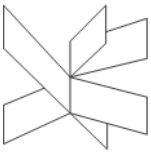

Software System for VIAPets– Project Description

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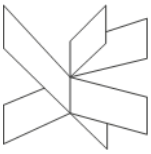
VIA University Collage

Dep. Of Software Technology and Engineering

Semester 1, 2024



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1. Problem Domain

We have a case presented by Mr. Bob about his combined pet shop and kennel called VIAPets. His pet shop business experienced a spike in sales during covid, as people felt lonely having to stay home and therefore needed a friend. That's when he came up with the idea to open a kennel, as people slowly got busier as covid subsided. We have described the case using the following Rich picture.

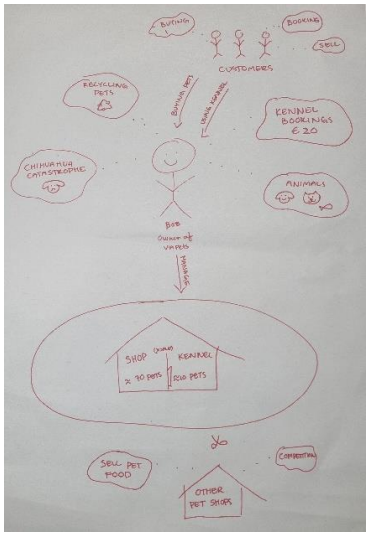
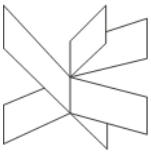


Fig. 1 Rich picture

1. **Pet Shop**:

Mr. Bob owns a pet shop, where he has various types of pets available for sale, including dogs, cats, birds, fish, and rodents. Currently the shop has a system, which keeps track of different information about the pets - such as, price, colour(s) of the pets, their age and gender, and most of the pets have also been given a name. All the dogs and cats, as well as some birds, have been assigned names. The system also stores additional information on dogs and cats, such as their specific breed, and if known, the name of the breeder. For fish, they store information such as species, predators and whether they are freshwater or saltwater fish.

Additionally, the shop has a service where they "recycle" pets—previously owned pets that are returned for resale. He added this service, as he had customers come in, who realised owning a pet, such as a dog or cat, may have been more challenging as expected, and Mr. Bob felt every pet deserves another chance, so he takes those pets in, adds them to the shop, and tries to find a more suitable owner for them.



The pet shop currently has a capacity of approximately 70 pets, not including the ones in the kennel.

2. **Kennel**:

Due to the spike in pet adoptions during covid, people would suddenly run into a problem with how to take care of their new pets, once they had to go back to work again, therefore Mr. Bob added a new addition to the pet shop - a kennel service. By adding this service, he could take care of the customer's pets, so they could have a peace of mind.

The information about the customer and pets is stored in the same way as the pet shop and the same information is stored, except for the prices, as they are irrelevant for the kennel.

Currently the kennel only has the capacity to room up to 10 pets at a time, and does only cater to dogs, cats and birds, at the given time.

3. **The Pet Shop and Kennel:**

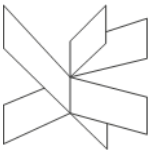
Due to an incident, he had heard people call the "Chihuahua catastrophe", where a new hire accidentally mixed up a chihuahua from the pet shop with one from the kennel. The information between pet shop pets and kennel pets are usually kept separately but the new hire somehow had gotten them mixed up. Due to this embarrassing moment, Mr. Bob knew he needed to get some help, as he did not want another such incident to happen.

4. **Pricing and Sales**:

Mr. Bob and his employees handle all payments in store, as this is the way he prefers so he can keep better track of the payments but also feel closer to his customers. They have a system for payments, but the system cannot store the information about the different pets and cannot differentiate between pet shop pets and kennel pets, which is how the "Chihuahua catastrophe" happened.

5. **Competition:**

Mr. Bob only briefly mentions the competition - other pet shops - and the biggest concern he seemed to have regarding them was, that they also sell pet food, which VIAPets does not. But it is mostly since the kennel was such a new service, so he would rather get that all on track before providing more services. He could also proudly say that he was the only pet shop, which also has a kennel service, so that put VIAPets apart from the rest of the competition.



2. Problem statement

VIAPets requires a software system to streamline its pet shop and kennel operations, prevent costly mistakes (such as selling customer-owned pets by accident), and manage increasing complexity as the business grows.
The system needs to store detailed information about the pets for sale, customers, and kennel bookings, while ensuring that mistakes, like the recent sale of a kennel pet, do not occur again. The system must also support easy, direct interaction between the staff and the system without the need for individual staff logins.

