

# Design And Development of NEUST - San Isidro Campus Website: Highlighting Research And Extension Services And Per Area Department

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**Abstract-** *The study aimed to develop a website for NEUST-San Isidro Campus that will highlight the campus activities, courses offered, and management of the content of the campus website. The Agile Software Development method was used in terms of analyzing requirements, designing the pages, turning the design into actual web documents (pages), testing the developed website, and subjecting in evaluation by end-users and IT experts. The said evaluation aimed to assess its technical qualities based on ISO/IEC 25010:2011 standards with the following criteria: functionality (4.56-excellent), reliability (4.80-excellent), usability (4.80-excellent), efficiency (4.93-excellent), maintainability (4.90-excellent), and portability (5.00-excellent). The end-users, which were represented by the faculty, staff, and students, assessed it based on functionality (4.40-excellent), and usability (4.75-excellent) criteria. The combined assessment for functionality and usability were 4.48-excellent and 4.78-excellent respectively.*

*The website was designed and developed only for Nueva Ecija University of Science and Technology - San Isidro Campus, specifically to highlight the research and extension services and per area department activities.*

**Keywords-** Website, Web Content Management, Agile Software Development, NEUST-San Isidro Campus, Research, and Extension Services.

## I. INTRODUCTION

Information technology invades every sector of society. Almost every day new scientific interpretation of knowledge shared by developers, innovators, and contributors are introduced and utilized whether it is in the industry, government, and in the academe. Such technology plays a vital role in our today's generation (Navarro, 2019), specifically in performing our daily tasks, work activities, and in information drive. With these kinds of technology that control everything such as the internet, a compelling and useful platform of communication where most of our work

tasks are communicated and processed emerges. Such is with the development of websites which compels just a matter of clicks to be informed and updated. Social media, one of its platform, made it possible to always keep us within reach.

However, there is a pitfall in the so called evolution of social media which is part of the voluminous challenges that every institution has to face (Mina et al, 2020). The feeling of empowerment of every single user to express freely and to release fabricated stories leads the public to be misinformed. This may distort the vital role of communication to an organization. With such risks, they need to be vigilant in disseminating facts about them. Thus, a website akin to social media, that can connect people and can facilitate information dissemination to its intended users, followers, subscribers, and clients, is deemed necessary. It is also considered a key medium of the company, organization, and institution in the cyber world to speak on their behalf.

Every organization, public or private regardless of its status whether in business, government, the education sector, and non-government office, must have a website. In the business sector, it can showcase the products and services they offered, communicates with the customer often, and can also transact business with other businesses online. For the government sector, it reaches out to the people openly they are well informed with the progress of the state and served them better in a systematic way. In education, most of the schools have a School Information System that manages the student academic records, class schedules, faculty schedules, financial records, school activities, as well as the policies and provisions of the schools. Schools that have an automated system incorporate in their websites for everyone's access to students, parents, faculty, administrators, and employees. For non-government organizations (NGOs) and agencies who offer services to those people who ask for their assistance, they created websites to reach out to them and cater to their needs.

For these reasons, NEUST-SIC, with the students as the primary stakeholders demands full access to its website. NEUST-SIC management as the primary source of information on the website will assure data integrity and validity. This guarantees that users are well informed properly.

### 1.1 Objectives

The general objective of the study is to develop a website for NEUST-San Isidro Campus that will highlight the campus activities, courses offered, and management of the content of the campus website.

Specifically, the study aims to achieve the following:

(1) to showcase the NEUST-SIC profile from ranking file up to higher ranks; (2) promote the campus activities in research and extension services; (3) provide up-to-date announcements and campus activities; (4) trace the alumnus and their employment profile; (5) provide access to researches conducted by faculty and staff; and (6) develop individual web page per office and department.

### 1.2 Significance of the Study

The study was deemed significant for the following:

**Nueva Ecija University of Science and Technology - San Isidro Campus.** As the primary beneficiary of the campus website, the NEUST-SIC shall have its full access and control of the management of the content of a website. This is deemed important for it will allow them to access a wider reach of audience online. This will also highlight the school's activities that may generate support from its community.

**Faculty and Employees.** The faculty and employees shall see the school calendar of activities, the latest happenings at the campus, as well as the school announcements and faculty portal.

**Students.** The students have easy access to the school policies, courses offering, enrollment schedules, calendar of activities, announcements of the universities, particularly the San Isidro Campus.

**Alumnus.** The website will able to reach the NEUST-SIC graduates to look into their status of employment and their whereabouts.

