An Application of Software Technology towards an Effective Web Design

Shiow-Luan Wang and Vu Thi Hoa

***Abstract*—A website offers a business not only an additional platform for promoting services, but also another avenue for generating more revenue by attracting more people to visit and make purchases.**

A suitable designed website interface helps a web manager to measure how well a website satisfies its visitors and the interface design will be the key criteria to check its information presentation for a quality website. The application of software technology tends to improve information presentation in content modalities (e.g. text, images, videos, colors, etc) for visitors with diversity and dynamic way.

The purpose of this study is to build a personal website based on visitor information requirement. System architecture is designed to a visually appealing website with regard to the study abroad experiences to provide information for visitors. The interaction between visitor and computer system via well designed website interface is illustrated in an attractive, colorful and impressive presence; it helps visitors to use easily in networked environment.

***Index Terms*—Website interface, visitor information requirement, architecture interface and technology.**

I. Introduction

Over the past decade, the world has become increasingly hyper-connected. The Internet and its associated services are accessible and immediate, where people and business can communicate with each other instantly [1]. This hyper-connectivity is deeply redefining relationships between individuals, costumers and enterprises, so that the impact of Information and Communication Technologies (ICT) on each industry has become wider and deeper and it also affects the overall development of a country.

In additional, the literature review had a deal with journals about organizations from various types and sizes integrating web technologies into their operations [2]-[5]. This topic was widespread interest that in the fact, organizations recognized positive impact of website on their achievements. Using website helps organizations can approach for visitors and provides them with not only general information about its applications, products or activities, servers but also the visitors can find new opportunities through human- computer interaction. However, this website would not be possible without an architecture and technology design for building quality of their website. Because visitor preferences will be increased and even willing to allow slower response times for a webpage that was aesthetically more attractive [6]. Moreover, for satisfy visitors to stay longer and return often, website needs to be usable as well as appealing.

In this paper, a personal website was designed by combining content modalities (e.g., information text, images and the applications plug in) with color scheme and the tone of layout. The goal of this website was not only being conveyed the extreme detail process to design website interface, but also was being identified elements of website design preferred by visitors and supported by empirical evidence.

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II. Background

A. Visitor Information Requirement to Virtual Interface Design

This section will begin by describing the standout virtual interface. The virtual interface design was become increasingly important because it referred mediate between Human and computer for accessing information [7]. Its benefits and interaction between visitors and computer by using virtual reality technologies are factors critical to supply novel and increase modes for allowing overcome limited communication and business effectiveness over the Web [8]-[9]. By contrast, interface design has often been difficult because its approaches and multidisciplinary nature: beside software engineering, a system of rule like perception theory, Media design and project management is required [10]. These interfaces and how ways can be improved that has also a connection with Human-Computer interaction (HCI) (see part B for detail).

Nowadays, suitable for development Information and Communication Technology (ICT) and popularization of World Wide Web, people can be immediately responses on the Internet to learn, work, and even do the shopping. Hence, visitor information requirement (VIR) to virtual interface also is an essential comes from our life (Fig. 1)

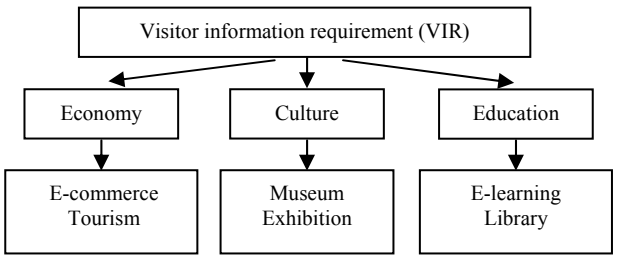

Fig. 1. These environments for visitor information requirement

In the business field, a lot of companies were offered theirInformation via its virtual website and most of these websites enables consumers to buy or sale online as web.

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Online-shopping has become a hot market in recent years. The success mostly depends on the webpage design that has great impact especially on the willingness of the visitors [11]. Virtual Interface also contributes to the success and growth of tourism [12]. Through interface of virtual reality continues to evolve the planning and management and heritage preservation of tourism by creating virtual experiences that they may accept as substitutes for real visitation.

