Technical Report - **Product specification**

TrackTails

Course:	IES - Introdução à Engenharia de Software
Date:	Aveiro, 07-10-2024
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Project abstract:	TrackTails is an innovative application that will allow pet owners to get some useful information about their pets, specifically dogs and cats. The application would make data like location, vital signs, sleep patterns and escape alerts available to pet owners easily.

Table of contents:

1 Introduction

TrackTails is a project developed within the scope of the IES course, that would provide pet owners valuable information about their pets well-being and health. The system is tailored primarily for cats and dogs, and would provide real-time location and health tracking, which would allow the system to issue escape alerts and various reports. The data will be presented to the user in a user-friendly interface that would be easy to learn and make it easy to understand the information provided by the device in the pet. This report details the product concept, personas, scenarios, and user requirements that will help develop the TrackTails system.

2 Product concept

Vision statement

This project aims to help pet owners obtain valuable information about their pets' well-being and overall health. Unlike other products TrackTails combines GPS tracking and health monitoring in one product that provides real-time feedback. Our product also includes reports that help identify any sudden routine changes that might affect the pets' well-being or health such as sleep or activity reports, as well as escape alerts if the pet leaves a predetermined area. All of this data will be made available to the owner via an user-friendly and easy to learn graphical interface.

Personas and Scenarios

Before starting the project development, it is essential to go through a brainstorming phase where we define the personas that will represent the different types of software users. After defining the personas, we create usage scenarios for each one, which will allow us to better understand their needs and interactions with the system. From these scenarios, we can then refine a clear and detailed list of requirements that will guide the project development.

Personas

The requirements gathering for TrackTails will be supported by three personas, each representing different types of software users with unique use cases. The defined personas are Maria Costa, João Silva, and António Pereira, who will help guide the application's development according to their specific needs and distinct profiles.

Maria Costa

Maria Costa, a 20-year-old student, is in her second year of the Primary Education program at the University of Aveiro. Originally from Viseu, Maria is studying away from home and has a great love for nature. In her free time, she enjoys outdoor activities, cycling, and spending time with friends. Back in Viseu, she left her two pets: her cat Boneca and her dog Trovão, both playful and adventurous.

Living far from her pets, Maria wants to keep track of their daily activities. Therefore, she needs simple and intuitive software that allows her to easily monitor her four-legged companions, ensuring they are always well while she is away.

João Silva

João Silva is a 35-year-old worker who works as a dentist in his own clinic. He is originally from Santarém and enjoys running and traveling the world with his wife. One day, João went for a run and found a dog that was possibly lost, and at that moment, he didn't know what to do.

To solve this problem, João thought that there could be a system that would make lost dogs easily identifiable, facilitating their return to their owner or to a place that could receive them.

António Pereira

António Pereira, a 29-year-old professional, manages a kennel. Originally from Vila Real, António has a deep passion for animal welfare and spends his free time playing video games. As a kennel manager, he has realized the need for consistent monitoring of the animals under his care, including tracking their vital signs and other key data to streamline the management of the facility.

António is searching for software that can handle monitoring for the 20 to 30 animals that come through each month. He needs the software to offer the capability to manage his professional needs efficiently at the kennel.

Luis Silva

Luis Silva, a 46-year-old veterinarian, runs his own clinic in Guarda. With a lifelong passion for animals and a love for chess, Luis has built a reputation as a caring and dedicated professional. Over time, he noticed that many pet owners struggle to bring their animals in for regular check-ups, making it harder to catch potential health issues early on.

To address this, Luis is looking for a solution that allows him to remotely monitor his patients' vital signs and behavior, such as sleep patterns and activity levels. The software needs to collect and display accurate health data for the 15-20 animals he sees each month, providing him with the insights necessary for remote diagnoses. Additionally, Luis requires the ability to receive PDF reports from pet owners, so he can review detailed health information before providing feedback or suggesting treatments remotely.

Scenarios

Scenario 1 - Maria Costa

Maria returned to college and, after a day filled with classes, she wanted to check the app to see if Thunder had been taken for his daily walk. So, she opens the app and confirms that Thunder has been walked, which gives her peace of mind.