**Community.** This also will serve as a window to other stakeholders in the community for extending education programs about livelihood, technical assistance, the business

technology in which the university extends their services to the community.

## II. LITERATURE REVIEW

According to Blummer (2008), some academic libraries adopted the web as a communication tool as early as the 1990s. The literature on educational library websites includes research on both design and navigation. Early studies typically focused on design characteristics, since websites emerge as the primary provider of information on the services and collections which are available in the university's physical library. This era of technology developments embraced new digitization efforts that open chances for websites with commercial and local databases, electronic journals, e-books, and virtual reference started to emerge in the late 90s. This availability of additional services on library websites increased and facilitated the research efforts showcasing new features among websites in the different academic libraries. During this period, articles also become visible that provides easy navigation and usability issues for these pages. Web pages documents efforts by libraries intended to use web technologies and resources to serve user groups. Today, most of the library offices, schools, or business organizations held numerous researches and integrated into their library system. However, the research also suggests these efforts hindered by design and navigation issues with academic library web pages. Rand (2014) outlined some design considerations in developing a website. Accordingly, for eye-catching and user-friendly websites, functionality, appearance to navigation, and coding integrity are the first to consider. In addition, he specifically mentioned that choosing the right domain name and host providers is a topmost priority. This is followed by a good back end service, clean design, usability, short loading times, and compatibility with existing browsers. Tracking such as Google Analytics is also an additional feature. These considerations will help assure better user experience with the site and may encourage visitors. Furthermore, Leedy (2016) emphasized that a good school website needs to deliver what its customers want within their fingertips. Furthermore, he adds that the optimal viewing experience for end-users, regardless of the device type they are using, is a primary reason why redesigning a school website is a must. By this, he meant ease of reading and navigation with a minimum of resizing, panning, and scrolling.

### A proposed Web Portal for the College of Computing and Information Technology

In the study of Fuangvut (2005), he stated that a campus portal is an exciting recent phenomenon forming part of the new generation of online services for all stakeholders in

institutions of higher education. He added that the general notion of a portal should be to be distinguished from that of other web-based applications and the traditional intranet of the institution. The author indicates the two major distinguishing characteristics of a campus portal, they are as follows : (1) personalization, by which end-users are only able to access information and online services pertinent to their activities, and (2) customization, by which end-users are able to select their preferred information channels and optional online services. Barlett (2006), in his study, used a layered approach incorporating four progressively-informing steps. First, an initial exploration was performed using informal, free-form interviews to examine what members of the Moggill Community Association (MCA) perceived the needs of the community to be. Second, a design survey was developed to test the usefulness of technology to communicate ideas garnered in the interviews. This survey was a simple web-based interface to information previously distributed by the MCA Executive. Third, a participatory design exercise was run to help participants describe what they thought was needed to assist their communication and collaboration tasks. Fourth, prompts from the participatory design exercise were used to improve the design survey.

The results taken from the exercises and the usage statistics of the design survey implied that sections of the community were interested not only in receiving the information the site supplied, but also in creating new information for distribution. This finding of Barlett provides tentative support for a theory that web technologies positively affect community-expressed needs for better communication and collaboration, and a basis for supporting the further investigation of the phenomenon with larger samples.

Sevilla (2010) pointed out that aside from social media, one untapped technological potential of tapping alumni is a school website. She believes that in order to connect to these people, a school must create a website where its accomplishments, problems, and aspirations could be posted. This can be a venue for its alumni to connect with his/her Alma Mater by visiting the school website, posting their comments, reading its articles and reports, and revive the attachments.

**III. METHODOLOGY**

This part presents the discussions on the study’s research design in assuring a systematic flow of from sampling design and technique, sources of data, data gathering tools, and data gathering procedures during the development of the software.

**A. Research Design**

The study used the developmental method of research. A developmental study is the process of synthesizing different elements which have been broken down to its specifics and putting together those which are related to be re-arranged in creating or developing a new model, concept, material or instrument (Adanza, et al, 2009).

The development of the Website of NEUST - San Isidro Campus Highlighting Research and Extension Services and Per Area department followed the Agile Software Development method. The procedure of development started with dividing the system development tasks into sprints. For each sprint cycle, the following were done: planning, analyzing, designing, developing, testing, and evaluating. Agile Software Development is described as “iterative” and “incremental.”



