

Drones

**A briefing paper for staff,
field organizers, and allies**



**American Friends
Service Committee**

Researched and compiled by AFSC's Wage Peace campaign
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Introduction

This document is a compilation of research and work that will allow AFSC staff and other organizers to take more effective action on the campaign against drones, especially as the “War on Terror” continues. Drones are changing the way warfare is approached, and what is now known should be considered the tip of the iceberg. We expect that much of the most critical information is still classified, and there is little to no public knowledge of how widely drones are deployed, the process that leads a person to be targeted for assassination by the U.S. government, and the capabilities of the next generation of drones. As P.W. Singer, drone expert at the Brookings Institution, has said, “...these Packbots and Predators are just the first generation, the equivalent of the Model T Ford and Wright Brother’s Flyer”



CGI rendering of a possible future Nano Unmanned Air Vehicle.

This document should raise as many questions as it answers. There are still significant details that are unknown about the technology that is quickly becoming one of the primary tools in our war of the last dozen years. Make no mistake, the fact that the United States is pulling out of Iraq and Afghanistan does not mean that the war is now over. The wars are merely evolving, and drones and targeted killings are rapidly becoming two of the major mechanisms with which they will be fought. Drone technology is coming home to the United States as well. While Wage Peace is the primary organizing body for AFSC’s work against drones, there are many issues raised in this document that should be looked at by other field organizers, particularly regarding ways that techniques learned in warfare abroad will apply to communities we work with domestically.

The information contained within this document is open source. References can be provided for numbers or facts stated. Some of the numbers are estimations, because certain aspects, particularly those surrounding the CIA program and casualty numbers, are difficult (if not impossible) to confirm given the dearth of information available to the public.

Why Drones?

Domestically, drones are a popular bi-partisan issue, even warranting their own 51 member caucuses in the House and Senate, with 51 Representatives in the [Unmanned Systems Caucus](#) and 10 Senators in the [Unmanned Aerial Systems Caucus](#). Drones are 'cheap', but 'cheap' in the Pentagon is a relative term. By 2018, drones are slated to fill nearly one third of our Air Force and Army. As of January 2013, [31% of all military aircraft](#) are drones, while the Army is spending heavily in R&D for Unmanned Ground Vehicles (UGVs). Drones present a major cost, not only in terms of purchasing the actual systems, but for all of the logistics that must be in place for the drones to operate: bases, satellites, pilots, analysts, data storage, and many other elements that cost a great deal more than the drones themselves. We must also consider the



cost of systems to defend against drones that we will be forced to develop as drones are used increasingly by non-US military forces. These costs will be covered either by increasing taxes or slashing social programs.

Allocation of resources and time towards building a more efficient way to kill people

(almost always people of color) while preventing “our people” from being killed is an insult to the values that the US claims to hold. While there exists the critical question of dollars and allocation of resources, the most potent point to be made about drones is regarding their morality. There are many approaches to this: the secrecy around the program, the human rights argument, the ability of the President to order anyone whom he deems a ‘threat’ to be killed anywhere in the world. All of these points should be raised. One of the great strengths of the drone campaign is its wide draw. The amount of discussion about drones has risen significantly in the last 2-3 years because of the breadth of concerns about their use. From privacy to government spending, and human rights to surveillance of minority communities, these machines raise important issues that we have to confront in a post-9/11 world, and many people recognize the potential of drones to raise discussions about warfare and the tools that we use to wage it. Drones provide an opening that hasn’t been seen since the advent and fight over nuclear weaponry.

For additional resources, please email Tory Smith (tsmith@afsc.org) for details.

History of Drone Development

Pre-Authorization of the Use of Military Force (AUMF)

While drones have been in use since WWII, most of those were used as targeting dummies for aircraft and anti-aircraft systems to shoot down. The first widespread use of drones for reconnaissance purposes was during the Vietnam War for photo-reconnaissance, with over 3,000 missions flown. During the Vietnam War era, development began to arm these drones, although there are no declassified reports of their use. Drone combat development was pioneered in Israel, especially during the aftermath of the 1973 War and the new reality of advanced surface-to-air missiles being delivered to various Arab countries surrounding Israel. The IAI Scout and the Tadiran Mastiff (both Unmanned Aerial Vehicles (UAVs)) were used by Israel to surveil targets in Lebanon during the 1st Israel-Lebanon war in 1982, and many of the ways that drones are used in counter-insurgency operations today comes from Israel's example. The MQ-1 Predator, easily the most recognizable drone today, first saw service during the Balkans conflict, where they performed reconnaissance (recon) missions in support of the NATO mission in the region. The first known use of drones equipped with an offensive capability were MQ-1s, which test-fired Hellfire missiles into a replica of Osama Bin-Laden's house in Feb. 2000 at Nellis Air Force Base in Nevada.

Post-AUMF

After 9/11 and the Congressional approval of the "War on Terror," the first armed drones, MQ-1 Predators, were flown into Uzbekistan and used for the first time in an armed capacity on [October 9, 2001](#). Since that period, the use of drones by the United States and other countries has increased dramatically. While drones were used primarily in Afghanistan in 2001, their use rapidly expanded after that time. The first reported drone strike to kill outside of Afghanistan was in Yemen, with the November 2002 assassination of [Qaed Salim Sinan al-Harethi](#), alleged mastermind behind the [U.S.S. Cole bombing](#). This strike also killed [Kamal Darwish](#), a U.S. citizen from Buffalo, NY, the first recorded extrajudicial execution of a U.S. citizen by his own government using a drone. The first [Friendly Fire](#) incident involving a UAV was on April 6, 2011, when a Predator dropped two Hellfire Missiles on a group of U.S. Marines during a firefight, killing two. R&D of drones has exploded, with the market for UAVs and related military systems estimated to reach [86.5 billion dollars](#) in revenues by 2018.

International Developments Post-AUMF

In less than a decade, drone use has become commonplace by militaries around the world. In addition to its earlier use of the technology, Israel used drones in operations during the second Intifada, the 2006 invasion of Lebanon, and Operations Cast Lead and Pillar of Cloud (2009 and 2012 invasions of Gaza). Drones are also alleged to have been used in several strikes against Palestinian targets in [Sudan](#), [Syria](#), [Lebanon](#), and the [Sinai](#). Russia has used recon UAV's during the [second Chechnya uprising](#) in 1995 and the 2008 [Russia-Georgia War](#). Since 2007, [Turkey](#) has used recon UAV's during its continuing conflict with Kurdish rebels. [Pakistan](#) has

used Italian-made recon UAV's in the 2009 Swat Valley Offensive. [India](#) uses Israeli-made recon UAVs for border surveillance with Pakistan, especially in the Kashmir Valley area. [Colombia](#) has quietly bought American UAV's for against the FARC and other groups operating on the Colombia-Venezuela border. [China](#) has UAV capacity, but it is unclear whether the technology has been deployed in a combat environment yet. [Iran](#) has also developed UAV capacity. States do not have the monopoly on the use of drones, as both the [FARC](#) and [Hezbollah](#) have been recorded using drones against Colombia and Israel, respectively.

