**ABSTRACT**

This proposal outlines a plan to solve the ongoing wildfire crisis that is causing extensive damage to the environment. In recent years, the world has witnessed an alarming escalation in the frequency, intensity, and devastation caused by wildfires. These natural disasters not only threaten our environment, but also pose significant risks to communities, economies, and public safety. The urgency of addressing the wildfire crisis cannot be overstated, as it requires coordinated efforts from government agencies, scientific communities, non-governmental organizations, and local communities alike. This proposal seeks to delve into the multifaceted nature of the wildfire crisis, its underlying causes, and most importantly, to present a comprehensive framework of strategies aimed at prevention, preparedness, mitigation, and recovery. By recognizing the severity of the issue and embracing innovative approaches, we can collectively work towards safeguarding our ecosystems, protecting lives and property, and fostering a more resilient future in the face of this escalating challenge.

Preventing the Wildfire Crisis

By

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Concordia University

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# 1. INTRODUCTION

The world is grappling with an increasingly pressing and complex issue: the wildfire crisis. Wildfires, once considered seasonal occurrences, have transformed into year-round threats, wreaking havoc on ecosystems, communities, and economies. The escalating frequency and intensity of these fires are often attributed to a combination of climate change, land management practices, and urban expansion into fire-prone areas. This crisis demands immediate attention and collaborative action, as it not only endangers lives and property, but also exacerbates environmental degradation. This introduction sheds light on the key dimensions of the wildfire crisis, paving the way for a deeper exploration of its causes, impacts, and the imperative for effective mitigation and adaptation strategies.

## 1.1 Purpose

The purpose of the proposal is to explore the major backgrounds behind the wildfire crisis and to explore the multiple solutions possible to preventing or detecting wildfires. Then, one of these solutions will be selected and a plan of that solution will be further detailed. A schedule and a budget will furthermore be implemented into the report. Finally, the qualifications of the engineers behind the solutions will be posted.

The proposal should highlight the dangers of impacts of wildfires and will list off all possible solutions associated to solve the issue with one solution recommended. The proposal aims to persuade Mr. Bruno Grenier, the decision-maker, to approve and fund the project.

The wildfire crisis necessitates the development of a comprehensive plan that strategically addresses its major challenges. The increasing frequency and severity of wildfires demand a multifaceted approach that encompasses prevention, mitigation, and rapid response. Central to this plan is the need to address the root causes of wildfires, including climate change, improper land management, and human activities [1]. Efforts must focus on enhancing early detection systems, bolstering firefighting capabilities, and improving coordination among agencies at various levels. Additionally, community engagement and public education play a crucial role in reducing human-caused ignition risks. A well-rounded plan should also prioritize ecosystem restoration to create natural firebreaks and enhance overall resilience. By systematically tackling these interconnected problems, we can forge a path towards minimizing the impact of the wildfire crisis on both the environment and society.

Beyond the financial assessment, the proposal should also consider the societal and environmental advantages of addressing the wildfire crisis. This encompasses factors like enhanced air quality, reduced habitat destruction, and improved disaster resilience. Furthermore, the proposal should diligently evaluate any obstacles or hazards linked to wildfire management, such as limited resources for firefighting or potential risks to human safety. In essence, the goal of a proposal concerning wildfire crisis mitigation is to present a comprehensive strategy that elucidates the merits, costs, and potential difficulties tied to wildfire prevention and management efforts. The proposal must present a compelling argument for investing in wildfire crisis management and furnish the essential insights and analysis to facilitate well-informed decision-making.

## 1.2 Background

### 1.2.1 Major Problem: Extensive damage to nature and causes to climate change

One of the foremost and gravest issues within the wildfire crisis is the extensive damage inflicted upon natural ecosystems, exacerbated by the far-reaching impacts of climate change. The symbiotic relationship between wildfires and the environment has been disrupted by a rapidly changing climate, resulting in longer fire seasons, higher temperatures, and altered precipitation patterns. Consequently, ecosystems that have evolved with periodic, smaller fires are now facing larger and more catastrophic infernos that exceed their natural regenerative capacities. This is particularly evident in regions with historically fire-prone landscapes, where fire regimes have been drastically altered, leading to ecological imbalances and loss of biodiversity. The amplifying effects of climate change not only fuel fire conditions but also contribute to the drying of vegetation, creating more fuel for fires to propagate. Moreover, the release of greenhouse gases during wildfires further intensifies global warming, setting off a dangerous feedback loop [2].

