Pet Patrol: A Web-based Pet Management System

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ABSTRACT

The significance of this research "PetPatrol: A Web-based Pet Management System" aims to solve the challenge of discovering legitimate online pet training services in the Philippines. Previous research has shown that pet owners face difficulties in finding reliable pet trainers through major social media platforms such as Facebook and Instagram. To address this computing problem, this study conducted a survey questionnaire of 52 respondents and proposed a solution through the development of a Pet Management System.

Using Agile methodology, the Pet Management System was designed and prototyped with features focused on such as pet training booking and appointment to make it easier for pet owners to reserve services online. The system prioritizes the verification of legitimate pet trainers to avoid fraudulent trainers from attacking pet owners.

The results of the study revealed that 80 percent of the pet owner have never tried using a pet management system that focuses on pet training. Therefore, Pet Management System has greatly improved the target business process by providing a more efficient and less cumbersome way for pet owners to book and reserve pet training services online. This system's main contribution is its ability to address the challenge of discovering legitimate pet trainers and providing a trustworthy platform for pet owners to access these services and it is also a great way to eliminate manual process of looking for trainer since the system is equipped with automatic trainer matching. Overall, PetPatrol has significant potential for a positive impact on pet owners in the Philippines.

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1 CHAPTER 1

1.1 Rationale of the Study

An information system is a collection of software, hardware, and communication networks that collects relevant data, typically within an organization. Numerous firms utilize information technology to complete and manage their operations, communicate with consumers, and remain ahead of the competition. eBay, Amazon, Alibaba, and Google, among others, depend entirely on information technology.

According to industry trends and estimates, information systems may be advantageous for pet management systems; the pet market will continue to flourish in the future. While the prediction is optimistic overall, several parts of the pet market are experiencing tremendous growth. Pet owners want the best for their cherished pets. Moreover, businesses in the pet industry want to ensure that they are capitalizing on the most recent market trends. Pets sleep in the beds of their owners. They are walked and frequently eat better than humans do. They literally become family members. Pet owners understand the joy their animals can provide them, but they also understand the worry and anxiety that comes with having a pet that requires care.

According to predictions and industry trends, the pet market will continue to grow. Hence information systems may be helpful for pet management systems. Data analysis and increased productivity, particularly in the training segment, could be facilitated by information systems in the pet market. Even though the outlook is generally favorable, the pet market is expanding dramatically in some areas. The best is what pet owners seek for their cherished animals. Additionally, companies in the pet sector want to make sure they are utilizing the most recent market trends. Pets snooze in their owners' beds. They frequently eat better than humans and walk. They become members of the family. Pet owners are aware of the joy that their animals can provide them, as well as the stress and anxiety that come with owning a creature that needs attention. Even if mobile applications have supplanted traditional websites, a professional web application is a vital tool for meeting industry standards when discussing web-based systems. Websites are cross-platform, device-adaptive applications with personalized interfaces and unique content. The introduction of business web applications provided developers with unrestricted access to information production and distribution. In addition, web-based interventions should be structured so that individuals can adjust the intervention to their requirements. (2004) (Wantland et al.) With the introduction of high-level Web programming languages, which are intended to make it easier to deliver and locate data and information, creating interactive and responsive Internet applications is becoming less difficult. .

However, apps must do much more than simply respond to user requests. They need the correct features, not too many, just the right ones, presented in a manner that gives users power. The design issue here is significantly more complicated than simply providing facts. Flash apps must be more user-friendly than other forms of software because they are transitory. According to Nielsen (2002), the next ten years of Web design will be characterized by a substantially higher grasp of user requirements than the preceding ten.

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Considering that it can be accessed without installing an app, a web-based Pet Management System program would be incredibly effective. As a matter of fact, there are numerous benefits to utilizing a pet management system. First, it can assist owners in organizing the information about their dogs. This can be especially helpful for pet owners with several pets with special needs. Secondly, this can be an excellent method to meet new companions for pets, as well as to receive advice from pet trainers. There are numerous pet management organizations on the market, each providing a unique set of services. Some pet management firms offer basic services, such as feeding and watering, while others offer extensive services, such as exercise and training.

Additionally, pet management organizations specialize in specific types of animals, such as dogs or cats. Even if there are numerous pet management systems accessible worldwide, we cannot deny that pet behavior is still a problem on a global scale. A substantial majority of respondents in a study done by Buller and Ballantyne (2019) said that many pets exhibited separation-related behaviors, such as disruptive behavior, vocalization, and house soiling, when left alone at home without intervention with humans. Others noted atypical behaviors linked with fear, anxiety, and aggression, such as shaking, avoiding humans and other animals, barking, growling, snapping, and biting.

