Development of Animated Virtual Reality Website for Tourism Attraction

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Abstract. Website is a communication system that has been popular throughout the world. Even in Thailand, the construction websites are widely used in various organizations, government agencies, and business units, particularly the tourism industry where there is a growing of interest. In this research, a website is designed and developed in order to display multimedia in form of 3D animated virtual reality for tourism and assessment of user satisfaction. For the web designing, we focused on its user such as a tourist. The graphics can be displayed on any web browser, appropriate use of graphics and fonts arrangement, appropriate designing of website frontend for presenting to tourist attractions. The developed website can make an impression to attract users that would like to travel after seen with a virtual tourist information offered through the website. The research results show that users were satisfied at a whole at the high level. The form of websites can be configured to present information or promote information for other tourist attractions that will benefit to the tourism industry in the future.

Keywords: virtual reality website, virtual 3D animations, tourist attraction, website

1. Introduction

Website design is important to create an impression to the user and willing to return to use our services again in the future. Starting of looking for ideas to design in order to create comparison and differences is the good thing because there are currently numerous sites emerging every day. Customers have more choices and it is good to create a relationship with a service user satisfaction to the website. So the website design has to make a difference, a new look of satisfaction to its users. The importance of the design is to look at the clarity of the goal to be able to build more trust and attract the attention of users than other websites. The website design should consider the following: 1) the designer must look in contrast to the users, 2) designer is not the user and the user is not the designer, 3) designing for general users to differ from the visitors, 4) designed to strike a balance between form and function, 5) the quality of services is the success, 6) it should has a relationship between the old technology with new technology[1].

Today, there are programs that allow us to create a website without HTML coding language , which can be selected using many tools to create web applications. Currently, the web applications have advantages and disadvantages of different away according to the featured of works. For example, the tools that will be used to create a project such as Dreamweaver, NetObject, HomeSite, ColdFusion, FrontPage, Visual InterDev. It may be created by using the web program's language such ash ASP. , PHP, JSP, JavaScript, VBScript, Visual C + +. Net, Visual C #.Net or other programs. Many more, all of the programs mentioned above web languages are based on the language HTML (HyperText Markup Language).

Graphics for the Web is one of the key elements that help make represent the web that allow users to more easily understand. Graphical format for website can be divided into two types; Graphic Interchange Format (GIF) and Photographic Experts Group (JPEG). Both of these file types are files that web designers used on a web page because of its small size. When the pictures were showed on the page, it will take only a short time to download pages [2].

The creation of virtual reality animation with highly realistic and impressive deemed necessary because it is a tool to convey ideas, imagines, useful facts, and communicating a good image to the consumer. The creation of 3D visualization in both three-dimensional image and animation. Thy 3D artist must be proficient in both aesthetics and technology skills that are key factors to achieve quality work to meet the full deployment. More important, the developed website has to be responsive and supported the display of animated virtual 3D at higher levels[3]. It is well accepted in this era that the best communication channels to reach consumers worldwide, fast, limitless, and most budget save is the quality website. It can be used to offer information with an interesting, complete, accurate and beautiful design., relatively easy to use, and can support the display of the still picture, slide, and virtual tour 360 degrees, etc., in accordance with Nirut Chotethanom[4], which has researched and developed a web page to introduce Mahasarakham University in form of 3D. Chiwawut Boonthanom[5] described that in the 3D display via a web browser, most often by running add-on programs because most browsers do not directly support rendering of 3D images.

The tourism industry has changed dramatically and the internet has played an important role. It gives rise to meet the needs of tourists who visit the tourist attraction that must be taken into consideration in developing the website that offers tourist information source with access to a wide group of tourists and consequently support the visitors to increase their interest and abilities of traveling[6]. This is consistent with changing behavior of tourists. Communication tools and virtual advertising can delivered such information to visitors throughout the website where they can browse or search[7] via the internet anywhere and any time they like.

Thus, researcher are interested in designing and developing a website to display 3D animation virtual reality in a multi-media format and to assess the satisfaction of website users. It is capable to display of animated virtual three-dimensional world in multimedia and other graphics display and animation. This is to spread on public relations about tourist attractions for visitors through the website.

