



# MiGua! App for User Awareness Prior to Adopting Dogs in Urban Areas

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**Abstract.** This paper makes a proposal to reduce the abandonment of pets through a mobile application that makes the user aware before adopting a dog. This application is called MiGua! and the main function is to give some tasks to the user for some time so that he can feel the impact of having a pet before buying or adopting one. The developing process is based on the User-Centered Design methodology in order to include the user in all the stages and produce an app pertinent to the needs of our community. Paper and digital prototypes helped to evaluate the interface as the real impact on participants.

**Keywords:** Abandonment · Pet care · Usability  
User-Centered Design · Prototyping · Evaluation

## 1 Introduction

According to some estimates, the current world population of domestic dogs *Canis lupus familiaris* may be as high as 500 million, of which a substantial although unknown proportion is poorly supervised or free-roaming [1]. Nowadays in the cities, the abandonment of pets has become a problem. According to data from the Ministry of Health of Mexico City every year 18,000 dogs are lost or abandoned by their owners [2]. Most street dogs may be abandoned by their owners because they are not previously aware of what their care means, such as the time, space and money invested in their adoption or purchase.

According to a study carried out by the Affinity Foundation in 2010, the main reasons for abandonment are: (1) unexpected litters (14%); (2) changes of address (13.7%); (3) economic problems (13.2%); (4) loss of interest (11.2%); (5) a problematic behavior of the pet (11%); (6) the end of the hunting season (10.2%); (7) family allergies (7.7%); (8) a newborn in the family (4%); (9) owner's death (3.5%); (10) vacations (2.6%) and (11) fear of contracting toxoplasmosis during pregnancy (2.4%) [3].

In order to try to solution this problem the first thing to do is to identify if a person meets the necessary requirements before adopting a pet. In this case, it doesn't not exist an established or official way to evaluate if the future owner can take responsibility of having a pet.

Several studies have demonstrated that owning a dog has benefits for the owners' health. Dog owners are reported to visit the doctor less frequently [4] and to have lower health care costs than non-dog owners [5]. In addition to the health benefits of a pet, such as the dog, this can help create a better environment among the population. Having a companion animal can enhance social interactions between people, and this could lead to fewer depressive symptoms [6].

In the present article we propose a solution of awareness before the adoption of a pet through a mobile application designed with the User-Centered Design (UCD) methodology. The prototype, as a game, simulates the main responsibilities that must be taken when adopting a dog. And the end the user will be evaluated to determine if it is suitable for adoption.

The article is composed as following: in Sect. 2 is presented a state of the art of existing tools. Section 3 is dedicated to present the contextual study conducted to obtain and detect user's needs. The evaluation of the prototype is described in Sect. 4. Finally, conclusions and further work are established.

## 2 Background

Currently, there are different applications in the market that helps users with specific problems related to dogs, adoption and their care. For example, "Walk for a Dog"<sup>1</sup> is an application developed in New York that connects people with different shelters near them to walk dogs without their owner [7].

Another one is "Miwuki Pet Shelter"<sup>2</sup>, which gives a list of protective associations, and a list of currently adoptable dogs and cats [8]. Also, it is possible to use "Dog care"<sup>3</sup>, which is an application that helps and gives advice to dog owners for the care of the pet such as: basic care, toxic foods and first aid [9]. As well, "Dog walk-track"<sup>4</sup>, is helpful for dog owners to keep track of the daily walks they have with their pets, and share photos of them on social networks during the walk [10]. As a closely related application, but in a complete virtual environment it exists "Dogotchi: Virtual Pet"<sup>5</sup>, a video game that simulates the care, hygiene and feeding of a dog, but all the interaction is virtual and does not take any information from the phone sensors, nor change habits of the user in real life [11].

By analyzing and evaluating the previous applications we can notice that none of them were designed to raise awareness for dog care before the user makes the adoption of it. So, it is necessary to ensure the future owner about what means to have a pet so he can evaluate before adopting one by knowing that in his decision it is the life of a dog.

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<sup>1</sup> <http://www.wooftrax.com>.

<sup>2</sup> <https://www.miwuki.com>.

<sup>3</sup> <https://upstairs.co.in>.