It is quite tough to identify dog trainers because it is impossible to tell if they are unquestionably real trainers, especially in the Philippines, where there are a large number of fraudulent trainers. Lots of pet owners use social media platforms to book a pet training service, and it would only be possible to verify if that individual is a fraudster since certificates nowadays can be easily altered.

Furthermore, the lack of pet management applications can be a problem for pet owners. Training a pet can be a difficult and time-consuming task. It is essential to have a good application to help with this process. Pet management applications can help pet owners train their pets more effectively. They can also help to save time and money. This study focuses on how a pet care management system could help pet owners manage their pets to be safe and healthy and have good behavior. This study will also address the lack of an online pet management system or training services here in the Philippines.

From the collected data and observations of the case, the researchers proposed the system "Pet Patrol: A Web-based Pet Management System" as a solution to the local community's problem; it will aid pet owners in booking legitimate trainers. The program will accept applications from pet trainers with extensive expertise using a reward-based approach to pet training and then certify them if they are accepted. Dog owners can schedule an appointment at their respective residences on a specific date. The proposed system could manage trainers' schedules, particularly if they conflict with other training dates. Pet owners can view the profile of the trainer. The suggested system will match the trainer with the pet based on the trainer's skill set and the dog owner's skill set preferences. The method will also help trainers because it will let pet owners know about their services and help them make more money.

1.2 Objectives of the Study

1.2.1 General Objective. The main objective of this study is to design a web-based pet management system for pet owners, including matching pet trainers to pet owners' skill set preferences and managing trainers' schedules.

1.2.2 Specific Objectives. Specifically, this study aims:

- Determine the existing pet training services application.
- Design a feature of a pet training services that will assist pet owners in terms of:
  - Matching pet trainers of the specified requirements/information.
  - Providing a profile selection suitable for pet owners.
  - Searching pet services online.
  - Managing training.
  - Pet messaging services.
  - Generating of reports.
- Implement and test the proposed system for pet management.

1.3

Scope and Limitations of the Study

1.4 Scope of the study

- Pet Owner
  - Process Registration
  - Process Login
  - Manage Pet
    - Add Pet
    - View Pet
    - Update Pet
  - Manage Booking
    - Search Pet Trainer
    - Match Pet Trainer and Pet Owner of the specified requirements/information
    - View pet trainer profile and training class information
    - Book pet trainer.
    - View Training Lesson
    - Cancel Bookings.
  - Manage Account
    - Change profile image.
    - Change password.
    - Change contact number
    - Change Profile information/
  - Process Notification
    - Email Verification
    - Booking Status
  - Generate Report
- Pet Trainer
  - Process Registration
    - Pet Trainer Application
  - Process Login
  - Manage Acccount
    - Change Profile Image
    - Change Password
    - Change Email/Contact Information
    - Change Profile Information

    - Add payment details
    - Update payment details
  - Manage Training Class
    - Add Training Class
    - Add Training Lesson
    - View Training Lesson
    - Update Training Lesson
  - Manage Booking
    - Accept Pet Owner
    - View Pet Owner.
    - Update Pet Owner Booking Status
    - View Pet Owner's pet information.
  - Process Notification
    - Admin Approval
    - Booking Status Change
  - Generate Report

- Admin
  - Process Login
  - Manage Acccount
    - Update Password
  - Manage Pet Type
    - Add pet type
    - View pet type
    - Update pet type
  - Manage Training Service
    - View Training services
    - Add Training Services
    - Update Training services
  - Manage Users
    - Manage Pet Trainers
      - View pet trainer's rating
      - View pet trainer's record
    - Manage Pet Owner
      - View pet owner
      - View pet owner's feedback to pet trainers
  - Manage Bookings
    - View users booking appointments
  - Process Notification
    - View notifications
  - Generate Report

1.5 Limitations of the Study

- The system will not accept online payment. Payment will happen only outside the system.
- Users are unable to communicate using the system.
- The system educates and limits pets to pigeons, dogs, cats, and parrots.
- The system does not include pet grooming, medical care, health surveillance and vaccinations
- The system is restricted to pet trainers that are registered locally.

1.6 Significance of the Study

The results of the study will be of great benefit to the following:

Pet Owner The system facilitates quick access to the schedules of pet trainers. Due to the online nature of the system, the transaction is simplified.

Pet Trainer The system serves as a guide for them to find an online appointment customer whose schedule coincides with their own.

Pet Centers This will help the pet centers in such a way that they can have this system as their platform for organizing their services. This will also help them boost their customer relations in terms of organizing training schedules with their own certified trainers.

