Mammy – a Technological Tool to Exchange Information

Valeriya Khrebtova[1], Pedro Fonseca[1], Ana Dias[1], Arminda Guerra Lopes[2]

[1]Instituto Politécnico de Castelo
Branco/EST, Portugal
{callmesunny, pedro_dxr}@hotmail.com,
anocas.margarida@gmail.com
[2]Instituto Politécnico de Castelo
Branco/EST & Madeira Interactive Technologies Institute, Portugal
aguerralopes@gmail.com

Abstract. This paper presents an academic work in progress application which allows to store the information about "Technology", "Cooking", "Health and care", "Fashion", "Pets", "Transports", "Business and finances" "Education", "Work", "Crafts" "Habits" in the same place, using a user friendly organized structure. The idea is to have a forum and a mobile application. The website is based on a forum, with a profile where it is possible to create new topics or answer topics that have been already created. It goes side by side with a mobile application based on the same concept but with a larger focus on user. The goal is to have a portable tool, which contains all the information the user needs.

Keywords: Forum, mobile application, information exchange

1   Introduction

Technological change invades most areas of society and many different aspects of our lives. The utilization of technologies, such as the Internet, increased across all sectors of society. Digital devices and applications play key roles in our daily life and in a wider range of the society. This gives us insight to develop a system, which can contribute to the inclusion of different people in digital world. As the Internet becomes increasingly embedded in the lives of individuals and communities, it is more critical than ever before to guarantee universal access. Digital inclusion is the ability of groups and individuals to access and use information via digital technology. It is comprised of three components: Access to devices, Access to the Internet and Digital literacy knowledge. Access to technology and digital skills have become increasingly essential for people to fully participate in society.

Digital literacy was defined as "having three buckets: 1) finding and consuming digital content; 2) creating digital content; 3) communication or sharing it" [10]. The American Literacy Association defines digital literacy as "the ability to use information and communication technologies to find, evaluate, create and communicate information, requiring both cognitive and technical skills. The digital

skills include understanding the basis of how digital tools operate. Nowadays, being adapted at using digital tools and technologies is common. People, generally, have the ability to deal with technologies (computers, mobile phones, etc.), which is enough to operate with the developed applications.

The use of "mammy" does not require a high level of technological knowledge, the use is intuitive, with a well-defined organization and easy representation of content, the system allows its users to quickly find what they need, interact with other users in forms of publications and commentaries on publications and interactive content that allows any user to enjoy the system.

The main purpose of this paper is to present a digitally inclusive application that is still in functional prototype form, that will contribute to users' access to technology.

"mammy" is composed by a forum and a mobile application. The idea was to make a website and a mobile application. The website is based on a forum, where users can interact with other users by creating some posts and comments, through a personal profile with basic information, such as a classification system (user-user, user-post, user-comment). It goes side by side with a mobile application based in the same concept allowing users: to follow all the content of the forum and to create a notebook, with events, notes, notifications of future events.

2   Related Work

"mammy" applications take into consideration the user and the feeling that it causes to him, in order to be able to transmit the warmth of the familiar environment and all emotions that this can drive.

Currently, the market already offers some similar solutions. It follows three examples of applications and forums to understand all the pros and cons of using them.

- **Crumblyy:** The App offers categories like "Technology Tricks", "Food and Drink", "Health and Fitness", "Daily-life Solutions", "Money Savers". All the content is updated daily, users can search the last updated tips, trending or search them by tags [3].
- **Life hacks:** offers tricks and tips for categories like "Technology", "Food&Drinks", "Health & Fitness", "Solutions"," Brainy", "Money Saver"," Life Tips", "Survival", "Party" daily updated, with a system of save and share in the social media. It is well designed and organized by categories [1][2].
- **wikiHow:** It is a repository based on How-to concept allowing to save any content to offline read. It offers the following topics: "Arts and Entertainment", "Cars&Others Vehicles", "Computers and Electronics", "Education and Communications", "Family Life", "Finance and Business", "Food and Entertaining", "Health", "Hobbies and Crafts", "Holidays and Tradicions", "Home and Garden", "Personal Care and Style", "Pets and Animals", "Philosophy and Religion", "Relationships", "Sports and Fitness", "Travel", "WikiHow"," Work World", "Youth". All these contents comprise pictures or videos organized step-by-step [4].

Table 1 presents the main characteristics of each application and mammy's corresponding features.

Table 1. Searched Applications and "mammy".