2. Website Design Theory

Web interface is a complex mixture of text, links, graphics, composition, formatting, and other aspects that affect Web application performance and behavior must be consistent with the user. [9] In web design, standardized design has the following advantages: faster access, download and read, and a search engine that is easy to use. It is standardized web that can increase use of web. So the web design is diverse, including of information architecture, reading design, searching, and web page design. Graphic designers should be aware of the following.

2.1 Information architecture design

Information architecture is focused on organization navigation and searching system to present information with easy access to users[10]. Type of organization and navigation system can play important roles on web building.

2.2 Readability Design

For many users who visit the website, they don't even look at the beauty of the web. The user selects more clarity than confusion. For strategies to save time, users often do not seek information in a linear fashion. Instead, they rely on the navigation system. So how to write content for web applications and web design should be matched with human behavior and tuning for optimal scan ability and understanding with simple language. This is to reduce the duration of the user and the skills of reading, writing web-friendly and concise. Guidelines for writing good web is: not to use slang terminology, avoid abbreviations and sarcasm, the play on words carefully[11]. The elements of art such as fonts and font colors are important parts in making a good first impression[12]. Different fonts can have a fast meaning or gravity. The colors can be used to support of positive displaying throughout the web. Guidelines for printingis :To use a common font size 10 points or higher and try to avoid busy background to black text on a white background. The important thing when choosing a font for a website, designers should be sure that it can be displayed in a browser.

2.3 Page Design

The web page design consists of two parts: the graphics of web page, and 2. HTML coding. The graphic design focuses on the visual presentation features that affect the user experience overall. (total download time,

advertising, pop-up window, etc.)[13]. HTML coding is very important in the design. The design of HTML coding should support web standards and its compatibility with web browsers[14]. According to statistical data in December 2009[15], browsers are widely used today are: IE8 (13.5%), IE 7 (12.8%), IE6 (10.9. %), Firefox (46.4%), Google Chrome (9.8%), Safari (3.6%), Opera (2.3%) and more. So the browser compatibility issues must be considered in web design. The problem with the web browser is a very big problem.

3. Tools And Methods

1. The goals of this research include: 1) general people aged between 18-60 years to access the website by answering the online survey to survey data about the tourist attraction to be presented on website, 2) 5 computer experts for the evaluation of website quality.

2. The tools used in research are; a questionnaire about data to be presented in the website, website quality assessment, and evaluation of satisfaction of users.

3. The statistics used in research are as follows: percent, Means, and Standard Deviation (SD). It has been used to analyze the website performance, assess customer satisfaction, and assessment of website quality with the evaluation criteria of BoonchomSrisa-ard[8].

4. Methodology

Researcher collected data by using online survey for the data of tourist attraction to be presented on the website. The research has been carried from September 2011 to October 2011 to analyze the data, design, and develop a website according to the website assessment by experts who have evaluated the quality of website and customer satisfaction by using an online survey, which was uploaded and link to the Kalasin Province's website. Researcher has a collection of questionnairesthat been returned and check the validity of the questionnaires, statistical analysis, and experimental results.

5. Experimental Results

Results of an online survey of 212 respondents to tourist information has been presented on the website as shown in Table 1.

Table 1.contains the information required in a website of virtual image for tourist attraction.

Required data on the website	$\bar{x}$	S.D.	Importance
1. Present data of tourist attraction.	4.25	.64	High
2. Present data of the trip.	3.83	.85	High
3. Present still images and virtual animation of tourist attraction.	4.52	.60	Highest
4. Present data of accommodation / hotels.	3.95	.78	High
5. Present graphics by all browsers	3.97	.68	High
6. Present tourist attraction by category	3.77	.76	High
7. Voting system for tourist attraction	3.67	.86	High
8. Present data for restaurants.	3.47	.58	Medium
9. Present data for activities and cultures	3.58	.70	High
10. Searching data of tourist attraction	3.92	.66	High
Overall	**3.89**	**.41**	**High**

Table 1 shows that the respondents have comments to the data required to be presented on the website, ranked by descending order. The first three data required presented include a slide show and virtual reality video of tourist attraction ($\bar{x} = 4.52$), tourist information ($\bar{x} = 4.25$) and all graphical browsers ($\bar{x} = 3.97$).