Researchers They are the students conducting the study. This study will help them accumulate additional learnings and skills to help achieve the system.

Future Researchers The study will serve as a guide for future researchers who are interested in making a system that focuses on matching a trainer with a pet owner depending on preferred training skill set and schedule conflict management. The study will serve as the basis for fulfilling their studies.

1.7 Flow of the Study

The figure below shows the flow of the study that indicates the input, process, and output of the study. In the Input box, it indicates the problems that the users have encountered, and the information needed in the system. In the Process box, it shows all the methods and approaches used by the researchers to analyze the data given by the users. In the Output box, it shows the system that the researchers come up to answer all the problems of the users.

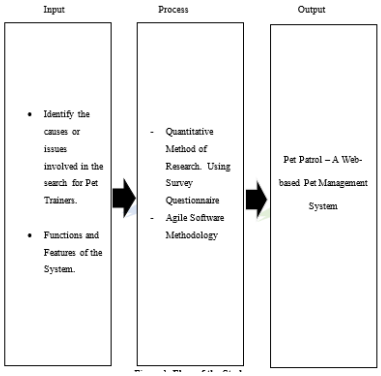


Figure 1: Flow of the Study

The input box is to identify the existing software that needs to be improve, such as matching trainer with pet owners preferred training skill set. Build a software with features that will improve the system with added features. The process box explains all of the study's methods and approaches and aids in the analysis of the data provided by the respondents. The output box shows what the proponents come up with idea and answers in improving the existing system.

2 CHAPTER 2

2.1 Related Literature

Profile Matching

Profile matching algorithms are used to match individuals with

potential partners based on their personal characteristics and preferences. Raad et al. (2010) proposed a method called Profile Matcher that determines whether or not two profiles being compared are the same, using the weighted similarity scores, a decision-making algorithm computes this outcome. In addition, Raad et al. concluded that when weights were assigned to each feature, the detection of profiles corresponding to the same physical users was more efficient and trustworthy. The proposed algorithm could improve the algorithm used in the study since it would link pet trainers and pet owners based on the pet owner's requirements and then allow the pet trainer to select which pet trainer fulfills its criteria.

The content-based system is a type of information filtering system that focuses on the content of the items being recommended or suggested to a user. According to Yao et al. (2015), content-based Web service recommender systems recommend similar services to a user based on the user's previous preferences. Such systems are based on the content similarity analysis of Web services. Recommender systems are proving to be a valuable tool for solving a piece of the Internet's information overload problem. It has evolved alongside the evolution of the Internet. The initial generation of recommender systems employed standard websites to collect data from the three sources listed below: (a) content-based data from purchased or used products, (b) demographic data obtained from users' records, and (c) memory-based data collected from users' item preferences. The second generation of recommender systems makes considerable use of Web 2.0 to collect social data (such as friends, followers, followed, trustworthy users, and untrusted users). The third generation of recommender systems will utilize web 3.0 with information provided by Internet-connected integrated devices. The widespread usage of data from devices and sensors (e.g., real-time health signals, RFID, dietary preferences, and online local meteorological factors such as temperature and humidity) will follow the widespread incorporation of location information in many recommender systems (Bobadilla et al., 2013).

Booking System

An online booking system is a software application that allows businesses to accept online bookings and reservations. Numerous enterprises use online booking systems, including hotels, vacation rentals, tours, activities, events, and classes. According to Steeves, one of the greatest benefits of an online booking system is the ability to be open for business around the clock, regardless of your hours of operation. Similarly, to how your website allows customers to learn about your business without obtaining a brochure, a booking system allows them to reserve their seats without having to wait until they can reach you. Instead, people have the flexibility to book independently, at their convenience – on the train to work, while the kettle boils, or while waiting at the airport for last-minute trip planning. That brings up an important point (Steeves, 2020).

Schwarzschild et al. devised a 2x2 experimental survey design by changing users' booking channels (online vs. low) and the service complexity of various, less digitized people-processing businesses (high: dentist vs. low: restaurant). The authors polled 281 individuals familiar with online booking and reservation after conducting various preliminary tests. Findings indicate that the booking channel (online reservation versus phone reservation) influences perceived booking risk and negatively impacts customers' propensity to utilize the reservation service. Moreover, consumer attitudes about online reservations attenuate the impact of booking channels on perceived booking risk. Research repercussions: Offering clients the option to make a reservation or appointment online appears promising for merchants and other service providers of traditional people-processing services that do not typically operate their own IT departments (Schaarschmidt et al., 2017). Recently, the Internet has arisen as an additional method for scheduling appointments. The scheduling of appointments through the Internet has been a prominent topic of study. Several studies conducted satisfaction surveys and found that Web-based appointment scheduling is a crucial element, and most patients or users would utilize the service again (Zhao et al., 2017).

