



SUPPORTING ELECTROENERGETIC CORPORATE “CEZ SHPERNDARJE” BY DEVELOPING NEW-CONNECTIONS APPLICATION

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Abstract

CEZ Shperndarje the biggest corporate (monopoly on the energetic sector in Albania) was under the difficulties on managing online/on-time/without overlapping of processes the whole workflow for generating new contracts/per new connection/new clients and deliver on time the contract and build up the service to the client. At this phase the ICT Department came to suggestion supporting the company with a new development called “New Connection Application” involving since the beginning the dedicated group of Departments: Customer Care/Engineering/Meter Management/Billing till the contract delivery to the clients (automatically generated from the system) after finalization of the physical connection to the clients and update to the Billing System the whole set of mandatory data. This was one of the big challenges of the company to undertake. The next challenge for CEZ Shperndarja after the famous E-Bill platform generating invoices in web platform for all portfolio clients, was to inform all clients applying for a new connection to see their status online in our web page. For all clients was designed a new interface of finding online status of their application on the system based on the registration credentials. This would facilitate them on getting on time the new contract, having the real connection of electricity at their home or businesses, knowing the status of their application online. The development was done in the platform of Apache/MySQL/PHP (AMP). The whole platform was working on the intranet (local application of new connection) and internet environment (actual status of new connection applications).

Key words

Web Applications; Billing System, new connection status.

INTRODUCTION

Development and usage of Web applications are popular due to the ubiquity of the browser as a client, on the Intranet and Internet Platforms. The ability to update and maintain web applications without distributing and installing software on potentially thousands of client computers is a key reason for their popularity.

This paper presents the need of designing the “New Connection Application” for CEZ Shperndarja main Divisions (Sales and Distribution) to support on time correctly and informing online all Albanian Citizens for their new contracts or updated ones during the new/updated connection applying process.

The screenshot displays the 'NEW CONNECTION APPLICATION' form. At the top, there is a logo for 'CEZ Shperndarje' and a search bar. The form is organized into sections with red headers. Section 1, 'Type of Subject', includes radio buttons for 'Households', 'Private', 'Budget Institutions', and 'Non-Budget Institutions'. Section 2, 'Applicant Details', contains two columns of input fields for personal and identification information. Section 3, 'Applicants Representative(if needed)', includes fields for name, position, ID, contact details, and address. Section 4, 'Information regarding the property data (if needed)', includes property details and a permission question. Section 5, 'Type of energy connection', has radio buttons for different connection types. Section 6, 'Bussines Type', has radio buttons for 'Apartment', 'House', 'Industry', and 'Construction and Trade'. Section 7, 'Electrical Load Details', includes fields for power requirements and a question about alternative sources. Section 8, 'Please state the maximum power required in kVA?', includes fields for installed and requested power, and radio buttons for '3 phases' and '1 phase'.

FIG 1. NEW CONNECTIONS APPLICATION-MAIN FORM

CUSTOMER CARE SPECIALISTS ENTERING DATA OF CLIENTS APPLICATIONS

The idea of developing such an application was to offer to all “CEZ Shperndarja” main departments part of managing the new connection process in order to simplify and reduce the time consuming for generating new contracts, correct and fulfill all data-cleaning process in Billing System for having the most accurate data for all customer contracts with “CEZ Shperndarja” company (www.cez.cz, www.cez.al). The most important parts of this application were the analyses, design, implementation, testing and training phases until the completion and Go-Live process.

In the meantime, to support our clients we developed on-line status of New Connection Application where clients can manage and see the status of their application till receiving their official contract online from the system.

