

Development of a Website through XP Xtreme Programming, for the Integration of Academic Production in the research area

Desarrollo de un Sitio Web mediante XP Xtreme Programming, para la integración de Producción Académica en área de investigación

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Abstract

The present work describes the process of a Web site for the administration of the information, of a Superior institution, the objective is that the research area has a website that allows to have the management of its CA Academic Bodies, in the scientific production conducted by the professors of each CA of the institution, classifying, articles, papers, books and reports of scientific research projects, made by teachers-researchers with a profile of the Program for Professional Development Teacher (PRODEP). The methodology used is the XP methodology (Xtreme Programming) is an agile methodology that allows to have the desired results, showing the functionality of the product in each phase of the development, it is carried out in four stages: Planning, Design, Coding and Testing. Software prototypes must be based on user stories, in this case teachers and public with Internet access, these stories are established from the beginning of the project. The development of this website will allow the university community to provide a support tool for the research of scientific articles of interest in institutional web pages, as well as to control and store all the scientific products that the institution has.

Academic Groups, Methodology XP, Web Site

Resumen

El presente trabajo describe el proceso de un Sitio Web para la administración de la información, de una institución Superior, el objetivo es que el área de investigación cuente con un sitio web que permita tener la gestión de sus Cuerpos Académicos CA, en la producción científica realizada por los profesores de cada CA de la institución, clasificando, artículos, ponencias, libros e informes de proyectos de investigación científicos, realizados por docentes-investigadores con un perfil del Programa para el Desarrollo Profesional Docente (PRODEP). La metodología utilizada es la metodología XP (Xtreme Programming) es una metodología ágil que permite tener los resultados que se desean obtener, mostrando así la funcionalidad del producto en cada fase del desarrollo, se realiza en cuatro etapas: Planificación, Diseño, Codificación y Pruebas. Los prototipos de software deben estar en función de las historias de usuario, en este caso docentes y público con acceso a Internet, estas historias son establecidas desde el inicio del proyecto. El desarrollo de este sitio web permitirá proveer a la comunidad universitaria una herramienta de apoyo para la investigación de artículos científicos de interés en páginas web institucionales, además permite controlar y almacenar todos los productos científicos con los que cuenta la institución.

Cuerpos Académicos, Metodología XP, Sitio Web

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Introduction

The technology within the education centers has advanced in such a way that it has allowed anyone to have intelligent devices with Internet access, capable of performing various tasks of daily use, optimizing most of the activities and with them the time that it takes to perform them. However, to date there are scenarios in which it has not been possible to take advantage of the potential of these devices. The biggest problem at present, is that the contents of the Internet pages contain false or incomplete information, causing a great unknown in question to the truthful and uncertain. Articles generated in universities in Mexico, whose bibliography is extensive and the information generated totally reliable, have been lost due to the lack of a public platform that allows the dissemination of research done by teachers with a profile in the Teacher Professional Development Program. for the Superior Type. (PROMEP, 2015).

The interest to investigate this problem is to develop a Website that allows to manage the information produced by a higher level institution, in this way the administrators will be able to control the scientific production made by each member of the Academic Body (CA). In this context, the information and communication technologies (ICT) applied to the generation of this web platform have allowed the development of a feasible development process for the project with the help of the Xtreme Programming methodology.

Therefore, the problem that seeks to solve this project is defined as presenting an accessible web platform, facilitating the scenario of the publication of scientific products, which is useful to establish a channel of communication between users and any research that teachers have done and published. However, the cost and availability of a server in the university, lead us to stop the project and resort to implementation alternatives that are available to the institution.

The rest of the article is organized as follows; In the section of the Approach of the problem a review of the background is made in an institution for the analysis of the magnitude of the problem and the current situation of higher level institutions, while in the Design and Codification sections the procedures are described carried out in the development of the website for Academic Bodies and Research Direction, in the Tests section, the scopes obtained with the development and implementation of the project are presented, while in the Conclusions section the aspects of interest for research works are mentioned. future.

Theoretical framework

In Mexico, one of the most recent policies aimed at promoting new ways of stimulating the generation and application of knowledge has been the impulse to the creation of academic bodies (CA) in public institutions of higher education, this with the purpose of strengthening dynamics Academics sustained in collaborative work, manifested in the structuring of disciplinary teams.

For some authors it is more appropriate to handle the concept of "epistemic communities", referring to groups of experts whose mission is to solve a series of problems through the application of scientific knowledge (Maldonado, 2005).