Functionalities\Applications	Crumblyy	Life hacks	wikiHow	mammy
Update	Weekly by system	Daily by system	Daily by system	Daily by users in the forum and by system
Content	Plain Text	Plain Text	Hybrid Organization	Hybrid Organization
Design	User friendly	Simple	Simple	User friendly, comfortable and warm
Offline System	No	Yes	Yes	No
Favorite System	Yes	No	Yes	Yes
Organization	Topics >Posts	Topics >Posts	Topics >Posts	Topics >Subtopics >Posts
User Profile	Yes	No	Yes	Yes
Life Management (Calendar, Events Creation, Notification System)	No	No	No	Yes
Taking Notes	No	No	No	Yes

Three examples about the searched forums are presented:
- **Forum Saúde:** A Portuguese forum particularly dedicated to health. The forum is organized by topics, with questions and answers. Users are permitted to search on it [5].
- **Deficiente Fórum:** A Portuguese forum. The forum is lead to all kind of assistance for people with disabilities, or with health problems. The content is divided into topics and subtopics [6].
- **Zwame:** A Portuguese technology forum. The focus is on subjects related to any kind of technology. It has a topic breakdown by topic, and subtopics [7].

Table 2 presents each forum main characteristics compared with "mammy".

Besides all the functionalities found in those forums, "mammy" offers some more: the registered user can post and comment, can vote, can save a post in their favorites that can be accessed in both components (forum and app). Users can also take notes for future use and easy access to the application.

Table 2. Forums and "mammy".

Functionalities\Applications	*Fórum Saúde*	*Deficiente Fórum*	*Zwame*	*mammy*
Update	Frequently by users	Frequently by users	Daily by users in the forum and by system	Daily by users in the forum and by system
Content	Plain Text	Plain Text	Hybrid Organization	Hybrid Organization
Design	Simple	Simple	Simple	User friendly, comfortable and warm
Favorite System	No	No	No	Yes
Organization	Topics->Posts	Topics->Posts	Topics->Subtopics->Posts	Topics->Subtopics->Posts
User Profile	No	No	Yes	Yes
Budget System	No	No	No	Yes
Content classification system	No	Yes	Yes	Yes
Comments	Yes	Yes	Yes	Yes

3   Preliminary Study

Taking a user centered approach authors developed an interactive questionnaire, composed by 14 questions in English as lingua franca. A user-centered approach is a process that focuses on user needs and requirements. It is used to understand the user need [8]. Authors used a mixed methods approach to obtain data to consider on the application development using questionnaires and brainstorming tools.

The questionnaire was available on the Internet for a week and delivered on social networks such as Facebook and Instagram. The results were given by 139 answers from people from different countries. The first section of questions was about basic information of users, nationality, age and gender. Then, we asked our users to answer the second group of questions in a fast as they could way, in order that we knew the first color they thought when they heard the word mammy and also the color that they associated with the theme of the application. Then, we asked which word between, "professional", "relaxed", "fresh & clean", "simple" or "fancy" suited better the design. The third part of questions was about the functionalities. They had to choose between four options ("Love it", "Kinda like it", "I give it a meh" and "I don't like it"). This allowed us to understand the best functionalities. Finally, users were freely questioning about ideas they thought they would like to see implemented. They mainly chose the pink color, red and blue for the website, which should have a fresh and clean design with the possibility to share ideas, to have a profile and achievements. It was highly recommended that the mobile application should be a softer version of the forum and should have the possibility to make events and to store notes for future use. The ideas from the users were a chat, a profile with avatars an organization system using icons, colors, topics and categories. They were also interested to have the possibility to send a friend request and events related to the city the users were in a particular moment

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4 Application Description

For the development of the functional prototype, authors relied on the user-friendly concept. User-friendly is normally used in relation with the design of computer systems. The term refers to easy to use or understand. Something related to a computer that is simple for people to use. The interface focused on good navigation, interaction and experience accordingly Nielsen's ten heuristics [9], which is:

- The user always has the visibility of his state in the system because he is informed in real-time of what is happening;
- The relationship between the system and the real world is respected by interconnecting the icons or images with real functionalities;
- The free navigation of the users is allowed giving total control within the possible routes of use;
- The same consistency and the same standards are maintained throughout the pages and screens of the system;
- There is concern that the user will not make mistakes such as misspellings;
- All the way through the user is shown to reach a certain page / screen of the system;
- User flexibility is offered to any type of user, whether expert or novice;
- Aesthetics and minimalist design are one of Mammy's main concerns;
- There is concerning to show explicit messages in case of errors;
- The system is equipped with illustrative help from FAQ's and there is the possibility to contact the administrators for any doubts or problems.

Computer security is a great concern. "mammy" has been built around security, giving users their data backup and hypothesis of data recovery if they need it.

Figure 1 represents the main page of the forum, which shows all the topics that exists in the forum in an organized way. Each image has a title representing one topic. The print screen image has cooking, fashion, animals and technology topics.

