

## Information System of Personalization Thai Health Food Menu for Elderly Persons

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**Abstract**—The data and projections show the Thai population continually increasing, on the other hand the rate of old population growth will continually. In Thailand according to age pyramid in 2012. Older people above 65 years in men and women are about 4.5 million and 4.8 million respectively. The major benefits of this online intelligent personalization of Thai health menu for elderly persons are ability to reach a large number of users at low costs, to provide detailed information online, to take applications and even to conduct tests. Also using intelligent program the elderly person can be check and matches made the health menu more quickly. This research made the Thai online website for personalized one-to-one interactions and transactions. The health menu data of information system is under the food science principle based on the research from the National Research Council of Thailand. There are the effective stages of the process involved in producing the website and testing. The web site was written the web page with HTML, Dream Weaver, PHP, Java Script and MySQL for database management system and Google Map for reaching the specific Thai health food restaurant. The web site presents issues relating to Thai health menu, which is mainly focused on broadening coverage. There are the meal for ordinary elderly person, the customized menu plan for sickness elderly person such as caused from cardiovascular disease, diabetes, cancer, high blood pressure, rheumatism and obesity, and the clinical nutrition packages, the daily-seven-day meal packages, which present each day breakfast lunch and dinner, the body mass index (BMI) computing and the dish nutrition evaluation, the meal according to blood groups, the menu ingredients and dish computing and the dish nutrition evaluation, and the discussed member health board.

**Keywords**-Thai health food; menu; elderly persons; personalization, information system, website;

### I. INTRODUCTION

The world's population is not only growing larger, it is also becoming older. Population ageing is an inevitable consequence of fertility decline, especially if it is combined with increases in life expectancy. The proportion of older persons is increasing at a faster rate than any other age segment. According to the UN Population Division, during the next 45 years, the number of persons in the world aged 60 years or older is expected to almost triple, increasing from 668 million people in 2005 effective to nearly 2.03 billion of older persons live in developing countries; by 2050, that proportion will increase to almost 80 percent. [1] The data and projections show the Thai population continually

increasing, on the other hand the rate of old population growth will continually. In Thailand according to age pyramid in 2012. Older people above 65 years in men and women are about 4.5 million and 4.8 million respectively [2]. The people in this group, more than 15 percent of the Thai population, account for about 30 percent of all health care expenditures. In the area of population ageing, Thai government aims to influence public policy and promote policy dialogue to respond to the challenges posed by the social, health and economic consequences of population ageing and to meet the needs of older persons [3].

For an overwhelming number of senior citizens, who are not institutionalized have an inadequate intake specific nutrients. By the Thai Ministry of Public Health reported [4], the fact that they are not eating properly, in their minds, by taking vitamins and other supplements whose products are heavily advertised on TV, radio and in publications. In Thailand there is no more important aspect of providing proper nutrition for the elderly in the coming years. To realize that a quick fix like taking vitamin or supplements does not replace proper nutrition.

Since the meal is the key eating occasion. Thai meal has its culinary culture, with its distinguished identity. Nowadays not only the eater but also for both professionals and academic researchers interested in Thai food disciplines such as the meal matrix (harmony and contrast), the harmonious blend of the Thai meal and regional meals and others. In order to establish what is offered to older people in Thailand and international, therefore a system of software development Thai health food menu for elderly persons has been implemented. The system via website contains (1) the meal for ordinary elderly person, (2) the customized menu plan for sickness elderly person such as caused from cardiovascular disease, diabetes, cancer, high blood pressure, rheumatism and obesity, and the clinical nutrition packages, (3) the daily-seven-day meal packages, which present each day breakfast lunch and dinner, (4) the body mass index (BMI) computing and the dish nutrition evaluation, (5) the meal according to blood groups, (6) the menu ingredients and dish computing and the dish nutrition evaluation, and (7) the discussed member health board. The intelligent program also provides high resolution satellite images for the ways to and the most of Thai health food restaurants.