The idea of "epistemic communities" constitutes a new approach to public policies, the author considers them as "entities composed of professionals who share the commitment to a common causal model and a series of common political values. They are united by the conviction in the truth of their model and the commitment to translate this truth into public policies "(Parsons, 2007), also refers to the epistemic communities taking the form of "invisible universities "or" networks of people "with similar ideas.

The concept of invisible universities had already been worked on, as Crane called "invisible colleges" (Campanario, 2002, page 175) a small community of scientists who exchange information with each other and increase their position of power within a given field or discipline. Members of the "invisible college" know each other, and probably read and share the work of the other members.

In this respect Olivé (2008) points out that:

"The objective of scientific communities is to generate authentic knowledge in their field, an objective knowledge of reality that is the result of rational processes ... scientific communities are characterized by a constellation of shared elements; among them, the previous knowledge that accumulated in their field, but, above all, a set of values and common interests within each specialty " (pag.33).

For Tierney (2001) the main element in a scientific community is the production of knowledge through joint work: "The community of scientists within a specific field works together, so that a person learns a fact and another builds on this fact to discover another, and so on" (pag.165).

According to the previous opinions, the academic body should be understood as a small scientific community that produces and applies knowledge through the development of one or several lines of research, and the work in them works as the unifying element of said team.

What, added to all the above, the fact of sharing information between researchers and / or scientists is advancing with the development of new technologies that can facilitate the transfer or an own inquiry.

The importance of the visualization of a web page for the development and advance in education is very important and more to impart knowledge among the student society (Mendoza, 2018).

The use of a web page may seem like a good idea for some people. The problem is that by not being aligned in the lack of knowledge of the education provided, a poor communication solution is being offered. (Jiménez, 2014).

A web content manager or content management system CMS (Content Management System) will be an important part that facilitates the editing and publication of content on the web directly from the server. (Innovate your Web, 2009).

Methodology

The problem addressed by this work is to develop a website for the research department and Academic Bodies of the Institution, with the implementation of the XP methodology, in planning, designing, programming and testing, based on the team's ability to communicate with each other and the desire to learn from inherent mistakes in a programmer.

The advantage of XP is its ability to respond to unforeseen events, which includes the following phases: Planning, Design, Coding, Testing. These phases will be implemented in the development of the project. See figure 1.

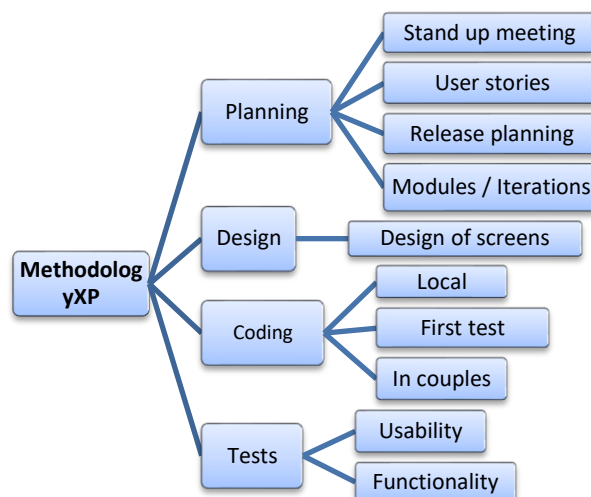


Figure 1 Phases based on the XP Methodology of the Website
Source: Self Made

Project development

Planning phase

Work meetings are held with the research area director, to define the requirements through user stories. The results of this phase are: Stand-up meeting, User stories that identify the requirements. The goal to fully develop the project is approximately 4 months.

Stand-up meeting

These meetings are held at the beginning of every day during the project period, the entire development team meets to present the problems and ideas that are being presented, in order that the team as a whole build a better solution. (Department of Computer Systems and Computing, 2018).

For the project, the interaction with the research director (User) was required, in table 1, the planned meetings are detailed.

| No. Meeting | Activity |
|-------------|--|
| 1 | Define the modules and the list of users. |
| 2 | Delivery advance main screen and prototype members of the academic body. |
| 3 | Delivery of the first iteration |
| 4 | Delivery of the second module |
| 5 | Review of the site mounted on a free server. |
| 6 | Delivery of the third iteration |

Table 1 Delivery meeting plan and progress
Source: Self Made

The iterations used for the creation of the website served to improve the requirements and requests of the user, 4 were used to define the objectives and improve the user's stories. See tables 2-5.

