

Drone Report from the Consumer Electronics Show 2016

In our 2 1/2 days at CES, I walked over 30 miles! It certainly is a big show and, as with 2015, drones were a large part of the buzz this year. Here is our “executive summary” of drones at the 2016 Consumer Electronics Show (CES). It contains a number of opinions and predictions. At Droneflyers we dislike parroting PR statements or cheerleading for the entire drone industry...rather we look at the trends, accomplishments and market as a whole and try to distill it down for our readers.

Our report will focus on the consumer drone market although some mention will be made of commercial uses.

[Here is our still picture gallery from CES.](#)

General Overview

2016 will likely be a year where the evolution of consumer drones continues. Drones have become extremely complex and it's very unlikely that brand new technology is going to arise...rather we are seeing a maturing of the industry as well as integration of existing technologies into lower priced consumer drones.

In order to give some method to our madness, we will run through the drones in order of “types” laid out in our recent article.

1. Toys
2. Racing/FPV
3. Consumer Camera Drones
4. Prosumer Camera Drones

One other consumer category is DIY – that is, the building and customization of reasonably priced models. This market is shrinking due to mass production allowing for a better value than DIY. There are small niches where a certain level of DIY may be growing...especially when it come to programming and education. An example is the CoDrone project on kickstarter at:

Toy Drones

The market has become saturated with toy drones, driving the prices down and the capabilities up. The popularity of these models is likely to continue through 2016 as most of them fall below the FAA minimum (about 1/2 lb) so there is no requirement to register them.

Most of the toy drones are still following the original designs from years ago – however, there are a few newer models which may point to the future of these lower-end flying machines. One is this model from Mota – which is lightweight, foldable and seems safer than most.



Nine Eagles (Mola) Folding Toy Drone

Another model designed for safety is the Fleye – a “flying soccer ball”. You can find more

information about this model at <http://gofleye.com/>

Our video montage of CES demos has some footage of both of the above – along with many others.

Safety, ease of operation and “selfie” camera abilities are likely to drive the upper end of the toy market in the future. On the lower end, price will rule the roost.

Racing/FPV

This market is smaller than either the Toy or Camera Drone market however it is growing quickly. Up until recently pilots had to build or modify their own FPV quadcopters. 2015 saw a number of new RTF platforms selling for as low as \$200. This trend will continue into 2016 with many enhanced models being introduced. Some of them could be classified as “hybrids” – having the ability to go fast, yet also containing GPS, ground sensors and other systems to make flying easier. An example of this new breed is the RC Logger Navigator 250:
<http://www.rclogger.com/RC-EYE-Navigator-250.html>

Many of the newer Racing/FPV models feature headsets which allow for the full immersion experience.

The Racing/FPV sector is likely to continue to grow as many consumers like the idea of FPV piloting – and, these aircraft are much more exciting to fly than the Consumer Camera Drones.

Consumer Camera Drones

This category was red hot in 2015 and 2016 promises more of the same. Photography and Video have proven to be the first “killer apps” that allow for further R&D and



RC Logger Navigator FPV Type
Drone

refinement of aerial robotics. Currently the **leader in this segment is DJI** – the well known Chinese company that has heavily invested in drone research and production. They have dominated by offering more and more for less money. Their current starter model – the **Phantom 3 Standard** – offers more features than their model of just one year ago – for 40% of the price (\$1369 a year ago, \$499 today). Coming up in 2nd place in this category is **Yuneec** – a company which also produces drones and other aircraft for Blade (Horizon Hobby).

This segment is very large – so a number of trends are at play. Here are some of them:

1. *Commoditization of basic camera drones* – A number of companies introduced new models at CES which are patterned after the successful DJI Phantom line. **Hubsan**, Autel Robotics, AEEE, Xiro, ProDrone and a few others showed very similar sized machines.