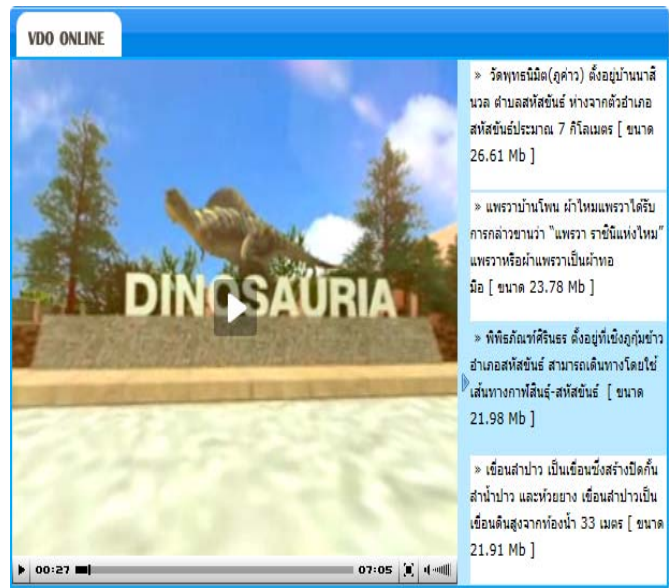The design of the website.

Figure 1. shows the main website

Figure 2. shows an example 1 of virtual reality animation through the website

Figure 3. shows an example 2 of virtual reality animation through the website

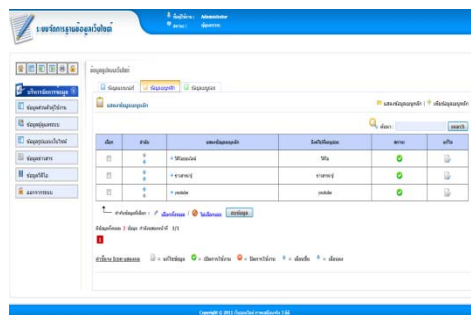Figure 4. shows an example 3 of virtual reality animation through the website

Figure 5. shows the window of website management

An assessment of satisfaction from the online websites of the 75 respondents were shown in Table 2.

Table 2. Satisfaction to the website

Items	$\bar{x}$	S.D.	Satisfaction
1. design and layout of the website	3.95	.77	High
2. motion pictures of tourist attractions	4.25	.64	High
3. appropriate colors	3.59	.70	High
4. appropriate letters	3.56	.66	High
5. interaction with users	3.55	.68	High
Overall	**3.78**	**.53**	**High**

From Table 2, found that the satisfaction of users of virtual reality animation for tourist attraction as a whole is at the high level ($\bar{x}$ = 3.78). Data presented in descending order of the first 3 items include motion pictures of tourist attractions ($\bar{x}$ = 4.25), the design and layout of the website ($\bar{x}$ = 3.95), and appropriate colors ($\bar{x}$ = 3.59).

6. Conclusion

For creating the animated virtual reality website, there are clear targets from the survey aims to find out the exact elements that required by users. It is directly designed according to user requirements. "Users want a specific needs" and user are satisfy with the website that can be displayed with all web browsers such as IE, Mozilla Firefox, chrome, etc. By the website design of the study, the researcher has developed a website of animation for tourist attraction. The results of the survey sample have been used as a guide for the development and presentation of data necessary to meet the needs of users. This will affect satisfaction with the user and return to use again in the future or to attract users to the web forever. For the design of the website, the research team took into account of the following: 1) determinethe website's objective, 2) specify the user group, 3) to organize information, 4) the creation of navigation system, 5) to design a web page 6) the using of graphics, 7) the choice of colors and text formatting, 8) type and version of the browsers, 9) to take into account of the differences in the medium of the website, 10. the size of the monitor and color depth of the Plug-in. From web development, it is obvious that the user wants to get tourist information through website. The presentation are slides and virtual reality animations of tourist attraction. The agencies involved with the implementation of the tourism promotion such as Ministry of Tourism, Office of the Tourism should be taken from this research to improve website with appropriate data presented in order to meet the requirements for further use.

However, in this experimental study, although it can display virtual reality animation by any browser. But there are limits on the speed of the display. It may result from the size of the virtual image, a multimedia file formats, or from any other causes. It is recommended to do a future research.

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