Scenario 2 - Maria Costa

One of Maria's relatives called her and mentioned that Doll seemed to be ill and was sleeping very little. To ease Maria's worries, her relatives took Doll to the vet, who advised them to keep a close eye on her. Throughout the week, Maria was able to accurately monitor Doll's sleep patterns and vital signs through the app, which helped determine if the pet was improving.

Scenario 3 - João Silva

João went for a run to the city center and came across a dog that appeared to be lost. He approached the dog and noticed that its collar had a device with a QR code that said, "If I'm lost, scan me." He scanned the code, and an interface opened, displaying all the information he needed to follow in order to return the dog to its owner.

Scenario 4 - Luis Silva

Luis Silva is at the veterinary clinic where he will treat Dona Lucinda's cat who has been eating little. To be able to make the diagnosis, Luis Silva needs to ask the owner a set of questions, leaving him dependent on the uncertain precision that his answers may present.

Through the proposed system, Luis Silva is able to quickly access a vast set of data, more or less precise, which allows him to better carry out the diagnosis.

Scenario 5 - António Pereira

António Pereira, manager of a kennel, is reviewing the list of animals that recently arrived. With 20 to 30 animals passing through the kennel each month, he is starting to have difficulty keeping track of them.

By finding a suitable tool, António will be able to improve animal care and focus on ensuring that they have a comfortable and safe stay in the kennel.

Product requirements (User stories)

Epics	**User Stories**
Epic #1 Animal-system association	As a pet owner, I want to be able to access data about my pet remotely so I can track them wherever I am.
	As a pet owner, I want to be able to track multiple animals in a single interface, to make management easier when the number of animals is high.
Epic #2 Track pet states in real-time	As a pet owner, I want to be able to locate my pet so that I can easily find it if it gets lost.
	As a pet owner, I want to track the physical activity of my pet, so I can better understand my pet's habits and be able to notice changes in his behavior.

	As a pet owner, I want to monitor my pet's sleep patterns and vital signs so I can see if the pet is showing any symptoms indicative of health problems or improvements in them
	As a pet owner, I want to be alerted whenever something abnormal happens (vital signs are very altered or abrupt movement indicates a fall or being run over), so I can help you as quickly as possible.
Epic #3 Share basic owner information	As someone who found a lost animal, I want to be able to obtain information about the animal and contact details about the owner, in order to help it return to its owner.
Epic #4 Analyze historical data	As a pet owner, I want to be able to consult the route taken by the pet over a certain period of time so I can have some control over the places it travels.
	As a pet owner, I want to be able to consult historical data on physical activity, sleep patterns and vital signs of the animal, in order to detect anomalies over time.
Epic #5 Share Pet Information with Veterinarian	As a veterinarian, I want to be able to have access to the animal's data in order to help me carry out diagnosis.

3 Architecture notebook

Key requirements and constraints

<Identify issues that will drive the choices for the architecture such as: Will the system be driven by complex deployment concerns, adapting to legacy systems, or performance issues? Does it need to be robust for long-term maintenance?

Identify critical issues that must be addressed by the architecture, such as: Are there hardware dependencies that should be isolated from the rest of the system? Does the system need to function efficiently under unusual conditions? Are there integrations with external systems? Is the system to be offered in different user-interfacing platforms (web, mobile devices, big screens,...)?

E.g.: (the references cited in [XX] would be hypothetical links to previous specification documents/deliverables)

There are some key requirements and system constraints that have a significant bearing on the architecture. They are:

- The existing legacy Course Catalog System at Wylie College must be accessed to retrieve all course information for the current semester. The C-Registration System must support the data formats and DBMS of the legacy Course Catalog System [E2].
- The existing legacy Billing System at Wylie College must be interfaced with to support billing of students. This interface is defined in the Course Billing Interface Specification [E1].
- All student, professor, and Registrar functionality must be available from both local campus PCs and remote PCs with internet dial up connections.
- The C-Registration System must ensure complete protection of data from unauthorized access. All remote accesses are subject to user identification and password control.
- The C-Registration System will be implemented as a client-server system. The client portion resides on PCs and the server portion must operate on the Wylie College UNIX Server. [E2]
- All performance and loading requirements, as stipulated in the Vision Document [E2] and the Supplementary Specification [15], must be taken into consideration as the architecture is being developed.>