Social development led to develop both of physical and mental. So visitors have more needs to discover culture around the world. However, social development also means increasingly busy and somewhat time for themselves than. Therefore, virtual exhibitions used technologies such as the World Wide Web enhanced by virtual reality may be facilitating the preservation, dissemination and presentation of culture artifacts [13] and offers an entertaining, informative and enjoyable experience to virtual museum visitors such as virtual inspection of exhibition in the National Art Museum of Catalonia, Spain or in the Victoria and Albert Museum, London, United Kingdom [14]-[15]. The investment for website interface is so necessary in this environment. In whatever way, in our study, the orient-object of this personal website is aboard students; educational environment was noticed.

Virtual interface is widely used for educational environment (e.g., e-learning, library, and information search, etc.) Some previous studies in E-learning were given that the interactive graphics are found to have a high potential to enrich multimedia learning materials and improve the educational value of E-learning [16]. Moreover, currently in library field, Networked, World-Wide-Web- based online databases and online public access catalogs were used popular. New interfaces of information retrieval (IR) systems also are increasingly supported progressive interactive search formulation and refinement [17]. That was demonstrated searching online information in digital library is necessary of people's larger work activities.

B. Human- Computer Interaction (HCI)

"Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them" was provided by ACM SIGCHI [18]. The HCI field is the intersection of the three components (i.e., the computing sciences, the design art, and the behavioral and social sciences). The first rule of good design in HCI is attentive to the differences between visitors of a proposed computer interface and the second rule is usability [11]. Researchers in this field have emphasized the successful interaction between human and computer as a key factor in design and implementation of computing systems. According to their definition, web usability refers to the complex construct that encompasses effectiveness, efficiency, and satisfaction in a specified context of use [19]. Effectiveness defined the true value and completeness when online visitors achieve goals with a quick visit without putting forth much cognitive effort (e.g., purchase, information gathering) while visiting a website. Satisfaction is represented the comfort and acceptability a variety of options to support the visitors as reliable, secure, and privacy-guaranteed services.

Thus, from the combination of visitor information requirement to virtual interface and HCI components, out website was set up to attract abroad students by developing efficient navigational design and design effective informational organization for making the greatest benefits of both website developers and composition website.

III. System Structure and Characteristics of Our Website

A. System Structure of Our Website

Our website was built by private with the purpose for help abroad students who are living or want to be going to study in Taiwan in the further to have more information about country which they want or will go to study in the future.

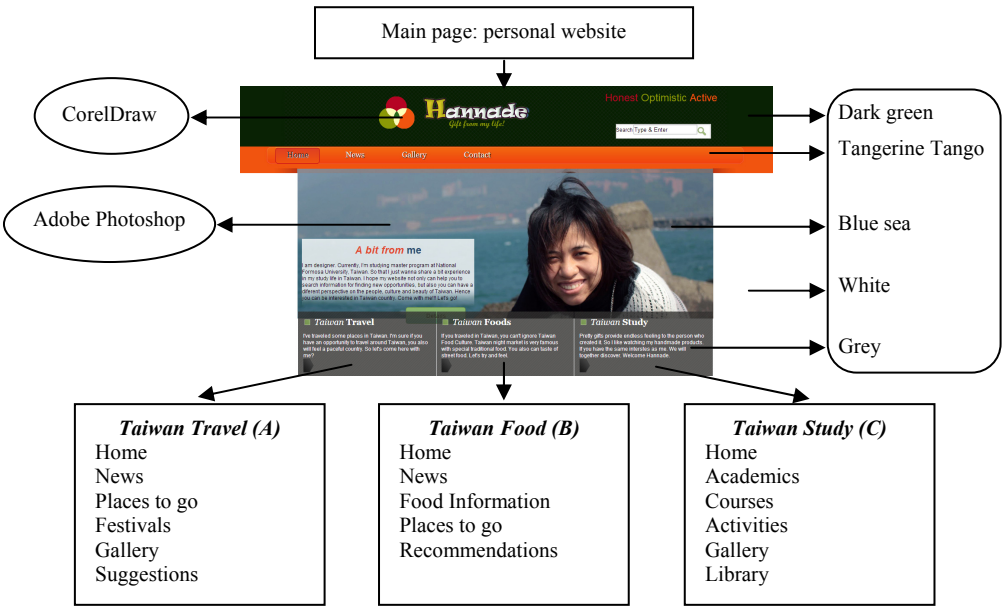

Fig. 2. The system structure and technology of our website; these colors in main page