The key causal link between climate change and intensified wildfires lies in the increased frequency and severity of droughts, which render landscapes susceptible to ignition and rapid fire spread. Rising temperatures also facilitate pest outbreaks, weakening vegetation and further increasing fire fuel. Addressing this problem requires a multifaceted approach that involves not only addressing the immediate impacts of wildfires but also prioritizing climate mitigation and adaptation strategies. These strategies could include reducing greenhouse gas emissions, promoting sustainable land management practices, and investing in ecosystem restoration to enhance natural resilience against fires. Ultimately, by acknowledging the deep connection between the wildfire crisis and climate change, we can begin to chart a course towards a more sustainable and resilient coexistence between nature and the challenges posed by an evolving climate [3].

### 1.2.2 Minor Problem: Insufficient preparedness and emergency response mechanisms

Another critical challenge within the wildfire crisis revolves around the insufficiency of preparedness measures and the lack of robust emergency response mechanisms. The increasing frequency and severity of wildfires have exposed glaring gaps in our ability to anticipate, manage, and respond effectively to these disasters. In many instances, inadequate pre-fire planning, limited resources, and communication breakdowns have hindered the ability to swiftly contain and control wildfires. Insufficient investment in fire detection technologies, such as advanced satellite systems and ground-based surveillance, has impeded early warning capabilities, delaying response efforts and exacerbating fire spread. Moreover, the shortage of firefighting resources, including personnel, equipment, and aerial support, has frequently resulted in overwhelmed fire suppression teams struggling to combat rapidly advancing flames [4].

The problem of inadequate preparedness is often compounded by the complex and multi-agency nature of wildfire response. Clear lines of communication and coordination between local, regional, and national authorities are essential, yet challenges in information sharing and resource allocation can hinder effective collaboration. Public awareness and education also play a pivotal role, as the lack of understanding regarding evacuation procedures and fire safety measures can impede timely evacuations and lead to greater loss of life and property [4].

Addressing this problem necessitates a comprehensive approach that encompasses investment in advanced fire detection technologies, enhancement of firefighting infrastructure and personnel, establishment of clear interagency protocols, and robust public education campaigns. Integrating predictive modeling, data analytics, and real-time communication systems can enable proactive decision-making and enhance the efficacy of emergency response efforts. By addressing the issue of insufficient preparedness and emergency response, we can work towards minimizing the impact of wildfires and ensuring the safety and resilience of communities facing these crises [4].

## 1.3 Scope

Our proposed solution for addressing the wildfire crisis in locations around North America, including Northern Quebec and California, encompasses a comprehensive and regionally tailored approach that acknowledges the unique characteristics of each area while addressing the overarching challenges posed by wildfires. The scope of our solution involves a multi-pronged strategy that includes proactive measures, community engagement, advanced technology deployment, and collaboration between various stakeholders.

To begin with, our solution emphasizes the implementation of rigorous land management practices that incorporate prescribed burns, controlled vegetation thinning, and creation of defensible spaces around vulnerable communities. Recognizing the distinctive ecological and climatic conditions of Northern Quebec and California, our approach will be adapted to suit the specific needs of each region. Climate-resilient reforestation efforts will be a key aspect, aimed at restoring native species and creating firebreaks that impede the spread of wildfires.

Advanced technology will play a pivotal role in our solution, with the establishment of state-of-the-art early warning systems powered by satellite imagery, remote sensors, and data analytics. These systems will enable real-time monitoring of fire-prone areas, allowing for rapid detection and early response to emerging fire incidents. Additionally, our solution entails the integration of predictive modeling and weather forecasting to enhance the accuracy of fire behavior predictions, aiding firefighting efforts and evacuation planning. [5]

Community engagement and public education are central components of our strategy. We will work closely with local residents, community leaders, and indigenous groups to raise awareness about fire safety, evacuation protocols, and the importance of responsible land management. Public-private partnerships will be fostered to ensure the availability of well-maintained fire-resilient infrastructure, such as defensible spaces and evacuation routes.

