Software Requirements Specification

For

< SafeSpot – A Smart Tracking Device >

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1	**INTRODUCTION**	
	1.1 Purpose of the Project	Safespot sets out to revolutionize the tracking device landscape by integrating user-friendly emergency response with convenient accessibility. Imagine pressing an SOS button and your loved ones instantly receiving your live location. No complex apps here – a simple message retrieves your whereabouts. This compact, power-efficient device attaches to anything, empowering you to personalize alerts and settings for ultimate peace of mind, whether ensuring personal safety, safeguarding valuables, or navigating unfamiliar environments.
	1.2 Target Beneficiary	• Children and vulnerable adults • Commuters and travelers • Animal shelters and pet owners Safespot's versatility extends beyond these specific examples, offering potential benefits to individuals and organizations across various sectors, where personal safety, asset security, and real-time location awareness are crucial.
	1.3 Project Scope	Safespot aims to deliver peace of mind through a smart tracking device with emergency response. We'll develop the hardware, firmware, and optional user interface for real-time location tracking, SOS alerts with live location sharing, and message-based accessibility. Rigorous testing ensures reliability and user-friendliness. Documentation, training materials, and marketing strategies support launch. Excluded are a dedicated app, third-party integrations, and advanced features like geofencing. Success hinges on a functional prototype, positive user feedback, and achieving sales targets. We'll adapt to changing requirements through a defined change management process, keeping stakeholders informed.
	1.4 References	[1] A. Falcon-Caro and S. Sanei, "Cooperative Networking Approach to Assisting Blinds in a Crowd Using Air Trackers," 2022 4th International Conference on Emerging Trends in Electrical, Electronic and Communications Engineering (ELECOM), Mauritius,2022,pp.1-5,doi: 10.1109/ELECOM54934.2022.9965262. [2] T. Roth, F. Freyer, M. Hollick and J. Classen, "AirTag of the Clones: Shenanigans with Liberated Item Finders," 2022 IEEE Security and Privacy Workshops (SPW), San Francisco, CA, USA, 2022, pp. 301-311, doi: 10.1109/SPW54247.2022.9833881.
2	**PROJECT DESCRIPTION**	
	2.1 Reference Algorithm	1. The NEO 6M GPS Module constantly tracks the Longitude and Latitude. 2. The SIM800L GSM Module establishes a cellular connection
	2.2 Characteristic of Data	No Data Set has been used in this system.
	2.3 SWOT Analysis	**Strengths:** **Unique Value Proposition:** Combines real-time tracking, integrated emergency response, and message-based accessibility, addressing a gap in existing solutions. **Affordability and Portability:** Compact design and low power consumption cater to diverse user needs and budgets. **Ease of Use:** Message-based access eliminates complex applications, appealing to users of all technical backgrounds. **Weakness:** **New Entrant:** Faces competition from established tracking device companies and potential imitators. **Limited Features:** Initial version may lack advanced features offered by competitors (e.g., geofencing, activity tracking).

		Reliance on Cellular Network: Emergency response may be hampered in areas with poor signal quality. **Opportunity:** **Growing Market:** Rising demand for personal safety and asset security solutions creates a vast potential market. **Partnerships:** Collaborations with security companies, NGOs, or service providers can expand reach and impact. **Technological Advancements:** Integration with emerging technologies (e.g., LPWAN) can improve functionality and efficiency. **Threats:** **Regulations and Standards:** Stringent regulations on data privacy and safety could increase development costs and compliance burden. **Security Breaches:** Cyberattacks or data breaches could damage user trust and reputation. **Economic Downturn:** Reduced consumer spending could impact sales, especially in the non-essential category.
	2.4 Project Features	**Real-time Location Tracking:** Continuously acquire current location (latitude, longitude, altitude) using GPS and provide access through: **Message-based retrieval:** User sends an SMS, receives reply with current location. Optional mobile app: Visualize location on a map, access historical data. **Integrated Emergency Response:** **Send SMS alerts:** Pre-configured messages containing live location to designated emergency contacts. **Optional:** Initiate call to emergency services (depending on regulations). Send confirmation message to user acknowledging action. **User-Friendly Access:** Message-based interaction eliminates need for complex apps.

2.5 User Classes and Characteristics	N/A	
2.6 Design and Implementation Constraints	N/A	
2.7 Design diagrams	N/A	
2.8 Assumption and Dependencies	**Assumptions:** **Market Demand:** There is a sufficient market demand for a smart tracking device with integrated emergency response, justifying the project's investment. **Technology Availability:** Necessary hardware components, communication networks, and development tools will be readily available at reasonable costs. **User Willingness to Adopt:** Users will be receptive to adopting a new tracking device and comfortable sharing location data for emergency response purposes. **Regulatory Compliance:** The project can comply with all relevant regulations regarding data privacy, safety standards, and wireless communication protocols. **Dependencies:** **Hardware Component Availability:** The project relies on the timely availability and reliable functionality of key hardware components like GPS modules, GSM modules, microcontrollers, and batteries. **Cellular Network Coverage:** Emergency response functionality depends on reliable cellular network coverage in the areas where the device will be used. **User Education and Awareness:** User adoption hinges on effective marketing and educational efforts to raise awareness about the device's benefits and functionalities. **Compliance with Regulations:** Obtaining necessary certifications and approvals from regulatory bodies is crucial for market launch and continued operation.	

3	**SYSTEM REQUIREMENTS**	
	3.1 User Interface	We are using Arduino IDE to write the code. Rest the location can be accessed by simply sending a text with specific command.
	3.2 Software Interface	The Arduino Nano board will be used and the code will be compiled and uploaded using Arduino IDE.
	3.3 Database Interface	No Database will be used in this Project.
	3.4 Protocols	The Arduino Nano board will be connected to a ESP8266 Wi-Fi Module that will help in establishing a connection between an android app and the Arduino Nano microcontroller.

4	**NON-FUNCTIONAL REQUIREMENTS**	
	4.1 Performance requirements	
	4.2 Security requirements	No such requirements.
	4.3 Software Quality Attributes	**Adaptability:** The device can be installed in any home anywhere around the world. **Correctness:** The system uses LDR Module that provides accurate data. **Flexibility:** It can be installed anywhere in the world without Ny changes in the code. **Interoperability:** It directly connects to an android device. **Maintainability:** No battery change is required. **Reliability:** It is very reliable.

5	Other Requirements	No Other Requirements.
Appendix A: Glossary		N/A
Appendix B: Analysis Model		N/A
Appendix C: Issues List		N/A