In the planning phase the analysis of the website was carried out, the modules and the actions to be carried out were defined, as well as the deliverables and functions of each one of the team members, including the client as a fundamental part.

| User History | |
|--|----------------------------------|
| Number: 01 | Name: Registration Module |
| User: Administrator | |
| Priority: High | Assigned Iteration: 1 |
| Functionality: Enter the basic personal data of the teacher or member of the academic body | |
| Description: Contains a section to register the user who wants to access the system. | |
| Functionality Tests: Insert the data and perform the corresponding validations for each required field, in the case of email, it is necessary to validate that the format is correct. | |

Table 2 User history - Registration module
Source: Self Made

| User History | |
|--|---------------------------------------|
| Number: 02 | Name: Password Recovery Module |
| User: Teacher | |
| Priority: High | Assigned Iteration: 2 |
| Functionality: Recovery and / or password change due to forgetting | |
| Description: It contains a section where the user, not remembering his password, can restore it by means of his email address and thus he can log in without problems. | |
| Functionality Tests: Insert the data and perform the corresponding validations for each required field, in the case of email, it is necessary to validate that the format is correct. | |

Table 3 User history - Password Recovery Module
Source: Self Made

| User History | |
|---|---|
| Number: 03 | Name: Module of Members of the Academic Bodies |
| User: Coordinator | |
| Priority: High | Assigned Iteration: 3 |
| Functionality: Register, edit and eliminate teachers | |
| Description: Coordinator options for registration and modification of new teachers | |
| Functionality Tests: Insert user and verify that belongs to the academic body, besides editing personal information and eliminate teachers who no longer belong to these | |

Table 4 User history - Module of Members of the Academic Bodies
Source: Self Made

| User History | |
|--|-------------------------------------|
| Number: 04 | Name: Academic Bodies Module |
| User: Teacher (Administration), Normal User (Navigation) | |
| Priority: High | Assigned Iteration: 4 |
| Functionality: Browse the different academic bodies and information management of teachers or members of academic bodies. | |
| Description: Academic Bodies. It contains a sub-module where you can access the different academic bodies that the web system has registered. | |
| Teachers It allows the registration, modification, elimination of the different research articles that the teacher has registered, as well as updating their profile. | |
| User interface tests: navigation through the elements that are being tested reflect the client's functions and requirements, including window management, fields and access methods; The objects of the windows and features, such as menus, size, position, status, work according to the standards. | |
| Functionality Tests: Insert the data and perform the corresponding validations for each required field, in the case of email, it is necessary to validate that the format is correct. | |

Table 5 User history - Academic Bodies Module
Source: Self Made

User stories

The user stories have the same purpose as the use cases, the client describes their needs based on the requirements of the website, a documentary research was conducted, from which the way of collecting the background of the products made by teachers was obtained researchers of the institution.

Release planning

The developers and clients established the ideal implementation times of the user stories and the priority with which each phase was implemented.

Iterations

– **Registration Module**

Section where the user will access the system and verify the level of access to control the information pertaining to each teacher or academic body.

– **Password Recovery Module**

In this section you can recover / modify the password of users who have had problems accessing your account, until you forget your password, for security and for trust a verification email will be sent to the corresponding user.

– Module of Members of the Academic Bodies

In this section the users and their information will be created and managed, the administrator will be able to edit the system in its entirety, up to the profile of the teachers. The coordinators of the academic bodies, will have privileges of access only to the CA of their area, with the accesses of edition in the members of CA, to register, modify and eliminate academic products while the members of CA will be users who will be able to edit only its profile and its products, with limitation to modify the one of other members.

– Module of Products of the Academic Bodies

Section where teachers can upload and control their products, from publications to articles developed by them. Products can be added, edited and deleted according to the user.

Project speed

What XP says

Number of user stories or programming tasks performed per iteration.

It helps to estimate the amount of user stories to be implemented in a given iteration.

Experience in current project

The number of user stories performed per iteration was not a good measure of the speed of the project because not all had the same level of difficulty and therefore the same requirement of development hours.

In the second iteration, fewer weekly hours were worked in comparison with the other iterations. The reason for this result was that the level of difficulty was of less complexity, therefore, the number of hours required for the user stories of the second iteration was the lowest of the entire project.

Everyday meetings

To follow up on the project, several meetings were held and topics were discussed where the following weekly activities were agreed, problems and solutions according to the needs of the project, sometimes the client was requested to request information and new agreements.

Design phase

Site screens on a local server

Homepage

For the access of the main page, tests were carried out locally in a desktop computer in order to visualize the interface of each of the windows of the web page, this was done with the aim of designing each of the sections You have the web page and see its structure before you can mount it on a server. See Figure 2.



Figure 2 Index of the main page

Source: Self Made

Academic Bodies

The carousel in the browser or gallery of academic bodies; in this part we have the options of the academic bodies, within this dynamic menu we have 2 buttons on the sides to go through the options and choose one, each academic body has a description and a "See more" button in this option will redirect us to the selected academic body and see more detailed information of each one of the CA. See figure 3.