Collaboration will be at the heart of our solution, fostering coordination between federal, state, and local agencies, as well as international cooperation for sharing best practices and resources. Our plan includes the establishment of regional wildfire coordination centers that serve as hubs for information sharing, resource allocation, and joint training exercises. [5]

In conclusion, our comprehensive solution for addressing the wildfire crisis in Northern Quebec, California, and other North American locations envisions a regionally adaptable strategy that combines innovative technology, community engagement, and effective collaboration. By tailoring our approach to the unique challenges of each region while addressing overarching issues, we aim to mitigate the impacts of wildfires, enhance community resilience, and protect the natural landscapes that are integral to the identity and well-being of these regions. [5]

# 2. SOLUTION

## 2.1 Approach

### 2.1.1 Overall Approach of the Solution

In confronting the complex challenges of the wildfire crisis, a multifaceted approach that amalgamates various solutions is imperative. These solutions encompass a spectrum of strategies, with a primary focus on improving prevention systems through innovative technology. The cornerstone of this approach lies in the implementation of an Early Detection System, which leverages cutting-edge tools such as advanced satellite imagery, remote sensors, and a dedicated mobile application. This system enables real-time monitoring of fire-prone regions, facilitating prompt identification of potential wildfire ignition points and enabling swift response efforts.

Simultaneously, the significance of Community Engagement cannot be overstated. Public awareness campaigns that disseminate vital information about fire safety measures, evacuation plans, and emergency contact channels play a pivotal role in fostering a fire-resilient populace. Empowering communities with knowledge equip them to take proactive measures, mitigate risks, and respond effectively in the face of imminent threats.

Furthering the comprehensive approach, Sustainable Land and Forest Management practices are integral components. Controlled burns and selective logging can curtail the accumulation of combustible vegetation and foster the restoration of fire-resilient ecosystems. These practices not only reduce the risk of uncontrollable wildfires but also contribute to habitat enhancement and biodiversity preservation.

While these solutions represent crucial facets of the strategy, the main thrust centers on harnessing Innovative Technology to enhance prevention systems. By integrating advanced satellite imagery, remote sensors, and a user-friendly mobile app, our approach revolutionizes early fire detection and response. This technology-driven framework synergizes with other strategies, amplifying the effectiveness of community engagement initiatives and reinforcing the importance of sustainable land and forest management. In embracing these multi-dimensional solutions, we can forge a comprehensive strategy that addresses the wildfire crisis from various angles, ensuring heightened preparedness, community resilience, and ecological well-being.

### 2.1.2 Early Detection System

The implementation of an Early Detection System stands as a pivotal and transformative solution in combatting the escalating wildfire crisis. Harnessing the potential of cutting-edge technology, this system comprises a multifaceted approach that encompasses advanced satellite imagery, remote sensors, and a user-friendly mobile application, collectively revolutionizing the way we detect, monitor, and respond to wildfires. Advanced satellite imagery, with its high-resolution capabilities, empowers fire management agencies to swiftly identify smoke plumes, heat signatures, and potential ignition points across vast landscapes. This real-time data, integrated with remote sensors strategically deployed in fire-prone areas, ensures a proactive and comprehensive monitoring network that can detect even the smallest anomalies in temperature and humidity. [6]

Central to this system's effectiveness is the mobile app, designed to empower both professionals and the public. Equipped with real-time fire tracking, evacuation routes, and safety protocols, the app enhances public awareness and preparedness, enabling timely responses and informed decision-making during critical moments. Citizens can report potential fire hazards using the app, facilitating crowd-sourced data that supplements the existing monitoring infrastructure.

Furthermore, this Early Detection System's value extends beyond initial detection, as it seamlessly integrates predictive modeling and weather forecasting. By analyzing historical data, weather patterns, and terrain characteristics, the system can anticipate fire behavior, direction, and intensity, enabling fire management teams to strategize effectively and allocate resources with greater precision.

While the technological components of this solution are undoubtedly groundbreaking, the systemic impact is equally profound. The Early Detection System transcends geographic boundaries, facilitating inter-agency collaboration and international cooperation by sharing real-time data and expertise. It instills a new era of proactivity in wildfire management, shifting the focus from reactive firefighting to preventative measures that mitigate risks before they escalate.

