UNIVERSIDAD TÉCNICA DEL NORTE

FACULTAD DE INGENIERÍA EN CIENCIAS APLICADAS

CARRERA DE INGENIERÍA EN SISTEMAS COMPUTACIONALES

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TEMA:

AUTOMATIZACIÓN DE LOS PROCESOS ACADÉMICOS DE LAS CARRERAS DE LA FACULTAD DE INGENIERÍA EN CIENCIAS APLICADAS.

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Automating Processes Academic Careers in Engineering Faculty of Applied Science.

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Abstract. The "Técnica del Norte" University is an institution of higher education, public and accredited, its mission is to train excellent professionals, that's why they work to improve the quality of the education everyday and all process carried out inside it. "The Direction of the Technological Development and Informatics' of the "UTN" is to improve the academic process being more efficient. It has developed some modules connecting to the main central system existent to improve the attention of all the users of the university.

Keywords

Processes, Efficient.

1.   Intro

Currently the H. Academic Council has the challenge to overcome many of the limitations that have arisen during the development of their activities, so many of the processes have not been able to execute in the best way. Several examples can be cited; The semiannual monitoring process planning, schedule management, control classrooms, laboratories and web-enrollment processes that must be optimized in order to better and expedite all the above processes.

Currently the UTN has an Academic System and ERP systems that are integrated several forming the Integrated UTN.

In a second step of this process automation of academic processes systematization of the School of Engineering in Computer Systems.

Something to consider is that being a career directly related to the use and implementation of information technologies and communication, there are still processes or procedures that are recorded on paper or on a very basic spreadsheet or a text file.

Everything said has caused long lost and there is a lack of organization in many processes involving the Academic Council H. causing the largest student is injured.

This project aims to improve the management of the Academic Committee giving them tools that allow them to access the information required for monitoring processes semester schedules, timetables Management Control Classrooms, Laboratories and registration via the web.

With all the above beneficiaries will be teachers and students as they will have more information regarding these processes.

It is also important to note that these processes contribute to systematize a quick verification of compliance with some benchmarks.

For the development and implementation of modules for Integrated System UTN Oracle tools will be used as the institution has the right software, these tools are:

- HTML
- CSS
- Open standards.
- JavaScript
- Apex
- Apex Listener.
- Oracle Database 11g.

- • Oracle Forms

2.   Materials and Methods

The method used for the development of this project was using processes and procedures which are detailed below:

Processes: A process is the set of activities or tasks, mutually interrelated elements that supports input during development either at the beginning or along the same, which administer, regulate or self-regulate under management models for individual elements output or expected results.

Procedures: Procedures can be defined as the homogeneous modules that are able to specify and elaborate process, which form an ordered set of activities or transactions determined sequentially and are directly related to those responsible for the implementation, as a fundamental part of the procedures is that policies must comply with established rules, procedure duration and flow of documents continue to develop correctly.

A very important feature of the procedure is to be documented throughout the development of these step by step to control execution.

The primary objective of the procedures is to identify and point to what, for what, whom, where?, How?, And when each of the activities comprising the procedures of the various processes and procedures in the UTN regarding the academic process.

This system will focus on the following modules:

Semester schedules

Visual and statistical results obtained from results of previous semesters to know the approximate number of students would be able to enroll in the various subjects of the next academic year, in order to help planning semesters as the estimated number parallel to be opened by subject.

Schedule Development and Management

Add controls that allow not only record the times but also times to help make quick and smart form in order to obtain a schedule without crossing hours taking into account parameters such as working day of each race and teacher availability.

Assigning Physical Spaces

Order to assign the classrooms and laboratories depending on capacity, physical and technological infrastructure that requires each subject while performing a dynamic allocation so there is no crossover of subjects in the same physical space.

Web Registration

Allow students to make a pre-registration taking into account the rules of study credits.

• Web access.

• Identify the student by the number of document.

• Get a list of subjects that the student does not endorse and is even able to enroll.

• Make the selection of the materials by the priorities as:

- Registration number and level of matter.

- Obtain a valid document

To develop the software was used

RUP. Rational Unified Process is a methodology used in software engineering to standardize the process of project development. "RUP iterative development promotes and organizes the development of software and systems in four phases, each consisting of one or more executable iterations of the software at this stage of development."

