



Chapter One: EML 4551C

1.1 Project Scope

1.1.1 Project Description

The objective of this project is to design a technology allowing human trafficking victims to discretely call for help and relay their location to be rescued by authorities . In 2023, over 2,100 cases of human trafficking were reported in Florida, ranking third amongst U.S. states (CBS 2024). Florida is a hotspot for all types of human trafficking, which mainly includes sex trafficking, labor trafficking, and domestic minor trafficking (Uitts 2023). It is estimated that under two percent of minor trafficking victims are rescued (Miller 2023). The current efforts to rescue human trafficking victims is not sustainable, hence a large market for a product to cause prevention is present.

1.1.2 Key Goals

The primary goal of this project is to design a device that would enable operators to discreetly gather actionable intelligence on potential human traffickers. The device may or may not require human interaction but will not allow traffickers to notice the signal it is relaying.

Additionally, this device should involve a tracking method so that those being trafficked can be rescued. A signal will be relayed to any outside sources that can locate the signal and its location.

The signal should be capable of following the individual to different locations and relaying a position. The device should have a either a continuous beacon or send out discrete signals while being transported or stationary.



This device should be capable of operating in typical environmental conditions in the state of Florida so that it can maintain performance year-round in the major cities throughout the state. The device will be installed in a vehicle interior and therefore will need resistance to higher than ambient temperatures in the summer.

1.1.3 Market

The primary market for this project is the CIA (Central Intelligence Agency) who will be overseeing the creation of the product. Other primary markets for this project are federal law enforcement agencies including the FBI (Federal Bureau of Investigations), DEA (Drug Enforcement Agency), and the U.S. Department of Homeland Security who may also want to use the product or access the designs. The secondary markets for this project include local law enforcement agencies such as county sheriff departments, city police stations, and local first responders who will be using the technology to help rescue human trafficking victims. Another secondary market is legal guardians of minors or residents of Florida who may need to access the product. A further secondary market is private business owners who want to help prevent human trafficking from occurring on their properties. Finally, public transportation hubs, such as bus stops, train stations, shipyards/docks, and airports are a valid market due to the high volume of human trafficking that passes through these areas (Migration Data Portal, 2024).

1.1.4 Assumptions

Each of the assumptions for this project are generally devoted to one of three categories. Firstly, the intersection points at which the developed technology will integrate with existing systems. Secondly, which parties can be expected to understand how to



operate the technology before, during, or after it is needed. Finally, some assumptions must be made to define the expected operating conditions.

Defining integration points with existing systems allows the maximum amount of time to be spent on the aspects of this project that will improve upon current technologies and meet the key goals. For this purpose, it is assumed that first responders have the necessary technology to receive and interpret the devices signals and data.

The developed technology requires user interaction; however, it is not reasonable to expect all users will have the time or ability to train in its use so it is assumed that victims will not have prior training or experience operating the technology. Public knowledge of how the technology operates would make it more likely for traffickers to become aware of it and avoid it so it must be assumed that only first responders and essential personnel will have prior knowledge of how the device operates.

Assumptions related to the technology's operating conditions are based on the potential environmental factors it will face. The device will have a primary operational area covering the state of Florida. As such, it must be assumed that the temperature range that it will face extends from 0 to 50 degrees Celsius. It must also be assumed that the technology will be in dusty and/or humid conditions. Finally, the team assumes the technology will be tested in environments that are the same or very similar to those in which high rates of human trafficking occur.

The device is designed to be deployed as technology either implanted into a vehicle's rear-view mirror, or as a self-contained unit that will replace the rear-view



mirror. Given these factors, it is assumed that up to a week of uninterrupted vehicle access can be obtained for installation.

Finally, the device will be deployed in situations where the people that interact with it may be inherently hostile to its presence, and where its detection can reduce or undermine its effectiveness. Therefore, the device must be able to remain undetected under intense scrutiny.

1.1.5 Stakeholders

The primary stakeholder in this project is the Central Intelligence Agency (CIA), who is contacting us through Joe. Dr. McConomy is our secondary stakeholder, which will assist with advising, communication, and guidance. State Troopers from the Florida Highway Patrol will act as an additional stakeholder, as we will be in contact with Troopers who have experience with cases involving human trafficking. All other areas of law enforcement will be in contact about potential product testing and information. Victims of human trafficking and anyone located in the Florida region have interest in this product. The machine shop and any other parties involved with overseeing the construction of our prototype have an interest in seeing that it is not delayed during manufacturing. Team 503 is interested in that the product created meets all the key goals and customer needs.