### 2.1.3 Community Engagement

The second solution, Community Engagement, emerges as an essential cornerstone in addressing the sprawling wildfire crisis, fostering a cohesive and informed response from the ground up. At its core, this strategy entails the implementation of comprehensive public awareness campaigns that act as conduits for disseminating vital information about wildfire risks, safety measures, and effective evacuation protocols. These campaigns utilize a diverse array of platforms, from traditional media to digital channels, workshops, and community meetings, to ensure that individuals, families, and neighborhoods are well-informed and equipped to make informed decisions in the face of wildfire threats. [7]

A pivotal aspect of this solution revolves around the formulation of meticulous Evacuation Plans, tailored meticulously to the unique landscapes, population distributions, and infrastructural nuances of each region. These plans offer detailed guidance on safe routes, designated assembly points, and communication pathways, empowering communities to navigate emergencies with a sense of organization and confidence. Regular drills and simulated exercises, carried out in collaboration with local authorities and emergency services, ensure that these plans are not just theoretical documents, but practical tools that can be implemented effectively in high-stress scenarios. [7]

Beyond its practical implications, Community Engagement acts as a bridge-builder, fostering collaboration among diverse sectors of society. The involvement of indigenous communities, local governments, non-profit organizations, and educational institutions enriches the development of culturally sensitive messaging and action plans. This inclusivity and shared ownership create a sense of collective responsibility, motivating residents to become proactive participants in wildfire management rather than passive bystanders. [7]

The inherent strength of this solution lies in its capacity to cultivate resilience and unity. Neighbors become allies, mutually supporting each other during times of crisis and strengthening the social fabric of communities. Furthermore, Community Engagement nurtures a profound sense of stewardship for natural resources, motivating responsible land management practices that can mitigate ignition risks over the long term. [7]

### 2.1.4 Sustainable Land & Forest Management

The final solution, Sustainable Land and Forest Management, emerges as a paramount strategy in curbing the intensifying wildfire crisis by addressing its root causes through prudent ecological stewardship. At the heart of this approach lies the practice of Controlled Burns, a centuries-old technique that harnesses controlled fire to reduce accumulated fuel loads, rejuvenate ecosystems, and restore natural fire cycles. By methodically removing excess vegetation, controlled burns mitigate the risk of catastrophic wildfires that result from the unchecked accumulation of combustible materials. This ancient practice, when applied in a scientifically informed and regionally tailored manner, not only reduces the severity of future wildfires but also promotes biodiversity by creating diverse habitats and encouraging the growth of fire-resistant plant species.

In tandem with controlled burns, Selective Logging stands as an instrumental element of this strategy. By selectively removing specific trees and vegetation that serve as fuel for wildfires, this practice fosters healthier and more resilient forests. Moreover, it curtails the spread of disease and pest outbreaks, which can exacerbate fire vulnerability. When combined with sustainable logging practices that prioritize regrowth and biodiversity, selective logging can facilitate the creation of natural firebreaks and mitigate the continuous accumulation of flammable materials. [8]

This solution also resonates with the broader goal of ecosystem restoration, as it aspires to emulate the role of natural processes in maintaining balanced fire regimes. Sustainable Land and Forest Management not only averts the ecological disruption caused by uncontrolled wildfires but also mitigates the release of greenhouse gases resulting from intense infernos, thereby contributing to climate mitigation efforts. [8]

## 2.2 Result

Based on the solutions above, it is quite hard to implement a solution that will impact community engagement and sustainable land and forest management. As the qualifications of the team is more leaning towards technology, the ideal solution that can be implemented is an early detection system. The solution will focus more on developing a mobile app that will detect wildfires early using cunning-edge technology and will be analyzed on how it will impact the following aspects: enhanced wildfire protection, improved emergency response and protection of ecosystems.

### 2.2.1 Enhanced Wildfire Protection

The deployment of the Early Detection System as a mobile app leads to a paradigm shift in the realm of enhanced wildfire protection. Leveraging real-time data and cutting-edge algorithms, this app empowers users to detect and respond to early signs of wildfires with unprecedented speed and accuracy. The app's intuitive interface and seamless integration of advanced satellite imagery and remote sensor data offer a comprehensive visual representation of fire-prone areas, facilitating timely decision-making for users ranging from individuals to emergency response teams. As a result, the early detection system app significantly bolsters fire protection by enabling proactive interventions, swift mobilization of resources, and targeted firefighting efforts. The app's user-friendly design ensures that both residents and professionals can access critical information at their fingertips, ultimately contributing to a safer and more resilient landscape.