**Figure-1. Agile Software Development**

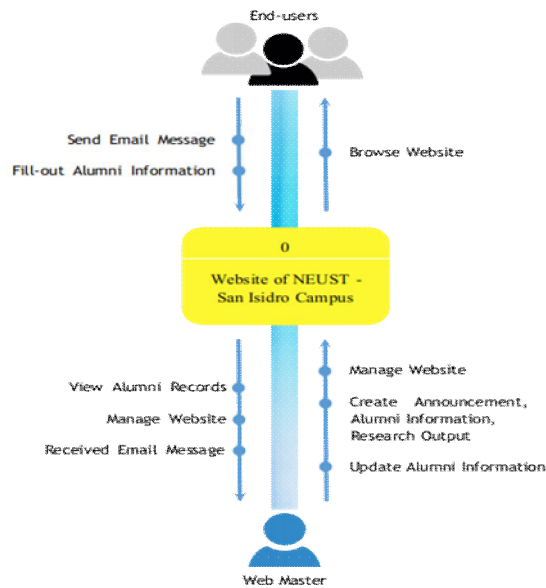
During the development of the Website of NEUST - San Isidro Campus, a series of data gathering and analysis was conducted through browsing the official website of the university and bench-marking online researches, consultations with end-users, and observations. Information gathered during this stage was vital for the planning phase of the website development. The campus collected Website contents were per area department while some were taken from the university website. A table for Gantt Chart was prepared to track the development of the website.

AGILE SOFTWARE DEVELOPMENT	1st Month				2nd Month				3rd Month				4th Month			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PLANNING	█	█	█	█												
ANALYZING			█	█	█	█	█	█								
DESIGNING				█	█	█	█	█								
DEVELOPING									█	█	█	█	█	█	█	█
TESTING													█	█	█	█
EVALUATING																

**Figure-2. Gantt Chart in the Development of the website of NEUST- San Isidro Campus.**

In the design stage, different method diagrams were created to illustrate the graphical process of manipulation, distribution and storing of information between a system and its environment. A structure of the existing website and proposed are shown, to illustrate the movement of information between external entities and the processes, data stores and the activities within the system.

The Figure below is the process diagram, where it describes the place to place activity in accomplishing different tasks performed by the end-users and webmaster.



**Figure-3. Process Diagram of NEUST- San Isidro Campus Website.**

In the developing stage, the modules of the website were divided into sprints attainable in iteration every two weeks of completion. Using LAMP (Linux, Apache2, MySQL, and PHP) as a localhost web server, HTML5 was used in building a diverse website; CSS3 was used in setting file structures, enhancing the aesthetics side of webpages, Bootstrap 4.2.1 was used in designing website responsiveness. Material Icons were utilized in providing the graphical icon, PHP programming language was used in the coding process with MySQL for defining the database structure. The back end and front end was developed. These two were integrated with the use of an Application Program Interface (API). MySQL Workbench was used for data modeling, SQL development, and comprehensive administration tools for server configuration, user administration and backup (Lalit, 2016). Sublime Text3 was used as the text editor for coding, and the website was deployed using a free web hosting account in x10hosting.

During the testing stage, both end-users and IT experts were involved. The technical qualities of the website were checked by the researchers to determine if the intended functionalities were met. Finally, the website was evaluated by other IT practitioners from Nueva Ecija University of Science and Technology, College of Information and Communications Technology Department, and some Freelancer developers to validate the technical qualities of the developed website.

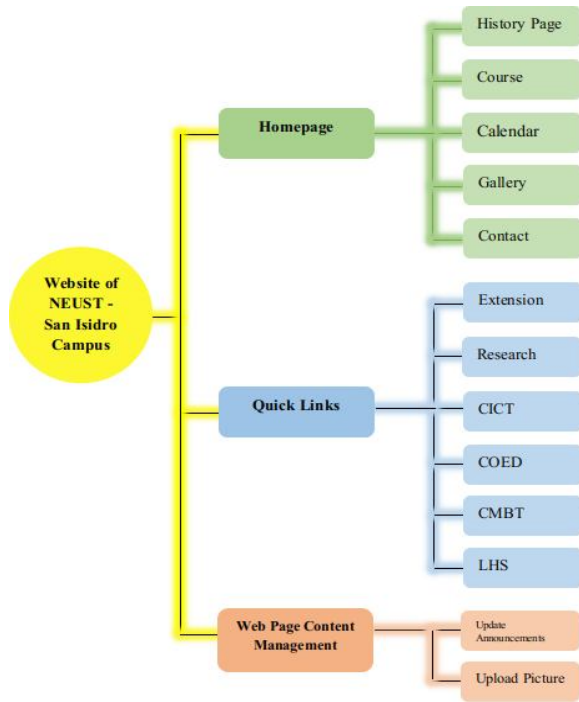
## B. Results

The climactic attainment of system functionality that was delivered for the development of the website of NEUST - San Isidro Campus are discussed in the preceding paragraphs.