Figure 3 Carousel of the academic bodies

Source: Self Made

Members of the academic body

In the button of figure 2 "See more" in the Career gallery of the main page, it will redirect to the menu of the academic bodies. In Figure 3, shows the members of the academic body that perform in the institution within which it has been selected, you can see all members of it: name, the general objective of each of the members and a respective photo of each one of them. See figure 4.





| Name | Objective | Photo |
|--------------------------------|---|---|
| Brenda Juárez Santiago | Investigate and manage information technology and communication projects, to encourage higher education research skills, through the implementation of new technologies, solving real problems in the industry and education. |  |
| Normal Alejandra Ledesma Uribe | General Objective |  |
| Gregorio Rodríguez Miranda. | General Objective |  |
| René Santos Osorio | General Objective |  |

Figure 4 Members of the academic body
Source: Self Made

Enter

To be able to log in you must locate the menu that is at the top of the page below the banner in figure 4. Since it is possible to locate the menu, the access option is searched in the upper right and clicked to see the options that each of them has. See figure 5.

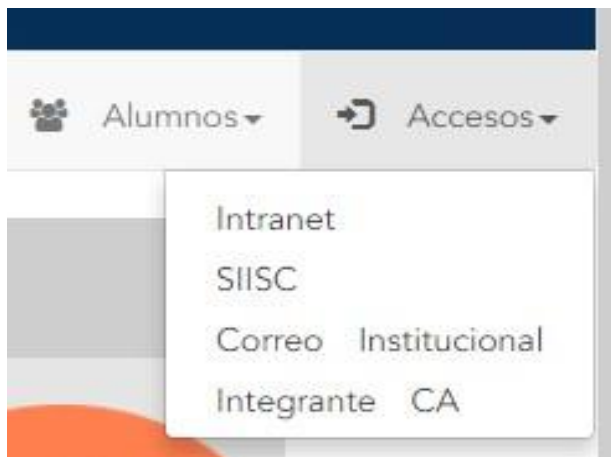


Figure 5 Menu for user login
Source: Self Made

Within Access options you have to enter Integrante CA.

To be able to enter, you must put the user or email in the Username part and the password in the password of each of the members of the CA. See figure 6.

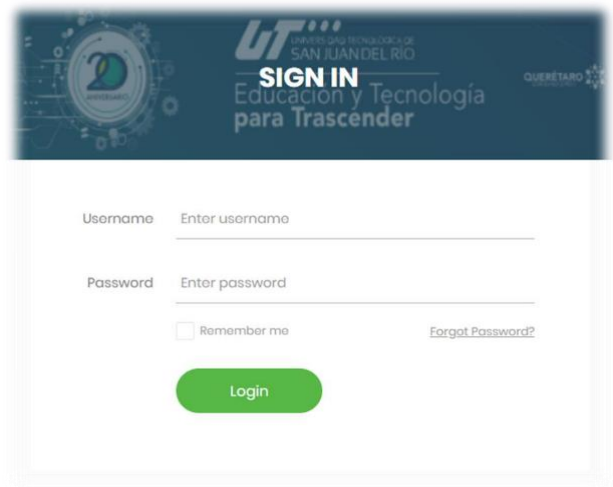


Figure 6 Teacher profile login
Source: Self Made

**Modification of the Academic Bodies
Add teacher**

To be able to add a member you must be the coordinator of said CA.

On the CA screen locate the objective part.

Click on add teacher and a window will be displayed to register another member of the CA that belongs to it. See figure 7.



Figure 7 Add teachers
Source: Self Made

Fill in the fields that appear with their respective values and personal information of new member and click on add. See figure 8.

Name

Last Name

Position

Figure 8 Registration of academic body
Source: Self Made

Delete Teacher

To be able to eliminate the Teacher one must find in the screen of Academic Body and locate the table with the list of the teachers who belong to this academic body from which it is desired to eliminate. Click on the delete button and click on accept to confirm that you wish to delete your information from the website. See figure 9 and 10.



Figure 9 Location of the delete button

Source: Self Made

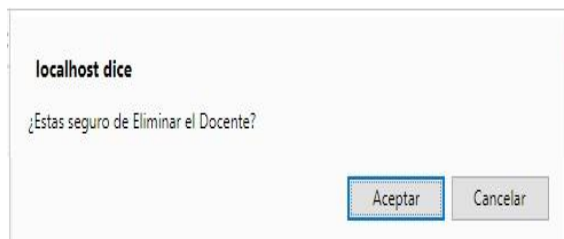


Figure 10 Delete button

Source: Self Made

Teacher Edit

To be able to edit a teacher must have a position of Administrator, Coordinator or own the profile.