## II. CONTEXT OF THE SYSTEM : CRITERIA AND TOOLS

### A. Research and content concerns

From the researcher's points of view, the first point, there is lack of food research into old age in Thailand. The research namely Poverty and Financial Security of the Elderly in Thailand [5] this research presented that Thai family, especially children is still the most important source of financial security for the elderly in old-age. The Thai government currently provides a range of program as a part of social safety net for guaranteeing a certain income level in old-age. The second point, there are many websites which are health shop and almost are comprehensive supplier of vitamins and supplement throughout Thailand. Last, the information about the health are from the wellness center of the hospitals. There are the online information of Thai food and restaurants but all are not specific for old age.

This research contents concern the information of Thai menu special for elderly which are (1) the health food receipts and (2) theirs ingredients and (3) the personal, daily life meals in practice for well elderly and sick elderly persons follows the research of a nutritionist of Rajamangala Insititute, namely Charoonsri Polviang [6]. Under the permission of National Research Council of Thailand

From the research [6] result of the study, the researchers change into the content on the website. The supplementary which are the BMI computing, the meal according to blood groups, and the map routes suggest for eating out at a restaurant have been made.

1) *The User Context, the most important factor when evaluating website is the objective of the web. What are we using the web for? Entertainment, academic work, hobbies or avocational interests. The objective of this website is specific for elderly persons or persons in charge. The website is to be another instrumentation or method on offering appropriate guidance for elderly in terms of improving their nutrition and quality of life, and for us as youngers have a remarkable sympathy to elderly, scholarly sources are traditionally very strongly text -based and pictures.*

2) *The Web Context, some of the visual distinctions that signal the nature of content in print sources hold true on the web as well. Because the web encourage wider use of graphics, so websites contain more graphics and more colors than their print counterparts (compare to the original of the research book that this research used the contents.)*

There are five criteria for evaluating web pages [7] : accuracy, authority, currency, objectivity, and coverage and there are generic criteria for evaluation [8] : stated criteria for inclusion of information, authority of author or creator, comparability with related sources, stability of information, appropriateness of format, and software/hardware/multimedia requirements.

## III. METHODOLOGY

### A. Process Framework

There are the elements of an effective process that researchers reviewed before and constructed the practical implementation. The elements are in Fig. 1.

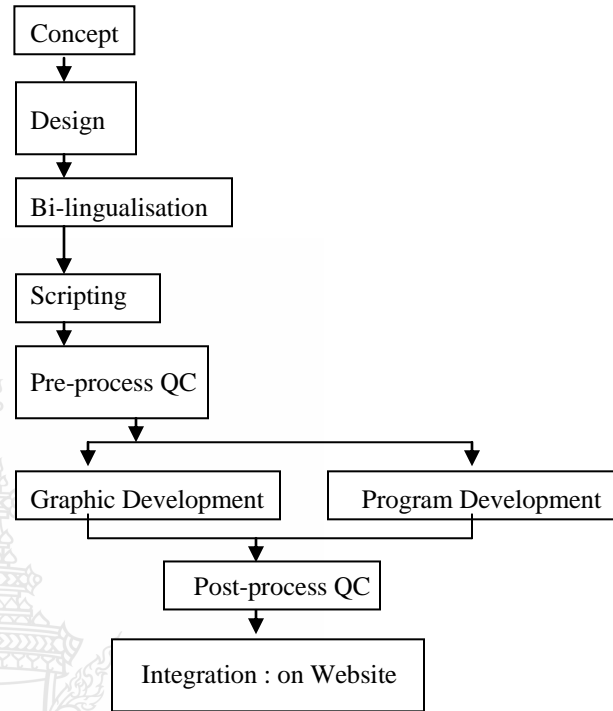


Figure 1. The system process

- At the concept stage, researchers considered the points about the elderly needs and want to know, which each module has a common structure and logical flow especially for elderly and has a theme template.
- At the design stage, researchers make the system intuitive and enjoyable for the elderly, informed all the time if they seem not understanding the content, use good design principles for the screens – do not overload the elderly with too much text.
- This research constructed the website in Thai and English.
- In scripting stage, the researchers considered the points about the correctness of the contents must be followed the original research of the nutritionist. Scripting creates the text to be embedded in the website program.
- At the pre-process QC stage, after the scripts are ready they should be check by another person familiar with the website making and content area. So the independent external qualified persons check the script for the system.