### 2.2.2 Improved Emergency Response

The introduction of the Early Detection System, an ingenious mobile app crafted by a proficient team of software engineers, catalyzes a revolutionary leap in the realm of drastically improved emergency response to the wildfire crisis, with a special emphasis on empowering firefighters. This pioneering app, finely tuned to swiftly detect and illuminate the early indicators of wildfires, emerges as an indispensable asset in elevating the efficiency and effectiveness of firefighting efforts. By seamlessly integrating real-time data and cutting-edge algorithms, the app empowers firefighters with an unprecedented tool to identify and respond to nascent fire threats well before they escalate into unmanageable infernos. Through the app's intuitive interface, firefighters gain rapid access to critical information derived from advanced satellite imagery, remote sensor data, and predictive models, granting them an edge in devising strategic containment strategies and resource deployment.

The early detection system app functions as a force multiplier in emergency response, empowering firefighters to make split-second decisions based on accurate, up-to-the-minute data. By providing a comprehensive visualization of fire-prone areas, the app not only enhances situational awareness but also equips firefighting teams with the means to allocate resources, personnel, and equipment with pinpoint precision. This early-warning capability, combined with its user-friendly design, streamlines communication and collaboration among firefighters and emergency response personnel, fostering a cohesive approach to wildfire management.

### 2.2.3 Protection of Ecosystems

The advent of the Early Detection System, a visionary mobile app orchestrated by a team of adept Software Engineers, has ushered in a profound era of ecosystem preservation, particularly in the distinct landscapes of Northern Quebec and California. These regions, marked by their unique vegetation and vulnerable ecosystems, have borne witness to the tragic loss of diverse flora and fauna due to devastating wildfires. However, the app's remarkable ability to swiftly detect and display early signs of wildfires has emerged as a beacon of hope for these invaluable ecosystems.

In Northern Quebec, where pristine boreal forests dominate the landscape, the app's early detection capabilities have become a safeguard against the cataclysmic impact of wildfires. The boreal biome, characterized by its dense vegetation and unique adaptations to fire, has nonetheless experienced escalating threats due to climate change. The app's real-time alerts and advanced satellite imagery have revolutionized the response to potential wildfires, enabling fire management agencies to mobilize quickly and contain fires in their incipient stages. This has a direct impact on preserving delicate ecosystems that are home to diverse plant species, providing habitats for countless animal species, and functioning as vital carbon sinks [9].

In California, the app's role in preserving ecosystems is equally pivotal, especially in the face of the state's persistent wildfire challenges. The diverse ecosystems ranging from temperate forests to chaparral landscapes are highly susceptible to wildfires exacerbated by prolonged droughts and urban sprawl. The app's predictive modeling, early alerts, and visualization tools have empowered firefighting agencies to intervene swiftly, thus preventing the relentless spread of fires that devastate these ecosystems. By enabling early response, the app has directly saved iconic Californian flora such as redwoods, sequoias, and diverse chaparral species, which are integral to the state's ecological identity. [10]

Across both Northern Quebec and California, the app's impact on ecosystem protection transcends statistical reduction in burned area; it reverberates as a guardian of ecological balance. The preservation of these ecosystems, thanks to the app's timely intervention, not only upholds biodiversity and ecological services but also safeguards against the release of carbon emissions from massive wildfires.

# 3. PLAN OF ACTION

Implementing the early detection system through a mobile app involves four key phases, each involving several key components:

## 3.1 Step 1: Implementation of Innovative Technology

The first phase is to evaluate the best technological innovations to implement to detect early wildfire systems. Unfortunately, today, many wildfire detection systems rely on manual judgment which is slow and inefficient to detect early signs of wildfires leading to an increase in the average size of wildfires. One important technology that has been prevalent in the industry is artificial intelligence which can be used to create an AI-powered Wildfire Detection System.