Another study by Gedmintienė Visockaitė states that personal finance has become particularly relevant for the population nowadays, which is why it is essential to understand and learn how to manage them effectively – the proper allocation of income and minimize costs, to look for possible ways to increase the value of the personal property and not only preserving it. (Gedmintienė Visockaitė, 2016).

Web Services

Web services are the answer to this business requirement. They are designed so that apps can interact regardless of their location, the IT infrastructure on which they run, or the programs used to construct them. A web service's architecture includes an abstraction layer that separates the technology from the applications or services, making it simple for applications to interact over the web without the technological infrastructure interfering (Odemba, 2019). As a fundamental necessity for online services, security is also an important aspect of web services. Without an underlying security architecture that makes these exchanges trustworthy, applications such as private e-mail, purchase order processing, transmission of payment information, and workflow automation are useless (Ratnasingam, 2002). The purpose of web service interoperability is to provide consistent and designed associations from one programming application to the next.

Online services are a potent tool for developing current web applications because of this. Cleanser, WSDL, and UDDI protocols define a self-descriptive method for locating and calling a product application strategy, regardless of location or platform. Information is assembled into XML request and response reports and transferred between programming bundles via HTTP or message-based protocols. Disclosure, definition, and solicitation/response instruments introduce interoperability difficulties (Pedamkar, n.d.).

Pet Management

Pet management is a crucial aspect of responsible pet ownership. A well-designed pet management program can provide numerous benefits for both pets and their owners. According to Costa et al. (2017), the effectiveness of a pet management program may be strongly influenced by cultural, economic and behavioral factors of a particular community. Important indicators such as pet profile, care provided to animals and owner's perception of stray dogs may provide crucial information to a successful public policy program. Indicators should be periodically monitored in order to identify necessary adjustments and/or improvements. Pet owners can more easily manage their pet's and ensure that they are receiving the proper treatment. According to chottanom (2018)'s research, owners were satisfied with the pet management system, with an average

satisfaction rating of 3.65 and a standard deviation of 0.96. The study was conceived and produced to assist pet owners in remembering their pet's behavior. Data about pet activities can be recorded by the system.

2.2 Conceptual Framework

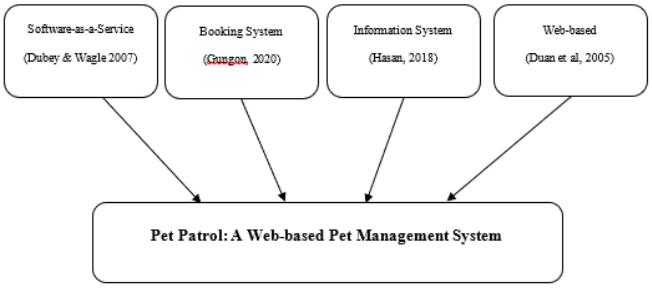


Figure 2: Conceptual Framework of Spree
Illustrates the Pet Patrol's conceptual framework.

Software-as-a-service Software as a service offers several advantages to IT buyers, including more frequent upgrades, a lower cost, and a higher level of service from vendors that must become more responsive to customer needs or risk losing subscription revenues. Countering these benefits are the acknowledged risks of reliability and security. In addition to these broad concerns, CIOs and other IT managers must make changes in their architectural, managerial, and governance models to capture the total value of this new model. Since most IT systems have been designed as closed systems with few controlled links to the outside world, CIOs will have to shift their thinking about architecture to a hybrid closed and open systems model. In a review of which systems should be wholly internal and which should be leased as a service or completely outsourced, the business must consider not only data security but also the pace at which different applications are evolving. This hybrid nature of business applications, which will increasingly look out and in, will also affect decisions on middleware. A comprehensive redesign of a company's IT architecture must take this factor into account to help the company avoid creating a new system that is as complex or unstructured as the legacy system being replaced (Dubey Wagle, 2007).

Booking System A Booking System is a software that can be used to manage service bookings. Be it a pool, fitness center, gym, yoga studio, or parks leisure center; an Online Reservation System allows all kinds of service organizations to take bookings and appointments online and handle both phone and in-person bookings with simplicity. An online reservation system allows a potential customer to reserve and pay for a service directly through a website. This implies that from the minute a customer decides to schedule a slot for your service.

