

UX Project Documentation

Original Capstone Project file:

CapStone Project

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People experience a heightened sense of urgency and distress when their pets go missing. I am interested in exploring how I can enhance the pet security experience for pet owners.

This project aims to explore and enhance the pet security experience for pet owners, addressing the heightened sense of urgency and distress experienced when pets go missing. The problem was selected based on personal observations and a recognized gap in existing pet recovery measures.

Currently, many pet owners mistakenly believe that microchips work as GPS trackers, which is not accurate. Microchips provide information only when scanned by a vet/shelter and do not aid in actively recovering a lost pet. Additionally, while social media can raise awareness about missing pets, posts often go unnoticed due to the overwhelming volume of content, plus the fact that not everybody even has social media in the first place.

The project does not propose a specific solution or redesign an existing product but focuses on understanding the problem space better. By researching and identifying the issues and needs in this area, the project will guide the development of a suitable solution to provide peace of mind and ensure pets' safety and security.

“What about pet name tags/gps?” - Collars come off, they are not secure. (Especially due to the fact that animals need at least two fingers between their neck and their collar so they can breathe properly, which only gives a higher chance of the collar coming off). My mom has a cat who gets out of his collar every couple of days, so it's definitely something she worries about, if he were to get out and get lost.

Secondary Research Report for Capstone Project on Enhancing Pet Security

Written by: Emily T. Collier

What

This secondary research explores the problem space of pet security and aims to validate the importance of addressing the distress pet owners face when their pets go missing. Using credible sources, the research highlights gaps in current solutions, identifies pain points, and examines how technology can play a role in creating an innovative and effective solution for pet tracking.

The focus is on analyzing current tracking methods such as GPS collars, invisible fences, microchips, and activity monitors, as well as understanding their limitations. This research also investigates the feasibility and ethical concerns around new technology, such as GPS implants. The ultimate goal is to uncover insights that will support the development of a better pet security solution.

Why

Millions of pets vanish annually, leaving pet owners in distress. Studies show that **1 in 3 pets goes missing in their lifetime**, highlighting the need for dependable pet security measures. However, current products like GPS collars and microchips have significant drawbacks, including inefficiencies in technology, risk of tampering, or inability to provide real-time tracking. Given that the **total Canadian pet population reached nearly 28 million in 2020**, and is projected to continue to grow, it's clear that there is a massive, underserved market.

This research aims to:

1. Validate the widespread need for safe, durable and efficient pet-tracking solutions.
2. Identify gaps and limitations in existing methods to inform the design of an innovative solution.
3. Help define the target user group, their pain points, and their preferences.

Insights

Key Findings

Who Struggles with Pet Tracking?

- Pet owners everywhere experience emotional distress when their pets go missing.
- Misconceptions about the effectiveness of tools like microchips amplify frustration, as many believe they function as GPS devices, which they do not (McLeanVet, 2024).

Main Factors Impacting Pet Security Negatively

1. **Technological Limitations:**
 - GPS collars and tags require frequent charging and perform poorly in areas with weak satellite signals, especially in rural environments (Tractive, 2024).
 - Invisible fences and warning collars fail when pets ignore signals or when devices are removed.
 - Home security cameras are confined to tracking pets within the home’s boundaries.
 - Microchips lack real-time tracking capabilities and rely on external scanning after a pet is found.
 - Activity monitors excel at health tracking but contribute little to recovery efforts.
2. **Practical Issues:**
 - Collars are prone to falling off or can be chewed or removed easily.
 - Pets often escape during fireworks, storms, or other stressful events where current tracking mechanisms fail to respond in real time.

Current Methods of Pet Security

An analysis of existing solutions shows clear advantages and disadvantages:

TYPES OF PET SECURITY	PROS	CONS
GPS Collars/Tags	<ul style="list-style-type: none">- Provide constant location updates via mobile apps- Keep owners informed in real time- Accurate location	<ul style="list-style-type: none">- Require frequent recharging- Expensive- Susceptible to being lost or damaged- Limited range, especially in rural areas

Invisible Fences (shock collar)	<ul style="list-style-type: none"> - Offer localized containment with warning systems. 	<ul style="list-style-type: none"> - Susceptible to being lost or damaged - Possible collar injuries - Fear behaviour - Signals can be ignored - Transmitters can be unplugged - Prone to malfunction - Expensive
Home Security Systems	<ul style="list-style-type: none"> - Allow owners to monitor pets visually within a confined space. 	<ul style="list-style-type: none"> - Limited to indoor use - Provide no assistance in recovery. - Expensive
Microchips	<ul style="list-style-type: none"> - Permanent identification - Tamper-proof - Painless procedure - Doesn't need replacing 	<ul style="list-style-type: none"> - Cannot provide GPS functionality or real-time tracking. - Can only be scanned by vet technicians, shelters or those with a device capable of reading the chip
Activity Monitors/Apps	<ul style="list-style-type: none"> - Some devices have built in GPS locators - Some devices store medical records - Activity alerts/rest time & sleep patterns - Track behaviour 	<ul style="list-style-type: none"> - Limited recovery capabilities - Expensive - Susceptible to being damaged - Provide no assistance in recovery.