Source: IBM

Figure 1 Description of Phases RUP

In the Inception phase will take place:

Software Development Plan: The document in which a general approach to the whole project is provided.

Vision Document: This document describes the main features that the project will be described.

Requirements: A System Requirements document will be submitted by the user, detailing the features it will have.

In the Elaboration phase will take place:

Use Case Model Business: Here you define which functions are allocated to each system user role. A diagram of use case specifications and use cases will be shown.

Document architecture: the most important architecture diagrams that composed this system, as the architecture of the tool, the integration of the modules is displayed, the database diagrams and activity diagrams of the processes with the procedures manual respective.

Design: prototypes of Web pages with their features and functionality will be modeled.

In the Construction phase implementation of the structural basis of applications such as database schema and web pages with their validations are performed.

In the transition phase the system is tested with real data and train users in their management of applications, and will be formally transferred to the documentation of the project, indicating the findings and recommendations.

Certain standards organizations like IMS suggested for such tools should be used.

Flexible: The systems are constantly changing and being updated so it is necessary to make a system compatible with new technologies and modular, so adding or removing components.

Accessibility: The system must be available, at anytime and anywhere (obviously having internet access), to use the available resources.

Security: As with any system, you must have access permissions methods and authentication then discuss about the tools to use.

2.1 Tools

Application Server to be used in this project is the Oracle Weblogic 11g EXPRESS APLICATTION development tool Oracle (Apex) in version 4.2.3. This tool is fully compatible with the Oracle database so it will be easy connections to it.

Apex is a tool for web applications very easily and quickly, which benefits the development of the applications and makes the time to optimize as long as the PL / SQL code are well designed. This tool is connected directly to the database, since it is a component that is installed in the Oracle database.

Making a web application in Apex has benefits as the usual dynamic action forms that avoid having to manually develop mechanisms using javascript or AJAX code itself. You can include plug-ins that help place grouped dropdown lists, text fields with mask effects in and out of windows, or other elements.

Applications are made in Apex, you can export and import the database into SQL script type, which facilitates portability and draw backs. Then APEX architecture shown.

Apex has the ability to integrate with SQL language, PL / SQL, along with HTML so facilitating the integration of the database with web applications.

To access an application that Apex is needed on the server is installed and configured correctly so APEX_LISTENER access the application from a web browser.
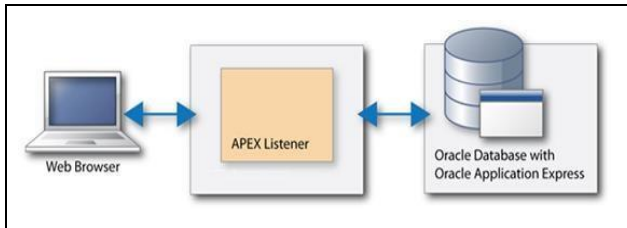
Fuente: Oracle

Ilustración 2 Arquitectura Oracle Application Express Listener

3.   Results

By applying a development methodology, in this case the RUP, allows an orderly work and especially as a result obtain quality software.

As all web applications and be published on the Internet, allowing all users to access the various modules 24 hours a day, 365 days a year from any browser, without installing or configuring specific components.

To access the system you only need a computer with internet access and an updated browser, revenue is not difficult installing more components.

Described below are some benefits to that obtained with the system implementation:

IMPACTO	BENEFICIOS
Economic	Process improvement, time savings and utilization of human talent. Savings in maintenance and reuse of hardware and software
Social	Increase the prestige of the Technical University of the North.
Technological	Expansion and improvement of the quality of software UTN
Environmental	Reduction of impressions and use of paper.