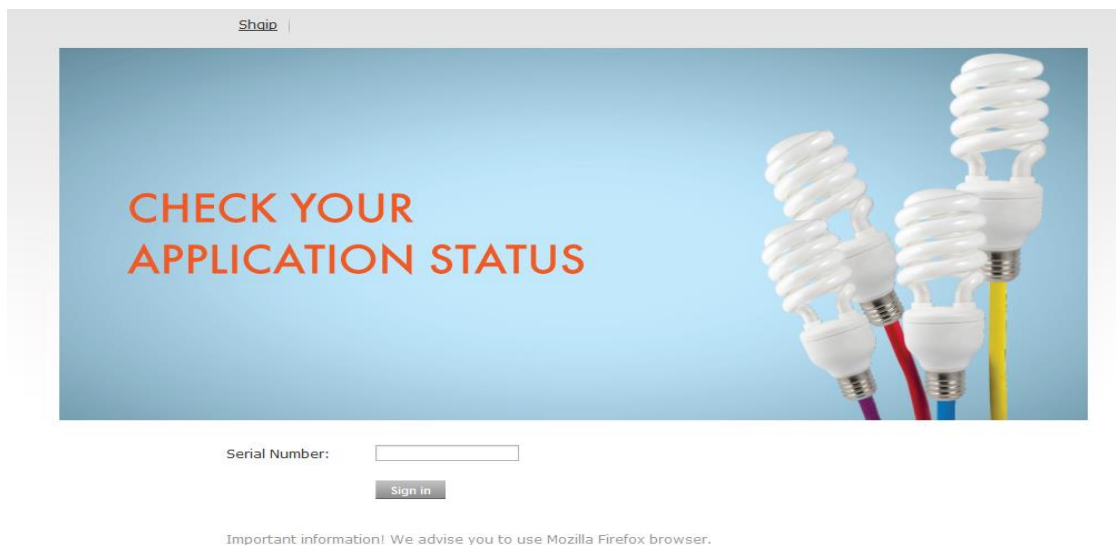


FIG 2. CHECK CLIENTS APPLICATION STATUS ON-LINE AT THE OFFICE PAGE OF CEZ ALBANIA

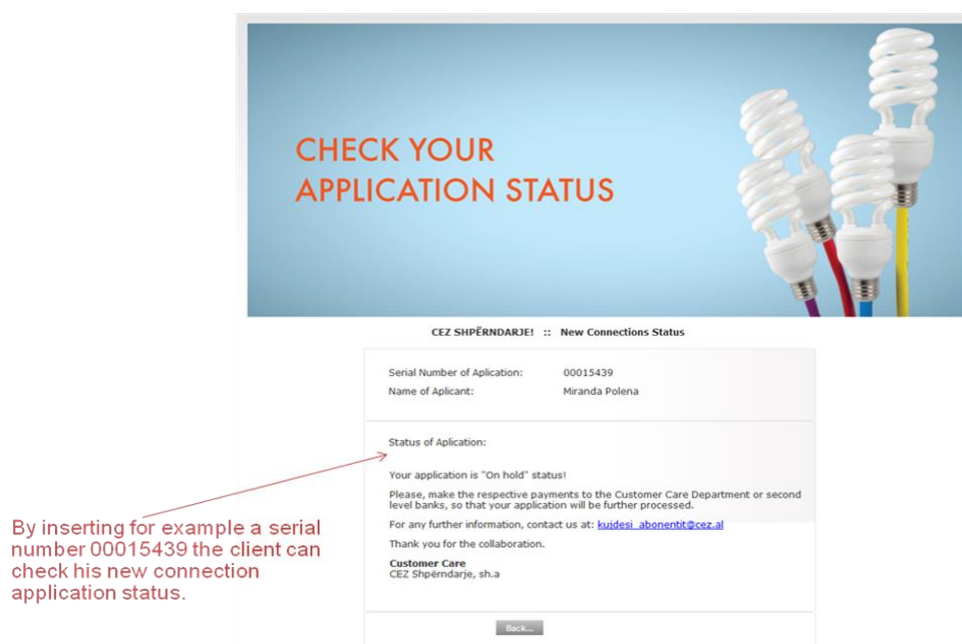


FIG 3. AN OVERVIEW OF THE STATUS OF ONE OF THE CLIENTS APPLYING FOR NEW CONNECTION THROUGH NEW CONNECTION APPLICATION AT CEZ SHPERNDARJA CUSTOMER CARE OFFICES

Why “New Connection Application” was the first question?

The Corporate “CEZ Shperndarje” answer was immediately, support/help all our clients(old and new ones) applying for new connection applications in the most fast, correct, and secured platform spending even less time staying in line for hours to our customer care centres. In the meantime for all clients through this application was given the possibility to see their application status online in our web site till the

finalization process with the contract and physical line at their business/home/institutions etc. All clients need to declare the basic data to be registered on the “New Connection Application”/Customer Care primary form, by the customer care specialist and then we generate and give to the clients the credentials generated from our system as unique ones to follow up the whole process.

Project Methodology

(Analyses, Implementation, Testing and Go Live)

The main and most difficult task was performing a very good Analyses Phase and producing after a Blueprint Document understanding the whole workflow process beginning with the main apply from the clients on the Customer Care Offices and finalizing at the Customer Care Offices with the delivery of the contract to the clients (the whole process finalized and delivered to the client).