### • Program development and graphics development

Google Maps [9] is a basic web mapping service application and technology provided by Google, free (for non-commercial use), that powers many map-based services, including the Google Maps website, Google Ride Finder, Google Transit and maps embedded on third-party websites via the Google Maps API. It offers street maps, a route

planner for traveling by foot, car, or public transport and an urban business locator for numerous countries around the world. With the introduction of an easily pannable and searchable mapping and satellite imagery tool, Google's mapping engine prompted a surge of interest in satellite imagery. Sites were established which feature satellite images of interesting natural and man-made landmarks, including such novelties as large type writing visible in the imagery, as well as famous stadia and unique geological formations. Although Google uses the word satellite, most of the high-resolution imagery is aerial photography taken from airplanes rather than from satellites.

This research is a simulation experiment of interactive software development on supporting features of Thai health menu, so the microcomputer which suitable for text, image and multimedia was used. MySQL DBMS runs on AppServ while simulate server with the Windows operating system. PHP Language is for connecting data and web application, and the intelligent part of the way suggestion by Google Maps API. Java Script, Dream weaver and Flash are for web decorating. For the graphics development part, the researchers considered the points which are must be bright and colorful that suitable for elderly and avoid copyright issues.

- At the post-process QC, the functional of all components and particularly the navigation is checked. The module must be checked again for content and continuity against the story board.

#### B. Program Testing

The final step in the process was to integrate the content modules on the Internet. The follow up process was the result of our desire to maintain a quality program. There are two test : usability testing and usability inspection.

Usability testing is a technique used in user-centered interaction design to evaluate a product by testing it on users. This can be seen as an irreplaceable usability practice, since it gives direct input on how real users use the system [10]. This is in contrast with usability inspection methods where experts use different methods to evaluate a user interface without involving users. Usability testing focuses on measuring a human-made product's capacity to meet its intended purpose. Examples of products that commonly benefit from usability testing are foods, consumer products, web sites or web applications, computer interfaces, documents, and devices. Usability testing measures the usability, or ease of use, of a specific object or set of objects, whereas general human-computer interaction studies attempt to formulate universal principles Usability testing is a black-box testing technique. The aim is to observe people using the product to discover errors and areas of improvement. Usability testing generally involves measuring how well test subjects respond in four areas: efficiency, accuracy, recall, and emotional response. The results of the first test can be treated as a baseline or control measurement; all subsequent tests can then be compared to the baseline to indicate improvement.

Setting up a usability test involved the realistic situation (the researchers launched the system at an exhibition of the

university), wherein the elderly persons performed a list of tasks using the system being tested while observers (researchers) watched and took note. The researchers used test instruments which are scripted instructions, paper prototypes and pre-and post-test questionnaires for gathering feedback on the system.

Hallway testing (or hall intercept testing) is a general methodology of usability testing. Rather than using an in-house, trained group of testers, just five to six random people, indicative of a cross-section of end users, are brought in to test the product, or service. The name of the technique refers to the fact that the testers should be random people who pass by in the hall way [11].

The researchers had an opportunity to participate in a software innovation contest, at that time, the method of expert review for usability testing was used. As the name suggests this method relies on bringing in experts with experience in the web design field to evaluate the usability of the system.

Usability inspection is the name for a set of methods where an evaluator inspects a user interface. This is in contrast to usability testing where the usability of the interface is evaluated by testing it on real users. Usability inspections can generally be used early in the development process by evaluating prototypes on specifications for the system that can't be tested on users. Usability inspection methods are generally considered to be cheaper to implement than testing on users [12]. The researchers used the cognitive walk through method which is a usability inspection method to identify usability issues of website, focusing on how easy it is for new users to accomplish tasks with the system. The method is prized for its ability to generate results quickly with low cost, especially when compared to usability testing, as well as the ability to apply the method early in the design phases, before coding has even begun [13]. In this research, researchers did the cognitive walk through method at the pre-process QC stage by independent external qualified persons.

#### C. Practical Implementation

The researchers designed to plug Google Maps into the webpage of the systems. Google created the Google Maps API to allow researchers to integrate Google Maps into websites with own data points. It is a free service, and currently does not contain ads. By using the Google Maps API, it is possible to embed the full Google Maps site into an external website. Researchers are required to request an API key, which is bound to the website and directory entered when creating the key. The Google Maps API key is no longer required for API version 3. Creating a customized map interface requires adding the Google JavaScript code to a page, and then using Javascript functions to add points to the map. The researchers designed the database system using context diagram, data flow diagram, entity-relationship diagram and the reports of the system.