Locate the edit button inside the box with the main data in the profile that is in each of the profiles of the members of the CA where they are required to make the changes. Click to display the menu with the options to edit. See figure 11.



Figure 11 Modification of a teacher

Source: Self Made

After modifying the information of the fields that were selected, click on the update button in the bottom of the menu. Changes will be made automatically with the new information that has been registered in the modification. See figure 12.

Figure 12 Teacher information form

Source: Self Made

Projects Add project

To be able to add a project, you must be in the session and profile of each of the members of the corresponding CA. Search the projects section on the teacher's page.

Identify the option to add in the project and click, fill in the information with the requested fields: title, description, representative image of the project, type of project and at the end click to add the project with the others. See figure 13.

Form to add a project. Fields include: titulo (empty), Descripción (empty), Imagen (file selection: 'Seleccionar archivo' | Ningún archivo seleccionado), Link/Url (empty), and Tipo de Proyecto (dropdown: Reporte). A green 'Actualizar' button is at the bottom.

Figure 13 Add a project
Source: Self Made

Edit project

To edit a project you must be in the "MY PROJECTS" section and select the article you want to Modify. Within the project section locate the edit button and click to display the menu. See figure 14.



Figure 14 Section of my projects to modify
Source: Self Made

After finalizing the changes, click on the button. See figure 15.

Form to modify a project. Fields include: IMAGEN (file selection: 'Seleccionar archivo' | Ningún archivo seleccionado), titulo (El Portafolio Electrónico-Online, Herramienta para el Desarrollo de Com), Descripción (Portafolio de desarrollo), Imagen (portafolio), Link/Url (https://drive.google.com/file/d/0BwMxlvwpJ8nfmRObVdPRnZ5aWc/view?usp=shar), and Tipo de Proyecto (dropdown: Reporte). A green 'Actualizar' button is at the bottom.

Figure 15 Form to modify project
Source: Self Made

Delete project

Within the selection of "MY PROJECTS" identify the options and click on the delete button. A warning will appear. When you click on the accept button, the project information is deleted, otherwise no action will be taken. See figure 16 and 17.



Figure 16 Section of my projects to eliminate
Source: Self Made



Figure 17 Removing a project
Source: Self Made

Phase coding

Local Coding

Coding is a process that is done in parallel with the design and which is subject to several observations by XP considered controversial by some experts such as the rotation of programmers or programming in pairs. In addition to the aforementioned topics, the reader will find below a description of the following topics: customer always present, coding the test first, sequential integration and frequent integrations.

Client always present

One of the requirements of XP is that the client is always available. Not only to solve the doubts of the development group, should be part of it. In this sense it becomes a great help to solve all the doubts that may arise, especially face to face, to ensure that the implemented covers the needs raised in the user stories.

Code the test first

One of the advantages of creating a test before the code is that it allows identifying the requirements of said code. In other words, when writing the tests first, all the special cases that the code to implement should be considered in a simpler and clearer way.

In this way, the developer will know with complete certainty when it has finished, since all the tests will have passed.

Programming in pairs

All the code must be created by pairs of programmers seated both in front of a single computer which in principle represents a 50% reduction in productivity, however, according to XP there is no such loss. It is understood that there is not much difference, as far as the quantity is concerned, between the code produced by a couple under these conditions that the one created by the same members working separately, with the exception that one or both programmers are very expert in the tool in question.

When you work in pairs, you get a better quality design and a more organized code with fewer errors than if you worked alone, in addition to the advantage of having a partner to help solve problems in coding time, which they present very frequently.

It is recommended that while one member of the couple is concerned with the method being written, the other is concerned with how it fits into the rest of the class. (Lete, 2009).

Sequential integration

One of the biggest drawbacks presented in software projects has to do with integration, especially if all programmers own the entire code. To solve this problem, many mechanisms have emerged, such as giving ownership of certain classes to some developers, who are responsible for keeping them updated and consistent. However, added to the fact that this goes against the collective ownership of the code is not solved the problems presented by communication between classes.