Common Misconceptions and Questions

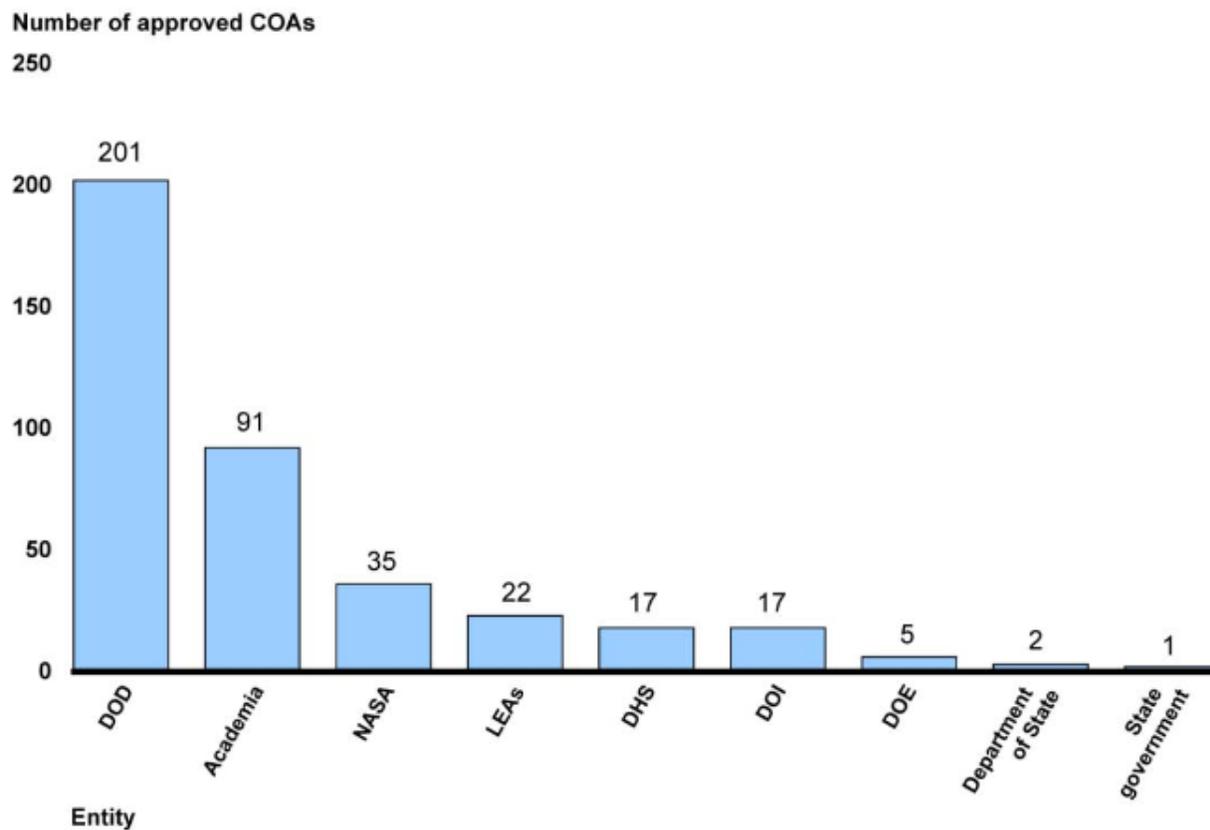
Are drones killing people by themselves?

While this may be the direction that drone development is heading (the industry term is *autonomy*) there are no indications that drones – at least in terms of the flying killing robots that we’ve come to know so well – are doing capable of this. Ironically, most of the warnings we’ve had against autonomous systems have come from defensive systems. For example, during the First Gulf War, [Patriot Missiles](#), which had autonomous capability (they were designed to shoot down ballistic missiles, a task that for whatever reason we decided was best left to a computer), designated one American and two British fighter planes as enemy missiles, shooting two down and killing RAF pilots Flight Lt. Kevin Barry Main and Flight Lt. David Rhys Williams and USAF pilot Lt. Nathan D. White. On July 3, 1988, the USS *Vincennes*, an AEGIS missile cruiser, shot down [Iran Air Flight 655](#), after the computer misidentified the Radar signature of the Airbus 300 as that of an F-14 on an attack run and fired on the airliner, killing all 290 people on board. Both of these incidents were human-on-the-loop, where humans authorized the firing weapons. However, the main point here is that in situations where thinking is rushed, like in times of combat, people are very likely to trust what the computers are telling them, which can occasionally be wrong, due to the inherent difficulties in having something which can only think in binary code make an assessment like “is this a threat?”

How common is the domestic use of drones?

More common than one would think, but not in the ways that you’re expecting. While there have been many exaggerated reports of drones being used by the U.S. government, most drones are flown by hobbyists, research facilities (universities mostly), and increasingly by industry. The Federal Aviation Administration (FAA) is the primary proprietor of information about the domestic expansion of drone use, due to its position as the broker of both Certificates of Authorization (for government-affiliated organizations) and Special Airworthiness Certificates (for private industry). The Electronic Frontier Foundation has been at the forefront of gathering additional information from the FAA via the Freedom of Information Act (FOIA) requests. They need your help too! Currently there have been 1,428 certificates given out by the FAA for domestic drone use, not counting illegal drone flights in the United States, which may push the number much higher. This list is just the beginning; there are expected to be over 30,000 operators of domestic drones after the FAA completes the steps laid out in the FAA Modernization and Reform Act of 2012 to open up the American airspace to drones.

Figure 2: Entities with COAs Approved from January 1, 2012, through December 31, 2012



Source: GAO analysis of FAA data.

Notes: DOD=Department of Defense, NASA=National Aeronautics and Space Administration, LEAs=Local Law Enforcement Agencies, DHS=Department of Homeland Security, DOI=Department of the Interior, and DOE=Department of Energy.

Legal Ramifications of Drone Warfare

Within days of the 9/11 attacks, the Bush Administration asked Congress for blanket authorization to use military force to “deter and pre-empt any future acts of terrorism or aggression against the United States,” a blank check that would usher in the “Global War on Terrorism.” Congress responded by giving the President sweeping powers under the [Authorization for the Use of Military Force](#) (AUMF) to use against “those nations, organizations, or persons [the President] determines planned, authorized, committed, or aided the terrorist attacks that occurred on September 11, 2001, or harbored such organizations or persons.”

Twelve years later, the Obama administration continues to use and broaden the provisions of the AUMF to justify a far-flung secret drone war targeting people in Yemen, Somalia, Pakistan, and other countries. This administration has in fact expanded upon the original authorization: “*As a matter of international law, the U.S. is in an armed conflict with al-Qaeda, the Taliban and **associated forces** in response to the 9/11 attacks, and we may also use force consistent with our inherent right of national self-defense.*” John Brennan (former chief counterterrorism advisor to the Obama administration; current Director of the CIA), April 20, 2012.

Investigations

The [American Civil Liberties Union](#) (ACLU) has argued that “[t]he CIA and the military are carrying out an illegal “targeted killing” program in which people far from any battlefield are determined to be enemies of the state and killed without charge or trial.” News agencies, [civil and human right groups](#), and [faith organizations](#) have been petitioning the government to release details on how kill lists are developed and the alleged legality of targeted killings under international law.

In January 2013 the UN Special Rapporteur on counterterrorism and human rights, Ben Emmerson, launched an investigation of states’ [use of armed drones and other forms of targeted killings](#). The investigation will focus on the legal framework applicable to the use of drones and the technology’s impact on civilians by examining 25 case studies of strikes carried out by the United States, the United Kingdom, and Israel in Afghanistan, Pakistan, the occupied Palestinian territories (oPt), Somalia, and Yemen.

Current Military Use

Most Commonly Used Drones

MQ-1 Predator

The most recognizable drone in the U.S. military, although soon to be phased out for a slightly upgraded version, the MQ-1C Grey Eagle. Mostly used in surveillance missions (which means it will have the prefix RQ-1 (reconnaissance) versus the MQ-1 (munitions capable). Capable of carrying two Hellfire missiles. Current numbers: 268 (unknown number procured by the CIA/Joint Special Operations Command (JSOC)). Total cost for purchasing the MQ-1: [\\$2.39 billion](#).



