



Smart Personal Protection

How The Next Generation of Smart Devices Will Enable EVERYWHERE SECURITY™.

WHITE PAPER

Author

Ryan McManus

May 2015

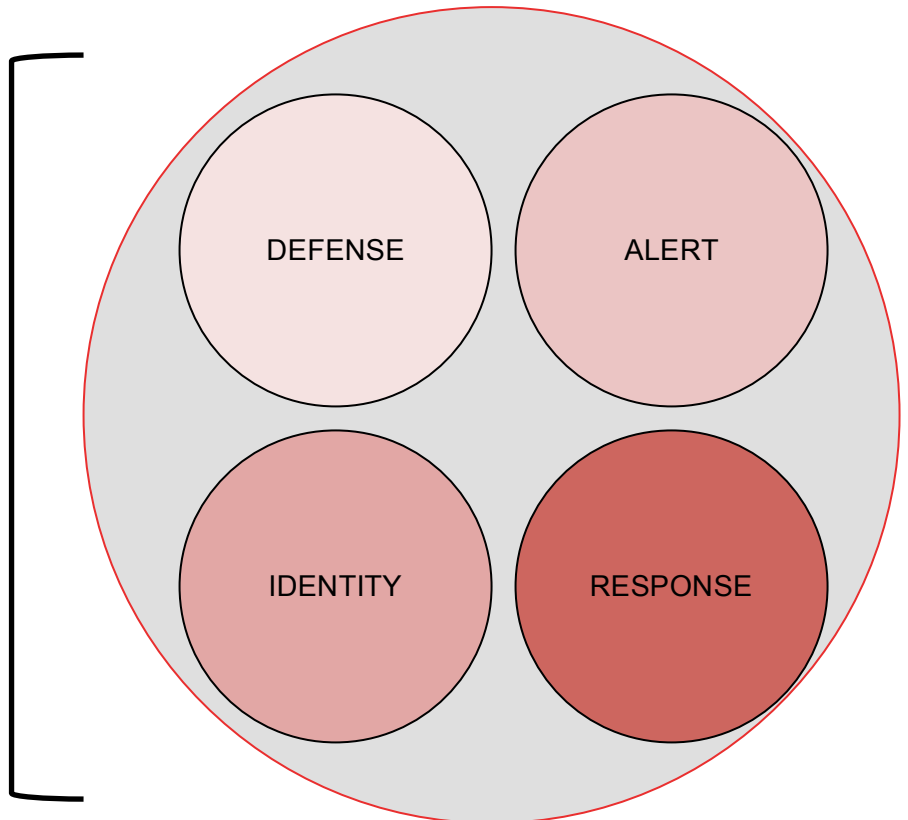
Introduction

Smart personal protection connects consumer mobile technology with security and self-defense. Through technology advancements that leverage consumer-adopted standards, a new breed of smart hardware has emerged to offer safety, security, & and physical health benefits. Smart phone technologies have embraced third-party development of products, such as apps and Bluetooth connected devices. Many organizations have forecasted explosive adoption of Internet of Things (IoT) technologies.

“Internet of Things” has become the defacto name for a wide variety of devices that connect to the Internet. Since many have covered this topic, we will not rehash the public information about the billions of devices that will be connecting to the Internet in the coming years. This white paper addresses a segment of smart devices that **are** focused **on** providing protection and security services to consumers. **Smart Personal Protection** is a new classification for internet-connected devices that combine self-defense (pepper spray), security (central station monitoring), evidence collection (camera), and response (profile push-to-911).

There is a revolution taking place in technology and business. Intelligent hardware is replacing legacy products and the once impossible is a reality. App marketplaces, the commoditization of microcomputers, rapid-prototyping hardware, and crowdfunding have emerged in parallel to attract innovators, investors, and customers. Technology development cycles have accelerated and created opportunities to establish new markets. Startups are embracing lean methodologies to innovate with a consumer focus. Not to be outdone, technology heavyweights from Apple to Intel are competing to dominate a corner of the market and establish platform technologies that will become standards.

SMART PERSONAL PROTECTION FEATURES



Why Smart Personal Protection

"One in three US households rent, which is a largely untapped market today. We also believe younger consumers, who tend to be more mobile, would be interested in basic home security offerings at lower price points that they can take with them as they move."

Michael Wolf

Chief Analyst at NextMarket Insights. May 20, 2014

Smart Personal Protection was developed to satisfy a need in the market that is not covered by home security or self-defense products. By combining multiple features into a single solution, Smart Personal Protection presents an opportunity for home security service providers to expand their service offerings outside of the home. EVERYWHERE SECURITY™™ is an advantage attained by consumers that choose to carry a smart personal protection device.

