

## ***Drone Security – It's the One You Don't See That Will Get You***

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Military Unmanned Aerial Vehicle (UAV) or more popularly called drones, like the MQ-9 Reaper hunter killer UAV, are formidable weapons systems. They can deliver missiles, bombs and other munitions across the world and with significant accuracy and lethality.

The good news is that non-state terrorist organizations, including al Qaeda and ISIS, are so far unable to put their hands on such formidable weapons.

The bad news is that, with the advancements made in UAV technologies, commercial, even hobbyist systems, priced in the hundreds or low-thousands of dollars can be equipped with a variety of payloads, such as DBIEDs or Drone Borne Improvised Explosive devices that turn them into real threats. They are small, quiet, almost invisible, and they can, directly and indirectly, cause substantial damage.

Market research estimates that by 2021 there will be around 29 million drone worldwide.<sup>1</sup> While there is no doubt that there are multiple beneficial uses to commercial drones, including agriculture, real estate, photography/videography geology, first responder assistance, law enforcement – to name but a few, we have seen recently terrorist organizations such as ISIS making use of Commercial Off The Shelf (COTS) drones for bombing and reconnaissance missions in Iraq and Syria.<sup>2</sup> The Lebanese terrorist organization, Hezbollah has also demonstrated impressive capabilities in utilizing commercial and Iranian-made military drones for bombing and intelligence gathering missions in both Israel and Syria.



### **What Are The Threats that Drones Pose?**

Drones can bring a wide variety of threats; the list below will explore some of them:

- 1) Drone-Born Improvised Explosive Device (DIED) – Today, almost every mid-size commercial drone can carry several pounds of payload, can be maneuvered very accurately with the aid of on-board video cameras and are equipped with the communications capabilities that allow operators to send commands to the drone, its optical payload and its DIED, for example. This combination of capabilities creates a potential threat to a variety of targets. It is important to note that, although in some cases the DIED poses a direct destructive threat, in other cases (e.g., sport stadiums), the DIED may act as a catalyst of a much more destructive reaction such as a stampede – something that can result in much higher casualty count than the explosives alone.

<sup>1</sup> <http://www.businessinsider.com/drone-industry-analysis-market-trends-growth-forecasts-2017-7>

<sup>2</sup> <http://www.iraqnews.com/iraq-war/elder-grandson-killed-bomb-islamic-state-guided-drone-mosul/>

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- 2) Collection of Sensitive Intelligence – Easily obtainable commercial and hobby drones can be used to reconnoiter potential terror targets, such as sensitive defense-related facilities, utility and transportation command and control centers, and probe for vulnerabilities in their security arrangements.
- 3) Endanger passenger aircraft - Commercially-available drones can be used quite effectively to threaten civil and military aviation, by posing a direct threat to low-flying aircraft landing or departing from airports.

### **Who Should Feel Threatened?**

What kinds of organizations should be concerned about the threat from drones?

#### **1. Large Venues**

Stadiums, huge concert halls and sports arenas are particularly vulnerable because they are generally open to the air and accommodate large crowds.

On May 22, 2017 a drone flew into Petco Park in San Diego, CA where the San Diego Padres were playing a game<sup>3</sup>. Petco has a capacity of over 42,000 people. The drone apparently flew around, hovered and then crashed into fans sitting in the upper deck. Whether this was intentional is unknown. What is known is that flying drones over stadiums is illegal under the US Federal Aviation Administration (FAA) rules which prohibits aircraft from flying below 3,000 feet within a 3 nautical mile radius of any stadium having a seating capacity of 30,000 or more where a major sporting event is underway.<sup>4</sup>

#### **2. Prisons**

Drones are useful tools for smuggling contraband of all types into prisons.<sup>5</sup> Among the most popular contraband items are mobile phones, drugs and porn. Unlike stadiums, the FAA has not banned the flying of drones near prisons at this time. Drone 'supplies' have been reported at the U.S. Penitentiary in Atwater, CA, the Federal Correctional Institution in Seagoville, TX and the Maryland Western Correctional Institution in Cumberland, Maryland.

Drones may also be used in the planning and carrying out of jail breaks and escapes. They can provide outstanding imagery for planning purposes, distract security personnel and provision escaping prisoners.

#### **3. Secure Facilities**

Military bases and storage facilities for high value, sensitive items are also potential targets to help thieves and terrorists figure out the best plan of attack.

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<sup>3</sup> <https://techcrunch.com/2017/05/23/the-faa-gets-a-case-study-with-a-drone-crash-inside-an-mlb-stadium/>

<sup>4</sup> [http://www-scf.usc.edu/~dgerard/9\\_5151.html](http://www-scf.usc.edu/~dgerard/9_5151.html) (see also NOTAM 9/5151)

<sup>5</sup> <https://www.usatoday.com/story/news/2017/06/15/inmates-increasingly-look-drones-smuggle-contraband-into-their-cells/102864854/>


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U.S. military bases recognize the threat posed by drones and have a new policy that permits them to shoot down any private or commercial drone that they deem are threats.<sup>6</sup> While the detailed policy remains classified, the unclassified guidance provided by DOD equates their authority over drones as "self-defense".

#### **4. Power & Communications Facilities**

Power generation and distribution facilities as well as communications facilities and transmission systems (lines) are all exposed to potential drone threats as well.

In March of 2017 drones were detected conducting unauthorized activities over Air Force and Navy nuclear facilities.<sup>7</sup> While the details concerning these instances are scant, clearly there is a great concern about these attempted intrusions. The services are working on defensive Tactics, Techniques and Procedures (TTP) to deal with these new threats.

#### **How Can We Defend Ourselves Against Terror Drones?**

With the growing realization of the threats drones pose, there is a rapidly-developing counter-drone industry, seeking potential solutions along a wide spectrum of technologies, from kinetic, to electromagnetic.

One basic approach is to simply shoot them down, just as you would in skeet or trap shooting. Notwithstanding the legal problems associated with discharging a firearm to shoot down a potentially threatening or intrusive drone, the chances of actually hitting one are pretty remote.

Another threat mitigation option is to 'jam' the drone so that it cannot communicate with its controller. Weapons like the DroneDefender from Battelle Memorial Institute<sup>8</sup> (see: target the drone's radio and GPS signals. Like any jammer, the signal from the weapon has to be stronger than the controlling ones.

Other systems employ variations such as altering the controlling signal and redirecting the UAV. This is typified by the MESMER<sup>®</sup>.<sup>9</sup>

TAL Global's aviation, cyber and physical security experts can help you assess your potential risks posed by drones to your facility or service, and work with you to mitigate these risks in a cost effective manner.

TAL Global believes in tailoring risk assessment teams and projects to specific client needs and can work with you to help you develop not only a gap analysis of where you are versus where you should be, but to help you design and implement a practical and cost effective path to get there.

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<sup>6</sup> <http://www.militarytimes.com/breaking-news/2017/08/07/dod-can-now-shoot-down-trespassing-uavs/>

<sup>7</sup> <http://www.washingtontimes.com/news/2017/mar/8/inside-the-ring-drones-threatened-nuclear-facility/>

<sup>8</sup> <https://www.battelle.org/government-offerings/national-security/aerospace-systems/counter-UAS-technologies>

<sup>9</sup> <https://department13.com/mesmer/>

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