Innovative Opportunities

- The theoretical idea of GPS implants for pets remains speculative due to several challenges, as discussed in Tractive (2024):
- **Size and practicality:** Current GPS systems require bulky hardware and batteries, making implantation unsafe and impractical.
- **Battery issues:** Lithium-ion batteries inside an animal would pose significant health risks.
- **Ethical concerns:** Implantation of hardware is viewed as invasive and potentially harmful.

The potential for a GPS implant depends on advancements in miniaturization and wireless charging technologies. Until then, there is a significant gap in providing a secure, tamper-proof solution.

The Market Context

- The Canadian pet population is forecasted to surpass 28.5 million by 2025 (Statista).
- IoT (Internet of Things) devices, including pet tracking technologies, are rapidly growing in popularity. However, current GPS solutions are hindered by design flaws and tech limitations.
- Based on user feedback, no single solution has fully mitigated the frustrations of pet owners, leaving ample room for a groundbreaking innovation.

Advantages and Disadvantages of Existing Pet Tracking Methods

To summarize findings:

1. **Advantages:**
 - Some systems (like GPS collars) allow owners real-time tracking, providing peace of mind.
 - Tools like microchips offer permanent identification that cannot be tampered with.
2. **Disadvantages:**
 - No current solution balances real-time tracking, tamper-proof security, and practicality.
 - Ethical concerns and technological limitations restrict the development of advanced solutions, such as GPS implants.

Integration into Capstone Project

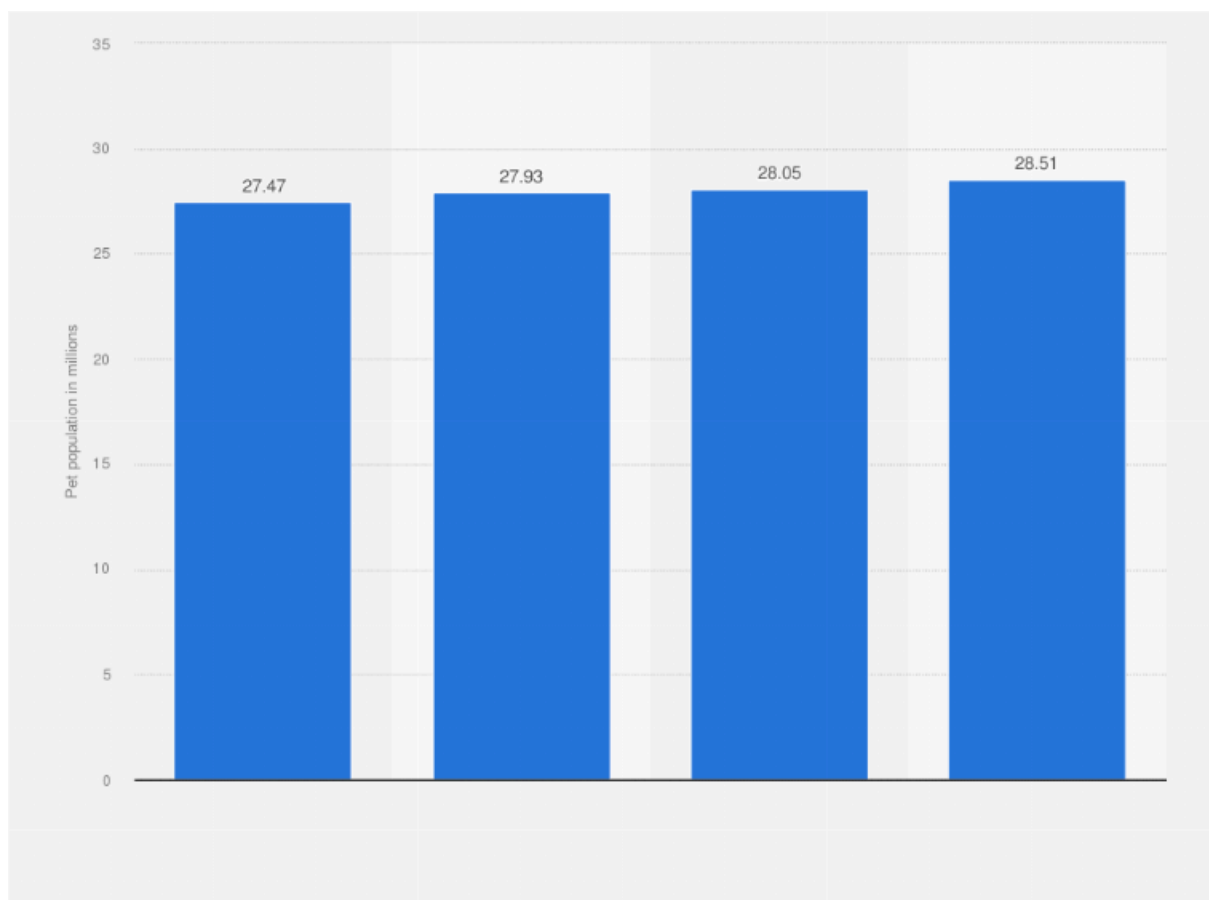
The research highlights a significant gap in the pet security market:

- Pet owners want a reliable, tamper-proof solution that combines the benefits of GPS collars and microchips without the logistical drawbacks.
- Exploring a potential essential pet application - a complimentary, comprehensive platform where you can host an extensive gallery of pictures and videos of your pet, showcasing them from various angles; depicting any distinctive markings that would

facilitate retrieval if ever their collar was to fall off and they were to get lost. This app, equipped with a dedicated section for local missing pets, would utilize GPS to suggest potential search areas, engaging the community of local pet-owners, effectively addressing needs in such an emergency situation. Just one of many possible solutions that could address important consumer needs.

Visual Aid

Here's an infographic overview of the pet population growth in Canada between 2016 to 2025.



Pet Population Growth in Canada

- 2016: 27.47 million
- 2020: 28.05 million
- 2025 (forecast): 28.5 million

[\(Source: Statista, 2024\)](#)

Final Considerations

This research validates that enhancing pet security is a worthwhile and essential pursuit, given the emotional and practical challenges faced by pet owners nationwide. Current products fall short of addressing these challenges fully, leaving pets at risk and owners dissatisfied.

The findings will guide the primary research phase, including interviews with pet owners to understand specific pain points. Additionally, the identified gaps point to untapped innovation opportunities within the pet security tech space. By leveraging this research, a robust and user-focused solution can be designed to genuinely enhance pet security.

Sources:

1. Tractive.com. (2024). Is There a GPS Implant for Dogs?

[Link to article](#)

2. McLeanVet.com. (2024). All About Microchips.

[Link to article](#)

3. Statista.com. (2024). Total Pet Population in Canada.

[Link to article](#)

4. Frontiersin.org. (2023) Security and privacy of pet technologies: actual risks vs user perception

[Link to article](#)

Pet Security Enhancement Research Plan

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Date: March 26th, 2025

Background

Each year, millions of pets go missing, leaving owners distressed and searching for effective solutions to locate their furry friends. Existing pet security measures, such as GPS collars, microchips, and invisible fences, fall short of addressing owners' key concerns like real-time tracking, tamper-proof designs, and practicality.

This capstone project focuses on designing a user-centered solution that enhances pet security by addressing these gaps. Through research, the project will identify pain points, explore user preferences, and lay the groundwork for innovation.

Objective

To understand user needs and design a more reliable pet security solution.

Research Questions

1. What are pet owners' primary challenges with current tracking methods?
2. How well do current solutions meet the needs of users in rural and urban areas?
3. What features would pet owners prioritize in an ideal pet tracking solution?
4. Why do owners choose specific pet security products over others, and what drives their loyalty or dissatisfaction?

Research Methods

To gather actionable insights, the following user research methods will be utilized:

- **Screening Survey:** Distribute a brief survey to recruit interview participants that meet specific characteristics.
- **User Interviews:** Conduct one-on-one interviews with pet owners to deeply understand their experiences and frustrations with existing pet security methods.

Participant Characteristics

The study will target the following participant groups:

- Pet owners across urban and rural areas.
- Owners of pets that are more likely to roam or escape (e.g., dogs and outdoor cats).
- Participants who have used existing pet tracking solutions such as GPS collars, microchips, or invisible fences.
- Individuals aged 18–99+ who actively participate in their pet's security or care decisions.

Recruitment Methods

Participants will be recruited through the following strategies:

1. **Community Outreach:** Leverage local pet owner social media groups, forums, and neighborhood apps (e.g., Nextdoor).
2. **Veterinarian Clinics & Pet Stores:** Display flyers and directly engage potential participants at trusted locations frequented by pet owners.
3. **Online Surveys:** Use targeted ads on social media platforms (e.g., Facebook, Instagram) to reach pet owners with relevant characteristics.

Schedule

- **Recruitment Period:** March 26th - April 9th 2025
- **Interviews:** Conduct interviews from April 10th to 24th
- **Screening Survey Completion:** Analyze survey results by April 24th, 2025
- **Share Research Findings:** Deliver research insights by May 8th, 2025

Expected Outcome

This project will identify the key frustrations and unmet needs of pet owners, validate potential innovations, and provide valuable insights to steer the design of an effective and user-focused pet security solution. The findings will also support the ethical and practical considerations of any potential technological advancements.

By addressing significant gaps in pet security, this project aims to contribute to a meaningful solution that ensures pets and their owners can rest easy.