AT&T: Our Connected Lives
The Internet-of-Things (IoT)

Design Team 6
The E-Designers
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SECTION 1  EXECUTIVE SUMMARY

We want to design a shock collar that is traceable using a smartphone. You can also set parameters for the collar to warn the dog that it needs to stay within the set boundaries. To warn the dog you will be able to choose to either use audible sounds or vibrations through the collar. The collar will be able to have two ways of sending and receiving signals. The first signal will be to communicate with satellites to get the GPS location of where the collar is located. The second way of communication will be with cellular telephone towers. The collar will send and receive signals the same way a cell phone receives and sends signals.
SECTION 2  INTRODUCTION

2.1  PROJECT OBJECTIVES.
Identify opportunities that leverage real-time connectivity and new and emerging technologies to collect information that can be used for products and systems that benefit our lives.

2.2  PROJECT BACKGROUND.
The Internet of Things (IoT) is a scenario in which objects, animals, or people are provided with unique identifiers and the ability to automatically transfer data over a network without requiring human-to-human or human to computer interaction.

Machine-to-Machine (M2M) solutions wirelessly connect millions of diverse devices to a network, enabling two-way communication. From trucks and turbines to heart monitors and vending machines, M2M allows network ready devices to connect and share reliable real-time data via radio signals. Monitored and managed remotely, M2M automates processes in industries from transportation to healthcare.

2.3  SPONSOR BACKGROUND.
AT&T is a premier communications holding company and one of the most honored companies in the world. Its subsidiaries and affiliates—AT&T operating companies—are the providers of AT&T services in the United States and internationally. With a powerful array of network resources that includes the nation’s fastest and most reliable 4G LTE network, AT&T is a leading provider of wireless, Wi-Fi, high speed Internet, voice and cloud based services. A leader in mobile Internet, AT&T also offers the best wireless coverage worldwide of any U.S. carrier, offering the most wireless phones that work in the most countries. It also offers advanced TV service with the AT&T U-verse® brand. The company’s suite of IP-based business communications services is one of the most advanced in the world.

2.4  PROJECT DESCRIPTION.
The project fits most closely with the pets and animals category. The Connected Collar is meant to be worn by dogs and is a type of smart pet accessories that your pet can wear daily. With the Connected Collar your pets will have a device that can be used to track your pet, moderate where your pet goes, and alert you when your pet goes to abnormal places.
SECTION 3 METHODOLOGY

3.1 Iot SYSTEM AND GOALS.
The system is made of a dog shock collar that is connected to GPS satellites to receive information about where the collar is on a map. This data can then be transmitted over cellular towers to the owner who has a smart phone and can be analyzed using an application. The Connected Collar will work in the same way a cell phone works by sending and receiving signals from cellular towers. Using an application for smart phones, users of the collar will be able to connect to the Connected Collar and control it using the application.

3.2 SYSTEM MODEL.

3.3 BASIC CONCEPTS.
The collar will use signals from satellites to determine the location with coordinates the same way a handheld GPS system works. Those coordinates can then be used to determine if the dog is in the set perimeters that are programmed into the device. Using the application on the smartphone the owner will be able to see how far away the dog is from their smartphone device. The owner can decide on their phone if they want to alert the dog to train the dog to come back to the owner or if the dog is at a manageable distance away to leave the dog alone. The owner will also be able to determine where the dog is if the dog is in an unknown location.
3.4 SYSTEM CONTROL.
Each collar will have a unique Identification number that can be used to communicate with the collar. This will help the owner of the collar to be able to manage multiple collars and control multiple pets at one time. A special application will be used so that the owner can manage the settings of the collar. Using the identification numbers for each collar, the owner will be able to access an account for each pet.

3.5 DAY-IN-THE-LIFE.
The Shock Training Collar would initially be developed as a collar that provides the GPS coordinates of the dog along with transmitting to your smartphone through the use of cellular towers. The product can be used as an electronic fence surrounding your house to keep boundaries for the pet. It can also be used to find the dog when it runs off or is in an unknown location. As the product continues to develop in the future it could offer even more functions. Such as learning the patterns of your pet and sending a message automatically to the owner’s cell phone to alert the owner of abnormal behavior. It could even be used after further development for search and rescue dogs. It could be used so that each dog would not have a person following the dog but the training would guide the dog and pick up when the dog starts to find something that is helpful to the search and rescue teams.

3.6 DEVELOPMENT AND MARKETING.
For development three companies that would be able to implement the product would be Tri-Tronics, SportDog, and PetSafe. They already produce shock training collars for dogs to be able to assist the owners in training the dogs. Partnering with these companies would mean that the credibility of the product is already there. Tri-Tronics has been in the industry for thirty years producing collars with the company’s motto “Making it easier for dogs to learn.” Tri-Tronics already has a market base and customers willing to buy their products. SportDog is a brand used mainly for hunting dogs but also sells collars to the general homeowners. SportDog makes quality collars that have lifetime warranties to back up their products’ quality. PetSafe is the brand that is found at Petco for the typical pet owner. PetSafe offers a collar that is waterproof and would be available to the general dog owner. If AT&T partnered with these three companies it would be a diverse market with each company focusing on a target market. Partnering with these three companies would make it easy to market the product and with the reliability of each of these companies consumers would be willing to buy the product. Harnessing the technologies that each of these companies has already developed and adding the functions of a cellular device would make a collar that is superior in keeping your pet safe and trained.
To further implement the training shock collar AT&T could partner with existing companies who already make training shock collars. For example SportDog makes shock collars and is already a well-known brand in the industry. Challenging the company to make collars connected to GPS satellites and also send signals to cellular towers. With the combined experience of AT&T helping to make the collar connected to the cellular towers and SportDog helping to provide a quality shock training collar, both companies would benefit. Marketing this training collar would be as simple as promoting in commercials the idea of “connecting your pets to the family.” Families already spend the money to buy their kids cell phones why not spend the money to connect the pets to the family. The collar can be marketed as a collar for keeping pets safe from roads by keeping them in the perimeters of the homeowners’ yard. The Collar also can be used to find your pet if the pet runs off. Through the GPS tracking it will be as simple as using a smartphone to follow the location of the pet on a map function.
SECTION 5 SUMMARY

The Connected Training Collar can be used for homeowners who have space for their pets to run around but want to moderate where the pet is allowed to explore. The Collar will be able to have boundaries programmed into it so that it can act like an electric fence for the pet and keep the pet safe from roads, or going on other people’s property. Some of the limitations will be that the collar will need to be connected to the Cellular towers so the collar will need to be used in places that have service. Some of the weaknesses for the product will be that it needs to be connected just like a phone needs connected to the network so a monthly charge will need to be added to the consumers phone bill. Some ways that this could be overcome would be that it could be discounted for users who already use AT&T as their carrier for their cell phones. Some of the strengths of this method will be that the dog will not be able to run out of range of what is normally used as a remote since the collar is connected to cell towers. This expands the range that the owner can control their pets.
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