| Test Case | |
|---|-----------------------|
| Case Testing Author: María Ortiz García | Code Test Case: PB-01 |
| Test Environment: Web | Code User Story: 001 |
| Descriptions and / or Actions for the Tests | |
| Name: Login Test - Administrator and Teacher | |
| Description: Tests will be carried out on the access of the administrator of the website and of the professors who enter their corresponding profiles. | |
| Terms: | |
| <ul style="list-style-type: none"> - The test will be done in several Web Browsers, such as: Google Chrome, Mozilla Firefox, Microsoft Edge, Opera, etc. - Users already registered and not registered will be used. - Passwords valid (8 characters) and not valid (less than 8 characters). | |
| Entry / Execution Steps: | |
| <ol style="list-style-type: none"> 1. It will open one of the possible web browsers with the tab in the direction of the research website. 2. In the address bar, where the URL is located, the word "Admin" will be placed after the diagonal "/" (example.com/Admin). 3. Once the Login or Access page is displayed, the user will be entered in the corresponding text entry. 4. The user is validated with "ENTER" with the keyboard, once this is done, the password or password entry will be activated. 5. Enter the password or Password (valid) in the text entry (once activated). | |
| Expected Output: | |
| <ul style="list-style-type: none"> - In valid user access and password, the profile page corresponding to the user will be displayed. | |

Table 6 Example of test cases developed for the test stage
Source: Self Made

Test phase

Local Tests

Usability and functionality tests

This technique was focused on evaluating the almost finalized project, where the user was kind enough to be guided by the tester to execute and review the website, software compliance was validated.

Implementation

Technical manual

A guide was made to identify more easily the aspects and characteristics that are part of the website. It was directed to the IT department so that they can provide maintenance in case the Website requires it. The following most important elements of said manual stand out:

- Business rules
- Responsible
- Requirements and user platform
- Application areas and scope
- Logical view
- Diagram of use cases
- Entity-Relationship Model
- Data Dictionary
- Deployment diagram
- Site map
- Description of fields
- Description of algorithms

User manual

A manual was designed to give assistance to the people who use the website, in this way it solves the simple problems that could arise during the operation, by means of screenshots the user was informed about the total functioning of the system and everything that involves the handling. This manual contains:

- Minimum system requirements
- Description of the web page
- Guide to use the website
- Glossary of terms

Development of the page in WIX

In the following section we show the example of the figures where the website was developed in the WIX hosting, See figure 18



Figure 18 Main page index in WIX Source https://uniticsparatodos.wixsite.com/c-academy

Section of the academic bodies that make up WIX

A carrousel style is shown horizontally showing a representative image of each one of the members that make it up and the name of each of them, as well as an about above of these in which the objective of the academic bodies is explained they reside in the university. See figure 19.

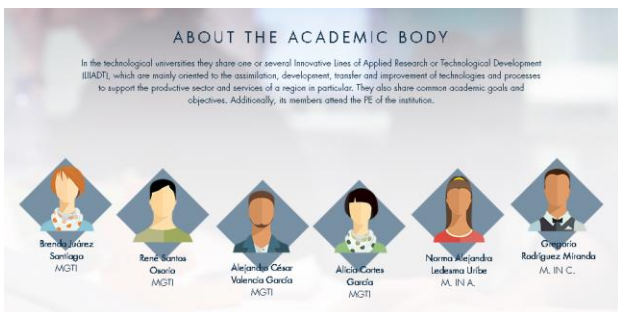


Figure 19 Section of the members of an academic body Source https://uniticsparatodos.wixsite.com/c-academy

Profile of the researcher in WIX

Section where you can see an image of the academic member, as well as the name and work and academic experience, achievements and sections where their projects are displayed: books, articles, reports of stay and collaborations that have developed. See figure 20 and 21.



Figure 20 Carousel of work and academic experience Source https://uniticsparatodos.wixsite.com/c-academy



Figure 21 Products of the academic members Source https://uniticsparatodos.wixsite.com/c-academy

Contact with the teacher in WIX

In this section the people who see in each of the profiles of the academic members will have the possibility of contacting the teacher in an electronic mail for academic purposes and being able to make collaborations according to the convenience of the person who contacts him / her. See figure 22



Figure 22 Academic member contact Source https://uniticsparatodos.wixsite.com/c-academy

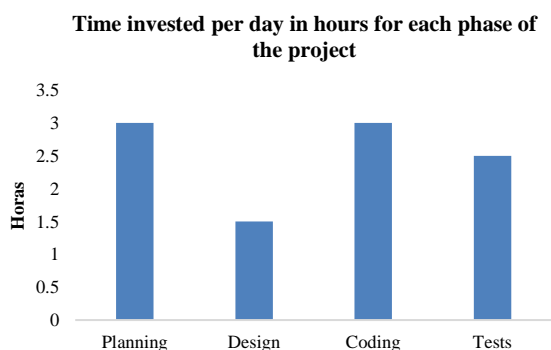
Results

The tests and development concluded successfully in 3 months with good integration and with a web page using a free web server hosting such as WIX to finish the development of this project, the XP methodology allowed us to identify the time spent in This project was estimated to have all the stages in a period no longer than 4 months.