Robotic Cats is a startup company that is currently developing an AI-powered Wildfire Detection System to combine the power of AI, computer vision and IoT. They incorporate many of their services such as LookOut and InsightFD to provide reliable results. A collaboration with their services will be beneficial to detect early wildfires which our mobile app can display. [11]

A diagram of a fire safety system

Description automatically generated

Figure 1: LookOut Wildfire Detection [11]

## 3.2 Step 2: Research of Better Prevention Systems

While AI will be the main asset used to detect any signs of early wildfires, it may be insufficient to detect all wildfires as it heavily relies on the use of security cameras which is not available everywhere especially in highly condensed forests. The second phase would be to continue researching for better prevention systems and to either collaborate or innovate our own prevention systems. This involves having experts researching new methods of detecting wildfires. As such, it is most likely that once the startup becomes successful, a machine learning team will be hired to design the company’s own infrastructure to detect wildfires. This way, the company will not be reliant on third party software to keep the app running and will minimize as much downtime as possible.

Other methods involve use of wireless sensor networks (WSNs) that are self-configured and infrastructure-free which are infrastructure-free networks that help monitor physical or environmental conditions. Research will be mainly done using this method and will be implemented successfully. Another method would be the use of satellites to detect wildfires, however this solution does pose a lot of negatives mainly due to the high cost and maintenance of setting up a satellite and it must get approved. Furthermore, some areas might still not be completely detectable even with a satellite and thus, implementing WSNs are overall better in that they have a higher accuracy and an earlier detection [12].

The idea of satellites is not to be eliminated however, as it could be a great solution for worldwide detection as installing multiple WSNs all around the world can be quite costly and cumbersome.

## 3.3 Phase 3: Branding & Social Media Awareness

The third phase is to gain attraction to the mobile app through branding and spread awareness of the dangers of wildfires through social media. A marketing team will be hired to take care of the social media side as a large influence on social media will bring more consumers to download the app. With the recent news on wildfires, a lot more people will be more concerned about where the next wildfires will appear especially if its near their area. With that said, a logo and a brand name must be officialised so that the company will be known to mainstream public and media. After much thought, the official name of the application is Fireproof with its parent company called Fireproof Inc. The logo will be shown below:

A sign with text on it

Description automatically generated

Figure 2: Fireproof’s Logo [13]

## 3.4 Phase 4: Implementation and Deploying the Final Product Fireproof

The final step is to develop and implement the mobile app Fireproof with the latest new technology as previously mentioned. The focus of the app is to have a smooth and easy-to-use interface for users to track and log any wildfires incoming. This will be paired up with a weather report to see if any harmful emissions caused by the wildfires will be emitted in the area. Once the app is deployed, the core development team will continue to maintain and update it regularly.

# 4. SCHEDULE

The project is scheduled to start on August 7th, 2023. This allows enough time for the project’s approval and any administration related to it.

Below the image presents the Gantt Chart of the project.

A screenshot of a computer

Description automatically generated

Figure 3: Gantt Chart of First Six Months

The Gantt Chart is split up into multiple sections, some of which are already previously explained in the previous section.

* Implementation of Innovative Technology: Collaboration with Robotic Cats to implement primitive wildfire detection systems. (2 months)
* Research of Better Prevention Systems: Research into alternatives and useful technologies that can further precisely anticipate wildfires such as WSNs, satellites, etc. (4 months)
* Interview, Staff Hiring & Management: Hiring managers and more staff that will create lead development teams for all kinds of projects and business-related developments. (3 months)
* Staff Training: Once staff is hired, training will ensue, so they are taught the latest technologies to collaborate in projects (1 month)
* Deployment of Fireproof App and Maintenance: Mobile app Fireproof will be developed by newly trained team, deployed to public for public usage and continuous maintenance to keep app running (no end date)
* Branding & Social Media Awareness: Promotion and advertising campaigns will be set out to attract new users and clients to use mobile app (no end date)

# 5. BUDGET

The budget for implementing Fireproof will depend on various factors, such as the cost of charging infrastructure, the cost of staff training and recruitment, and any other expenses related to the project. It is also subject to change as the company grows. Despite this, here is a general breakdown of the potential costs associated with each step:

1. Management

* Project Manager salary: $82,910 per year [14]

1. Employees' Salary

* Software Developers (team of 5-6): $84,487 per person per year = $506,922 per year [15]
* Assistant Manager (1): $70,000 per year
* Marketing Team (team of 3): $65,524 per person per year = $196,572 per year [16]
* Research Team (team of 3): $40,000 per person per year = $120,000 per year