Information System

Information systems are considered the most crucial field, so all modern studies focus on this area, and organizations compete to realize novel technologies and facilities to support this field. The generator part of this area is the information that was evaluated as the soul of these systems. High-performance achievement needs to identify the types of IS and the ways of work. Technology plays a great role in the information systems' life cycle, starting with database technology, which is defined as a collection of information or a group of facts in a structured way. Principally, DB stores the current and future data to make them available at any time to be used in the organizations. On the other hand, data warehousing technology is employed to store data from organizational sources externally and internally. Moreover, past and current data help to provide an excellent basis to support decision-making processes concerning the information needed for this purpose at any time (Hasan, 2018).

Web-based

The rapid growth of Internet technology has altered the process of developing and distributing expert systems. The essence of an expert system is to simulate expert knowledge and disseminate it to non-experts. Utilizing the Internet can dramatically improve this. There are few ES on the web or whether they exist but are not being reported in the literature because the literature searches revealed few reports on the subject. A standard methodology for designing web-based expert systems appears to be absent. We anticipate that web-based expert systems will increase in sophistication, complexity, and capability, fulfilling their enormous potential. Nevertheless, this necessitates an effort to solve the difficulties mentioned in this work. Web-based expert systems are projected to revitalize the area of expert systems and usher in a new age for their applications (Duan et al., 2005).

2.3 Related Studies

Researchers should conduct a thorough and systematic review of the related studies. A review of related studies is an indispensable component of the research. It sheds light on the study's theatrical or conceptual context. Here are some of the existing Pet Patrol-related software:

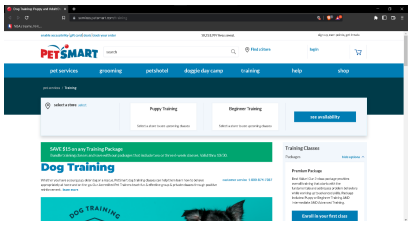


Figure 3: Petsmart LLC
The figure above shows PetSmart LLC, a system related to Pet Patrol. PetSmart LLC operates as a retailer specializing in pet services and products. The company offers a variety of pet food and items at low prices, as well as dog training, pet grooming, pet boarding, and pet adoption services (PetSmart LLC, n.d.)

Comparative Matrix

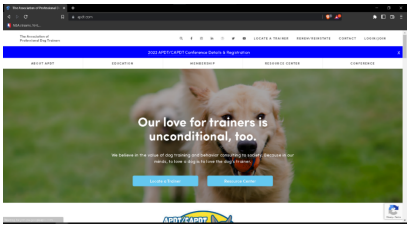


Figure 4: APDT

The figure above shows an image of APDT, a system related to Pet Patrol. The APDT is where clients will find the needed advice, support, and training. Whether just embarking on a dog training career, or a seasoned industry veteran, or just trying to decide how best to add a dog to the family, at APDT they can help find a local dog trainer for a loved but unruly pet, help professional dog trainers improve their experience, qualifications, and increase customer referrals; and help trainers access the benefits of a 5,000-strong global community with the same passion for dogs as (APDT, n.d.)

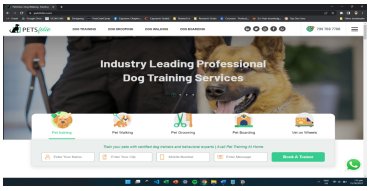


Figure 5: Petsfolio

The figure above shows a system associated with Pet Patrol. Petsfolio is a one-of-a-kind company that provides pet-centric services, such as dog walking, dog training, dog grooming, daycare center, and dog food delivery, with a team of highly enthusiastic, dedicated, and professional pet caregivers, ensuring that the Pet Owner's pet receives the utmost love and care under one roof (Petsolio, n.d.).

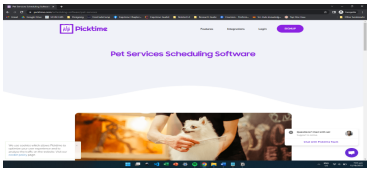


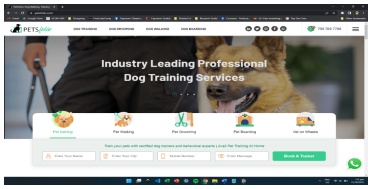
Figure 6: Picktime

The figure above shows Picktime, a system related with Pet Patrol. Picktime facilitates appointment and class scheduling for pet care providers and pet owners. Picktime enables trainers and clients to expand their pet-sitting businesses by drastically lowering administrative time and enhancing customer service (Picktime, n.d.).

3 CHAPTER 3

3.1 Environments

The locale of the study is in Cebu, Philippines, specifically the pet owners in Lapu- Lapu City and Mandaue City. The study used a survey questionnaire to ascertain the respondents' level of comprehension. The survey is distributed to the study's target group via Messenger and Facebook, where the researcher addresses the survey link. There are fifty pet owners who participated in the poll.