The object-oriented follows young people; they are strong, active, good ideas and a man of a firm stuff. Thus, highlight from our website is eye-catching interface. It was designed with bright color schemes, strong contrast between warm and cold color for giving "cool" and "impressive" feeling. Moreover, when visitors visit our website, they will have good feeling to want to continue visiting, retaining and returning in next time.

In addition, abroad students will go to foreign country, they need information related to culture differences so that this website divided three issues which are Taiwan travel, Taiwan food and Taiwan study (Fig. 2). Touching on each page has different content, layout, and effects. Beside, a lot of pictures, videos, and information contents were put on the website. It was divided by indentified subject (e.g., news, place to go, festival etc.) for easy search and navigate. Currently, our website just stop completing at the level of interface, and is still lacking in all features, contents, navigation controls, however, our website had a clearly orient to eligible for development in the future.

B. Technology for Creating Website

Many software (e.g., WebEasy Professional, Intuit Website Creator etc.) and open source (e.g., open source content management; source code editor; graphics/image editor etc.) was helped web developers to create website. In our study, we based on hardware system, localhost and software - open source content management– Joomla Package 2.5.7 to build our website.

The first for general website, Joomla Package is a content management system (CMS), which enables to create website and powerful online applications. It is easy use to install, set up and extensibility, special freely available. It allows website developers to organize and manage information system, extend effects. Joomla runs on localhost system which is the standard hostname given to the address of the loopback network interface. For running localhost, we installed the AppServ Network software which is a full-featured of Apache, MySQL, PHP, phpMyAdmin. In working, Joomla provides the templates and plug in package. However, our template code was revised suitable to our ideas by Adobe Dreamweaver software. Dreamweaver which provides an intuitive visual interface for making and editing HTML website is a proprietary web development application originally.

As above discussion, the struck precise on VIR to have the diversified and quality content is the main reason for appealing website. So that, these images in website must to make high quality, we used Adobe Photoshop and CorelDraw to edit pictures and design our logos (Fig. 2). Adobe Photoshop is graphic creation software as well as an editing application popular with strongly features (e.g., adjusts color, add effects, change size etc.) and creating any effect or style needed in a drawing or layout. By contrast, CorelDraw is graphic design software that allows users to create and edit vector images. It enables users to create professional illustrations for logos, brochures, and web students.

IV. Process of Designing Website Interface

A. Plan a Website for Visitor Information Requirement Based on Understand Your Visitors

A website's credibility was helped the human mind to make a definitive decision, and this initial verdict is based on entirely aesthetics. Hence, before making the website, think of plan your site by way of the purpose, object-oriented, and visitor information requirement (VIR) (Fig. 3) to consider the layout, page structure and how visitors will move the effective navigation. Allowing for better navigation, navigation buttons will be put in the best place which is the upper left-hand corner. In addition, keep the navigation buttons invariable, along with font and color for easy read and track movement from page to page.

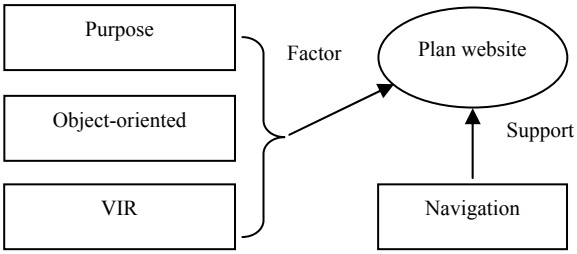

Fig. 3. The factors affect to make plan your website.

