

## Patent for Airborne Radio and 5G Networks

### Highlights:

- Patent granted for airborne radio network used in counter-drone systems and 5G cellular networks
- Technology enables drones to operate as cell tower antennas and fly to where data services are needed
- Technology significantly increases cellular data bandwidth without requiring new radio spectrum
- Airborne network is rapidly deployed without delays and costs for land-use permits, site rental, cell planning, and fiber backhaul
- Enhances the ability of MESMER™ to track and mitigate emerging threats

**COLUMBIA, MD and PERTH, WA – 25 October 2017** – Department 13 (ASX: D13 or “the Company”) has been issued U.S. Patent No. 9,798,329 titled “Airborne Relays and CMIMO.”

The patent, licensed exclusively to D13 and assigned to Genghiscomm Holdings, the IP holding company of D13’s Chief Science Officer Steve Shattil, will further enhance D13’s drone defence capabilities and advanced communication networking. This patent combines several D13 innovations to provide an airborne radio network. The technology was developed to bring sensors and countermeasures used in D13’s MESMER™ system closer to where threats are detected and migrate cloud computing to the edge of the network where it can respond to threats quickly. This technology also has groundbreaking applications that supplement or replace cellular networks.

4G cellular networks are beginning to use “massive” MIMO (Multiple-Input, Multiple-Output), which increases capacity by mixing signals between multiple antennas on a cell tower. However, depending on where cell phones are located and the obstacles between the tower and the phones, only a fraction of the antennas increase capacity because the antennas are too close together. The unused antennas waste power and add to hardware and operating costs. Further, the cell tower is seldom near where most phones are being used, which results in high transmission power and interference with other cells.

In a D13 airborne network, each drone functions as a cell tower antenna. Drones fly to wherever people need service, so there is never a dead spot and the phone transmits low-power signals, which extends battery life. Like a swarm of bees or a flock of birds, D13 drones navigate by sensing where other drones are. The drones also cooperate to bring the full capacity of MIMO to the network. This means that unlike cellular networks, D13’s airborne network won’t run out of radio spectrum.

D13 CEO Jonathan Hunter said, “Unlike a cellular network, which requires site surveys, real estate for cell towers and land-use permits, D13’s airborne radio network can be launched in minutes instead of years and at a fraction of the cost. This is important for future counter-drone systems too because it enables rapid installation and dynamically adapts to different sites and threat profiles. Another benefit is that the system can locate and track a person who is operating a drone in an illegal manner.”

The company anticipates there will be significant interest in the technology from telecommunications companies. Including this patent, Department 13 now holds 19 U.S.-issued patents, with 29 pending.

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**For more information, contact**

Jonathan Hunter  
Chairman and CEO  
Department 13  
+1 703 597 6574  
[Jonathan@department13.com](mailto:Jonathan@department13.com)

Investor relations  
Mark Wise  
Department 13  
+1 914 261 5574  
[mwise@department13.com](mailto:mwise@department13.com)

US Media:  
Laura Radocaj  
DGI  
+1 212 825 3210  
[lradocaj@dgicomm.com](mailto:lradocaj@dgicomm.com)

**About Department 13**

Based in Maryland, Department 13 (D13) was founded in 2010 by a team of former military operators, scientists and engineers who apply proprietary innovative advanced technology to emerging requirements. D13 is developing cutting-edge software and communication systems that have the potential to transform the networking and communication fields as well as current applications in drone defense, mobile phone IT security and secure enhanced Android phone systems. D13 is engaged with multiple counter UAS projects to provide strategic solutions for civil, military and commercial security requirements. D13 has 19 patents and 29 patent applications in the development of wireless protocol manipulation and communication networking software with applications in drone defense, local area and wide area cellular communications and networking, enhanced data bandwidth for all digital communications, cyber security for mobile devices and sophisticated RF technology applications (radiometrics). For more information about D13, please visit [www.department13.com](http://www.department13.com) or follow us on Twitter (@D13ASX), LinkedIn and YouTube.