One of the value propositions of Smart Personal Protection for consumers is that it provides a complete defense solution by combining defense, alert, identification, and response. Existing self-defense solutions require consumers to make trade-offs on the features that they believe are the most important. Beyond lethal vs. non-lethal personal protection, consumers are presented with "single action" solutions. One of the causes of trade-offs is human limitation during a traumatic event. Individuals that experience a personal safety threat instinctively have a fight or flight response. By eliminating self-defense trade-offs with automation, individuals are able to initiate a single self-defense action that provides feature rich protection.

Defense: The Importance of Protecting Yourself

Providing consumers with an easy-to-use self-defense solution requires part innovation and feature enhancement of existing offerings. Defender 24/7 is the first Smart Personal Protection system and it utilizes pepper spray as a self-defense feature while incorporating photo-capture and mobile security. Pepper spray has proven to be effective at delivering less-than-lethal force that effectively disables an individual and their senses. Advocates for pepper spray, such as the American Security Institute, recommend that pepper spray be carried on a key chain. The benefits of this are that pepper spray on your key chain is always accessible.

Alert: The importance of attracting attention to the situation

Attracting the attention to those close to a crime scene provides both a distraction and can disorient an attacker. When developing the features of Defender 24/7, we utilized a multi-function speaker. One speaker provides an audible notification informing the user that an alert has been triggered. A separate speaker acts as a siren, drawing attention to the scene.

Identification: The importance of capturing evidence

Studies have consistently shown that stress can dramatically negate the accuracy of an eyewitness's memory. Memory degrades over time. Eyewitness testimony is often the most effective piece of evidence used in criminal prosecutions. Jurors place a lot of importance on eyewitness testimony.

An eyewitness's memory is also challenged in court and many cases have been overturned after the validity of testimony was questioned. Often the victim is attacked and questioned, adding to the trauma that they have to endure. Eyewitness memory is subject to the "forgetting curve". The "forgetting curve" theorizes that a victim's memory can drop off steeply within 20 minutes of an incident. As time passes, memory/recall continues to decline exponentially.

Identification within a smart personal protection device serves a dual purpose and benefit.

1. **Capturing** the photo of an attacker provides a visual aid for law enforcement that will increase the likelihood of apprehending the assailant.
2. **Storing** the photo in the cloud will serve as evidence for prosecution of an assailant.

Identification is a significant advancement in personal protection, and Defender 24/7 will be the first consumer product to incorporate visual identification as part of the solution.

Response: The importance of safety and medical response

First responders for safety and medical alerts provide critical support services. Smart Personal Protection is enhanced by the connection to law enforcement. Response is not a common feature of self-defense devices. Consumer solutions for response are more common in PERS (personal emergency response service) devices that provide medical response. Defender 24/7 combines both medical and safety alerts into a single device, with separate triggers for each response type.

Smart Personal Protection provides response by utilizing a central station or alarm monitoring center. Central stations are like call centers, but they specialize in handling monitoring and responding to alarms. Central stations, such as the Defender 24/7 Monitoring Center, receive inbound notifications from alarms and make outbound calls to 911 centers. 911 centers or PSAPs (Public-safety access points), then act as the gateway to first responders. Users of smart personal protection are also reassured that help is on the way.

It Needs to Be Easy

Smart Personal Protection has been embraced by early adopters and incorporates the latest technology, but it cannot be complicated for the consumer. In the moment that a smart personal device is needed, users will experience the effects of stress in a variety of ways.

Fight or flight responses will be triggered and those equipped with a smart personal protection device that choose fight will need to do so decisively, confidently, and easily.



Extending Home Security to EVERYWHERE SECURITY™

The Opportunity for Home Security Dealers

For most consumers, their security ends at their doorstep. Once they leave home and go to the store, on a trip, or out for the night, the only security they're accustomed to having is their phone and the ability to call 911. Defender 24/7 aims to disrupt this attitude by changing "home security" to "EVERYWHERE SECURITY™." For the security industry, Smart Personal Protection is the long awaited answer for "What's next?"

Defender 24/7 will be able to be sold and distributed via existing home security companies directly to their own customers, allowing these companies to use their existing monitoring center as the response center for their customers. The backend API provides a seamless user experience for consumers and an additional revenue stream for security providers.

University police will also benefit from being able to offer Smart Personal Protection solutions to their students. For alerts activated within the campus boundaries, university police would be able to respond and for alerts received off campus, 911 would dispatch help from the nearest officer or medical responder.