One of the most important results we had was that thanks to the deliverables and the meetings made during the whole monitoring of the project was that the product was delivered on the stipulated dates, we minimized the risks that this entails, likewise the delivery times were minimized It was done at a faster time than with another methodology.

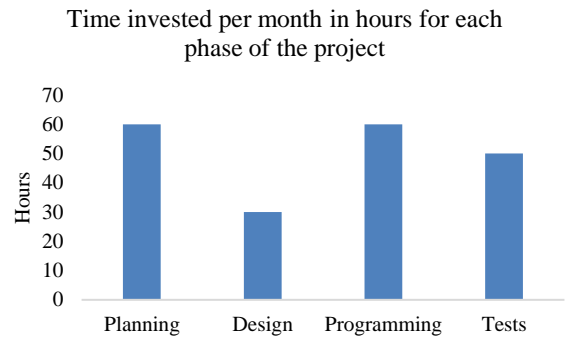
The final results were as expected, the tests and the development concluded satisfactorily with good teamwork and integration by developing the website in a free web server such as WIX to complete the development of this project, the problems that delay and I annul a good result was the lack of budget to rent a Host to store the project in addition to missing the SSL certificate and administration of emails for the operation of sessions I have proper integration of security, effectiveness and control of the page, however the procedure to obtain the resource by the university is being done to store the page on a server and its own hosting, however the option of managing WIX in the same way provides a service and hosting of acceptable information for the requirements that the University, provides the fastest options to make the page and meets the expectations tativas, that is why the coding of the page locally is useful so that in the not too distant future it is uploaded to the server that the university will have.

Figure 1 shows the time that was invested per day in hours in each of the phases of the XP methodology applied to the project.



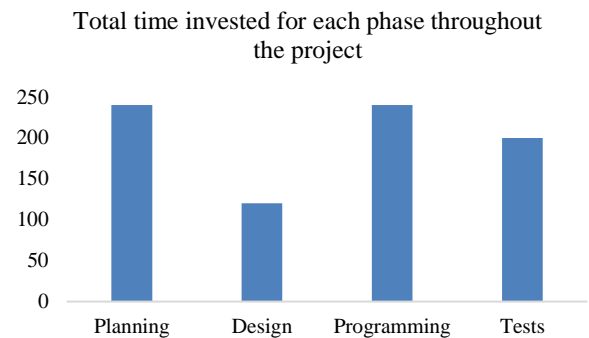
Graphic 1 Results of the time invested per hour per day per stage of the project Source: self made

Graph 2 shows the time that was invested per month in hours in each of the phases of the XP methodology applied to the project.



Graphic 2 Results of the time invested per month in hours for each phase in the project Source: Self Made

Graph 3 shows the total time invested in hours in each of the phases of the XP methodology applied to the project.



Graphic 3 Results of the total time invested in hours for each phase throughout the project Source: Self Made

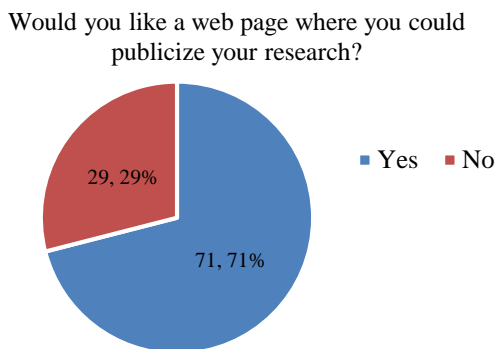
Conclusions

The website that has been implemented, has contributed in an important way to identify the CAs and their scientific products of the institution. It leaves us many types of learning, issues to reflect and situations to reinforce that can help us to perform a better job in the professional field. It is more than proven that the incorporation of a website in an institution, where you can view the different research articles that have been developed by the different academic bodies is positively related to the success of the same and the increase of visits to their research, so its relevance is maximum today. Hence the importance of having the implementation of a web system that stores the different articles and publications of their research of teachers, this system has a database that allows the efficient organization of data and information of all teachers that make up the academic bodies.

The benefits provided by the website for academic bodies is the ease with which other users or researchers can see and / or rely on their publications, research and products that are registered within the web system.