MQ-1 armed with two Hellfire Missiles

MQ-9 Reaper

Soon to be the new standard of drone warfare for U.S. UAV's, with multiple countries placing orders for the Reaper. More heavily armed (can carry four Hellfire Missiles, two JDAM Bombs), larger, and capable of longer flight times and a higher total ceiling than the MQ-1 Predator and MQ-1C Grey Eagle. Current procurement level is for 401, with 228 already in operation, plus an estimated 35-40 for [CIA/JSOC](#), nine for the Department of Homeland Security (DHS) (currently on loan to Customs and Border Patrol (CBP)), seven on the United States-Mexico border, two on the United States-Canada border). Total cost of MQ-9 program: [\\$13.09 billion](#).



MQ-9 armed with 4 Hellfire missiles, 2 JDAM bombs

RQ-4 Global Hawk

The ultimate in UAV reconnaissance, the huge Global Hawk has been plagued by an [alarmingly high crash rate](#) considering the program's per unit cost tag of 100 million dollars, and has already been cited by Congress for a breach of the [Nunn-McCurdy Act](#), with cost overruns of up to 22.8% of the original quoted price in 2007. Equipped with the



RQ-4 in flight, Air Force Handout Photo

[ARGUS surveillance system](#), which can automatically track all the individual people and vehicles on the ground in an approximately 20 sq. km area. Current number: [37](#) (possibly one or two used for CIA operations); eight for NATO, five for Germany, two for NASA. Total cost for purchasing the RQ-4: [\\$13.93 billion](#).

RQ-11 Raven

The smallest but most common drone in use by the U.S. military, it is basically a model airplane with a camera in its nose. Used by battalion level units and below (approximately 1,000 soldiers) the RQ-11 Raven is used as a surveillance tool in fighting in harsh environments. [High relative loss level due to limited communications range](#). Current number in operation is around [5,000](#), but total airframes constructed is 15,000. Individual cost: \$35,000 per RQ-11. Total cost for program: [\\$658.79 million](#).



A contractor holding a RQ-11 in Afghanistan.

AeroVironment Switchblade

Also known as LMAMS (Lethal Miniature Aerial Munitions Systems), one of the newest drones in use by the U.S. military, the Switchblade is a 6 pound flying robotic suicide bomber, launched out of a hand carried firing tube and guided by a soldier into a target. The Army has been [demanding increasing numbers of the Switchblade](#); they have already gone through the 75 that were procured for 'field testing' (a.k.a. shooting at real people) in 2012. Several terrorist plots that were disrupted by the FBI, the best known of which is the [Rezwan Ferdous](#) plot to fly homemade drones packed full of explosives into the Pentagon and the U.S. Capitol Building in September 2011, shows that our technology has inspired those who wish to retaliate against us. Current total cost for program: [\\$10.1 million](#).



Switchblade being launched in concept photo by AeroEnviroment

AeroVironment Hummingbird

One of two viable nano-level drones currently public (the other being the BAE Systems Black Hornet UAV). 'Nano' is defined as having a less than 15 cm wingspan and weighing less than 20 grams. Micro Air Vehicles (MAV) or Nano Air Vehicles (NAV) are currently being prioritized



by the Defense Advance Research Projects Agency ([DARPA](#)) as a need that should be filled. Currently still in [testing mode](#), it looks like these drones may begin to be deployed within a few years. Current total cost for program: [\\$2.1 million](#).

UGV

Unmanned Ground Vehicles, (UGVs) currently comprise mostly toy truck-sized robots whose main duties are bomb defusal and scouting terrain inside of buildings. Most of these have limited utility; unlike with UAVs, there is not one standard model UGV in use by the U.S. military. There are currently a few that have the capability to use weapons: the [TALON and SWORDS](#) systems both mount machine guns. However, many new models are now under development, some of them tank-sized or larger. A couple drones just over the horizon are the [Boston Dynamics 'Big Dog'](#) robot, a robotic pack mule which can [maintain it's balance](#), or [Carnegie Mellon's National Robotics Engineering Center's 'Crusher'](#) a 6-wheeled autonomous tank, capable of navigating through 120 miles of wilderness track by itself. The [2001 National Defense Authorization Act](#) required that one third of ground vehicles in the U.S. military be unmanned by 2015. Cost unknown.



iRobot/Boeing Packbot defusing a mortar round



Boston Dynamic's 'Big Dog' handout photo showing the UGV climbing over rubble

Known Areas of Operation

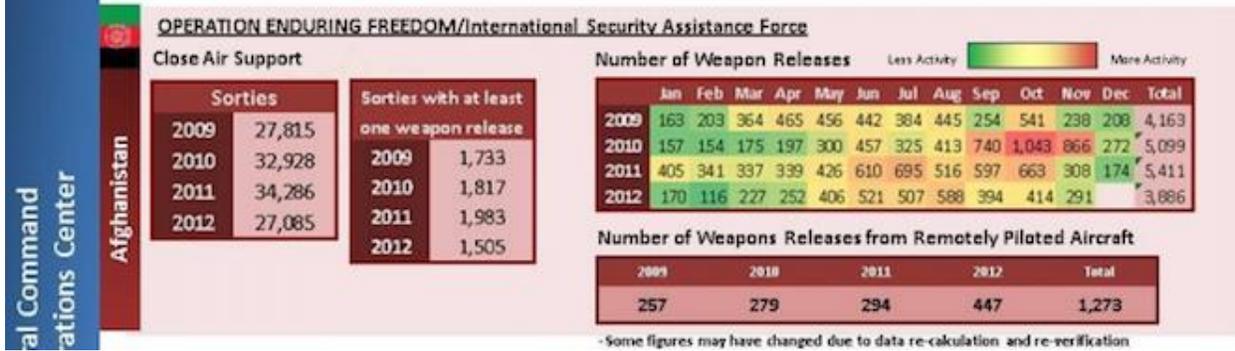
Afghanistan

Most of the drone warfare that is currently taking place is not in Pakistan (although that is the most well-covered example), but in the 'hot' warzone of Afghanistan. Drones have been in use in Afghanistan since before 9/11 as part of the [CIA's covert war against al-Qaeda](#), which regained the national spotlight post-9/11. The first drone airstrike in Afghanistan was in 2002, in Zhawar Khili, which will be detailed more below. The use of drones as reconnaissance aircraft was pioneered in Afghanistan as a strategy against the Taliban and associated forces. It is estimated that between 2009 and 2012 there were 1,273 U.S. airstrikes using drones (plus 345 reported from the [U.K.](#)). The percentage of airstrikes by drones is increasing, from [5% of airstrikes conducted to 9% in 2012](#).

Combined Forces Air Component Commander 2007-2012 Airpower Statistics

UNCLASSIFIED

As of 30 November 2012



Iraq

Drone use during the Iraq War was much less widespread than in other locations, partially because most of the combat taking place was in more urban locations, where drones have limited utility. However, there were certain drone firsts that took place in Iraq: the first time a drone [attacked another aircraft](#) (2003, the Iraqi MiG shot it down), and the first time there was a confirmed [signal interception](#) from a drone (2009, Iraqi insurgents were found to be using a \$26 piece of software that allowed them to 'steal' the video feed from U.S. drones in the area). Between 2008-2012, there were a total of 48 drone strikes in Iraq.

