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COMPUTER SYSTEM PLANNING HOUSING BUILDING FOR

MUTUALISTA IMBABURA

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Computer System Planning Housing Building for Mutualista Imbabura

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Summary. *The objective of this research focuses on the creation of a computer application for automating processes models involved in the planning stage of a building project construction, sponsored intention "Mutualista Imbabura" bank located in Ibarra city, Imbabura Province.*

Administration of a real estate project of the planning stage, which is considered the cornerstone of the real estate process by allowing delimit and define the feasibility of implementing a project.

The computer system was created under PowerBuilder version 11.5 and Manager Database System Microsoft SQL Server 2008 software based institution, fully integrated, programmable, the same standards of quality, safety with the platform technology of the Financial Core ORION.

Keywords

Real estate, computer system, PowerBuilder, Financial Core, Integrated, SQL Server, RUP methodology.

Resumen. *El objetivo de la presente investigación se centra en la creación de una aplicación informática para la automatización de los procesos que intervienen en la etapa de planificación de un proyecto de construcción inmobiliario, intención auspiciada por la entidad financiera Mutualista Imbabura ubicada en el cantón Ibarra provincia Imbabura.*

La administración de un proyecto inmobiliario parte de la etapa de planificación, la cual es considerada como el pilar fundamental del proceso inmobiliario pues permite delimitar y definir la viabilidad de ejecutar un proyecto.

El sistema informático fue creado bajo Power Builder versión 11.5 y el Sistema Gestor de Base de Datos Microsoft SQL Server 2008, software base de la institución, totalmente integrable, parametrizable, bajo los mismos estándares de calidad, seguridad con la plataforma tecnología del Core Financiero ORION.

Palabras Claves

Inmobiliario, sistema informático, Power Builder, Core financiero, Integrado, SQL Server, metodología RUP.

1. Introduction

Process automation is a priority and necessary changes within companies, keeping closely aligned and adjustable long evolutionary processes by line of business as a result allows greater productivity and efficiency, taking advantage of each material and human resources of the organization, substantially limiting the timely operational risk that carries the manual execution of processes.

The processes of the planning stage of housing construction in the first instance are perceived very deficient as they are performed manually. Construction documents as are filed in folders: architectural plans, surveys, timelines, municipal permits, budgets, technical specifications, among others. Which hinders large-scale agile and successful performance in the review and project management? This exposes documents can get lost, deteriorate, mingle and cause confusion among a lot documentation.

There are shortcomings in the planning of housing programs Mutualista that causes the works were delayed causing the cost of construction increases. Being mainly affected the institution and the client as the planned investment has its variations and somehow this makes affects the acquisition of housing.

Having these drawbacks makes other projects not being implemented or are delayed as planned and that the resources allocated to other projects would be redistributed. The purpose of this research was to implement a computer system to support the activities of the planning stage of a building project on the same database environment financial core development using the RUP methodology. The application is integrated as an additional module

ORION projection system scalability for this module is intended to complement the automation of the subsequent steps that are part of the real estate process of" Mutualista Imbabura."

The planning stage is the initial phase and can be considered as the core of the real estate process, clearly defines the idea that might be drawn to meet the real needs presented by the market results obtained after applying market research. Proper implementation of this step ensures successful marketing of housing units.

2. Software Tools and Methods

2.1 Software Tools

For application development made use of software tools based on the sponsoring institution, such as IDE PowerBuilder version 11.5 and Microsoft SQL Server 2008 which have the proper licensing of use, allowed to create each of the system modules.

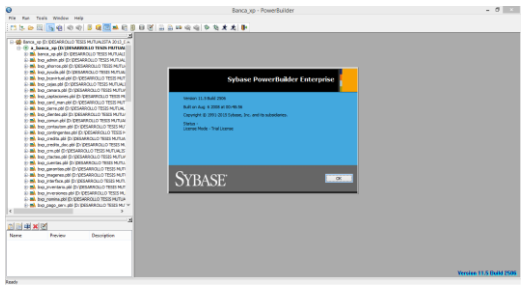


Figure 1. Power Builder
Source: Personal Adapted

This development environment is easy to learn and allows the development of applications R.A.D.