After several meetings and interviews with the Customer Care, Billing, Asset Management, Meter Management, IT highest manager’s level and IT analyses development and maintenance team the requirements specification document was created for developing the New Connection Application and Data-Cleaning form. Review of existing documentation helped us on understanding all workflow and working processed for each department and even cross working part for different department. The whole database platform already existing in Billing System, were a good reference when working for the final requirements specification document for both E-New Connection Application and the Data Cleaning form.

Project Methodology used

First phase had the following sub-phases:

- Analysis and Definitions

- Implementation (Active development)

- Backup Policy Design and implemented daily and weekly

- One-day delay with Billing System data, system synchronisation done.

Second phase had the following sub-phases:

- Final preparation (Migration, Integration tests, Documentation, user training)

- Go Live in 2 phases

- First Phase testing with internal users of the company

- Second phase go live

In general, all CEZ Shperndarja internal users (Customer Care specialist/supervisors, Asset Management staff, Meter Management Staff, Billing Staff and IT staff) using



the E-New Connection Application system from the Intranet and all other clients accessing from Internet their status of the application founded the importance of such application and how useful was for all of them the use in facility and simplicity in their work. The success or the failure of a software system depends mostly on its utilization. If the E-New Connection Application does not help and facilitate user's work, or if it is too complicated and time-consuming for them, they will never use it and that is why the correct definition of functional requirements is essential.

Software Design, Data and Software Model

After the analyses phase and agreement for the further steps the software design is the most important phase of the project and it is usually the most crucial one or the success of a the E-New Connection Application system. It consists in developing a database and software model, which will interact with the database for storing, modifying and retrieving data.

The first step in this phase was modeling the real world system in a well structured database (used the same structure as Billing DB but a normalized one). This model is represented by the entity-relationship diagram as shown in Figure 4.

During the designing and normalizing the E-New Connection Application Database, we have done the proper analyses of the real world system and model it in a database. A well-designed database takes time and effort to conceive, build and refine, this was done for E-New Connection Application Database keeping in mind all problematic platform the Billing Database was phasing during the time. The main and primary DB, which replicates daily with the E-New Connection Application Database is the Billing System Database; the back-up of both systems is done daily and weekly.

An effective data model completely and accurately represents the data requirements of the end users. The model used for E-New Connection Application eliminates redundant data, it is independent of any hardware and software constraints, and can be adapted to changing requirements with a minimum of effort (Williams and Lane, 2002; Ullman, 2003).

Figure 4 are shows the most important entities of the model and their relationships, where this core model was achieved after consulting several times the requirements specification document in order to assure the best modeling of the real world system. The further step was designing the software model and it was already agreed to use Object-Oriented Modeling as one of the most used techniques based on the advantages it offers (Kay 2003/2010; Zendulka, 2001; Lewis and Loftus, 2008).

IMPLEMENTATION AND SECURITY INFRASTRUCTURE

The next step is the implementation of the software for interacting with the database and most importantly offering a user friendly interface to do so. E-New Connection Application, platform everyday make a copy of the previous day registered regularly on Billing System on a day routine, meaning the E-New Connection Application platform is one day in delay with the main DB of Billing System from which gets the data and fulfil the others tasks for generating the invoices platform for the clients registered and requiring their data. (Riordan, 2005; Lane and Williams, 2004).

The communication between the database and the software includes:

- Storing data/information into the database;
- Modifying data/information already stored in the database;
- Retrieving and consulting data/information

Each user of the application should fill identification requirements in order to login in its personalized interface and use the application and its features.

Security infrastructure is essentially required to protect the systems (servers and personal computers), software, applications and the data that are being used in the E-New Connection Application, where new contracts and data cleaning forms are made available in to be accessed, printed or fulfilling data. Security infrastructures enhance the security of a System/Application/data and are intended to counter security attacks. The gateway (the starting and ending point for inbound and outbound traffic) of systems is protected with security devices. The standard security devices used are the firewall, intrusion detection system (IDS), intrusion prevention system (IPS), the antivirus software and monitoring systems.

Security for this application is ensured by protecting its network domain where service is running, its system domain on which the service is hosted and the service/application itself. Each security device is configured with proper access controls. Internet bandwidth is needed to access web-based E-New Connection Application platform. The amount of internet bandwidth required is directly proportional to the number of users, who access the online status of the application on the E-New Connection Application, service(s) and is one of the parameters to access a service easily with no time delay.