<sup>4</sup> <https://tractive.com>.

<sup>5</sup> <http://mawges.com>.

### 3 Contextual Study

Having the stray dog problem in mind, emerges the idea to encourage more people to adopt abandoned dogs by using technology. This could be achieved by generating a mobile application that could help user awareness to reduce abandonment rates. To identify the main needs of people who have adopted dogs, several interviews were carried out with different first-time owners, with no prior experience for adopting pets. From these interviews, it was possible to identify the main needs and motivations when adopting a dog. In this way, people need to be motivated in a good way by understanding the main responsibilities and work that has to be carried when a dog arrives to home. So, the questionnaire used to identify the needs of dog owners is presented below:

- What has been the biggest change you've made after adopting?
- What has been the biggest obstacle after adopting?
- Have you had bad experiences in your walks with your dog?
- What habits have you had to change after adoption?
- Have you experienced any bad experience when hiring a service for your pet?
- Would you adopt another dog?
- If you saw a case of animal abuse would you report it?

Through the surveys conducted, the various needs that users have were determined:

1. Time
2. Money
3. Security
4. Entertainment
5. Exercise
6. Responsibility

Under these variables, based on the people interviewed, it was conducted a modeling of different user's profiles. This, in order to stablish different communities of possible future owners and be able to canalize the prototype in an adequate way. Also, different ideal scenarios were built, where the main needs were met with the help of technology. In this way, it was possible to visualize the needs from a different point of view than the initial one.

#### 3.1 User Study

The user profiles of the application must meet certain requirements, including: being a young person (between 18 and 35 years), having an Android mobile phone with Internet access, have a medium to high level of proficiency of the device, and to not have much experience in pet adoption. Below are the different profiles and scenarios created during the process of user-modeling.

**Karla Pérez** Age: 27

- Lives in the city.
- Has an apartment.
- Divorced.
- She has a toddler.
- She prefers dogs of small breeds.
- She found a dog in the street and decided to adopt it.
- She is often distracted.
- Before living on his own she never had a dog.
- Being a single woman with a small dog makes her more vulnerable because of the insecurity of the city.
- She does not have much free time.
- She prefers to take her dog to a canine groomer.

The scenario of this woman is the next: the young woman goes out to walk and she finds a dog in the street which she decides to adopt it. She easily finds what to do and which groomers and veterinarians are reliable to take the puppy and check its health. After adopting it, she can easily receive advice from other owners for the best care of her pet. Taking it for a walk makes her feel safe since she knows that there are dangerous places in her neighborhood (there is no public lighting, police, or there are cars at high speed) and she receives, constantly, reports or advices of other dog owners. Also, if she needs to do some shopping she can go to pet-friendly establishments.

**Pedro and Carlos** Average ages: 32.

- They live in the city.
- They prefer dogs of medium races.
- They do not have kids.
- They decided to adopt a dog from a shelter.
- They are usually organized.
- One of them already had experience with pets.
- In their neighborhood there are not many parks.
- They live in a neighborhood with a lot of people movement.
- Their free time is little.
- Sometimes they take their dog to canine groomers.

The scenario for the young couple living together is the next one: they decide to have a companion animal and so they adopt it in a shelter. Actually, they can locate nearby shelters and know what to do and what to change to be able to adopt. When they take a walk with their dog, they take a path in which the community has put bags to collect the dog's waste along the way (in case they need them) and know where they are. In addition they can see in their application which parks allow dogs (some parks are restricted in that area). They can also see which veterinarians and reliable hospitals are close to their home and their schedules.

**Fernando Rodríguez** Age: 24.

- Live in the city.
- He prefers cats.
- He decided to adopt because the life of the dog was in danger in his previous home.
- He is carefree.
- He is not used to take out his dog for a walk.
- Prefer to take care of his pet alone.
- Has little time.

The scenario for the young man is the next one: he adopts a puppy in danger but he also knows where there are reliable veterinarians to check the dog's health. Then goes for a walk with his dog and can plan a safe route in which he will take the right time to walk. Other dog owners help him by giving recommendations of how to take care of this dog.