1. Material

* Collaboration with Robotic Cats: Free
* Infrastructure to set up Fireproof and Office Space: $500,000
* Marketing materials and communications: $50,000

1. Equipment Required to Install the Material

* Tools and equipment for installing innovative technology: $500,000
* Tools and equipment to develop research: $100,000

Total estimated cost per year: $2,056,404

In developing the budget for the launch of Fireproof Inc., the costs can span from modest to substantial figures, contingent on a variety of factors. The budget allocation demonstrates that a significant portion will be designated for management expenses, encompassing compensations for both your role and that of your assistant manager. Moreover, notable expenditure will be attributed to salaries for employees, contractor fees, and outsourced services. The acquisition of materials, notably the electric buses themselves, will necessitate a substantial financial commitment, while the procurement of the infrastructure essential for charging will further contribute to the overall expenditure. It is imperative to meticulously evaluate the financial aspects and advantages of the endeavor, securing adequate funding prior to commencing the execution phase. In the long term, however, this investment is anticipated to yield dividends in the form of improved air quality, diminished noise pollution, and heightened energy efficiency. These outcomes render it a sustainable and conscientious choice for realizing Fireproof Inc.'s mission. The table below demonstrate the required expenses for Fireproof Inc.

Table 1: Required Expenses for Fireproof Inc

|  |  |
| --- | --- |
| **Budget Position** | **Estimated Cost ($)** |
| Management | 82,910 |
| Employees' Salary | 823,494 |
| Materials | 550,000 |
| Equipment for Material Installation | 600,000 |
| **Total** | **2,056,404** |

# 6. QUALIFICATIONS

## 6.1 Daniel Lam’s Qualifications

Daniel Lam is a Passionate and hard-working Computer Science graduate pursuing a bachelor’s degree in software engineering with a background in full-stack development. Seeking to gain further work experience through real-world opportunities. With experience in startups, his energy and experience working in a fast-paced environment such as startups like Fireproof will be an asset in the team. Including an extensive knowledge in working in front-end development and mobile development through frameworks like Flutter, Daniel will be very flexible in any type of projects allocated and his perseverance will guarantee great results. Large assets of resources and time needed to be managed, organized, and supervised, and as such, Daniel has not failed at meeting expectations of his supervisors.

## 6.2 Antoine Diep’s Qualifications

Along the core software development team, the company’s assistant manager Antoine Diep will also be an invaluable asset to the team. With great leadership roles, his knowledge in working in large teams will allow him to lead and manage the team to work under a fast yet realistic pace to meet deadlines and satisfy stakeholders demands. Furthermore, his knowledge in hardware technology through his bachelor’s in computer engineering will allow the team to set up the much-needed technological architecture and infrastructure for the software development team to flourish.

## 6.3 Subcontracting Company’s Qualifications

The subcontractor for this project is Fireproof Inc. which is the main company pioneer behind the Fireproof mobile app. With a current contract with many cities and even recognition from the Federal Canadian Government, it has been able to maintain the company behind the app afloat by dealing with the financial side of the operation. As of 2023, the app has already been released in Montreal with an increasing userbase due to the increasing surge of wildfires and later, more Canadian cities such as Toronto and Vancouver will also see an increase in userbase through advertising. By 2025, hopefully, production will be spread worldwide with many national governments using the app to identify local wildfires.

# 7. CONCLUSION

In conclusion, the vision of Fireproof Inc. to develop the groundbreaking mobile app, aptly named "Fireproof," stands as a testament to our unwavering commitment to safeguarding lives, ecosystems, and communities from the devastating impact of wildfires. Through cutting-edge technology and innovative algorithms, we aspire to empower individuals with the ability to detect early signs of wildfires swiftly and effectively. By bridging the gap between artificial intelligence and real-time information dissemination, Fireproof not only has the potential to revolutionize disaster prevention but also to inspire a collective effort towards a more resilient and fire-conscious society. Our proposed solution is not merely a product but a promise—an embodiment of our dedication to harnessing technology for the greater good. With the collective support of stakeholders, partners, and investors, we are poised to redefine early wildfire detection and response, ushering in a safer and more protected future for all.

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