Iraq	Total armed drone sorties	Total missiles fired by drones	Total drone strikes
2008	5,558	60	43
2009	5,300	4	4
2010	3,378	0	0
2011	2,773	1	1
2012*	0	0	0
Total	17,009	65	48

* Year to October 31 2012

Pakistan

Pakistan has garnered the most media coverage of all the different drone wars, partially because it was the country in which the use of drones outside of a 'hot' warzone was pioneered, starting on June 18, 2004, when an MQ-1 shot a missile into the house of [Sher Zaman Ashrafkhel](#) in Wana, South Waziristan, killing Sher, local warlord Nek Mohammad, four or five Taliban fighters, and both of Sher's children, two boys, aged 10 and 16. One of the highest death tolls in the history of the drone campaign occurred in Pakistan on October 30, 2006, when an MQ-1 dropped a bomb on a *madrassa* (religious school) in the village of [Chenagai](#), killing 81-83 people, over 70 of whom were students between the [ages of 7 and 18](#). The intended target, Ayman al-Zawahiri, was found not to be present at



the time of the bombing. The most recent drone strike, as of this writing (05/30/2013) was a strike in [Miranshah](#), North Waziristan, killing four people in a mud hut.

Almost all of the [drone strikes in Pakistan](#) take place in the northwestern area of the country known as the [Federally Administered Tribal Areas](#) (FATA), where the United States believes that large numbers of Taliban and al-Qaeda fighters are mingled into the refugee populations there. The remoteness of the area means that very few journalists can access the area. The CIA (which is the only U.S. operator of drones outside of Afghanistan and Iraq) has carried out [365 drone strikes](#), killing between 2,535–3,576 people, of whom 411–884 have been identified as civilians of which 168–197 were children. An additional 1,173–1,464 people were injured by drone strikes.

Somalia

Somalia has been an area for U.S. covert activity ever since the beginning of the Somali civil war in 1991, but underwent a hiatus between 1993 (after the “Black Hawk Down” incident) and 2005. The first known use of a drone was on [January 7, 2007](#), when an MQ-1 tracked a group of vehicles, allowing an AC-130 Gunship to target the group, killing between nine and 11 people, including two confirmed civilians. From February 2011 onward, it appears that the CIA/JSOC had operational clearance to use drones in a strike capacity. The most recent confirmed drone strike was on [February 24, 2012](#), when an MQ-9 killed between four and seven people, at least two of them high operational commanders of Al-Shabaab. [Total confirmed drone strikes in Somalia](#): 3-9 strikes, killing 7-27 people, of whom 15 may have been civilians, and injuring between 2-24 people.



Drone crashed outside of Camp Lemonnier in Djibouti, one of the primary launching locations for drones into Somalia and Yemen.

Yemen

The first recorded instance of a targeted killing via drone occurred in Yemen in 2002, when an MQ-1 blew up an SUV belonging to [Qa'id Salim Sinan al-Harithi](#), alleged mastermind behind the USS Cole bombing, killing U.S. citizen Kamal Darwish and four Yemenis, Salih Hussain Ali al-Nunu, Awsan Ahmad al-Tarihi, Munir Ahmad Abdallah al-Sauda', and Adil Nasir al-Sauda'. All six had been suspected to be tied to various al-Qaeda affiliates. Following 24 al-Qaeda operatives tunneling their way out of a maximum security prison in San'aa, the United States began its drone strike campaign in earnest. On December 9, 2009, the United States, striking what they claimed to be an al-Qaeda camp, used a cruise missile packed full of cluster bombs on the village of [al-Majala](#),



Abdul-Rahman Al-Awlaki [pictured here middle] was 16 years old when a MQ-9 ended his life.

killing 58 people of whom 41 were confirmed to be civilians. Of those killed, five were pregnant women and 22 were children. Later, three people were killed and nine injured having stepped on unexploded cluster bomblets. Finally, the first publicized killing of a U.S. civilian by a drone took place on October 14, 2011, when an MQ-9 fired into a restaurant, killing between seven and nine people, including 16 year old [Abdul-Rahman al Awlaki](#), son of head propagandist for al-Qaeda, Anwar al-Awlaki, also a U.S. citizen, who had been killed two weeks earlier. [Total drones strikes in Yemen](#): 43-53 strikes, killing 228-325 people, injuring 62-144 additional people, plus an additional 77-93 drone strikes (the Yemeni Air Force often [claim credit](#) for strikes carried out by the U.S.) killing 277-426 people, and injuring 7-94 others.

Philippines

One of the least covered fronts in the drone war, the drone program in the Philippines was planned to [expand by 30%](#) as of March, 2012 in order to combat the groups Abu Sayyaf and Jemaah Islamiyah, both of which the United States alleges are connected to al-Qaeda. The Filipino government has exploited this situation in order to continue its campaign against historically Muslim parts of the Philippines, primarily focusing on the island of Jolo and the Moro Islamic Liberation Front. In February 2012, the only reported [drone strike](#) in the Philippines killed 15 people, three of whom were confirmed to be senior operational leaders.

Libya

During the Libyan revolution, NATO authorized the use of airstrikes in support of the anti-Gaddafi rebels following the use of Libyan airstrikes on the rebel-held city of Benghazi in March 2011. The United States' primary role in the airstrikes was the use of [MQ-1's and MQ-9's](#) on pro-Gaddafi forces, accounting the most airstrikes out of all the NATO aircraft, 145 out of 397. The casualty figures are not well publicized for drone specific airstrikes, mostly due to the difficulty of reporting on them, but an [Amnesty International report](#) estimates that at least 55 civilians, including 16 children and 14 women were killed by NATO airstrikes between March-October 2011.

Mali

The U.S. military has played a supporting role in the primarily French invasion of Mali, in this newest front of the "War on Terror." There has not been a [confirmed](#) instance of U.S. drones directly firing weapons on Ansar Dine and al-Qaeda in the Islamic Maghreb (AQIM) targets, but target spotting by drones for French and Malian forces has accounted for at least [60 strikes](#) since the conflict began, including the attack that killed Mokhtar Bel-Mokhtar.

Israel/oPt/Lebanon

Israel pioneered the use of drones, and remained the [leader in drone technology](#) until 2001, when the United States stepped up funding for the technology after 9/11. Most of [Israel's early use of drones](#) was during the 1970s, mostly as decoys for Syrian and Egyptian anti-air defenses. However, in the



¹ IDF UAV Eitan, a Medium Range Hunter Killer drone developed by Israeli Aeronautic Industries

1980s, more emphasis began to be placed on the use of drones for surveillance, and both Taldrian and IAI, the major Israeli weapons manufacturers, came out with competing models for drones that saw action during the [First Lebanon War in 1982](#), when they were used to track targets for the Israeli Air Force to destroy. By the time of the second Intifada, drones were being introduced for use against Palestinians in the oPt by monitoring populations and to [co-ordinate strikes](#) by attack helicopters, fighter jets, and artillery against Palestinians. There are also reports that missile-armed drones were used as early as [2004](#). The first confirmed use of drones in a targeted killing by Israel outside of the oPt was in 2009, when an Elbit Hermes 450 was involved in an [airstrike in Sudan during Operation Cast Lead against a convoy of trucks](#) in Sudan, claimed by Israel to be carrying Fajr-3 rockets and by Sudan to be carrying Ethiopian and Eritrean asylum seekers bound for Israel. Israel is still the leader in [drone exports](#), accounting for 41% of the world export market.

Current U.S. Deployments

Internationally, the United States has a [much larger presence](#) for drone bases than it did 5 years ago, and because of the nature of drone surveillance and warfare, many of the current bases are unsuited to the task of hosting fleets of drones. Logically, this means that the expansion of the U.S. drone program will include placing more airstrips in far-flung places in the globe. The following list is not comprehensive.