By doing the profile modeling it was clear that the user's needs were different from those initially established. So, after discussing profiles and answers to the questionnaire, the main needs identified are the time and money that an owner had to invest when adopting a dog. However, many of them did not know what kind of responsibilities it can take to care for a dog before having it. With this in mind, a brainstorming took place. In this brainstorm, it was identified that the problem of abandoning pets was not the motivation to adopt, but that the adopters are unaware of the responsibilities involved in adoption and cannot adequately meet them.

### 3.2 Development of User Interface

In the next step an inspiration-panel was developed in order to recognize what things or aspects have to be taken into account when developing the solution. This inspiration-panel includes words, colors and images that will help to give a clearer focus on what an ideal interface would look like. In addition to identifying what the application should be it also shows popular applications that are an inspiration because they have clear and simple interfaces. Some of the words that came into our mind when thinking in the final prototype were:

- Loneliness
- Tenderness
- Company
- Walk
- Happy
- Food
- Family
- Health
- Responsibility

At this step of the process, it was defined a point of view in order to make clearer what was the objective and the area of opportunity to be attacked. Our point of view devised for the app was: “being alone is very sad, what better company than a four-legged one!”.

At this point of the research it was realized that the tool could focus on two different types of users: (1) first-time dog owners who needed a guide to understand the best way to care for their dogs (see Fig. 1) and (2) users who need to have awareness about what implies to adopt a pet (see Fig. 2). From these ideas, two scenarios were developed by using storyboards. This way, it was possible to decide in a more objective way the course that should be taken in the later development of the application. In addition, with the storyboards it is possible to communicate with the users and arrive to the solution of the problem. These ideas were presented to a group of people to know which possible solution would have more acceptance.



Fig. 1. Storyboard for the first-time owners. A girl is followed by a street dog and decides to adopt it even if she doesn't know anything about dog care. So she searches in Internet for an application that could help her about veterinarians, food for dogs, special care, etc. The dog care information from the app helps her a lot so right now she is very happy with her new dog.



**Fig. 2.** Storyboard for user awareness. A boy moves into his new apartment and feels lonely. So, he decides it would be a good idea to adopt a dog, but he doesn't know what are the main responsibilities he will carry by having a pet. He finds an application that simulates the care of a real dog and helps him to decide if he could be a good candidate to adopt a dog, or not.

### 3.3 Fast Prototype

It was decided that the line of prior awareness was the better one to work on because it solves the problem before it exists and prevents the abandonment of pets. After deciding this line of development, we started with the user interface design. For this we used the technique called “The Wizard of Oz” to increase the functionality and clarity of the application. “The Wizard of Oz” technique is performed with the participation of a human who is known as “Wizard” or “Accomplice”, who simulates, without knowledge of the participant in the experiment, the role played by the computer during a Human-Computer Interaction [12]. This technique helps the creator to give an idea of how the interface will be developed, what are the possible errors, the different scenarios and the control of exceptions. In addition, it is possible to see in a real way if the interface created is simple and understandable for the profile of the user selected.

The prototype was tested on paper (see Fig. 3) by using the 10 Nielsen's heuristics [13]. From this first approximation, we found that the heuristics “family metaphors and language” have been violated, by having some words that were unclear. Also, the heuristic of “aesthetic and minimalist design” where the initial interface was composed of too many screens before reaching the solution.

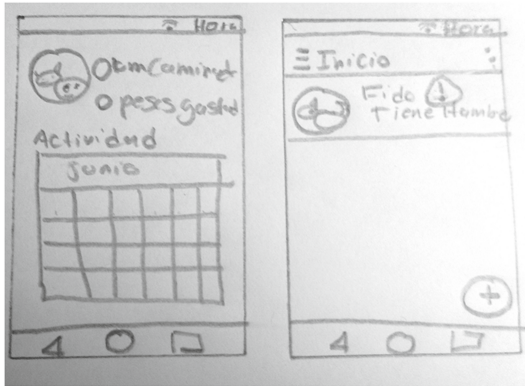


Fig. 3. Example of paper prototypes before starting to develop the digital one.