A Web Content Management System was built to streamline the website content. It contains tools for image uploader, announcement builder, user account management, and alumni tracking form.

Web pages for inter offices particularly the research and extension office were created, which showcase information about their activities, services offered, and schedules.

The homepage highlights the vision, mission, core values, and tag line of the university. Campus history, Courses offered, calendar of activities, a Google map location of the campus is also embedded on the website. A Google tool form to trace alumni and their employment status was also employed on the page as well as the faculty roster of each college were created in modal form.



**Figure-4. Structure of NEUST- San Isidro Campus Website.**

**C. Discussion**

The website was assessed by IT experts based on ISO/IEC 25010:2011. The researchers tap the five IT experts to conduct quality assurance tests and assessed the whole functionality of the developed website, and 20 end-users were also tapped to evaluate the website. The recommendations during the evaluation were solicited and incorporated into the adjustment of the website development.

**Table 1. Summary of Responses by IT experts assessment of the technical qualities of the developed Website of NEUST - San Isidro Campus Highlighting Research and Extension Services and Per Area department.**

Criteria	WM	Verbal Description
1 Functionality	4.56	Excellent
2 Reliability	4.80	Excellent
3 Usability	4.80	Excellent
4 Efficiency	4.93	Excellent
5 Maintainability	4.90	Excellent
6 Portability	5.00	Excellent
	<b>4.83</b>	<b>Excellent</b>

Table 1 shows that the developed website had passed the criteria tool of assessment of technical qualities in

functionality, reliability, usability, efficiency, maintainability, and portability based on ISO/IEC 20015:2010 standards all had been remark as excellent with an overall weighted mean of 4.83 with a verbal interpretation of excellent.

The developed website was also assessed by faculty, staff, and students of NEUST San Isidro Campus as end-users.

Summary of responses on the Assessment of the Website of NEUST - San Isidro Campus Highlighting Research and Extension Services and Per Area department by IT Experts and End-users based on the following criteria:

**Table 2. Summary of Responses as to Functionality.**

Respondents	F	WM	Verbal Description
1 IT Experts	5	4.56	Excellent
2 End-users	20	4.40	Excellent
	<b>25</b>	<b>4.48</b>	<b>Excellent</b>

Table 2 shows the combined assessment of all the respondents rating the system as excellent with a weighted mean of 4.48 for the functionality criteria. The IT experts' assessment has a weighted mean of 4.56, verbally interpreted as excellent while the End-users tabulated assessment is 4.40, also verbally interpreted as excellent.

**Table 3. Summary of Responses as to Usability**

Criteria	WM	Verbal Description
1 IT Experts	4.75	Excellent
2 End-users	4.80	Excellent
	<b>4.78</b>	<b>Excellent</b>

Table 3 shows that all the respondents agreed that the system had very strong compliance based on usability with a weighted mean of 4.78 verbally interpreted as excellent. The assessment of the IT Experts and End-users had a weighted mean of 4.75 and 4.80 respectively. Both were verbally interpreted as excellent.

**IV. FINDINGS, CONCLUSION, AND RECOMMENDATION**

**A. FINDINGS**

The researcher was able to develop a website for NEUST-San Isidro Campus that will highlight the campus activities, courses offered, and management of the content of the campus website that showcases the NEUST-SIC profile,

that promote the campus activities in research and extension services, that provides up-to-date announcements and activities, that traces the alumnus and their employment profile, that allows access to researches conducted by faculty and staff, that individual web content management template per inter-department was developed and ready in place. Both end-users and experts assessed the website's website functionalities as excellent.

## B. CONCLUSION

After a thorough conduct of this study, the researcher concludes that the Design and Development of NEUST - San Isidro Campus Website: Highlighting Research and Extension Services and Per Area department is developed. It desire to manage, search, provide fast and accurate open-access information to the latest happenings and upcoming activities of the University specifically the San Isidro Campus.

## C. RECOMMENDATION

The developed website for Nueva Ecija University of Science and Technology - San Isidro Campus is ready for use and recommended to includes it on the official website of the University. Functionalities of developed sites are now capable of disseminating factual information on the activities of the University as a whole, particularly the San Isidro Campus events. Promotes and speed up the process of informing the community of San Isidro Campus and other nearby cities and municipalities and other stakeholders about the activities the campus is whereinto.