Main Question:

How can we design a system that effectively manages both the pet shop and kennel operations, while ensuring accurate data storage and preventing future incidents like the "Chihuahua catastrophe"?

Sub-Questions:

Pet Shop:

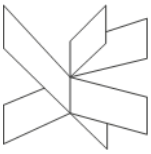
1. What specific information needs to be stored for each type of pet (dogs, cats, birds, fish, rodents)?
2. How can the system handle the "recycling" of pets, including tracking their previous owners and any relevant information?
3. What are the key requirements for managing the pet shop's inventory, including capacity limitations and stock control?
4. How can the system track sales, customer interactions, and payments for pet purchases?

Kennel:

1. What specific information needs to be stored for each kennel customer and their pet(s)?
2. How can the system manage kennel bookings, including capacity limitations and availability?
3. What are the key requirements for managing kennel services, including pricing, payment processing, and customer communication?

Combined System:

1. How can we design a system that integrates both the pet shop and kennel data while maintaining separation of information for each service?
2. What measures can be implemented to prevent future incidents like the "Chihuahua catastrophe" and ensure data accuracy?
3. How can the system be designed to be user-friendly for both Mr. Bob and his employees, ensuring efficient data management and access?
4. What are the potential benefits of implementing a digital system for managing the pet shop and kennel, including improved efficiency, data security, and customer satisfaction?



3. Delimitation

No online transactions: The system will not include features for customers to purchase pets or book kennel services online. All interactions will be done in person or over the phone.
No complex user authentication: Staff will not have individual logins to the system; it will be accessible to any staff member at the front desk.
Fixed scope of pet types for kennel: The kennel will only accept dogs, cats, and birds. Other pets will not be part of the kennel service at this stage.
Data storage: The system will not use a database, but rather local file storage as per Mr. Bob's request, like the system the team previously built for him.
Flat rate for kennel bookings: For now, the system will not calculate dynamic pricing for kennel bookings but will allow for manual entry of the kennel booking price.
No complex inventory management for additional products: While the business may expand to selling pet food in the future, the system will not track inventory or sales for products other than pets.

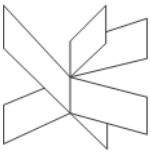
4. Choice of methods

The following methods will be used in the development of the VIAPets software system:

1. Requirement elicitation: A combination of structured interviews (as was conducted in the initial meeting with Mr. Bob) and scenario-based analysis will be used to gather detailed functional and non-functional requirements.

2. Agile Development: Given the tight deadline (the system needs to be ready before Christmas), an Agile development methodology will be applied. This will allow for iterative feedback and refinement based on Mr. Bob’s evolving needs and testing as new features are developed. The Agile approach will help in managing scope and ensuring key features are prioritized.
3. Object-Oriented Design (OOD): The system will be designed using object-oriented principles to model the different entities in the system (pets, customers, sales, bookings). This will support scalability if Mr. Bob decides to add new pet types or services in the future.

4. File-based data storage: Since Mr. Bob preferred not to use a database, we will use a file-based storage system for all records. JSON file formats may be used to store customer details, pet information, and kennel bookings, enabling quick read/write operations without the overhead of a database system.
5. User-Centered Design (UCD): The system will focus on simplicity and ease of use to accommodate the variety of staff working at VIAPets, especially considering that Mr. Bob doesn’t want complex logins or overly technical interfaces.



This outlines the understanding of the problem domain, limitations, problem statement, and methods to be used for the VIAPets system. The goal is to deliver a functional system that is easy for the staff to use while ensuring that operational errors are minimized.

5. Time schedule

Project period:

- Start date: week 36 (3rd September 2024)
- End date: week 51 (20th December 2024)
- Holiday date: week 42 (14th October 2024 - 20th October 2024)

Milestones:

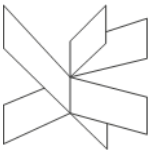
- Week 41: Project Description.
- Week 43: Analysis.
- Week 47: Design.
- Week 49: implementation.
- Week 51: Testing.

Phase breakdown:

Week 36- week 40:
Introduction to Problem Based Learning and understanding the semester project and the project case.
Total Estimated Time: 60 hours (per group member).

Week 41:
Project Description: highlighting the problem domain, problem statement, time schedule, methods, risk assessment.
Deadline: Friday 12/10/2024.
Total Estimated Time: 24 hours (per group member).

Week 43- week 46
Introduction to analysis and analysing the problem, define system requirements and analysing



the choice of technologies and methods.
Deadline: Monday 18/11/2024
Total Estimated Time: 72 hours (per group member).