#### 4 Usability Test

The general idea of the application is to simulate a real dog care. After the instructions and presentation, it is possible to configure a virtual dog to take care of it. The dog can be small, medium or big. Then the dog will ask the user for food or exercise. The user needs to discount of his money the cost of the food and open the application to take a walk. After a few weeks, the virtual dog will say to the user if it was happy or unhappy with the care. If the results are poor because the user has forgotten to do some activities with the virtual dog then it will notify you. Indefinitely of the result it will disappear and the user can have another virtual dog and take another shoot to improve his skills in dog care (see Fig. 4).

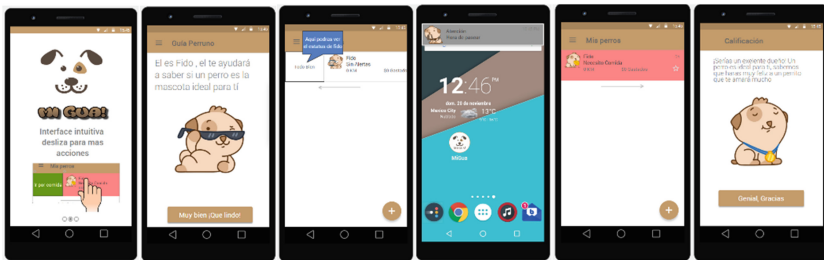


Fig. 4. Cycle of Miguel! app composed of main instructions, definition of the profile, reminders and final verdict.

After working on the violated heuristics, a digital prototype was created (see Fig. 5), which was already a more complete version than the paper version and closer to what would be the finished application. This tool has an ideal iconography as it respects the style of Android and the color palette.



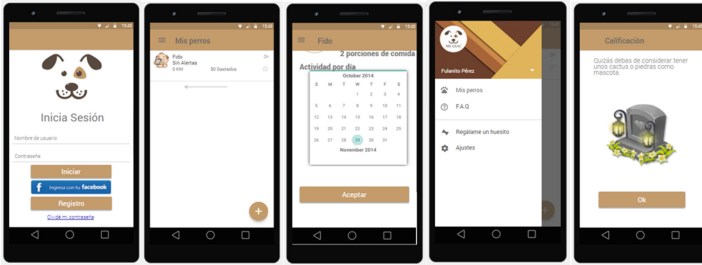


Fig. 5. Digital prototype

This new prototype was tested with different users in order to verify if the tool was adequate. As in the previous steps, the 10 heuristics of Nielsen were used. In this second iteration of the evaluation it was detected the violation of the following heuristics “metaphors family and language”, since some of the instructions did not seem to indicate that they were clear. For 100% of the users interviewed only half understood clearly the dynamics of the application. Also, “Memory Recognition”, because some icons did not remind them clearly of their main purpose. However, the final prototype was generated (see Fig. 6) correcting the heuristics violated. Later on, it was shown again to the users in order to have their advice. This time, the modifications done allowed to have a better application and easy to use.

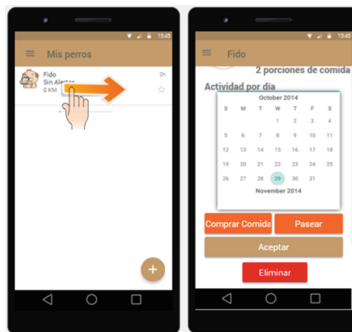


Fig. 6. Some screens of the last prototype generated.

## 5 Conclusion

Awareness is one of the most important factors to avoid the abandonment of pets. Therefore, motivating the population of cities is one of the first steps to reduce this problem. However, raising the awareness of the population is a major challenge that must be strongly taken by including a detailed process in order to

offer to the users an application according to their profile. In this case, we have developed MiGual to train users in having a pet. This app does not substitute pets, it only gives an advice about the responsibilities that a future owner has to have. That is why it must have a period of limit use, once that cycle has been completed the application will restart the progress, having to start again as shown in the first storyboard. This work was based on the methodology of User-Centered Design, which helped to check the reliability of MiGual and how users are the most important part of all the development process. By taking into account our users, since the detection of needs, it is more easy to have a successful application at the end. Also, with the prototype it was proved that the interface is functional and works with the profile users that we have established. In future work, it is intended to implement the application with the rules that the Google store requires so general public can be able to download it. And finally, through the comments of users we are going to measure the impact of MiGual in the resolution of animal abandonment.

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