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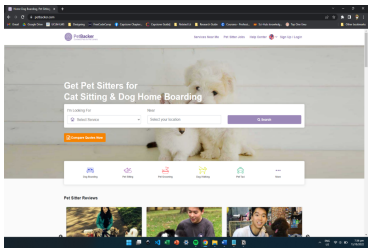

Figure 8: Petbacker

The figure above shows a system associated with Pet Patrol. PetBacker is a leading multi-national pet enterprise with a presence in 50 countries that allows pet lovers to share their passion for pets and employ trusted Pet Sitters who have spent millions of nights caring for pets. Pet stays booked with PetBacker are insured and backed by world-class support staff (PetBacker, n.d.).

Features	Pet Patrol	Pet Smart LLC	APDT	Picktime	Petsfolio	PetBacker
Register and Login	✓	✓	✓	✓	✓	✓
Stores Records in Database	✓	✓	✓	✓	✓	✓
Generates Reports	✓	✓	✓	✓	✓	✓
Manage Accounts	✓	✓	✗	✓	✓	✗
Evaluates Pet Trainers	✓	✓	✗	✗	✓	✗
Booking Appointments	✓	✓	✓	✗	✓	✓
Skills Services	✓	✓	✓	✗	✓	✗
Pet Trainer Matching	✓	✗	✗	✗	✗	✗
Trains other animals besides dogs	✓	✗	✗	✗	✗	✗
System Notifications	✓	✓	✓	✓	✓	✓

Figure 9: Comparative Matrix

As shown in the above comparison matrix, Pet Patrol provides a number of functions. A component of Pet Patrol is the ability to schedule appointments, manage accounts, and submit trainer applications. Among this pertinent research, Pet Patrol stands out since it trains animals other than dogs, enables trainer matching.

3.2 Software Engineering Methodology

During the study's implementation, the researcher will employ Agile Software Construction Methodology. Throughout the system's development, there will be multiple opportunities to evaluate

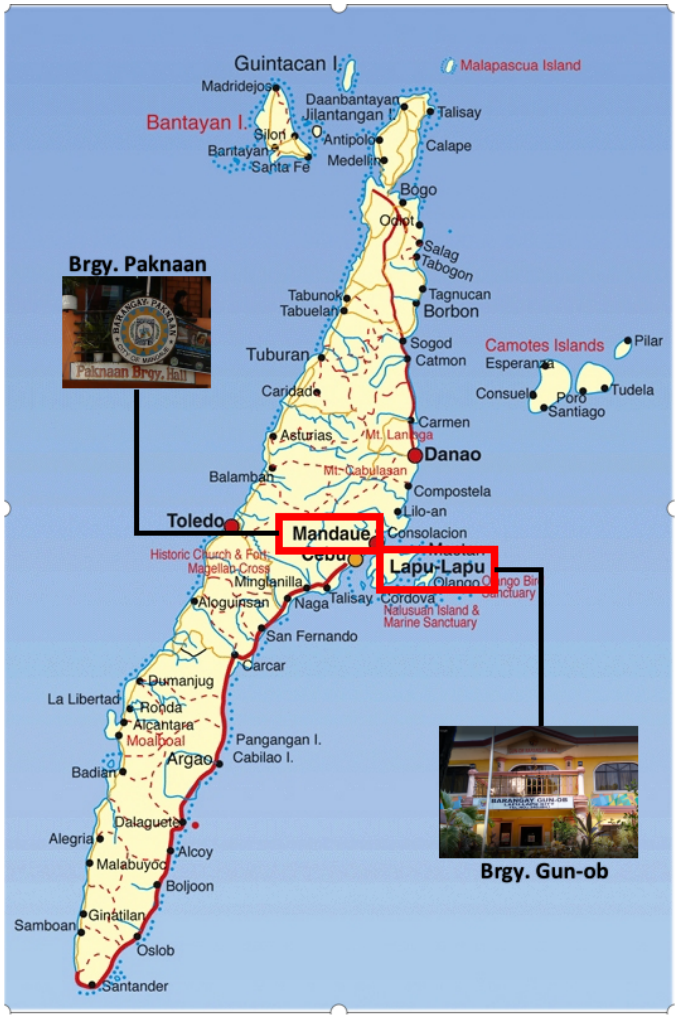

Figure 10: Local Map of Cebu Province
The figure above shows the map of Mandaue and Lapu-Lapu where the study is conducted.

the proponents' time and directions. This strategy assists advocates in coping with the unpredictability of software development. Agile is the ideal option for this study because to its speedy development and deployment process, which begins with planning, design, development, testing, deployment, review, and launch. It then continues the process, segmenting features, services, or tasks according to their relative importance. This allows the application to be launched in iterations and receive continuous feedback. It boosts productivity by allowing the team to quickly identify and repair defects and match expectations, and by implementing agile there is more control in the team and with the client, greater productivity, a higher-quality product, greater customer happiness, enhanced flexibility, and decreased risks. During the study's implementation, the researcher will employ Agile Software Construction Methodology. Throughout the system's development, there will be multiple opportunities to evaluate the proponents' time and directions. This strategy assists advocates in coping with the unpredictability of software development.