[Incirlik, Turkey](#)

One of the largest U.S. bases under U.S. European Command, NATO-ally Turkey has been allowing the [U.S. 414th Expeditionary Reconnaissance Squadron](#) to operate a Combat Air Patrol (CAP) of 4 MQ-1s in Turkey. The current area of operation is unknown, but there have been confirmed reports of video surveillance being retransmitted to a [Combined Intelligence Fusion Cell](#) in Ankara, which is staffed by U.S. and Turkish personnel, then being used by Turkey to target Kurdish populations in the country's west. U.S.–Turkish relations were strained after a [U.S. Predator spotted a caravan](#) of people and donkeys in the Kurdistan mountains, and was then waved off by the Turkish Air Force which used two Israeli-manufactured Heron UAVs to track the group while Turkish F-16s flew four bombing runs against them, killing 36 civilian gasoline smugglers.

[Jalalabad, Afghanistan](#)

Now one of the primary launch sites for CIA drones targeting Pakistan, [Jalalabad Air Base](#) became the [primary CIA/Academi](#) (formerly Blackwater) base after the [Shamsi Air Base in Pakistan was closed to the CIA](#). The [U.S. 18th Reconnaissance Squadron](#) also operates MQ-1s out of Jalalabad.

[Khost, Afghanistan](#)

While not confirmed to be a drone launch site, Forward Operating Base (FOB) Chapman in Khost is known to be a CIA base. On December 30, 2009, Humam Khalil Abu-Mulal al-Balawi, a Jordanian double agent, blew himself up during a meeting with CIA agents, killing himself, [five CIA operatives, two Academi employees, and his handler from the Jordanian General](#)

[Intelligence Department](#). After the attacks, the CIA launched its most [intensive strike campaign](#) in Pakistan, launching 11 attacks, killing around [100 people](#). FOB Chapman is located immediately on the Afghan/Pakistan border, and hosts an airstrip which has been [theorized to run drone attacks](#) on neighboring Pakistan.

[Kandahar, Afghanistan](#)

One of the largest air bases in Afghanistan, [Kandahar AFB](#) is home to the [61st Expeditionary Reconnaissance Squadron](#), which does launch and recovery for all the MQ-1s, MQ-9s and [RQ-170s](#) that are launched in Afghanistan for the U.S. Military. The [432nd Wing out of Creech AFB](#) provides the command and control while the drone is in the air. The [primary role](#) for drones out of Kandahar is surveillance and strike capacity in Afghanistan. The British Royal Air Force also operates a CAP of MQ-9s from Kandahar as well.



Captured stealth drone RQ-170 in Iranian Press Photo

[Shindand, Afghanistan](#)

Another probable site for [CIA drone use](#), an RQ-170 from Shindand flown by the CIA was [captured by Iran](#) in December 2011. Iran says that it had hacked into the flight control systems of the stealth drone and brought it to land inside Iran during a surveillance overflight, one of many in a [continuing effort](#) by the U.S. to spy on Iran's nuclear program.

[Al Udeid Air Base, Qatar](#)

One of the largest bases for U.S. Central Command (USCENTCOM), Al Udeid hosts the Combined Air and Space Operations Center, or [CAOC](#), which is the main operational hub for controlling both manned and unmanned aircrafts throughout CENTCOM's area of operations. [Rolling Stone reported](#) that the Judge Advocate General's Corps (JAG) – the U.S. military's legal branch – maintains three lawyers on site at Al Udeid who sign off on strikes happening throughout CENTCOM's command.

[Al Anad Air Base, Yemen](#)

The primary drone base in Yemen for the CIA, the Al Anad Air Base has been at the [forefront](#) of the U.S.-led campaign against Ansar al-Sharia and al-Qaeda in the Arabian Peninsula, or AQAP. While the death toll from the strikes has been steadily climbing, the Yemeni government continues to encourage the CIA and JSOC to operate from the base, saying "We'll continue saying the bombs are ours, not yours," according to a [leaked cable](#) from a meeting between former dictator Ali-Abdullah Saleh and General David Petraeus.

[Arba Minch, Ethiopia](#)

Arba Minch has been a base for the United States after its pullout from Somalia in 1994. U.S. military presence on this base has very much been [contingent](#) on tacit Ethiopian approval,

although the Ethiopian government officially denies that there are U.S. forces operating from there. In 2007, after the Washington Post [reported](#) that AC-130 gunships were operating from Arba Minch, the Ethiopian government [asked them to leave](#). However, as of 2011, there are at least several MQ-9s flying [surveillance](#) missions over Somalia from Arba Minch.

[Camp Lemonier, Djibouti](#)

Camp Lemonier is the home of the [Combined Joint Task Force - Horn of Africa](#) and one of the longest running drone bases. The MQ-1 strike that killed Qa'id Salim Sinan al-Harithi and U.S. citizen Kamal Darwish in 2002, inaugurating the beginning of the U.S. kill list, was [launched](#) from Camp Lemonier. In an ideal position between Somalia and Yemen, this is one of the busiest points of U.S. drone warfare, housing 3,500 CIA, JSOC, and contractor personnel.

[Mahe, Seychelle](#)

In the middle of the Indian Ocean, the island nation of the Seychelles is host to one of the [newest drone bases](#) opened by the United State, with the purpose of targeting the Horn of Africa and Yemen. While originally the MQ-9 Reapers based out of Mahe were to be used for [surveillance](#), recently leaked [cables](#) from the U.S. Department of State have discussed the Seychellois President's willingness of have armed drones based in the Seychelles. The U.S. media found out about the base after an MQ-9 [skidded](#) off the end of the runway into the Indian Ocean.

[Niamey, Niger](#)

The most recent drone base which has been discussed [publicly](#) is the possible operation of several drones out of the military side of the Diori Hamani International Airport. While the United States wants a base in the region and has signed a "status-of-forces" agreement with Niger, it looks like the base in Niger will not stay in Niamey, but will in fact [move](#) to Agadez, in the North of the country and closer to the Sahel, where the Tuareg revolution and AQIM are known to operate.

[Zamboanga, Philippines](#)

The main Southeast Asian base of [counter-terror operations](#) for the United States, along with a new base soon to be opened in [Guam](#), Zamboanga serves as a station for JSOC, CIA, and contractors to coordinate with the Filipino military against the Abu Sayyaf front. There are about [600 U.S. personnel](#) stationed with the [Joint Special Operations Task Force - Philippines](#), in direct contravention with the Filipino Constitution.

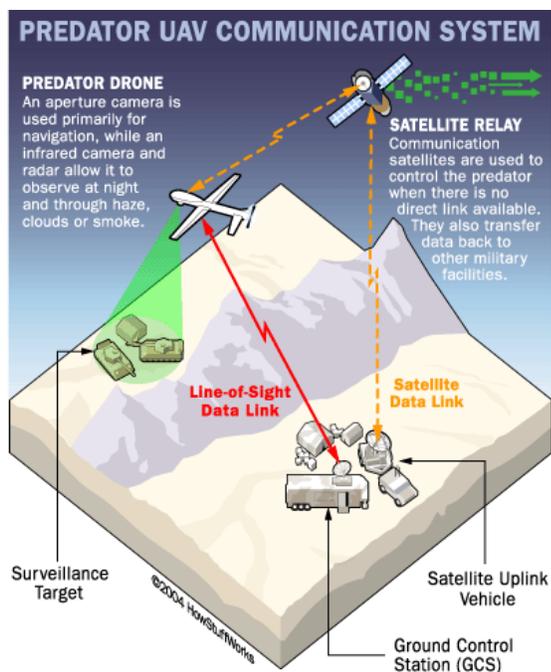
Domestic Drone Bases

Domestically, drone command and control centers, as well as bombing ranges and training areas, are in higher demand than ever. If half of the U.S. Air Force will be unmanned by 2018, then there is a great deal of development needed to make that happen. One of the main political considerations in starting controversial and expensive programs is to try and to all of the people that could potentially block the project have a slice of the pie, so to speak. Sponsoring drone command centers in their district is an easy way for politicians to "create jobs," and new, cutting-edge industry is a way for struggling regions to appear welcoming and full of opportunity.

