Project Design Phase-I
Proposed Solution Template

Date	24 September 2022
Team ID	PNT2022TMID43259
Project Name	IOT Based Safety Gadget for Child Safety Monitoring and Notification
Maximum Marks	2 Marks

Proposed Solution Template:

S. No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Child safety is the foremost common issue emerging around the world. Parents terrify to send their kids to schools located at longer distances due to the behaviour of unexpected strangers. For every 40 seconds, a child is missing in this world which is a major drawback of the society. Parents are responsible for taking care of their own children as the children are immature about what happens to them. Nowadays, due to economic condition and aims to focus on their child's future and career, parents are forced to crave for money. Hence, it becomes difficult for them to cling on to their children all the time. This problem must be rectified as the safety of children is very important.
2.	Idea / Solution description	The idea of this proposal is to design and implement the "Child Safety Wearable Device" for the safety of the children. According to this proposal, parents can monitor the security of their children at any

		time. **Panic button:** When a child feels threatened in any situation, he/she can press the panic button, which sends an automatic message and a phone call to the parent or guardian, as well as a precise live GPS location. Panic buttons are pushbuttons which can be pressed by a person in danger. It allows users to ask for help directly. The actuation of a panic button immediately leads to an alarm and notification as explained above. It enables children to attract the attention of their parents. It is a security device. **Heart beat sensor:** The heartbeat sensor detects the child's heart rate and delivers it to the guardian on a regular basis. Heart rate is a standard vital sign and has become a routine measurement in healthcare. The monitoring of this signal provides information about the physiologic status of the child. Periodic update of heartbeat is done through the GSM module to deliver frequent updates to the caregiver via SMS. **Fall Detection and Alert:** When the user falls, there will be a large spike in acceleration, which will be detected and the live GPS location will be retrieved using the GPS module via serial communication, process the GPS data, and send the live location coordinates to the caretaker through SMS, indicating the possibility of the user falling. In addition, an automatic call will be made to the caretaker.

		Temperature Sensor: A temperature sensor is a device used to measure temperature. In our case, it is used to determine the temperature of the child's immediate environment. It uses the GSM module to deliver frequent updates to the caregiver via SMS. **Battery:** A battery is a device that is able to store electrical energy in the form of chemical energy, and convert that energy into electricity. Batteries are used in various things that we use in our house. Batteries are used to power things like remote controls, torches, wall clocks, flashlights, hearing aids, weight scales, etc. **Accelerometer:** An accelerometer is an electronic sensor that measures the acceleration forces acting on an object in order to determine the object's position in space and monitor the object's movement. They are used in many ways, such as in many electronic devices, smartphones, and wearable devices, etc. The data from the accelerometer is analysed using several threshold values if there is any sudden fall movement. The user-supplied parameters, such as height, weight, and degree of activity, are used to adjust the threshold. **GPS:** The GPS stands for Global Positioning System. It is used for several functions. The main functions of GPS are to determine the location (position of the child), navigation (getting from one location to another), tracking (monitoring object or personal

		movement), mapping (creating maps of the world), timing (making it possible to take precise time measurements). **GSM:** The Global System for Mobile Communications module is intended for SMS monitoring. It is used for data security and data transmission. The GSM technology is used which uses mobile stations, base substations, and network systems.This module may be used to perform practically whatever a basic mobile phone can, such as send and receive SMS, text messages, make and receive phone calls, connect to the internet via GPRS, TCP/IP, and so on. When the panic button is touched, a text message is sent to the registered phone, coupled with a phone call and a live GPS location. Periodic updates are delivered to the caretaker through SMS using this module. **Internet of Things (IOT):** Internet of Things (IOT) is the latest technology that connects entire world. It is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-tocomputer interaction. It establishes connectivity (through internet) among the various devices or services or systems in order to little by little make automation development in all areas. Safety is the most wanted power for everyone in today's world. Technology is the best way to solve this problem. That's the reason to develop this project that can act as a rescue device and protect at the

		time of danger.
3.	Novelty / Uniqueness	The novelty of this project is to use Internet Of Things to create a gadget that provides "Smart Child Safety" to protect children, which will be far more effective than current methods in assisting victims. The child safety wearable system acts as a smart device. Child's surroundings can be located with the help of accurate and precise real- time location. Surrounding environment temperature, SOS light along with Distress buzzers are provided in this system .This helps in locating their child and also aids the bystanders to rescue the child. The other main purpose of this project is to use a GSM module to enable SMS communication between the child's wearable and the parent. Parents can text particular phrases such as "LOCATION," "TEMPERATURE","SOS","BUZZ," "UV," and so on, and the wearable device will answer with a text outlining the child's current location, which when pressed will show the child's exact location on Google maps. It also shows the temperature and UV radiation index so that parents can keep an eye on their children's surroundings. Also as a future scope, more power efficient model can be created that holds the battery for a long time.

4.	Social Impact / Customer Satisfaction	This small wearable device can give you much-needed satisfaction and safety regarding your child which every parent desire for. It provides us with the ability to monitor our child's fitness levels, track our child's location with GPS, monitoring whether our child is within limited area or not, notify every movement for us. Best of

		all, most of the devices that allow us to do this are hands free and portable, eliminating the need to take our devices out of our pockets. By using this device we can protect our child from kidnappers and thefts and also we can monitor our child's health condition. This could assist to reduce the number of attacks on children while also making them feel protected and secure. The major goal of this project is to create a device that protects youngsters from risky circumstances while also assisting them in combating them. Also as a future scope, more power efficient model can be created that holds the battery for a longer time. This project eliminates unreliable mode of transmission of sending and receiving messages and helps parents to locate their children when in distress. It assists parents to monitor their children remotely. In case situations happen, notifications will be sent to parents so that actions can be taken. Through this, child safety can be ensured and crime rate will be reduced.

5.	Business Model (Revenue Model)	A business with a large profit margin naturally attracts many manufacturers to do it. Children's watches, even considered a "window" by them, continue to produce a large number of similar inferior products. Nowadays, GPS tracking technology is widely used in personal households and businesses. The GPS tracking market is rapidly growing and has an amazing potential in the future. People are becoming more and more concerned about theirsafety and the safety of their valuables. That's why families are starting to use mobile tracking apps and GPS trackers for their children and other loved
		ones. Companies are also tracking and managing their vehicles, delivery trucks, cargo or employees. According to Global Market Insights, "the vehicle tracking market size was valued at $8 billion in 2015 and is anticipated to exceed $22 billion by 2022." Really, there's no doubt you should start GPS tracking business today!
6.	Scalability of the Solution	The proposed model can be used in each and every house containing small kids. It is helpful for the parents who are playing role as an employee. As it ensures the safety of the children, it would be very much useful for the society. It can be used and monitored from anywhere.