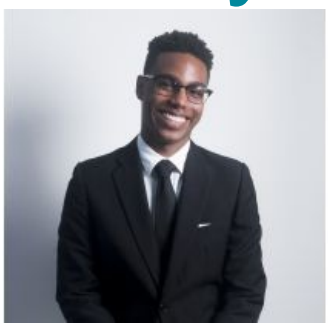
UAVs: The Deceptive Rise to Disruption in the Geospatial Industry



The period where exponential growth remains unnoticed following the inception of innovation is classified as ‘deception’. The year 1849 inaugurated the birth of the unmanned aerial vehicle (UAV or ‘drone’), producing a deceptive impact on the industry. Today, the use of consumer UAVs for data acquisition is quickly approaching its zenith, allowing for a broader scale of applications.

(By Jonathan McCollin, University of the West Indies)

The early use of consumer UAVs typically included videography. The move towards a photogrammetric approach occurred with the influx of mapping software, aimed at small-scale photogrammetry. These applications allowed for an autonomous, easy-to-use alternative to the survey-grade photogrammetry software suites, while maintaining an acceptable accuracy. Start-up companies, including Pix4D and DroneDeploy, brought a foreseeable disruption to the industry. The result was the birth of a new market, threatening the existence of conventional photogrammetric techniques.

The impact that drones will have on the industry is yet to be fully realised. A surge in the amount of applications for consumer UAVs is predicted. Yes, start-ups have done an exceptional job in tackling the photogrammetric aspect of geomatics. However, there is still progression to be achieved, including in terms of:

- **Small-format Topographic and Bathymetric Lidar Systems**

The production of small-format Lidar scanners will allow for a fast, easy-to-use alternative to the conventional methods of hydrographic and topographic surveys. Currently, point clouds are extractable from aerial imagery using some of the aforementioned applications allowing for easy representation, but one can argue that the accuracy of these methods cannot compare to that of a Lidar scanner. With the production of bathymetric Lidar systems on the rise, it is easy to see a smaller form factor being an asset to geospatial professionals. The need for boat and echosounder rentals will be fully eliminated for small-scale hydrographic purposes.

- **360° Cameras**

The use of 360° cameras will greatly assist the evolution of spatial representation. As the industry moves towards other outlets of spatial representation, UAVs paired with these full-field-of-view cameras will give the geospatial professional a new way of acquiring data. Consumer UAVs equipped with 360° cameras will allow for a much more realistic representation of the area being surveyed or the area to be surveyed.

- **Artificial Intelligence (AI)**

UAVs integrated with AI will open up a whole new world of possibilities. The ability to command a drone to perform certain technical tasks or, in the event of a malfunction, to simply say “return to home” – and all from a remote location – will provide an added layer of versatility during the survey.

- **3D-printed UAVs**

The inception of 3D-printed drones will allow for a much more affordable and accessible UAV. Any mounts or gimbals needed for upcoming technologies can easily be printed and malfunctioning parts can easily be reprinted, thus eliminating the need for a new purchase and ultimately saving money for the end user.

There are a myriad of other applications that can be addressed here. However, I believe that one can now see the important role that disruption plays in the progression of an industry. The applications for drones will continue to grow as new, innovative drone and spatial acquisition technologies continue to emerge. As a community, it is our duty to embrace these new approaches as they will allow for the *continuous growth of our industry.*

Jonathan McCollin *is a final-year student at the University of the West Indies, St. Augustine Campus, pursuing a bachelor of science in geomatics engineering. He is currently working towards being an inimitable catalyst of exponential technologies in the geomatics industry.*