Central Stations will be able to integrate with Defender 24/7's technology infrastructure to offer EVERYWHERE SECURITY™. The benefits of this are two-fold: home security companies will be able to expand their services and, thus, protection of their customers. These very customers will feel even safer knowing that their security company is now watching out for their safety outside of the home.

Deterrence

It's not enough to simply have the technology to protect yourself when you're out and about. Smart Personal Protection provides an added benefit of communicating information to users about the safety of their location that could prevent a crime from occurring. To extend Smart Personal Protection, mobile applications will be enhanced by geo-location technology that aggregates area crime statistics. There are many crime apps and services available, but they are flawed in how they collect and display data to the user.

Crowdsourced crime apps suffer from areas of user activity that is contrasted with areas of inactivity. Crowdsourcing crime creates a "chicken or the egg" problem. These companies have struggled to gain traction, though their missions are admirable. Data feed crime apps suffer from an inverse problem: data overload. Displaying every crime incident onto a map can create a cluttered user experience. Also, many of these apps show crime over a short window of time, which is not necessarily a good indicator of a neighborhoods safety.

To make a better user experience and create a feature that would help Smart Personal Protection users, the team at Pangaea Services has developed, Watch by Defender 24/7. Watch by Defender 24/7 will be a crime aggregation app. To create something unique, our team worked with a crime data analyst to determine a better way to collect and display crime data. Instead of using map pins to indicate where crimes have occurred, areas will be color-coded like a weather map. Crime statistics will be aggregated over multiple years to identify areas of crime. Time of day will also be a factor to determine when an area is more likely to place you at risk.

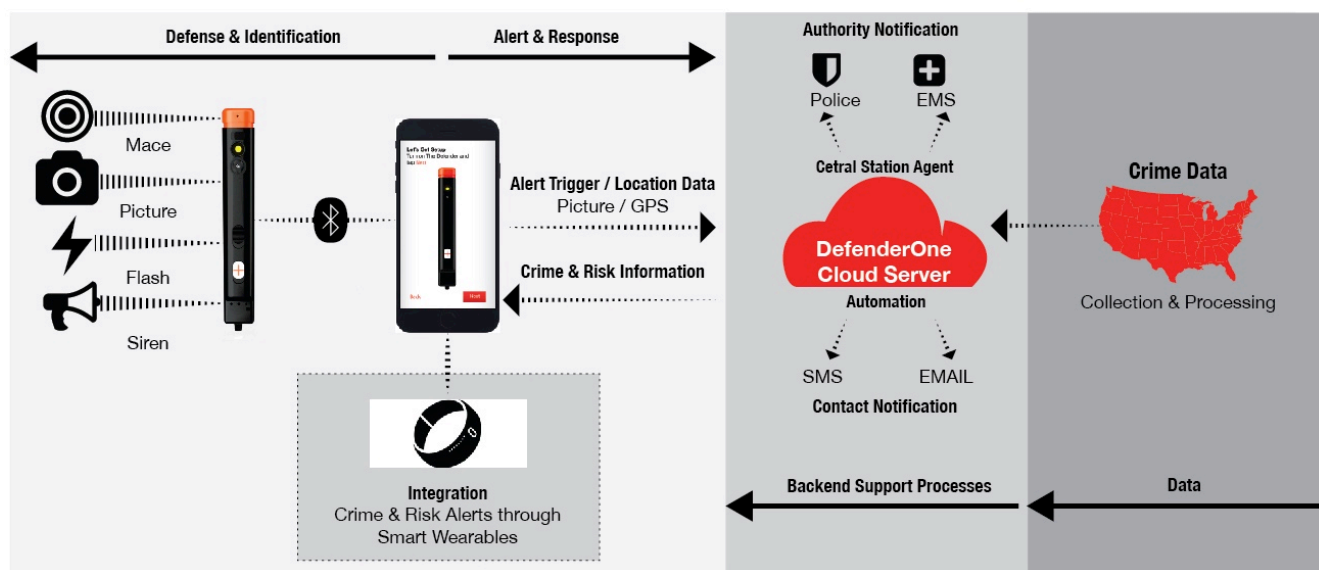
Users will be able to know:

- What geographical area has an elevated level of risk at what time
- Alternative safer routes to work or an event
- When and where one should be more vigilant about their surroundings

Defender 24/7 gives users the tools to assess these situations at the press of a button. This application does not serve to offer a "Do Not Enter" sign to certain areas but, instead, allows the user to decide what to do once they find themselves there.