Figure 2. Microsoft SQL Server logo
Source: Personal Adapted

The management system Microsoft SQL Server data base used to manage the data in the 2008 version, technological platform adopted by the institution from the conception of financial core.

2.2 Methodology

The application development was carried out under the RUP methodology Unified Process Development, obtaining a high quality product under standards of software engineering.

In the analysis stage the functional requirements of the application is defined holding meetings with the architect in charge of the department, which were later translated as use cases. A review of operational processes that lead manually and compiled a big information that basically consists of Excel templates as budgets and schedules, Word files as contracts, based on attachment, pdf files and AutoCAD drawings are made as architectural, among others.

After analyzing this documentation we proceeded with the design entity relationship database, which is a separate database as financial Core institutional policy for a database for each module.

This database maintains catalogs of parameterization of the different functionalities of the housing module ensuring system scalability and automation of the later stages of the planning of real estate projects.

A sketch of initial screen was performed to define the flow of information in the application, which would later form the graphical user interface.

Once the automated processes defined to be started with the development stage, which required several refinement iterations functional automated processes.

Some adjustments to the design and use cases outlined in the above steps were performed. Along with the development unit testing was performed together with the process owner who certified the acceptance of implemented software also allowed to solve some programming error.

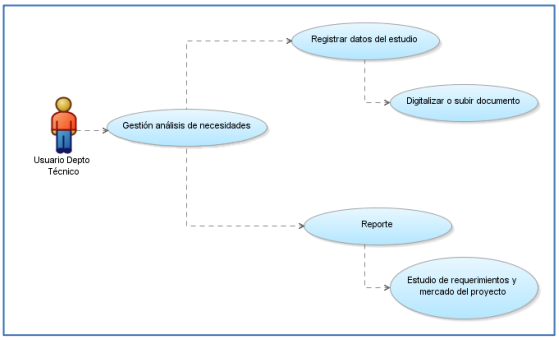


Figure 3. Information flow planning housing construction
Source: Personal Adapted

Transition to stage the product for delivery and production step was prepared. They worked in areas such as improving the product, installation settings and training about its use.

The main goal of the methodology is to ensure the production of high quality software.

3. Results

Once it ended the stages of software development methodology a product that meets the objectives in this investigation, which is made up of seven modules distributed was obtained as follows:

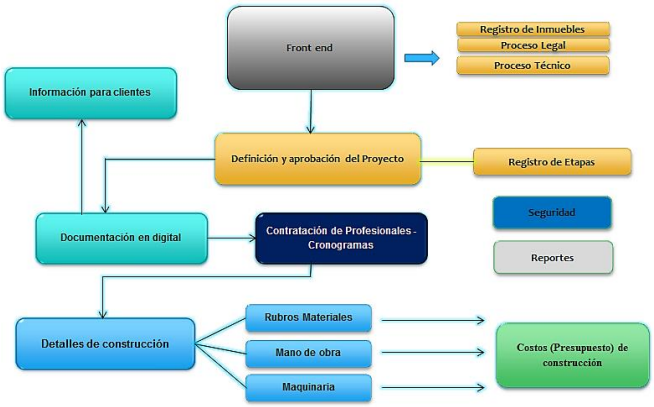


Figure 4. Distribution of the housing system modules
Source: Personal Adapted

As regard integration with the main system of the sponsoring institution business logic side Power Builder in the same source solution core financial institution code it is generated. Keeping development standards adopted by the institution to require a configurable system using stored procedures for business logic such a way changes as may be required in the future by regulations or changes in the process are the place directly at the level of database without the need to lower the service to update the solution.

The solution of the financial core in Power Builder maintains a distributed modules which are identified for each product provided by the institution to its customers structure, in this way, the database created for this project is called Real and prefixes for each of the tables is (IMB) according to the programming standards of the institution. The G.U.I. It was designed according to the institutional colors and options user profile are created under the same tree ORION system options, which can be assigned to users responsible for each process.