An optimal website was helped the visitors to find their VIR which was supported exactly in the short time. Understanding VIR which is important to give ideas for popular web browsers, were investigated by the various ways as survey, poll of visitors, relation documents…etc.

B. The Architecture for the Appealing Website

As you know, in this paper, a personal website was provided. The purpose of personal website is a place to express ourselves and show a little bit information experiences, so that this interface must to reflect clearly characteristics, personality and style of the site owners. However, they still follow the standards of website *aesthetics* because it will be strongly determined visitor satisfaction and pleasure [20]-[21]. Visitor perceptions of website aesthetics consist of two main categories: classical and expressive [20]. *Classical aesthetics* was applied to website design; it emphasizes orderly and clear design. *Expressive aesthetics* is reflected by the creativity, originality and by the ability to break design conventions to revive a favorable initial impression at the moment they are going to search information for keeping attention of visitors. A specially point of particular interest for having a good website is the relationship between usability and aesthetic.

After setting up plan a website, process of performance was executed base on some factors as (a) *layouts and modules*, (b) *colors scheme*, (c) *content modalities*. Through this personal website, gradual implementation of website has been explained in below detail.

1) Layout and modules

Web page developers frequently arrange on-screen interfaces based on subjective perceptions or functional website requirements [22].

In addition, looking websites all over the internet, you can see a layout includes two, three or four columns with column

widths was selected suitable to basic rules of art adapter of website: golden ratio, rule of thirds, symmetrical or asymmetrical balance [23], which are unlimited content as the page can be scrolled down [24]. Content displays in a fixed width space based on the available screen space. Hence, almost our website layouts were comprised two or three columns as Fig. 4.

Visitors had experiences with an exhaustive search in the first-fit placement, it so called "breadcrumb and butter"; "breadcrumb" is a wide column for content, and "butter" is a narrow column for navigation of web browsers. This position is fast and the optimal layout. Modules also impact to design website for allowing flexibility in content and delivering to visitors was been out of line with needs.

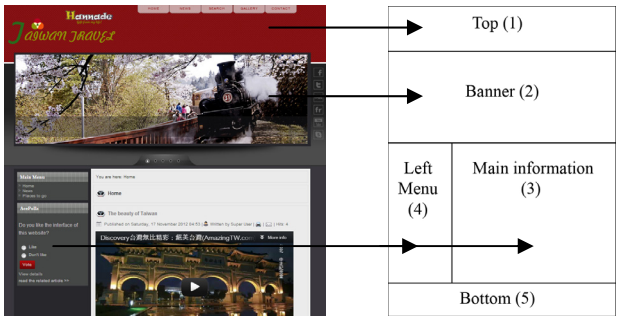

Fig. 4. Two columns layout of "Taiwan travel" (A) page

2) The choice of the color scheme

Human-computer interaction was offered that color is an important aesthetic element in appealing website [25], [26]. Color is an essential constituent of products, logos, etc. and can be an effective means of creating and supply with necessities brand and corporation images in visitor's minds [27]. Especially, the choice of color can influence to visitor feelings and reactions to making decision. However, it depends on color specification, color-difference evaluation and color appearance modeling. On the other hand, website developers should consider the effect of color related to culture. For example, our travel and food Taiwan pages toward Taiwan culture (Fig. 4), so that they were chosen red and yellow color suitable for meanings of color in different nations [28]; red related with the words lucky and love; yellow means happy, good taste and royalty.

The main page was focused individual as like the "look and feel" of characteristics, personality of website developers, organizations or companies and object-oriented (i.e., aboard students) including its images colors, themes color must to arrange and choose on the same scheme. In order that, the colors of main page in this personal website most often matched dark green, blue, tangerine tango (one kind of orange in fashion color trends spring 2012 [29]) and white background with positive word as faith, dignity, success, calming, etc. (see Fig. 2 and Table I).

