

**ROB BUCKLEY**

EDITOR

robertbuckley@geoconnexion.com



## Editorial:

**Rob Buckley**, Editor - GeoInternational  
robertbuckley@geoconnexion.com

**Peter FitzGibbon**, Editor - GeoUK  
peterfitzgibbon@geoconnexion.com  
+44 (0) 1992 788249

**Alan Plumley** News Editor  
+44 (0) 1438 715124  
news@geoconnexion.com

## Columnists:

### GeoInternational

**Louise Friis-Hansen**, FIG  
**Daniel Katzer**, Hinte Messe  
**Roger Longhorn**, GSDI  
**Alistair Maclenan**, Quarry One Eleven  
**Geoff Sawyer**, EARSC

### GeoUK

**Chris Harris**, Modern Surveying  
**Graham Wallace**, AGI News  
**Guest Blog: Damian Testa**  
**Terri Freemantle**, Observations

## Publisher:

**Mai Ward**  
+44 (0) 1223 279151  
maiward@geoconnexion.com

## Advertising:

**Micki Knight**, Sales & Marketing Director  
**+44 (0) 7801 907666**  
**mickiknight@geoconnexion.com**

## Mailing Address & Subscription Enquires:

**GeoConnexion Limited**,  
PO Box 594, Cambridge,  
CB1 0FY, United Kingdom  
+44 (0) 1223 279151  
info@geoconnexion.com  
subscription@geoconnexion.com  
www.geoconnexion.com

## Design:

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www.atgraphicsuk.com

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# THE PLATEAU OF PRODUCTIVITY

## UAVS HAVE AT LAST BECOME A MATURE, EVERYDAY PRODUCT FOR THE AVERAGE SURVEYOR. BUT INNOVATIONS ARE STILL CONTINUING

Back in my June editorial ("The slope of enlightenment"), I discussed how UAVs had transitioned along Gartner Research's famous 'Hype Cycle' from the initial 'technology trigger' to the 'slope of enlightenment' – the point at which "More instances of how the technology can benefit the enterprise start to crystallise and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious."

What comes next? The 'Plateau of Productivity': "Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off."

In the space of those few short months since the June issue, it seems that UAVs have quietly started to make their way onto that plateau, just in time for this year's InterGeo – as can be seen from the articles in this month's issue. These include a broad range of applications and innovation that indicate that not only are UAVs being used in more and more areas, but their use is mature enough that their operators are demanding additional capabilities and even changes in legislation to enable their further use.

Many UAVs can fly autonomously, once a flight path has been programmed into their onboard computers. However, certain applications still require the operator to maintain visual contact with their vehicles, such as when surveying near airports or conducting low-altitude surveys near obstacles. Legislative changes and improved management systems that take into account UAVs' autonomous capabilities are a good future solution, but they'll need time to implement. On page 39, Francois Gervais looks at how UAV operators can manage line-of-sight issues now and the compromises that will need to be balanced against one another to obtain good data.

Certain new applications of UAVs present even greater problems. Imagine flying your survey UAV around your chosen area... but towing a cable and magnetometer! Yet such are the advantages of UAVs now they're reaching the 'plateau of productivity', this is already what some people are doing. How

then to program your flight computer to take into account additional challenges, such as yaw induced by the magnetometer when turning or the altitude needed to be both safe and accurate at all times? On page 36, Sabine Markus looks at all the tricks needed to manage a UAV when it's suddenly several metres high!

UAVs are now mature enough that surveyors have a huge range of possible options to pick from when selecting a vehicle that suits their project. However, often there's a trade-off to be made. Multirotor UAVs are easy to use and can take off and land easily. However, their light weight means they can be buffeted by winds; it's harder for them to carry heavier, high-end cameras; and battery life can be poor.

Fixed-wing UAVs, on the hand, can carry heavier weights, fly further and faster, and require fewer battery changes. However, the larger they are, the harder they are to use, and they typically require a runway or catapult to launch from.

A new type of vehicle potentially combines the best of both these worlds – the vertical take off and landing (VTOL) UAV. Just like a Harrier jump jet, the VTOL UAV can take off and land on the spot, just like a multicopter. However, once in flight, it acts like a fixed-wing aircraft, gaining all their benefits in terms of range, speed and payload. On page 42, Adyasha Dash looks at VTOL UAVs in practice and considers some of the environmental and farming applications to which they're already being applied.

Of course, no one buys and flies a professional grade UAV purely so they can fly it. It's all about the data. On page 30, our regular contributor Lewis Graham looks at best practice in producing mapping products from UAV data, particularly with regards to the mining sector and its unique needs. Over the years, Lewis has more or less navigated the entire UAV hype cycle in these pages, from first building his own UAV through flying test missions to now including it as an invaluable, everyday tool in his surveying arsenal. Join him, if you will, on the UAV plateau of productivity.