360° Protection Cloud

Smart Personal Protection presents an improvement on existing self-defense solutions and distress apps because of the 360° Protection Cloud. The Protection Cloud is the central repository for the personal records and critical medical information that consumers want to share with 911. 911 enhancement services offer a pull-based system, where integrated 911 operations that integrate with the services are able to pull data on an individual in the event of a 911 alert. Smart Personal Protection's cloud service pushes data via SMS or email to 911 centers without additional integration requirements.



01

In addition to notifying law enforcement and medical responders, Smart Personal Protection utilizes a cloud infrastructure to communicate with contacts as specified by the consumers, such as family, friends, and other alert contacts.

Developer Program for Smart Personal Protection

Smart Personal Protection solutions present an opportunity to enhance other smart devices by providing a platform for communicating safety, security, and medical information. To provide a central hub, developer programs with API access allow smart device manufacturers to integrate Smart Personal Protection

Smart devices that can benefit from the integration of Smart Personal Protection include:

- Wearables: smart watches and activity trackers
- In-Car entertainment (Apple CarPlay and Android Auto)

Additional services, such as crime statistic mining and real-time update delivery, are possible with Smart Personal Protection.

Internet of Things

Trendwatching.com attributes the explosive growth of The Internet of Things to four forces: cheaper wireless connectivity chips, adoption of cloud storage, geo-location precision, and crowdfunding. The barrier to creating hardware technology has been lowered, but with that comes engineering-driven innovation that fails to fulfill a known need in the market.

Gadgets, toys, and tech satisfy desires in our lives. Technology should enhance the way we do things without complication.

The segments on the Internet of Things that will have an impact¹:

- Physical health
- Mental wellness
- Safety and security
- Connection to family and friends

Smart Personal Protection directly addresses the need for physical health, mental wellness, safety, security, and connection to family and friends. By leveraging the cloud, Smart Personal Protection provides simultaneous notification of family, friends, and law enforcement or medical responders. While other technology is relegated to the closet with old gaming consoles and flip phones, the Caring Things will remain as daily essentials. Smart Personal Protection devices will be deemed so essential that no consumer will leave their home without them.

¹ TrendWatching Report. *The Internet of Caring Things*. April 2014
<http://trendwatching.com/trends/internet-of-caring-things/>

A Smart Personal Protection User Story

"My name is George, I am married to my wife Jane, and have two children: a 16 year old daughter Judy, and a 12 year old son Elroy. I am a full-blown Defender 24/7 Customer! I have a powerful phone app, a related smart watch app, and the Defender physical protection device. I spend about \$15 dollars per month on Defender 24/7 services, but do so gladly – Defender 24/7 makes a safer life for both my family and myself. They do it by making my life easier, so I don't even notice that aspect of it.

The Defender series and app keep so many safety measures in one place, which is invaluable when keeping track of my entire family. It allows me to report crime, including pictures, to the Defender network, which includes subscribers as well as local news agencies. My neighbors and I, as a part of "Defender Neighborhood Safety Net", all get live updates about local happenings from other users. It even partners with sites such as AngiesList to keep an eye out for local businesses. This, for example, lets me monitor the most safe route to a local store or restaurant.

The defender app also keeps a GPS map of all of my family members. They can send me distress alerts manually or automatically, such as if the Defender Watch notices that they have an abnormal heart rate. This service in particular is invaluable for keeping care of my elderly grandmother, and her caretakers take part in the service as well.

One feature my wife and I appreciate is the ability for my family members to set their GPS and activities to "private" if they so desire. We are trying to teach and respect our daughter's independence, and this app allows us to do that while still keeping an eye on her safety. All of my family member may send "Are you ok?" alerts to one another that will automatically report an emergency if they don't receive a response in a certain amount of time. Not to mention If someone tries to break into our house, all the defenders – phones, watches, and sticks - off alerting everyone to the intrusion.

Defender 24/7 keeps my family and me safe. It does so because it is part of nearly everything I do in life, it helps me keep track of what I am doing, what my family is doing, and helps us live our daily lives without fear."

LEARN MORE ABOUT HOW YOU CAN OFFER SMART PERSON PROTECTION TO YOUR CUSTOMERS

For more information, please contact:
Ryan McManus
Co-Founder & Chief Marketing Officer
Pangaea Services, Inc
EMAIL ryan@getthedefender.com.

Learn More

Pre-order Defender 24/7 and learn more about Smart Personal Protection Solutions at www.GetTheDefender.com

Source Notes

ⁱ Defender 24/7 Cloud. January 2015. Pangaea Services, Inc.