TACTICAL PERIMETER DEFENSE SYSTEM (TPDS) FOR TACTICAL UNITS

D-Fence Solutions, Inc.
Phase 1 White Paper Proposal

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EXECUTIVE SUMMARY

There are countless US tactical installations around the world that are fixed, portable or mobile ranging from consulates and embassies to air fields, semi-fixed CIA annexes and highly mobile Army tactical units (esp. special ops or covert ops units). Security at all of these installations would benefit greatly from a force multiplier in the form of advanced technologies and especially non-lethal weapons (NLW).

Up to now the measures of protection for these tactical facilities have consisted of a variety of physical barricades, hardening devices, and lethal weapons.

The founders of D-Fence Solutions, Inc. (DSI) have been engaged over the past 7 years in researching the latest "proven" technologies that can detect, track, and effectively repel a wide variety of sustained aggressive and repeated potential threats. DSI's Tactical Perimeter Defense System (TPDS) solution successfully defends against an attacker's approach to tactical facilities occupied by US personnel and assets.

The TPDS defeats intruders' countermeasures and their attempts to penetrate or circumvent the perimeter it is defending. But, while defending perimeters is its most important mission, the TPDS also treats our own forces entering and exiting the perimeter, curious visitors, and those who have legitimate business inside the perimeter with prompt, helpful, safe information and instructions. And finally, those who may be in need of medical care, water or food would be guided and assisted by the TPDS AI (artificial intelligence) subsystem. As such, DSI describes the TPDS concept as a "moral fence".

Engineers at DSI who have been involved in crafting technical solutions have many years of field experience in commercial security systems design, Marine Corps and CIA tactical field operations as well as having led a number of "high tech" businesses in innovative technology development. DSI's corporate leadership has decades of special and covert operations experience with special operations forces. Three of DSI's founders are Booz Allen Hamilton alumni. All are intimately familiar with DoD contracting.

Inherently, the TPDS represents the application of advanced semiconductor and software algorithms developed primarily for autonomous automobiles vehicles and aircraft. For example, miniaturized phased array radar and LiDAR, thermal/IR and acoustic sensors, high definition and neurotrophic vision sensors, and deep learning decision making.

CONCEPT OF OPERATIONS

It is important to realize that the physical TPDS consists primarily of a multilayered, multifunctional fabric that can be easily attached to almost any solid fence or wall 6 feet high or more. Alternatively, the TPDS can erect itself in minutes and in many tactical outdoor applications requiring portability. Hence, there is a wide variety of CONOPS that could illustrate the remarkable breadth of possible TPDS applications. For this White Paper the Tactical Use Case is presented.

TACTICAL USE CASE

Small, highly mobile Army applications could be represented by a special operations unit that moves daily in a potentially hostile region. In this application, a portable TPDS self-erecting fence would be deployed from a roll of multi-layered fabric mounted on the back of a 4-wheel-drive truck. All of the electronics embedded in the fabric are powered by a pre-charged energy storage layer.

Figure 1 - Deployment of TPDS

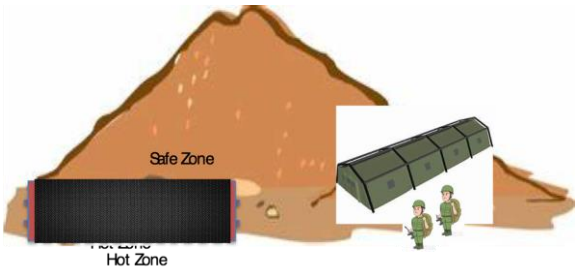

Figure 2 - Operational TPDS

When the TPDS fabric is deployed off the rear of the truck, it immediately begins to erect itself in the form of a 6-foot fence. The TPDS electronics immediately boot up and begin operating. All authorized personnel in the unit can temporarily move about and work outside the perimeter if each wears a small IFF (Identification Friend or Foe) electronic transponder.

For a tactical unit of this size, the TPDS would be deployed and fully operational within an hour.

TPDS SUBSYSTEMS

To provide a practical feel for the TPDS' extraordinary capabilities, below is an overview of each functional subsystem:

- Surface and Aerial Detection and Defense Subsystems:
  - Detection/tracking of manned and unmanned surface and aerial targets with passive IR and Optical Subsystems (still and motion)
  - Non-lethal directed energy deterrence of aggressive humans, manned surface vehicles, and low-altitude manned aerial vehicles
- Acoustic Subsystem:
  - Detection/tracking and listening to human and manned/unmanned surface vehicles with the Acoustic Subsystem's 3-D arrays
  - Directed full-duplex acoustic communications with any and all humans approaching the perimeter within a prescribed range using the Acoustic Subsystem's phased arrays
- Artificial Intelligence (AI) Subsystem:
  - Full duplex AI-driven acoustic communications through broad beams or narrow stereo-beams
  - Acoustic processing and AI Subsystem interpretations of language, dialects, and accents
- Data Processing, Storage, and Software Subsystem
- High Speed Network Subsystem
- Tunnel Detection Subsystems (Optional):
  - EM sub-bottom profiler Tunnel Detection (Proprietary)
  - Optical Tunnel Detection (Proprietary)
- Power Subsystem - Composite Material Solar Cells and Energy Storage/Distribution
- Tactical Perimeter Subsystem - For portable TPDS applications where no existing fence or wall is available, the TPDS will provide a self-erecting tactical perimeter

The capabilities of each subsystem are scalable depending on the expected perimeter threats and defense needs.

Key TPDS advantages over current conventional systems are low costs and short set-up and activation times. TPDS is also highly survivable because of its stealth appearance and potential cloaking options.

PROPRIETARY DATA

This white paper includes data that shall not be disclosed outside the United States Government, except to Government and non-Government personnel for evaluation purposes, and shall not be duplicated, used, or disclosed --- in whole or in part --- for any purpose other than to evaluate this submission.