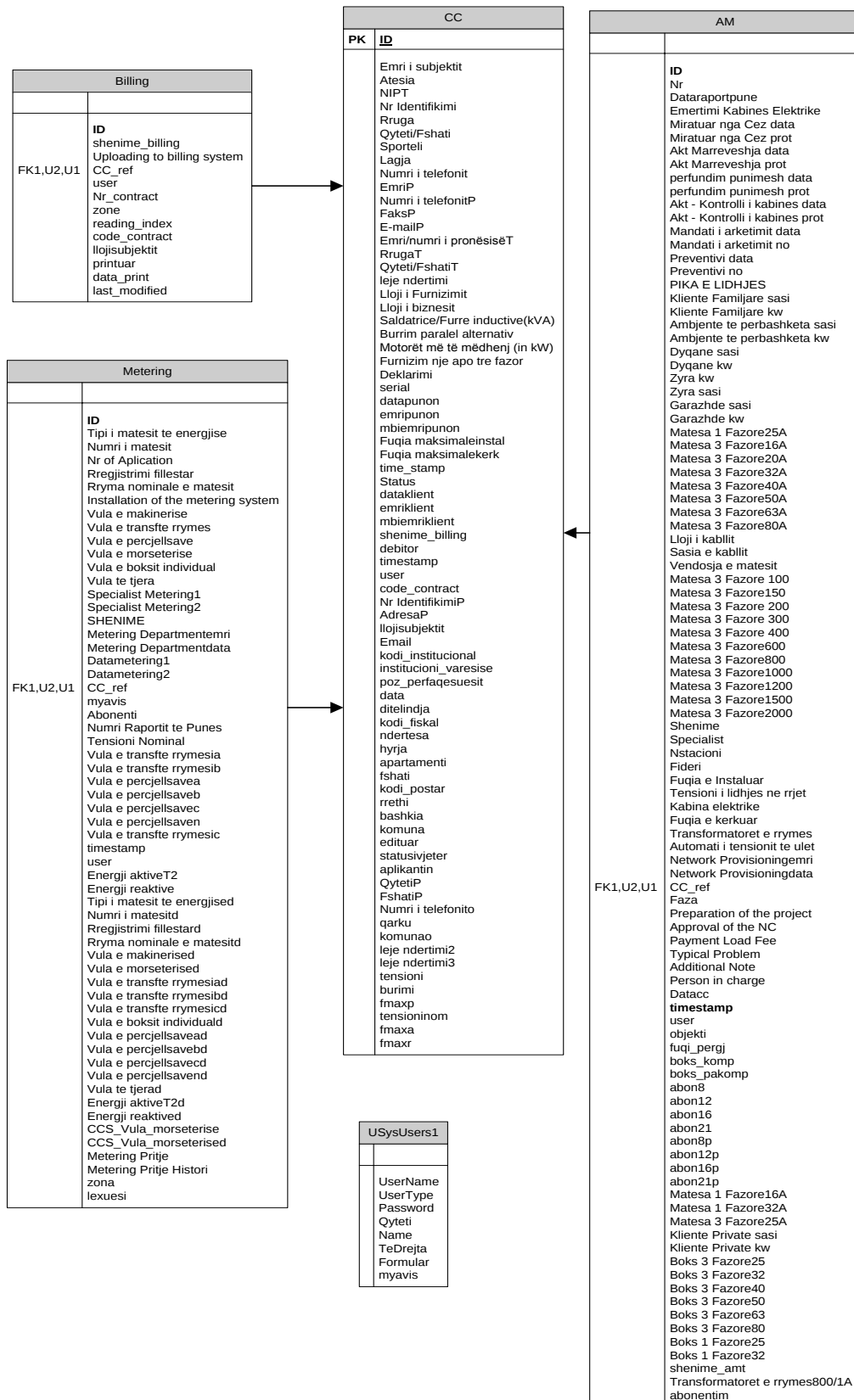


FIG 4. ENTITY-RELATIONSHIP DIAGRAM OF THE E-NEW CONNECTION APPLICATION PLATFORM

CONCLUSION

With the initiative of the ICT Department(CEZ Albania) and full support of Sales Division (Customer Care, and Billing Departments) and Distribution Division(Asset Management, and Meter Management Departments) of CEZ Shperndarja it was established a working team for the analyses, design and implementation of E-New Connection Application system. The goal of this project was to develop E-New Connection Application platform helping all around Albania CEZ Shperndarja customers for their new connections applications and online updating with Billing System and maintaining daily the Data-Cleaning form per each application arrived. Encouraging community acceptance and adoption of Web applications calls for initiatives to make such applications more broadly useful to users in their daily activities. To this end, we claim that a path-based incremental development approach, in which users are involved in evaluating each increment, is a good approach for appropriate technology Web applications.

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