Known Uses

Surveillance

By far the most common use of drones, if perhaps the least talked about. The U.S. military currently considers drones as part of an integrated system, where drones are being used, particularly along the mountainous Afghan/Pakistan border, to provide long-term monitoring of a population, and to solve the thorniest of problems facing occupying armies fighting insurgents – mainly telling the civilians and the fighters apart. By monitoring these areas, 24 hours a day, seven days a week, the U.S. military hopes to use drones to gather ‘patterns of life’ or ‘[signatures](#)’ in surveilled communities, allowing them to identify when something disrupts that ‘pattern of life,’ i.e. insurgent activity. They can then pinpoint these individuals, track them via drone (which often fly too high to be seen from the ground) and then guide manned airplanes or ground soldiers to take out the targeted people.



Of course, this is the way the program would work in an “ideal” world. Realistically, it is very difficult to gain a sense of a community, especially one foreign to your own, from 25,000 feet in the air, and misunderstandings often happen. On February 4, 2002, an MQ-1 Predator drone surveilled and coordinated an airstrike upon a group of men in a place called [Zhawar Kili](#), because a tall man who was thought to be Osama Bin Laden (Osama was 6’5”), was being “treated with reverence” by the two other men who were in the group. It turned out to be local scrap metal collectors. Daraz Khan, the tall man (who was 5’11”) and about 31 years old, from the village of Lalazha, and two others, Jehangir Khan, about 28, and Mir Ahmed, about 30, from the village of Patalan. All three died instantly. Currently, surveillance by drones is not banned or regulated by any aspect of international law.

“Targeted Killing”

By now the most famous example of the use of drones, the [CIA/JSOC](#) program of assassination – “[targeted killing](#)” in U.S. government jargon – is the directed use of force (now commonly applied by drone fired missile, but [airstrikes](#), [commando raid](#), or [cruise missile](#) have all been used) against an individual that the United States views as a threat. While the use of missiles guided from thousands of miles away is hardly a new phenomenon, the platform is new, and it changes the capabilities of those who may engage in targeted killing at a significant level. Israel [pioneered](#) the use of targeted killings, starting in the 1970s during the expansion of Palestinian-related hijackings, hostage-taking, and bombings in Europe and elsewhere, but the program was only acknowledged following the first Intifada.

Perhaps the best summary of Israel’s legal position on the issue is by Daniel Reisner, who headed the International Legal Division of the Israeli Military Advocate General’s Office from

1994 to 2005. [Reisner stated](#) that although targeted killing is illegal under previous understandings of international law, “If you do something for long enough, the world will accept it. The whole of international law is now based on the notion that an act that is forbidden today becomes permissible if executed by enough countries.” Reisner continues, “International law progresses through violations. We invented the targeted assassination thesis and we had to push it. At first there were protrusions that made it hard to insert easily into the legal molds. Eight years later it is in the center of the bounds of legitimacy.” The [U.S. Department of Justice White Paper](#), detailing the President’s legal authority to engage in targeted killing against U.S. citizens released February 2013 states, “Targeting a member of an enemy force who poses an imminent threat to the United States is not unlawful. It is an act of national self defense. Nor would it violate otherwise applicable federal laws barring unlawful killings in Title 18 [of the U.S. Criminal Code] or the assassination ban in Executive Order No. 12333... Were the target of a lethal operation a U.S. citizen who may have rights under the Due Process Clause and the Fourth Amendment, that individual’s citizenship would not immunize him from a lethal operation.”



With drones, the capacity for targeted killing increases tremendously. Before highly developed drone technology, the international law issues involved with having a human member of another state’s military shooting at a target inside of a country were complicated and often lead to embarrassing failures (ex. Mogadishu during the “Black Hawk Down” incident). The use of drones allows the United States and other countries to create an international law ‘zone of ambiguity,’ where there are enough diverging opinions to allow drones to be used as weapons, even in situations in which a fighter plane with a pilot could not be used. This allows the United States to exercise the use of force far [more freely](#) and at a substantially lower cost than was possible before.

Search and Rescue (SAR)

The U.S. military currently [highlights](#) the SAR missions as non-lethal missions for drones to engage in, highlighting their role as surveillance-gathering aircraft in a ‘humanitarian’ context. Both the MQ-1 Predator and the MQ-9 Reaper were [requested for SAR](#) in the aftermath of the Deepwater Horizon spill; however, the on-site commander declared them to be useless and asked for them to be removed after a couple days on site. SAR technology is an area that is undergoing rapid development in the civilian sphere.

Targeting Dummy

Targeting dummy aircraft used to be the [primary purpose](#) of drones and were used to give pilots a way to test-fire their weapons against other aircrafts in a training scenario. Most drones used by the U.S. military up until 2000 were used as targeting dummies, usually by equipping

manned aircraft with cameras and a remote control system, allowing the drone to be flown, while keeping costs down as older manned aircraft could be easily converted into drones, allowing the U.S. military to “recycle”.

Current Domestic Use

Law Enforcement

The area of most concern regarding drone use in the United States is the expansion of their utilization by law enforcement. Drones provide significant advantages to other surveillance tools used by police; they are cheaper than helicopters, and more mobile than security cameras. The use of drones on populations within the United States has been increasing, mostly under the radar. On June 23, 2011, the first arrest with the help of a drone was made in North Dakota, where [three cattle rustlers were arrested by the Nelson County Sheriff's department](#) which had used a MQ-1 to track the movements of the cattle rustlers on a 3,000 acre ranch. Several news sources have been quoted saying that the FBI and other federal agencies have used drones in investigations; however, there has not yet been a recorded instance of drone footage admitted as evidence in court. In April 2012, the Electronic Frontier Foundation filed an [FOIA request](#) with the FAA to release which organizations in the United States have requested authorization to fly drones above 400 feet ([no authorization](#) is needed for use below 400 feet in a non-urban area, and at least ¼ mile away from an airport).

Current Law Enforcement Agencies authorized (list as of [April 16 2012](#)):

- Arlington Police Department
- City of Herington Kansas
- North Little Rock Arkansas Police Department
- Department of Homeland Security
- Customs and Border Protection
- Federal Bureau of Investigation
- Gadsden Police Department
- Mesa County Sheriff's Office
- Miami-Dade Police Department
- Ogden Police Department
- Orange County Sheriff's Office
- Polk County Sheriff's Office
- Seattle Police Department



Seattle Police Department demonstrating their new drone during a public hearing.

This list only includes police departments that have requested authorization by the FAA to fly drones themselves. The DHS and the FBI are the main users of the more powerful drones and often loan them to local police departments. For the Nelson County example, an MQ-1 was used by the DHS in conjunction with local police, even though it was in control of the DHS at all times. This allows the DHS to circumvent some of the restrictions placed on drones by engaging in "[security co-operation](#)" with local police departments, a measure that authorized by the [Patriot Act](#).