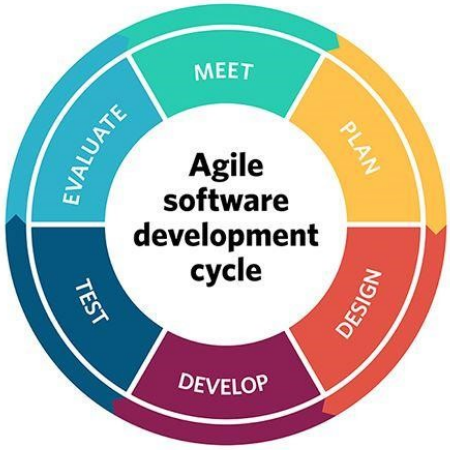

Figure 11: Agile Methodology Diagram
The figure above it shows the agile methodology cycle from planning, design, develop, testing, deploy, review, and launch.

Meet Phase This is the initial step in determining the project's objectives and requirements. During this phase, the researchers evaluate the information and issues uncovered in previous locations as they formulate the project's objective. The proponents compile all pertinent solutions for upcoming discussion and implementation to ensure the successful creation of the system.

Design Phase Once requirements have been developed based on the acquired data, the actual task can begin. The researchers arrived at a plausible and empirical conclusion. Members of the platform determine its functions and create a prototype to represent it. The key objective of the researcher throughout the design process is to be user-friendly in order to facilitate quick access to information and services. Consequently, each component of the proposed system is created using use case diagrams, database design, high-level design, and entity ratio diagrams.

Development Phase The fourth step of the agile development process is development. This is the most time-consuming process because it involves the most work. The proponents will begin integrating all product requirements gathered during the meeting, planning, and designing phases into a unified whole. Before a project is completed, it is subject to a number of evaluations and alterations designed to enhance its quality.

Testing Phase Before deploying the software, the researchers conduct multiple tests to ensure its functionality during the testing phase. Proponents will test the software for potential errors and bugs and to ensure that the code is error-free. Researchers are primarily concerned with the issue that arises at this stage. The purpose of the test is to compare the actual results with those predicted by the system.

Evaluate Phase Throughout the evaluation phase, researchers will supplement the system to ensure that the system is thoroughly tested. They must ensure that the prescribed methodology can

be reliably implemented. In addition, the remainder of the team examines and evaluates user requirements at this stage.

3.3 Planning/Conception-Initiation Phase

The problems that serve as the foundation for development are determined during the planning and conception-initiation phase.

Program Workflow

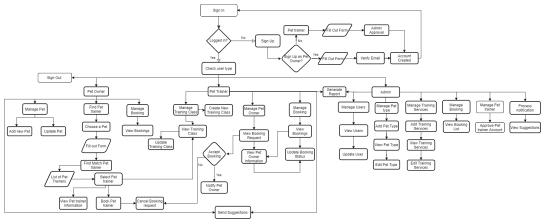

Figure 12: Program Workflow

The figure above shows the program workflow of Pet Patrol on the Admin, Pet Owner and Pet Trainer side.

3.4 Analysis Design Phase

Use Case Diagram

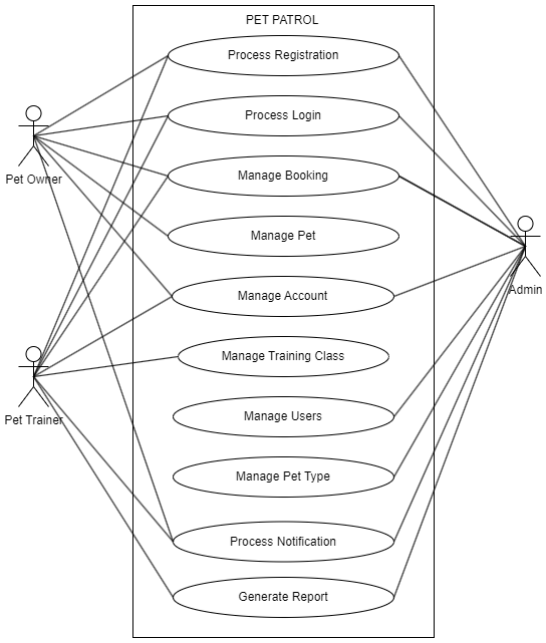

Figure 13: Use-Case Diagram of Pet Patrol

The figure above shows the overall functionalities of Pet Patrol, it represents a discrete interaction between Pet Owner, Pet Trainer and Admin

Entity Relationship Diagram

3.5 Development/Construction/Build Phase

The prototypes created during the analysis-design phase are transformed into a working information system that meets the documented system requirements during the development/construction/build phase.