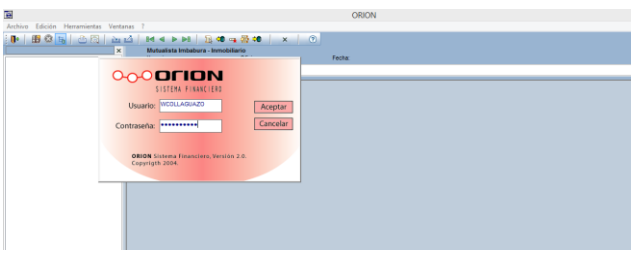


Figure 5. ORION Financial System
Source: Personal Adapted

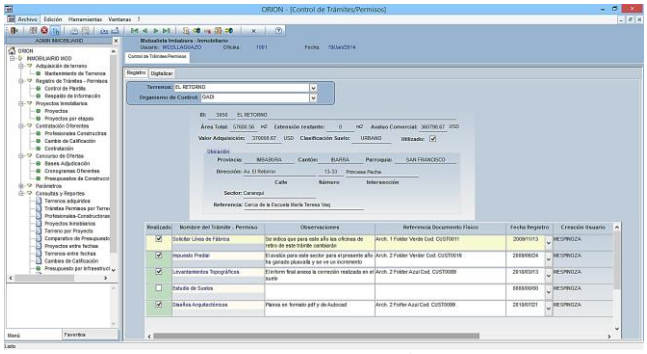


Figure 6. User Profile
Source: Personal Adapted

For generating windows on Power Builder was inherited from the parent object of the financial core which already contain implemented all the business logic of a typical CRUD, simply connect to the database assigned to the project and data windows generated that meet made specific functionality of each process to consume later in the form of stored procedures and functions use the same retaining bar in the main menu of the financial core. It is in the implementation of the code module for basic maintenance and daily functions, was reused.

The financial system does not contain individual buttons to execute functions of impairment based data but contains a main menu at the top of the GUI from which all functional system actions are triggered.

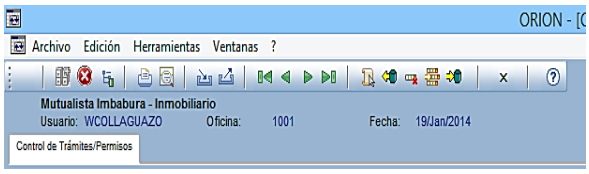
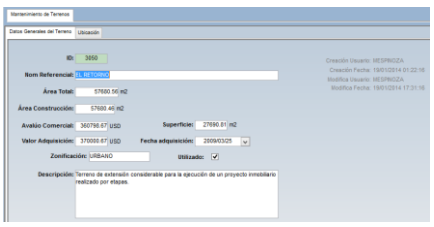
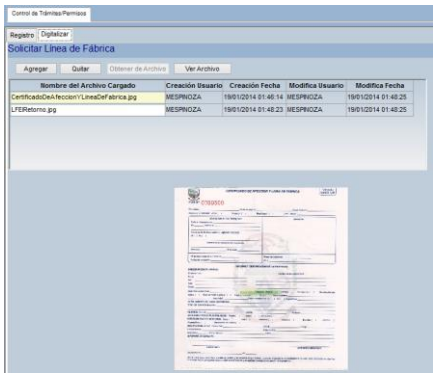


Figura 7. Main Menu System
Source: Personal Adapted

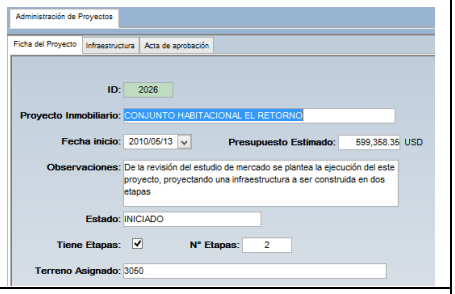
Below is a brief functional description of the application is shown