It is our opinion that most of these machines will not succeed – simply because DJI has the production capacity and economy of scale to satisfy worldwide demand for this type of machine. None of these companies can beat DJI in terms of pricing and marketing, so unless they offer vast improvements they are unlikely to grab a slice of the market. Still – it may be that some of these companies are happy with a tiny sliver (5% or less) of this market. The winners in the basic camera drone market will be those with the best image quality. After all, that's what these drones are designed for. In the same way that the iPhone cam is responsible for driving upgrades, so will improvements in imaging drive this segment.



One of two DJI Booths at CES

2. *Sports Drones* - A number of camera drones claim to be designed for action sports. Examples are Hexo+, AirDog and Lilly. The “follow me” craze has yet to prove itself viable - GPS systems are not accurate enough to carve a path through trees or buildings and the size of the action sports market is hard to guess. It’s difficult to imagine all of the sports drone manufacturers succeeding - more likely one or two may find success while the others fall by the wayside. Another concern for sports drones makers is that standard camera drones such as the new **Yuneec H** will be able to serve multiple functions - as long distance photo/video

drones and also as sports models.

3. *Phone and Tablet Drones* – some manufacturers have decided to put their stock into tablet and smartphone (app) controlled drones – instead of using standard R/C controllers. Parrot, Ehang and Hexo+ are three examples of this breed. None of these have yet proven themselves up to the reliability standards of standard R/C control. We hold the opinion that drones which use phone and tablet wireless systems (only) are subject to too many variables to operate reliably. As thousands of these new machines enter the marketplace the reliability factor will be further tested. It's possible that a manufacturer will get it right at some point – but until thousands of users each have many hours of flight we will not be able to guess at the reliability. For now – until proven otherwise – we remain unconvinced about smartphone-only higher end drone systems.

Uncertainty in regulation is also a big story going forward. I spoke at length to the FAA representatives at CES and they seemed very willing to accept common sense industry-created guidelines. The regulation mess will likely be sorted out within a year or so, but in the meantime it adds some uncertainty to the entire drone market.

4. *Smaller and Safer Camera Drones* – prototype models such as the Vantage Robotics Snap may represent a large market segment if they are perfected. The **Parrot BeBop** is also in this category – however, the poor range and dysfunctional smartphone control has not allowed it to reach its full potential. Still, the idea of lighter drones which would do less harm to vehicles and persons is a positive direction. Advances in miniaturization as well as continued investment in the sector will likely drive this market forward.

Prosumer Camera Drones

This segment is somewhat lacking in entries, having been originally created by companies such as Mikrokopter and Cinestar. The **DJI Inspire** has recently overtaken most others as the prosumers and low-end professionals choice. This mid-sized quadcopter has recently had

upgrades such as a **Micro 4/3rd camera** and the announcement of an infrared camera package. Such upgrades are likely to make prosumer drones cross the line into the professional sphere...albeit at a lower price than many existing models. At \$4,000+ with the fancier cameras, it's unlikely most hobbyists will consider these models. However, indie film makers, real estate and construction pros, public safety organizations and others are likely to drive sales of this category.

Other manufacturers such as **Yuneec** are also eyeing this market and showed prototypes and upcoming models at CES 2016.

Other Trends

Drones are poised to help with crucial deliveries of medicines, spare parts and other emergency items. Matternet, a company organized for such purposes, showed their delivery quadcopter at CES and are currently running a number of trials around the globe. These "drones for good" will help change public perception of aerial robotics as people realize the cost and energy savings which are achievable. Lives will be enhanced and even saved by the use of drones in civil aviation. For one example, [visit the Matternet site at his link.](#)

The next big steps forward involve adding even more intelligence to drones. "Sense and avoid" technology has been announced and new models which can avoid trees and other obstacles are on the horizon. Other models which are designed for utility inspection will help keep the lights on - or get them back on quickly after storms and other mishaps.



Matternet Delivery Drone Prototype

CES 2016 made one thing clear - that 2016 will be

another year of accelerated evolution in robotics.

[Here is our still picture gallery from CES.](#)

Here is a short video showing some of the booths and demos at CES 2016:

Here's another expert take on CES - from Drone Coalition.

Thanks for Reading!

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