Moreover, the developed website will be endorsed to the Management Information System Department who will be tasked to man its full operation. For further improvement of the developed system that is aimed meet the growing demand of the San Isidro Campus, a close collaboration with the website developer is encouraged.

## REFERENCES

- [1] Adanza, Estela G. *Methods of Research: a primer*, Manila Rex Bookstore 2009.
- [2] Barbara A. Blummer (2008) A Literature Review of Academic Library Web Page Studies, *Journal of Web Librarianship*, 1:1, 45-64, DOI: 10.1300/J502v01n01\_04
- [3] Bartlett, Keiran Michael (2006). Exploration of the effect on community collaboration and interaction with the introduction of a community website. MPhil Thesis, School of Information Technology and Electrical Engineering, University of Queensland.
- [4] Fuangvut, Tharitpong, Campus portals: a framework for development accommodating end-users' online activities, PhD thesis, School of Economics and Information Systems, University of Wollongong, 2005. <http://ro.uow.edu.au/theses/431>.
- [5] Fuangvut, Tharitpong, A Comprehensive Methodology for Campus Portal Development, January 2007. <https://www.researchgate.net/publication/314674063>.
- [6] Gante,Dionicio D., A Proposed Web Portal for the College of Computing and Information Technology of Isabela State University Cauayan Campus, Cauayan City, Isabela 2010, Retrieved from November 12, 2018 from: [https://www.academia.edu/4083326/A\\_proposed\\_Web\\_Portal\\_for\\_the\\_College\\_of\\_Computing\\_and\\_Information\\_Technology](https://www.academia.edu/4083326/A_proposed_Web_Portal_for_the_College_of_Computing_and_Information_Technology).
- [7] Lalit (2016). MSSQL to MySQL Data migration using MySQL workbench 6.3 Retrieved from November 23, 2018 from: <https://lalitvc.wordpress.com/2016/12/28/mssql-to-mysql-data-migration-using-mysql-workbench-6-3/>
- [8] Paul D Leedy; Jeanne Ellis Ormrod *Practical research : planning and design*, Boston : Pearson, [2016]
- [9] Jennilyn C. Mina, Marvin DG. Garcia, Ellen Jane G. Reyes(2020).Industry Partners' feedback on the OJT performance of Bachelor of Science in Information Technology (BSIT) Students. *International Journal of Advanced Engineering, Management and Science*(ISSN: 2454-1311),6(4), 177-182.
- [10] Emmanuel Carlos Navarro, "Human Resource InformationManagement System", *International Journal of Science and Research (IJSR)*(ISSN:2319-7064),[https://www.ijsr.net/search\\_index\\_results\\_paperid.php?id=ART20198718](https://www.ijsr.net/search_index_results_paperid.php?id=ART20198718), Volume 8 Issue 6, June 2019, 1826 - 1830
- [11] Seth Rand, 24 Things to Consider When Designing and Developing a Website March 6, 2014. <https://www.socialmediatoday.com/content/24-thngs-consider-when-designing-and-developing-website>.
- [12] Sevilla: MAS. De Haro, J.J. (2010).
- [13] [https://www.researchgate.net/publication/333992827\\_Human\\_Resource\\_Information\\_Management\\_System](https://www.researchgate.net/publication/333992827_Human_Resource_Information_Management_System).
- [14] ISO/IEC 25010:2011Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuARE) — System and software quality models. Retrieved from November 12, 2018 from <https://www.iso.org/obp/ui/#iso:std:iso-iec:25010:ed-1:v1:en>
- [15] <https://www.geos.ed.ac.uk/website/zope.html>
- [16] [www.urs.edu.ph](http://www.urs.edu.ph)
- [17] [www.neust.edu.ph](http://www.neust.edu.ph)
- [18] [www.feu.edu.ph](http://www.feu.edu.ph)
- [19] <https://www.scribd.com>

- [20] <http://www.academia.edu>
- [21] <https://core.ac.uk>
- [22] <https://www.cse.unsw.edu.au/~cs3710/PMmaterials/Resources/9126-1%20Standard.pdf>
- [23] <https://stackoverflow.com>
- [24] <https://getbootstrap.com>
- [25] <https://www.tutorialspoint.com>
- [26] <https://fontawesome.com/>
- [27] <https://www.startutorial.com>
- [28] <https://x10hosting.com/>
- [29] <https://www.bitbucket.org>
- [30] <https://www.github.com>