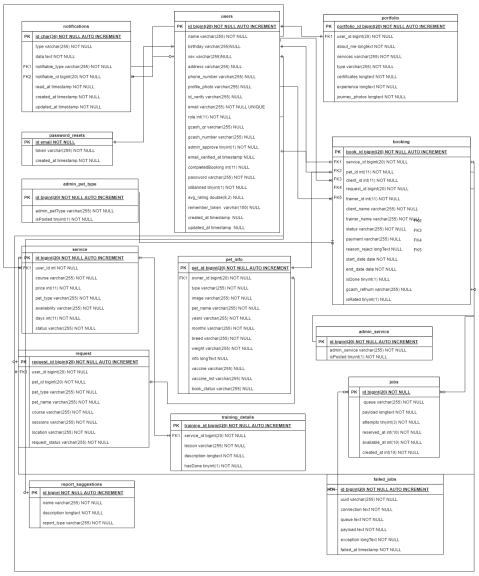

Figure 14: Database Diagram of Pet Patrol

The figure above shows the database diagram of the users and classes of Pet Patrol. It shows the relationship between the users and the admin.

Technology Stack Diagram

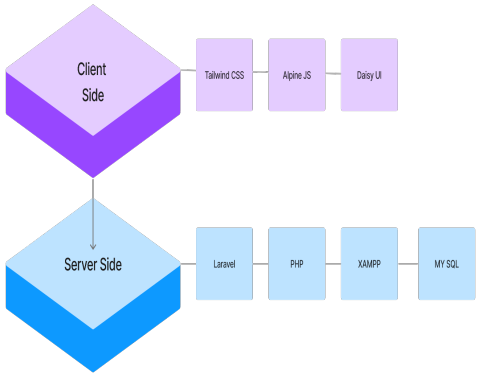

Figure 15: Pet Patrol: Technology Stack Diagram

The technology stack combines the programming languages, and tools in building an app. The above diagram shows the two components; the backend and the frontend.

3.6 Testing/Quality Assurance

Pet Patrol has passed all required usability tests, including unit testing, integration testing, alpha testing, and acceptance testing. All of the modules passed the unit and integration tests with excellent scores and operated flawlessly. Furthermore, the system's

alpha testing score ranges from Good to Very Good, indicating that the system met all of the test criteria utilized to evaluate the system. Finally, the average assessment of the system is a B, which is equivalent to Very Good.

As a result, the system complies with the established requirements and resolves the users' issue.

4 CONCLUSION

In conclusion, the data gathered from pet owners in Lapu-Lapu indicates that PetPatrol, a web-based pet management system, is a valuable tool for automating the process of matching pet trainers with owners. Additionally, the system is effective in preventing fraudulent pet trainers from exploiting unsuspecting pet owners. This capability enables the creation of a harmonious community of pet trainers and owners, while simultaneously providing a safe environment for achieving quality pet training lessons.

The system Spree has pass all the relevant tests regarding its usability such as unit testing, integration testing, alpha testing and acceptability testing. Therefore, it adheres to the requirements set and also it solves the problem that the users are having.

Based on the preliminary findings, when the system will be deployed most of the users would like to install and try out this mobile application to aid in solving their problems as well as enjoy some of the additional features it offers.

5 RECOMMENDATIONS

Based on the findings of the study, we highly recommend the adoption of PetPatrol: A Web-based Pet Management System in Lapu-Lapu. The system can automatically match pet owners with suitable trainers based on their specific needs while ensuring a safe and secure environment for pets. By effectively filtering out fraudulent trainers, PetPatrol can foster a harmonious community of pet owners and trainers.

Moreover, the researchers developed the system with the end-users in mind, and it is important to consider their ability to understand the system's flow. Further improvements can be made to the system to include additional features, such as grooming and vaccination services, and a messaging platform to facilitate communication between pet owners and trainers within the application.

Overall, the proposed system has great potential for future development and expansion, and it can greatly benefit pet owners in Lapu-Lapu and beyond.

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