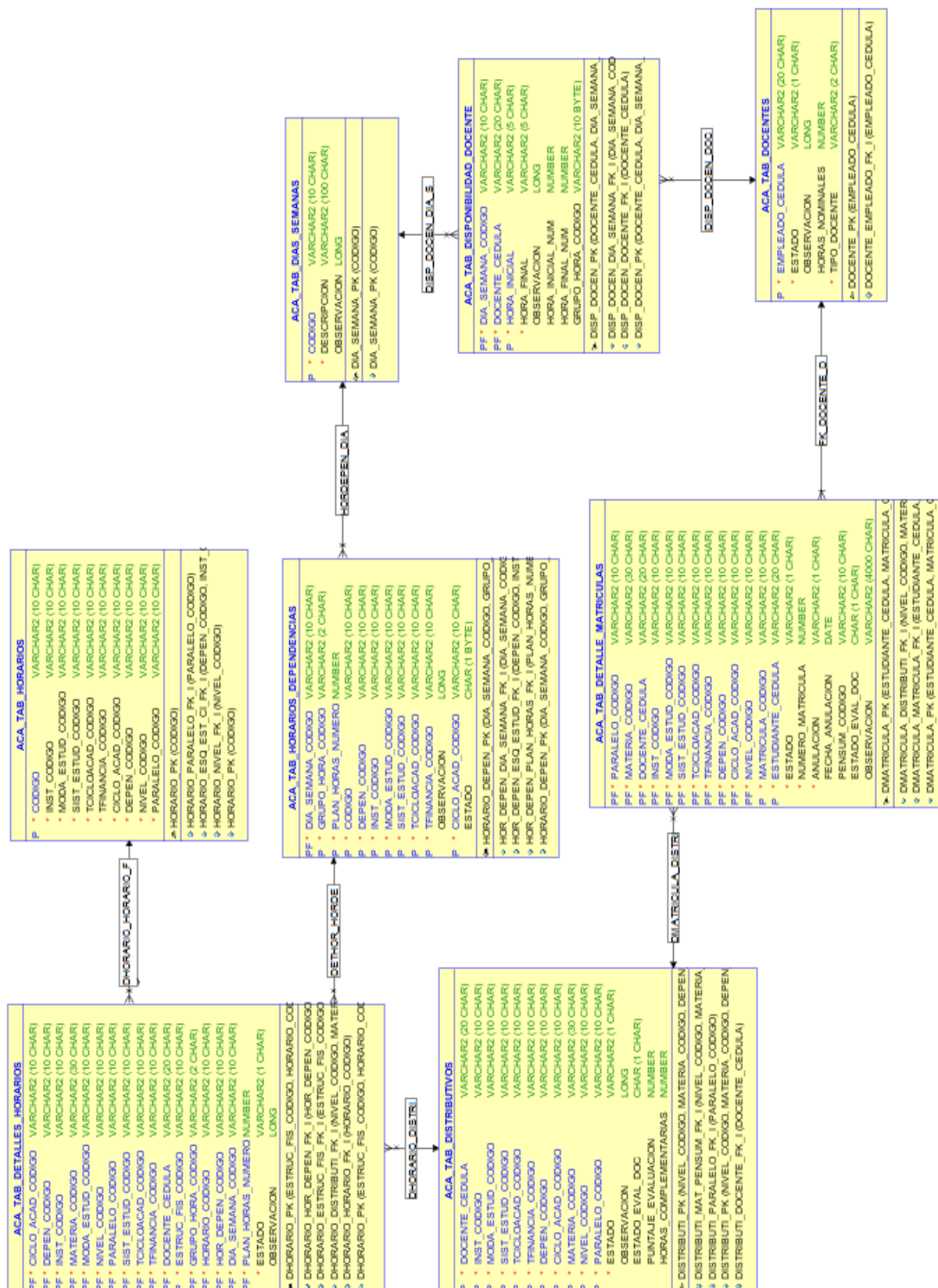**Table Project Impacts and Benefits**

Source: Own

3.1 Modelo Conceptual
Planificaciones Semestrales

GENERACIÓN DE HORARIOS

ASIGNACIÓN DE ESTRUCTURAS FÍSICAS

MATRICULACIÓN VÍA WEB

4.   Conclusion

The application is deployed with Oracle and related tools; in which modules of the Technical University of Northern integrated system are implemented.

The user training has been performed with good results, as it has implemented an easy to use graphical interface.

5.   Gratitud

I thank the staff of the Directorate of Technological Development and Computer UTN, my teachers throughout my student life knew impart their knowledge.

6.   Recommendations

Use development methodology because with this you can make an organized development and above all get quality software. When applying each of the modules to avoid changing information which interacts with each of the modules.

It is recommended that the Department of Informatics and Telecommunications making proper training to new users using each of the modules.

When simultaneous access modules, is necessary to analyze the current infrastructure and if necessary increase the capabilities of these.

Having a program guide, where the parameters and nomenclature to be used in the development of applications.

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