On module pages, white predominates, with a grey blends about one-quarter of the way up from the bottom and the tangerine tango puts at taskbar menu or border to emphasize website. Black green runs along the top and bottom of each page for balancing color. Moreover, our logo considers as a part of three cycles colors which are pink, green and orange. These colors were represented three chief traits in website developers in turn correspond to the honesty, optimism, and active.

TABLE I: THE COLORS IN MAIN PAGE OF OUR WEBSITE

No	Author	Colors	Meaning
1	T.J. Madden et al. (2000) [27] D. Vining [30]	Green	Gentle Faith, Safety
2	D. Vining [30]	Orange	Faith, Success, Pride
3	T.J. Madden et al. (2000) [27]	White	Peaceful
4	S. Paul et al. (2010) [28]	Red	Lucky, Love
5	D. Vining [30]	Yellow	Energy, Pleasant
6	T.J. Madden et al. (2000) [27] D. Vining [30]	Blue	Calming Integrity, Dignity

In addition, navigation buttons is black font on soft green background for easier reading. Special point, an image with blue sea is decisive color for avatar that puts in the center of top website. It brought out an evident effectiveness. According to all pages of our website, these colors were summarized (see Table I).

C. Using High Quality Content Modalities

Clearly to the mind, the content modalities (i.e., images, audio, flash, and video about personal, travels, or foods) of website influence the first impressions of websites, as they provide diversified cues that facilitate absorbing and continuing to hold information, can attract attention, and encourage website exploration [31]. Many elements of design and graphic art (e.g., space, use of images, size of images, use of movie and audio, and number of words per line, color and size of characters) can be used to convey contents on the web. Hence, the choices are truly endless. Additionally, the work of content design not only stops with selecting the appropriate elements for the particular visitors, but also involves deciding on the placement of those elements to facilitate their use. On the other hand, in order to give website a more professional and effective appearance, all content modalities should be focused, clear, beautiful, more effect and high resolution.

V. FINDINGS

First of all, base on the above discussion put forward a study focusing a website interface for visitor information requirement (VIR) to virtual interface design are summarized; our study not only has findings about strongly support on architecture and technology for internet visually appealing website, but also provides the standard background on Human-Computer Interaction (HCI). Moreover, a good Website design which facilitates a user's Web browsing behavior would generally lead to better user performance. The human mind takes just a millisecond to give decision-making as immediately, so that for designing website, you should be follow step by step of some tips and tricks which are making a plan of site, understanding your visitors, allowing for easy navigation, choosing a color scheme, and using high quality content modalities, then combined with high technology.

In addition, website interface offers a platform to attract visitor for easily access information and improve website system, promote product, service or share experiences, communication, making friendship, etc., for generating more revenue and benefit. The interface website influences the development of the website system and it has been used on all areas of life.

VI. Conclusions and Further Work

The finding of our study was built an appealing personal website includes three elements: Taiwan travel, Taiwan food and Taiwan study which were based on the architecture and technology for increasing the numerical visitors. Through this site, we also suggested: (a) factors of each step requirement to carry out website interface; (b) define the hardware and software requirement. Process of making your site was demonstrated that must to design logical layout, color scheme and use high quality of content modalities. Above factors will be combined as a flexibility way. By contrast, surfing a round of the most visited websites, the clean, profession, and easy of navigation is important experiences for website developers to understand how to attract visitors, keep them on your website. Moreover, visual complexity has a determine role in the website interface modalities of the initial impression for relating to interested in stratify visitors and arousal [32]. This is especially way provides a good web design for retaining visitors.

At the present, within a limitation of our ability to establish fully function of personal website; so that some issue is lack in this study. In spite of the useful conclusions, base on the architecture and technology was provided by us; our study will be improved to accomplish one's task in subsequent study that is: (a) enhance human-computer interaction by navigation for website flexible but always keep it simple and easy to use; (b) interested in raising deeply information for web richer content; (c) building a structure of voluminous database system for developing website system. Moreover, in real condition of life, with WiFi and new portable devices can expand that availability, we hope this personal website will be increasingly complete for having an opportunity to publish; visitors can be accessible 24/7, worldwide.

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