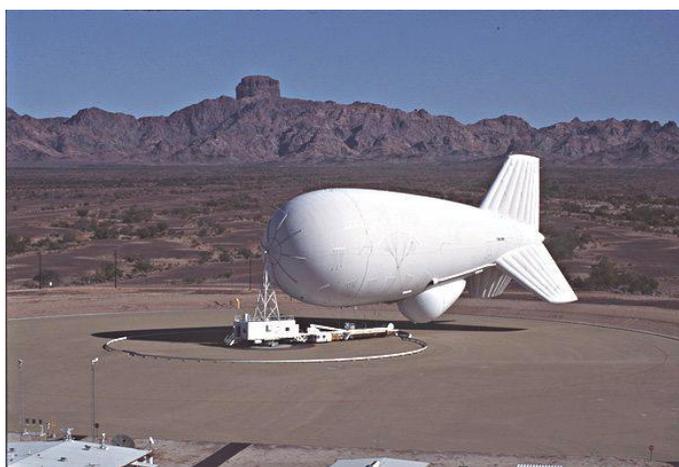
DHS/CBP

The Customs and Border Protection Branch of the Department of Homeland Security is currently using nine MQ-9 Reapers used currently on the United States borders, with the total procurement planned for 24. There were originally 10 MQ-9s loaned to CBP, but one crashed on the U.S./Mexico border on [April 25, 2013](#) after losing its satellite. The accident rate for CBP drones is incredibly high, as stated during an [FAA testimony](#) to



Congress in 2010, where it was revealed that “The CBP accident rate is 52.7 accidents per 100,000 flight hours (the standard safety data normalization factor/the standard on which safety data is reported). This accident rate is more than seven times the general aviation accident rate (7.11 accidents/100,000 flight hours) and 353 times the commercial aviation accident rate (0.149 accidents/100,000 flight hours).”

The Reapers are not the only drones now operating on the border. In early 2012, [Aerostats](#) – large, white blimps mounted with cameras, whose use was pioneered in Iraq and Afghanistan where they floated above U.S. forward bases – have been redeploying to provide “persistent” surveillance over large areas of the border, although these are still in the testing stage. The utility of both the Reapers and the Aerostats [has been challenged](#) by experts in the field.



The P-3 Orion, a propeller aircraft from the 1950s, is responsible for 17 times the number of drug trafficking interceptions than the MQ-9. The cost/benefit ratio for drones is extremely skewed, with the Reaper costing \$7,808 per apprehension versus the CBP average of \$1,166 per apprehension. A total of [\\$240.6 million](#) has been appropriated for the CBP Drone program.

Research

The largest number of authorizations to fly drones domestically are for universities and other research institutions. Out of 124 authorizations granted, [34 went to universities](#). Most of these universities are involved in testing drones to be used for everything from pollen analysis, sea level monitoring, advances in A.I. cooperation in natural environments, crop dusting, and, yes, targeting, surveillance, and tracking. [DARPA](#) provides most of the funding for these programs,

with a budget of [\\$2.82 billion in 2013](#). Virtually every major university with a robotics program receives funding through DARPA for some, if not all of their work.

DARPA Handout showing the [capabilities of the ARGUS system](#) as of 2009



Manufacturers

What follows is a brief list of the major players – as well as some of the upcoming competitors – within the UAV market. A much more complete list can be found at the website of the [Association for Unmanned Vehicle Systems International](#) which is one of the largest industry groups for drone manufacturers. Many of the corporations that I mention here are involved in joint projects with each other on production of drones, or in component supply relationships; however, the connections are far too dense for this particular resource. I will focus on the drones that are manufactured or primary services provided by these companies.

Honeywell

As one of the larger electronics manufacturers and R&D agencies in the world, Honeywell has been involved in multiple defense contracts, mostly for sensor and electronics components. Honeywell has recently entered into the UAV manufacturing market with the [T-Hawk](#), a Micro UAV that is modeled on a helicopter style propulsion (a.k.a. VTOL). **Headquarters:** Morris Township, NJ. **Additional Locations:** <http://www.careersathoneywell.com/en/Locations.aspx> **Total Sales for 2012:** \$37.7 billion.

SAIC

Science Applications International Corporation, or SAIC, is a defense Fortune 500 company that recently moved into new facilities near Dayton, OH in order to start what it calls a “[hub](#)” of unmanned surveillance research in partnership with the DoD and the intelligence community. **Headquarters:** Tysons Corner, VA. **Additional Locations:** <http://www.saic.com/about/locations> **Total Sales for 2012:** \$11.17 billion.

Lockheed Martin

One of the global defense manufacturing giants, Lockheed Martin has been surprisingly late into the drone scene. Currently there are several deployed systems manufactured in part or entirely by Lockheed Martin. Lockheed is now developing the [Falcon HTV-2](#), a hypersonic drone that could conceivably strike anywhere in the world within one hour of deployment. **Headquarters:** Bethesda, MD. **Additional Locations:** <http://www.lockheedmartinjobs.com/pdfs/Locations-Map.pdf> **Total Sales for 2012:** \$47.2 billion.

Boeing

Another one of the global defense manufacturing giants, Boeing has also been very conservative in the drone field, partnering with the Insitu Group to develop the [ScanEagle](#), a Tactical level surveillance drone. **Headquarters:** Chicago, IL. **Additional Locations:** <http://jobs-boeing.com/United-States> **Total Sales for 2012:** \$81.7 billion.

General Dynamics

General Dynamics is pulling out of the aerospace combat industry to focus more on ground based systems, and the [Robotic Systems](#) division is in the midst of developing most of the new UGV's that are being considered by the U.S. military. **Headquarters:** Falls Church, VA.

Additional Locations: <http://www.qdrs.com/about/facilities/index.asp> **Total Sales for 2012:** \$31.5 billion.

General Atomics

The General Atomics division of General Dynamics has been the primary manufacturer of the [MQ-1 Predator](#), and still dominates the hunter-killer field in drone warfare for the United States. Their aeronautical division is now orienting itself to exclusively build UAVs. **Headquarters:** San Diego, CA. **Additional Locations:** <http://www.ga.com/location-map-and-hotels> **Total Sales for 2012:** See General Dynamics

Northrup Grumman

Another defense giant, Northrup Grumman is the primary manufacturer of the [RQ-4 Global Hawk](#), as well as the [MQ-5 Hunter](#) Medium Altitude Long Endurance (MALE) drone, and the Unmanned Combat Air System (UCAS) X-47B, still under development, which is designed to be a carrier-based unmanned fighter plane. **Headquarters:** Falls Church, VA. **Additional Locations:** <http://www.northropgrumman.com/ContactUs/Pages/default.aspx> **Total Sales for 2012:** \$25.2 billion.

Raytheon

Raytheon has been avoiding the large scale UAV market in favor of trying to gain an early lead in the Miniature, Micro, and Nano UAV markets. However, one of their largest products, the [JLENS](#), an over-the-horizon surveillance system based on interlinking sensors, may soon be deployed in the United States. JLENS is designed to be mounted on Aerostats, which are currently deployed on the U.S./Mexico border. **Headquarters:** Waltham, MA. **Additional Locations:** <http://jobs.raytheon.com/en/locations> **Total Sales for 2012:** \$24.4 billion.

AeroVironment

The undisputed champ of small UAVs, AeroVironment has been developing the smallest known operational UAV, the [Hummingbird](#), with funding directly from DARPA. With a 6.5 inch wingspan, the Hummingbird is the first successful scaledown of a UAV, to the point where the device could fit into an individual's pocket. The RQ-11 Raven and the Switchblade are also produced by AeroVironment. AeroVironment is unique in that all seven of its UAV systems have been picked up and used by the U.S. military. **Headquarters:** Monrovia, CA. **Additional Locations:** [Here](#) **Total Sales for 2012:** \$325.0 million.

Textron/AAI

The [RQ-7 Shadow](#), a tactical-level drone designed and produced by AAI, is currently the primary tactical-level surveillance drone used by the U.S. military. Textron, the holding company for more well-known brands like Cessna, Bell Helicopter, and E-Z-GO, controls AAI as part of its defense industry holdings. **Headquarters:** Providence, RI. **Additional Locations:** <http://www.textron.com/about/company/worldwide-map.php> **Total (AAI Systems) Sales for 2012:** \$694 million.