Module	Functional Window
Property Management	

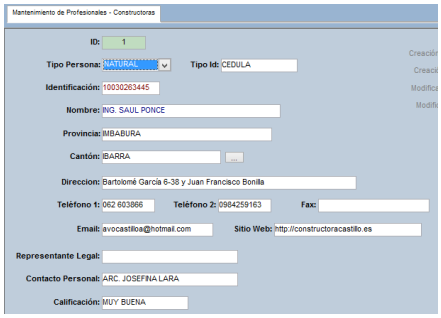
Record procedures – licenses

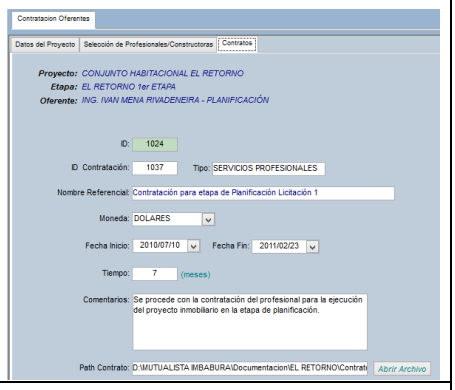


Property Projects

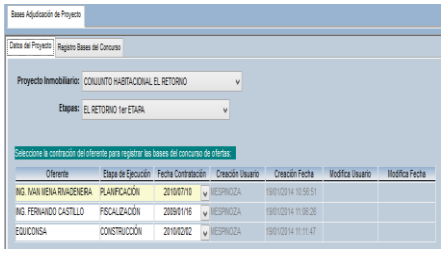


Bidders hiring

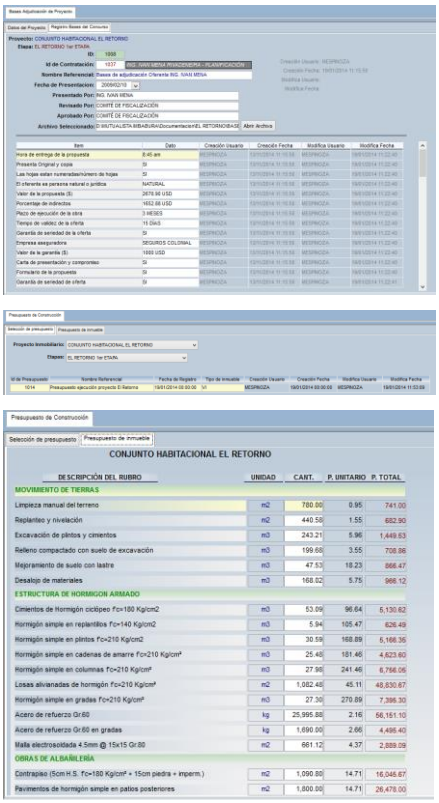




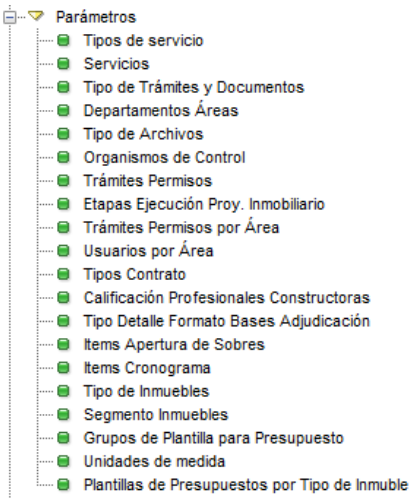
Contest Deals



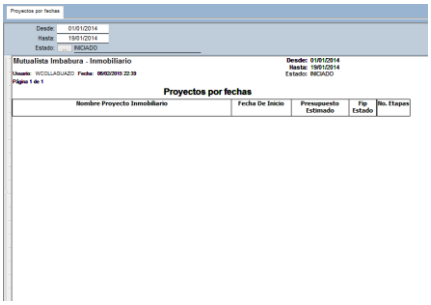
Contest Deals



Parameters



Inquiries and reports



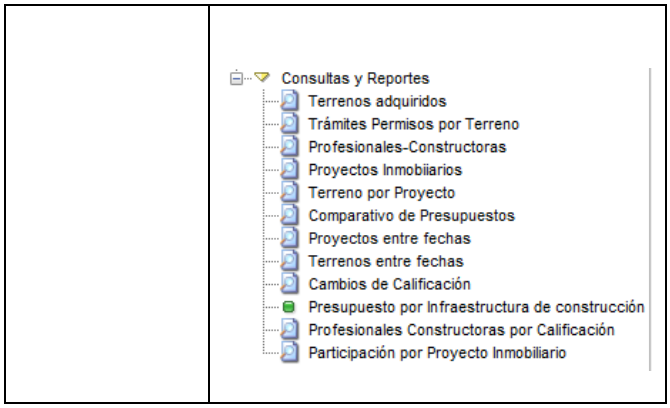


Table 1 Some displays system
Source: Personal Adapted

The implemented system was integrated to the financial core of the institution and runs on the company's intranet, ensuring an optimum level of data availability, security and quality of service.