Week 47- week 48
Introduction to Design, design the system architect, making decisions about layout design and technologies used. and setting meetings with the customer, and the mentors to ensure that our direction meets the vision of the customer.
Deadline: Friday 29/11/2024
Total Estimated Time: 36 hours (per group member).

Week 49- week 51
Implementation and testing the final product, and setting meetings with the customer, and the mentors to ensure that our direction meets the vision of the customer. And that the product works effectively with VIAPets' needs.

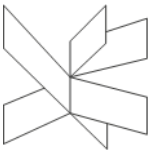
Meetings Schedule:
Monday to Thursday: The group will meet each day from 8:20 to 16:05.
Total Hours/Week: 4 days * 7.75 hours/day = 31 hours/week (group meeting time). Additional Individual Work: ~6 hours/week per group member.
Total Estimated Time: 111 hours (per group member).

Phase Weeks Total Time (per member)

Introduction to PBL & Case		Week 36-40:	60 hours
Project Description		Week 41:	24 hours
Analysis Phase		Week 43-46:	72 hours
Design Phase		Week 47-48:	36 hours
Implementation & Testing		Week 49-51:	111 hours
Total	**Week 36-51**	**303 hours** (per member)	

6. Risk assessment

Although the project should be simple based on the last project, we did with VIAPets there are still some risks while doing the project or after. This risk may or may not include. **Time risk**



The risk is that the software/program might not meet the time to deliver or further update based on it being Christmas which may fail the customer /Bob expectations.
To solve that, we need to make the important future first and focus on the rest later.

Animal risks
the risk is that software have a complex system where animals may or may not get mixed in business because of the similarity between the pets' descriptions, for example, dogs with cats due the similarity of the description. Or worse, another chihuahua catastrophe.
To solve that it, is important to know how to do it.

Worker risks
The risk is if a worker doesn't know how to operate the system/software/program because it is new. Also, there is a situation where a worker mixed up the kennel and pet business because of that.
To make sure that doesn't happen, we must make system as user friendly as possible.

Bob's risk

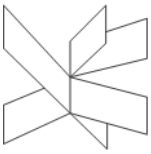
Although Bob specifies that he doesn't want a login system to his website, there are still some risks of being hacked or deleted by another user outside the VIAPets costumer bubble. To fix that, we can implement other sorts of security checks like keycard or biometric system. However, there is also another risk if Bob still refuses login future. If he does, then we can just not do it because the costumer always right.

Lack of additional future risks
Because Bob has some challenges for his rivalry against other shop owners, it might be challenging for Bob to add some features to his shop. For example, if we want to sell pet food or accessories.
To solve that, Bob might want to pay us more for those future or he must ask it before the time to deliver the software.

The number of pets in the shop
The risk is Bob tells us how many pets are in the shop; however, he did not explain the limit of pets in the shop, like what if it was 70 or 100 pets? That can risk the system stopping working if the number isn't the right one.

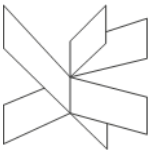
To solve it, we can be to make number of pets unlimited or ask him about that as fast as possible.

Goldie risk
The risk is we still don't know why Goldie, the golden fish, died. It can also affect other animals



if there is problem with sorting or something else unknown.
To solve that, we would like Bob to give us further information.

Risks	Likelihood Scale: 1-5 5 = high risk	Severity Scale: 1-5 5 = high risk	Product of likelihood and severity	Risk mitigation e.g. Preventive- & Responsive actions	Identifiers	Responsible
Not meeting the deadline of the project	4	5	20	Work faster and focus on most important future first	Tight time schedule	Jwan
Animals get mixed based on similarity of the description	2	3	6	Make more details about animals and double check	Mixes in the system or another chihuahua catastrophe	Daniel
Worker don't know how to operate the system	3	2	6	Make the user interface friendly	Longer time to use system or hard to work with system	User, Youssef, Lea, Jwan & Daniel
Chances to get hacked or lose very important data because user/bob don't remember password	5	5	25	Make another way to pass security such as keycard or biometric signature like face, finger, and so on	Program have so many user and in deferent title like worker, boss , managers.	Bob
Rivalry between pet shop sometimes allow to do some stuff out of the system range	2	3	6	Allow to make an option to add another future in software	If user want to make something new	Rival
Chances for unknown numbers	4	2	8	Make numbers unlimited or ask bob for further info	Hit animal max number more than announced number which is 70	Bob
Goldie the fish death still not known and have risk to be contagious	3	5	15	Have more information from bob	Other animals die after Goldie	VIAPets workers



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