microsoft Access. For the implementation of the interfacings and the data consultation, we exploited the development language Visual Basic 6.0.

This is why we achieved two applied operations: the first one is a Met-View applied operation and the second one is an applied operation of reading and writing of the data on the Datalogic Portable Terminal.

Figure 1 presents the flowchart of the Met-View applied operation.
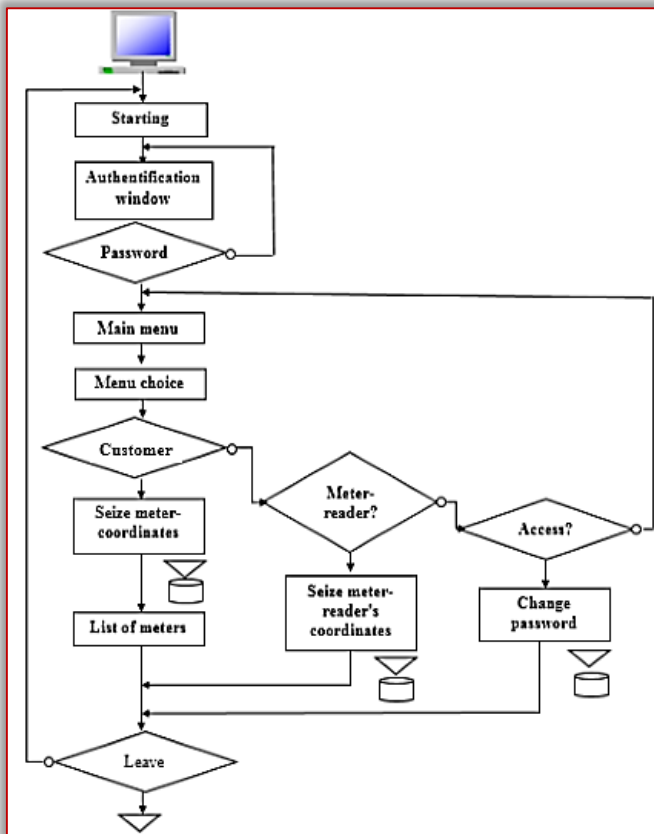
Figure 1. Flowchart of the Met–View applied operation

The window of access to the applied operation of reading and writing of data appears at the time of the call of the operation. It contains two fields; the first is reserved for the user's identification (meter-reader), the second for the password. In fact, every meter-reader possesses a login and a password that he must seize.
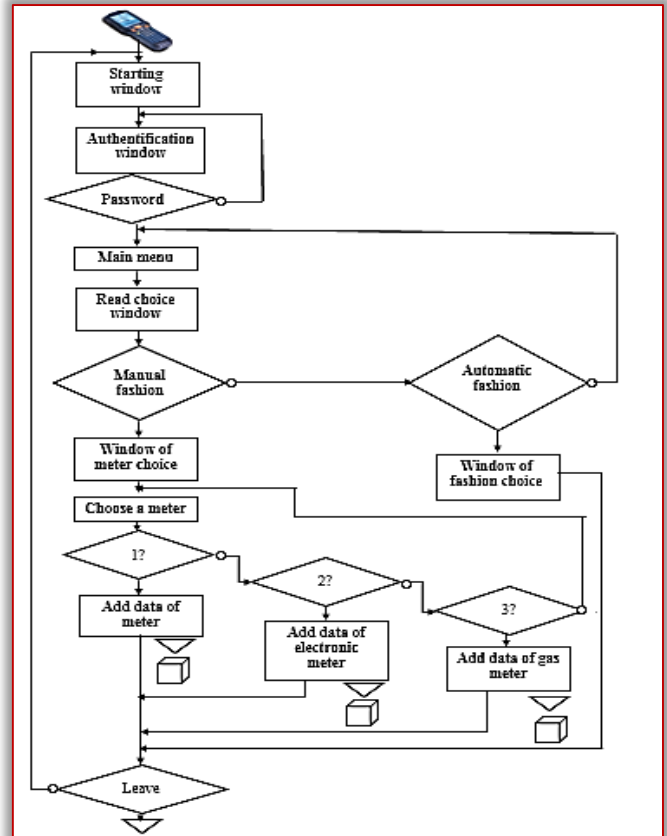

Figure 2. Flowchart of the Datalogic Portable Terminal applied operation

After starting the application Met-View, a window shows to the screen for some seconds next a window of password. Then, the user of this applied operation possesses a login and a password that he must seize to be able to reach the applied operation. The obligation of identification enables the access secure taking into account of the data importance that is going to be collected.

The window of the fundamental main menu of the Met-View applied operation introduces the main form of the operation that enables to reach many choices: access, meter-reader, customer, leave…

Figure 2 shows the flowchart of the Datalogic Portable Terminal applied operation that interest the reading and the writing of the data.

The customer window enables to manage subscribers' data. With a quiet click on the button that corresponds to the application. Then, the user will be able to: add a customer; suppress a customer; look for a customer; modify a customer's coordinates; annul an application.

The menu meter-reader enables the user to manage data of meter-readers. With a quite click on the button that corresponds to the application to do, the user will be able to: add a meter-reader; suppress a meter-reader; look for a meter-reader; modify a meter-reader's coordinates; annul an operation. This window enables the user to link for the meter-reader a Datalogic.

The window of the main menu of the second applied operation of the reading and the writing of the data on the Datalogic Portable Terminal enables to reach two fashions: manual and automatic.

The window of the manual fashion allows to want the type of the meter (electromechanical, electronic or gas).

The window of the electromechanical meters enables to want the zone, the tariff; it enables too the meter-reader to seize the index and the complication if it happens and record the data.

A second window for the electronic meters enables us to want the zone, the tariff. It enables us too the meter-reader to seize the index and the complication if it happens and registred data.

A third window of gas meters enables us to seize data (zone, n° of set, index and complication) regarding gas meters. All data regarding meters are registered in a file text of type block notes.

CONCLUSION
In this work, we have proposed an applied operation for the reading of the energy meters consumption and a contribution of Information System (IS) development of

reading of the energy meters consumption. Then, it is an essential attention for dispensers of energy around the world to have a few exact, exact data, instantaneously, on the energy consumption.

This applied operation allows us to associate a few central notions as the theoretical analysis of the operation and the realization.

Starting from this study of the proposal of a methodology of analysis and IS development of energy meters consumption presented in this work, we will enhance the analysis and modeling approach based of various techniques.

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