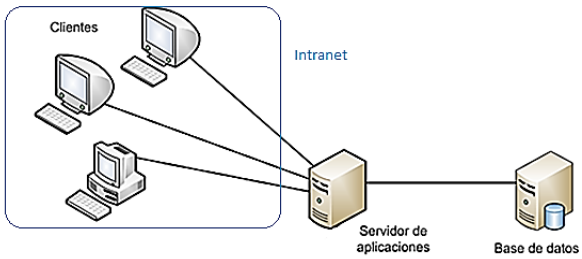


Figure 8. Technological System Architecture
Source: Personal Adapted

To optimize response time for users who connect to the system from another city the system is deployed on the intranet so that the application is compiled in its own application server.

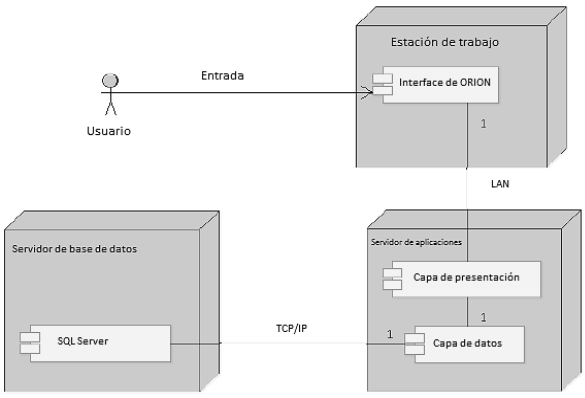


Figure 9. Functional architecture of the system
Source: Personal Adapted

Below is a brief functional description of the application is shown.

Land management

The application allows you to manage the flow of information regarding own grounds of the institution, which are recorded as a property which will then be used in a real estate project to plan the institution. When a new field is recorded template procedures and permits that are parameterized the system automatically loads. And later to manage the progress of compliance with each of the obligations of the institution with the various agencies.

Record Procedures / licenses

The system can manage different types of files as they are architectural drawings, Excel, Word documents, images, PDF and any other file type that is required, provides an interface parameterization to perform these procedures.

Each Control Agency system allows searching of procedures that are pending to comply and indicates which are met. For each procedure a directory where the files that the user sees fit up the system to support the legality of compliance will be stored is created.

Data Backup

For security and confidentiality of information the system maintains a digital repository located on the central server of the institution, which contains all files that have been uploaded in the administration of paperwork and licenses.

This documentation through an automated process that can be executed by the user is backed up to another server in the data center of “Quito Sur” office. It is noteworthy that the location of the digital repository can be parameterized.

Property Development

Regarding the management of real estate projects, the application provides an interface which allows the management of real estate projects recording the location, start date, the land is allocated for the implementation of this project allows the register of infrastructure building and digitization of the formal declaration. The system also allows you to record the steps in case a project is divided in phases.

Bidders Hiring

Previous to recording the contraction of suppliers to a particular stage of the execution of a real estate project is necessary to keep updated with information from bidders to enter into competitive bidding the project catalog.

The system differentiates those construction professionals at some point end their working relationship with the institution. For each of the stages of implementation can record contraction and then load the contract in PDF format

for future revisions or monitoring of the agreements reached in the document.

Contest Deals

This section of the application allows the registration of the foundation award presented by each professional builder, that´s to say all data in the documents submitted by the participant to the construction project bidding and the file is loaded into the digital repository is detailed.

Of bidders that are registered hiring the system automatically generates the schedule of activities and budget of construction according to the parameterized templates.

Parameters

Allows the parameterization of all necessary for the application catalogs fit the line of business. Among them we can mention parameters: Types of services, type of procedures / documents, file type, watchdogs, Procedures permits, contract types, property type, budget template groups, units of measure, among others.

Inquiries and Reports

In this option would bring is the module, it is important to mention that the financial system remains a specific module for creating and publishing reports.

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