The forum is structured by topics, subtopics and publications.

The system has a content presentation structured by topics, subtopics and publications. The user only has permission to insert new publications in a subtopic. He can also edit or delete it, comment on the publications of the other users, answer to comments, classify comments and post, save bookmarks to favorites. The users do not have influence in the organization of the information.
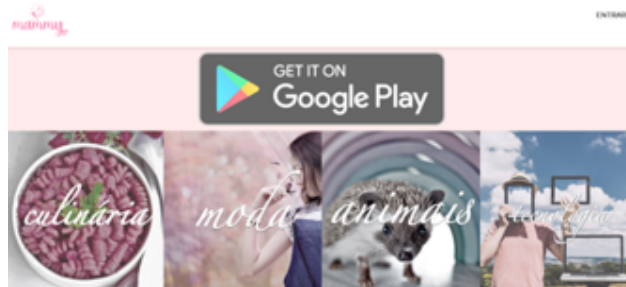
Fig. 1. "mammy" Main Page

Figure 2 represents the register page, it allows every user to have an account and the possibility to post, comment, rate and use all the other functionalities. To register the user needs to provide a username, an email, a password and his date of birth date.

Fig. 2. "mammy" Register Page

In figure 3 the application mock-up is presented. On the left page it is the main page with all the topics, in the middle page it is the login page where the user can login and access to the full content of the platform, the right page is after the login where it displays various options for the logged user.

Fig. 3. "mammy" Mock-up

Our mobile app is based on a concept of hybrid application, which means that, our app is adapted to all types of mobile phones and is developed with a combination of web technologies like:

- HTML (Hypertext Markup Language) is used to create the physical structure and CSS to stylize it.
- Javascript allows interactive effects within web browsers.
- PHP (Hypertext Preprocessor) allows the connection to a database making it possible to store all the data about our users and content.
- Phonegap tool is used to generate the application to be used on all type of mobile systems.
- For the forum "mammy" we used the same web technologies as the mobile application excluding the Phonegap tool.

5   Results

In Figure 4 it is possible to verify the obtained results. Figure 4 presents the analysis performed to one of the questionnaire questions. The users were asked about the type of design that the system should have. In authors opinion it was important to include them in this participation since "mammy" was created following a user-centered approach.
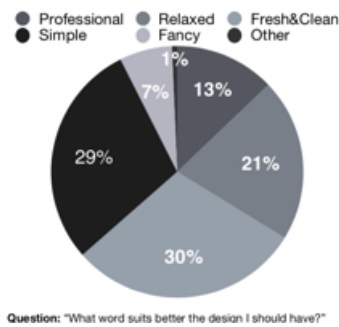

Fig. 4. Question about "mammy" Design

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As mentioned previously, one of the system's functionalities is the achievement, which is one of the features that the target audience has chosen as figure 5 presents.
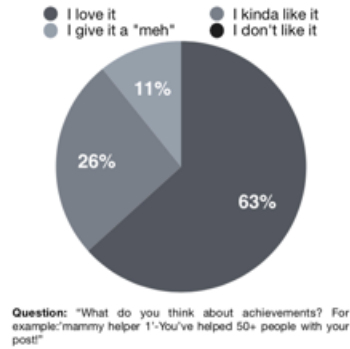

Fig. 4. Question about "mammy" Achievements

The open questions were about additional functionalities that users would like to see on the forum and on the website. We took advantage of the subjects related to "Organization of topics by colors", "Use of pastel color palette", "Simplicity of design and good structure", "Suggestion according to my interests", "Simplicity in information selection". For the application the questions were about "Online Agenda to remember events" application, "The application has to be similar to the website", "Calendar", "Application of life management", "A personal forum, as if it were a library of saved publications, where I can save publications that I find interesting and that allow me to re-read them in the future".

The obtained results were the reflection of user participation deciding about a palette of colors, which combine shades of pink and red, concerning the design, they considered that it should look "fresh & clean". The tendency was to have a user' own profile and the possibility of exchanging messages between users. They also expected to have a simpler version of the website with an interconnection of information between the functionalities to save notes and to create events.

6   Conclusions

In this paper, we introduced the project "mammy". It is based in a forum and a mobile application and the objective is to deliver a great amount of information in an organized way.

Making a research on the Portuguese market we concluded that, in this moment, this is the only Portuguese app of this kind. None of other apps satisfy all the requisites the mammy offers.

The acceptance during the presentation already made was very positive and the unique question was posed by future users was: "When you will bring it online… to us?", which gave motivation to keep developing the proposal.

We presented the first version of mammy to our university community and it had a great impact. So, we pretend to still invest in this project to try to expand it abroad markets and include other cultures.

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