EADS/Cassidian

European Aeronautic Defense and Space, or EADS, is one of the primary European manufacturers of drones and one of the powerhouses of the European Air and Space industries. EADS owns Eurocopter and Airbus. EADS's UAV subsidiary [Cassidian](#) produces several different levels of UAVs for European militaries, from handlaunched to High Altitude Long Endurance (HALE) level drones. **Headquarters:** Leyde, The Netherlands (U.S. Headquarters: Herndon, VA) **Additional Locations:** <http://www.eads.com/eads/int/en/our-company/where-we-operate.html> **Total (Cassidian) Sales for 2012:** \$7.42 million.

BAE Systems

One of the largest British defense companies, BAE Systems has recently made a number of investments in the UCAV market, specifically around increasing autonomy for UCAV systems. Both the [Mantis](#) and the [Taranis](#), developed by BAE, are currently undergoing testing to expand autonomous capability for MALE and HALE level drones. **Headquarters:** London, UK. (U.S. Headquarters: Arlington, VA) **Additional Locations:** <http://www.baesystems.com/our-company-rzz/our-locations> **Total Sales for 2012:** \$27.31 billion.

Israeli Defense Companies

While there are several, Israeli Aerospace Industries (IAI) is the largest of the many Israeli defense companies. IAI is the wholly nationalized Israeli defense company, which is involved in the production of several UAVs, and, as part of the Israeli defense industry, is currently one of the most prolific exporters of UAV technology around the globe (in company with private defense companies [Elbit](#) and [Rafael](#)). [IAI](#) produces a full line of UAV's, from micro through HALE. **Headquarters:** IAI: Kfar Truman, Israel (U.S. Headquarters: Arlington, VA); Rafael: Haifa, Israel (U.S. Headquarters: Bethesda, MD); Elbit: Haifa, Israel (U.S. Headquarters: Fort Worth, TX). **Total Sales for 2012:** IAI: \$3.34 billion; Rafael: \$148.8 million; Elbit: \$2.88 billion.

iRobot:

One of the smaller companies on this list, iRobot became famous in the robotics world after the release of Roomba, a robotic vacuum cleaner which was one of the first robots to reach a widespread consumer base. iRobot now manufactures [UGVs](#) for IED disposal and ground reconnaissance. **Headquarters:** Bedford, MA. **Additional Locations:** <http://www.irobot.com/us/Company/About/Offices.aspx> **Total Sales for 2012:** \$436.24 million.

Recon Robotics

Another smaller company, developing for the law enforcement/defense market, Recon Robotics has developed the [Throwbot XT](#), a 1.2 pound UGV that can be thrown at least 120 ft. This is probably the smallest UGV on the public market today. **Headquarters:** Edina, MN.

Boston Dynamics

Primarily an engineering and research based company, Boston Dynamics has been at the forefront of walking UGV's. Their LS3 bot, or [Legged Squad Support System](#), is currently the closest of its kind to be deployed. Based off the BigDog system, the LS3 is currently sponsored

by DARPA and the U.S. Marine Corps for a walking drone that can follow soldiers.
Headquarters: Waltham, MA.

Actions Taken by Other Groups

ACLU/CCR Lawsuit

Both the American Civil Liberties Union and the Center for Constitutional Rights have filed multiple lawsuits around the [targeting](#) and eventual [assassination](#) of Anwar al-Awlaki, and the murder of his 16 year-old son Abdul-Rahman al-Awlaki two weeks later by drone. The first lawsuit, *al-Aulaqi vs. Obama* (2010) was dismissed in federal court due to the “political nature” of the questions that were raised in the lawsuit, but the second lawsuit, *al-Aulaqi vs. Panetta* is currently progressing, with the most recent action taking place around the federal government’s motion to dismiss the case (followed by an [opposition motion](#) filed by the ACLU and CCR).

CODEPINK

While they are not the only [radical/activist](#) group involved in opposition to drone warfare, they are certainly the most visible. Medea Benjamin has written one of the [primary books](#) on the topic from the peace and social justice perspective. They have done direct actions during the confirmation hearings for John Brennan, and brought a delegation to Pakistan in 2012 to speak with victims of drone attacks.

Rutherford Institute/Charlottesville, VA

The first U.S. city to pass a law prohibiting drones, the [Rutherford Institute](#) (a legal group similar to the ACLU) pushed through a [2 year moratorium on drone use](#) by local police in Charlottesville, VA, and looks set to do so for the [whole of Virginia](#).

Occupy Seattle vs. Seattle PD

In one of the major actions against police use of drones, Occupy Seattle and others spoke out during a [public hearing](#) on the use of drones. The two quadcopter drones that the SPD had purchased were returned to the manufacturer after Mayor Mike McGinn pressured the police department [to give up](#) the drones after a large scale public outcry over their use.

United Nations Special Investigation

The special rapporteur on counterterrorism and human rights Ben Emmerson launched an [investigation](#) into the U.S. use of drones for [targeted killing](#), and is expected to make a [searing condemnation](#) of U.S. drone policy and make recommendations to the General Assembly on curtailing the use of drones for assassination.

Recommended Resources for Follow-Up

Grassroots Organizations

[American Friends Service Committee](#)

[Electronic Frontier Foundation](#)

[Know Drones](#)

[No Drones Network](#)

Legal Organizations

[American Civil Liberties Union](#)

[Center for Constitutional Rights](#)

[Bill of Rights Defense Committee Model Legislation](#)

International Organizations

[United Nations Special Rapporteur on Counter-Terrorism and the Protection of Human Rights](#)

[United Nations Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions](#)

[Amnesty International](#)

[Human Rights Watch Targeted Killing Campaign](#)

[Human Rights Watch Killer Robots Campaign](#)

[Relieve UK](#)

Academic Reports

Stanford International Human Rights and Conflict Resolution Clinic/NYU Global Justice Clinic

Report: [Living Under Drones](#)

Human Rights Clinic – Columbia Law School/Center for Civilians in Conflict Report: [The Civilian](#)

[Impact of Drones](#)

Pakistan Institute for Peace Studies Report: [Legality of Drone Strikes in Pakistan](#)

Data Compilations

The Bureau of Investigative Journalism: [Covert Drone War](#)

Glossary of Terms

Unmanned Aerial Vehicle (UAV) – The official U.S. designation of flying aircraft that are controlled from a remote location and capable of transmitting video back to that location, either armed or unarmed, of any size. Also known as Remotely Piloted Aircraft (RPA) or Unmanned Aerial System (UAS).

Unmanned Ground Vehicle (UGV) – The official U.S. designation of legged, tracked or wheeled robots which can be controlled from a remote location and is capable of transmitting video back to that location, either armed or unarmed, of any size.

Human-In-The-Loop – The decision-making process about where the drone is, what it's looking at, and what it shoots at; must include a human being, usually a pilot, a sensor operator, and an analyst. The drone may fly on autopilot, but once in the area of operation, humans are brought in. Current status of all aerial drones employed by the U.S. military.

Human-On-The-Loop – For decisions, a human is only notified once a drone has spotted a potential target, and then the human will decide whether or not to authorize a weapons release. Most military systems are migrating in this direction.

Autonomous – The drone evaluates targets by itself, and decides whether or not to engage. Any target will have to fit within the programming guidelines that is laid out, but as long as they fit with a certain set of data points, they will be targeted (a child throwing a stone will be read exactly the same as a soldier throwing a grenade in binary code).

Militant – As reported by the [New York Times](#), a militant is currently defined as "...all military-age [16-60] males in a strike zone [a.k.a. hit by U.S. munitions] as combatants, according to several administration officials, unless there is explicit intelligence posthumously proving them innocent," which is the Obama administration's preferred method of address to those that are killed in drone strikes.