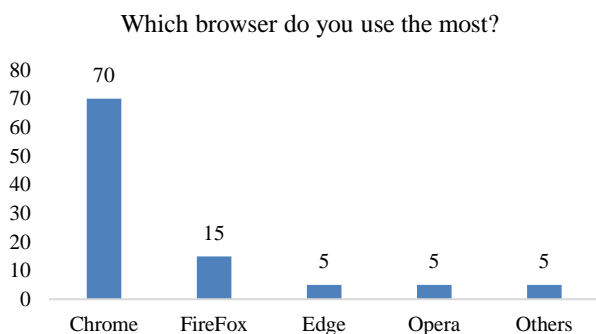
Annexes

The first question was asked to know how many teachers would like a web page as a means to publicize and deliver their research to their superiors. See graphic 4



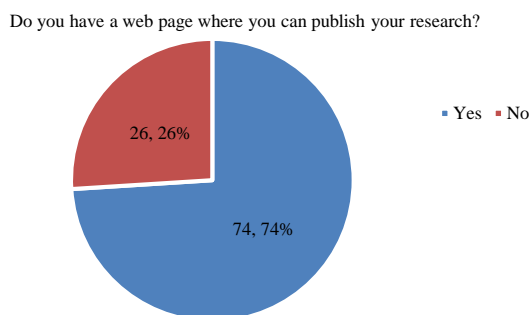
Graphic 4 Number of teachers who would like a web page Source: Self Made

After the first question we emphasized to know what kind of browsers they use where they could edit and correct the page for a good visualization of it. See graphic 5



Graphic 5 Browsers most used by students Source: Self Made

The third question was to count the teachers who already have the help of a web page to publicize their research. See graphic 6



Graphic 6 Teachers of the academic bodies that have a web page Source: Self Made

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References

Ana María Pesci Gaitán, J. M. (2007). Los cuerpos académicos en la formación de investigadores. Revista Iberoamericana para la Investigación y el Desarrollo Educativo, 10.

Beas, J. M. (23 de Mayo de 2011). JMBEAS. Obtenido de JMBEAS sitio Web: http://jmbeas.es/guias/historias-de-usuario/

Casanova, S. (21 de Julio de 2015). Samuel Casanova - Efectividad en equipos de desarrollo. Obtenido de Samuel Casanova sitio Web: https://samuelcasanova.com/2015/01/sprint-planning-5-claves-para-una-sesion-eficaz/

Departamento de Sistemas Informáticos y Computación. (05 de 01 de 2018). Metodologías ágiles para el desarrollo de software: eXtreme Programming (XP). Obtenido de http://www.cyta.com.ar/ta0502/b_v5n2a1.htm

gob.mx. (Febrero de 2018). Recuperado el Febrero de 2018, de http://www.dgesu.ses.sep.gob.mx/PRODEP.htm

gob.mx. (Febrero de 2018). Recuperado el Febrero de 2018, de http://promep.sep.gob.mx/ca1/conceptos2.html

Hernández, I. (2010). Gestipolis. Recuperado el 2018, de https://www.gestipolis.com/importancia-formacion-curricular-docentes-universitarios-siglo-21/

Ingeniería de software. (s.f.). Recuperado el 2018, de http://ingenieriadesoftware.mex.tl/52753_xp---extreme-programing.html

Innova tu Web. (12 de 09 de 2009). Obtenido de http://www.innovatuweb.com/novedades/destacado/42-que-es-un-cms.html

Jiménez, E. (02 de 10 de 2014). Diseño Web. Obtenido de https://www.ernestojimenez.net/art/mal-plantillas-modificarlas-diseno-web/

Lete, P. (2009). Metodologías ágiles para el desarrollo de software: XP. *Cyta*, 9.

Mendoza, J. A. (25 de 04 de 2018). *informaticamilenium*. Obtenido de <http://www.informaticamilenium.com.mx/es/articulos.html>

Montón, C. (18 de Julio de 2017). *ConSalud.es*. Recuperado el Marzo de 2018, de https://www.consalud.es/quien-dijo/la-importancia-del-investigador_38052_102.html

Olvera José, S. E. (2017). Estudio de caso de servidores de red como estrategia educativa y gestión de la energía. *Sistemas computacionales y TIC'S*, 7.

Orozco, M. F. (s.f.). *ANUIES*. Recuperado el 2018, de <http://www.anfei.mx/public/files/RGD/X/meridial.pdf>

Pontificia Universidad Católica de Chile. (2018). Recuperado el 2018, de <http://www.uc.cl/>

PROMEP. (2015). Recuperado el 2018, de http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0185-27602010000300001

Ramirez Arias Jesus Marcelo, H. T. (2017). La implantación de sistemas de información y la madurez organizacional. *Sistemas computacionales y TIC'S*, 12.

UCLA. (2018). Recuperado el 2018, de <http://www.ucla.edu/>

Universidad de Guanajuato. (2018). Obtenido de <http://www.ugto.mx/>