## IV. RESULTS

The system was produced for online presentation providing easy and user-friendly screens, at main menu of

the homepage was divided the contents into 8 parts. The programming was written into 2 parts the administration part, and the user part, the detailed content of all food menu and map information are managed by the admin. The user part has shown the first homepage as in fig 1. The other information is in figs. 2-5.



Figure 2. The homepage of the website

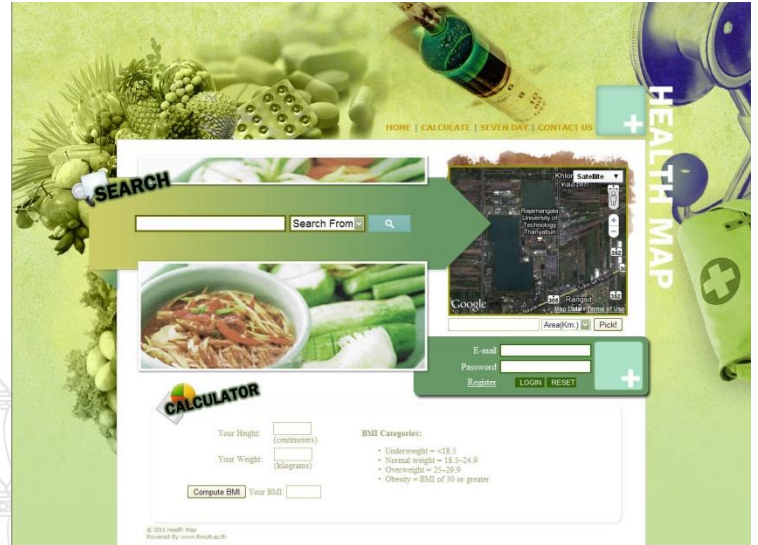


Figure 4. The BMI computing



Figure 3. The health menu for ordinary and sickness elderly



Figure 5. The 7-days meals packages

## V. CONCLUSIONS

As population older adults are more likely than younger, ones to be afflicted with a variety of age related diseases and functional status. Member of this population are also at increased risk of nutritional deficiencies due to

the number of perception food they take. When considering the importance of food for health especially nowadays Thai foods with its ingredients are seasoned with herbs. So Thai food (even though some menus are adapted from many nations such as Indian and Chinese food) considered very good for health. This program provides online nutrition counseling services, provides health risk assessments and supports to address the users underlying health conditions and personal likes and dislikes.

#### REFERENCES

- [1] UNFPA, The United Nation Population Fund, Report, 2011.  
<http://countryoffice.unfpa.org/thailand>
- [2] P.Longman, "The world will be crowded with old people" An FP Special Report SEP/OCT 2011.
- [3] Office of the National Economic and Social Development Board, Thailand.  
<http://www.nesdb.go.th,2011>.
- [4] Ministry of Public Health, Thailand. [www.moph.go.th](http://www.moph.go.th), 2011.
- [5] S.Worawet, "Poverty and Financial Security of the Elderly in Thailand," *Aging International* vol.33,2009.Numbers 1-4, pp. 50-61, doi : 10. 1007/s12126-009-9030-y.  
<http://www.springerlink.com/content/khqth82j2x342.287/>
- [6] C.Polviang, 1994. Food Menu for Elderly Persons. Elderly Persons Research Project. Rajamanagala Institute of Technology.
- [7] J. Kapoun. 1998. "Teaching Undergrads WEB Evaluation : A Guide for Library Instruction.", *C&RL News* (July / August 1998) : 522-523.
- [8] H. Tillman. 2003. Evaluating Quality on the Net. Babson College, MA.
- [9] Google Maps : [http://en.wikipedia.org/wiki/Google\\_Maps](http://en.wikipedia.org/wiki/Google_Maps)
- [10] J. Nielsen. 1994. Usability Engineering, Academic Press Inc. San Diego.
- [11] J. Nielsen. 2000. Jakob Nielsen's Alertbox, March 19, 2000 ;  
<http://www.useit.com/alertbox/20000319.html>
- [12] J.Nielsen. 1994. Usability Inspection Methods. John Wiley and Sons. New York.