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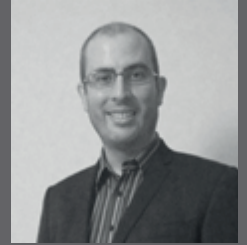
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# WHAT CAN WE DO WITH THIS?

## IT ALWAYS TAKES TIME TO WORK OUT WHAT NEW TECHNOLOGY CAN BE USED FOR. UNMANNED AERIAL VEHICLES (UAVS) ARE NO DIFFERENT

When the mathematician Alan Turing developed the idea of the 'universal machine' in 1936, I doubt he could ever have envisioned the purposes to which digital computers would be put. While he assuredly knew they would be able to calculate the answers to mathematical problems, could he ever have predicted their use for 'first-person shooters', editing movies or creating maps?

Similarly, back in 1945, science-fiction writer Arthur C Clarke predicted the creation of geostationary communication satellites, but nowhere in his letter to *Wireless World* did he ever mention satellite TV or the BeiDou GNSS system. Even more recently, Theodore Paraskevako's 1974 patent for the 'smartphone' may have included computational power and a screen, but it never mentioned that our phones would end up organising our lives, taking our photos for us and even guiding us around town when we're lost.

Yet now, despite never having occurred to the inventors of these technologies, these applications are commonplace.

Unmanned aerial vehicles (UAVs) aren't themselves a new technology, having been experimented with over the course of the entire 20th century. However, UAVs that are light, easily available to civilians, affordable, remotely controllable and able to include useful payloads are far newer. As a result, many of the people now using them are the pioneers.

This issue, in a special focus on UAVs, we look at what some of these innovators are doing. We start on page 19 with our columnist Alistair Maclenan who looks at Lily, a UAV that can follow its owner, recording data wherever he or she goes, and at the potential for UAVs to stop potential disasters before they start.

Alistair also looks forward to InterGEO, where UAVs are set to dominate, and on page 20, our Company Showcase looks at just some of the companies who are going to be exhibiting there. Meanwhile, on page 30, Megan Roden looks at how attitudes towards UAVs are changing, thanks to some of the latest innovations for geospatial professionals.

On page 31, in the third of his series of articles looking at his experiments with UAVs, Lewis Graham reveals how he's been getting on with using UAVs for survey-grade position-

ing information. As well as trials of several cameras, Lewis has been determining whether real-time or post-processed kinematic systems provide the most advantages.

Long-time UAV user COWI has been putting UAVs to a new use: traffic analysis. With cameras floating above roundabouts and using semi-automated tools, traffic planners have been able to work out not only when congestion has been taking place but why. But with UAV batteries still only offering relatively short flight times, how have they been able to keep their UAVs aloft for many hours at time? René Lund Hansen reveals the solution on page 34.

Meanwhile, France's Akuo Energy has been looking for a way to both create a basemap and survey its fields of solar panels to determine if there are any problems. For years, manual inspection seemed to be the only way, despite Akuo's solar farm covering 30 hectares of land and including 75,000 solar modules. But a group including a UAV surveying company and two software companies have been able to develop a surveying method involving UAVs that could replace manual inspection.

Yet Akuo had one big fear – if a UAV falls from the sky, the solar panel it lands on is not going to fare well. Any UAV used for inspections would have to not only be able to fly for long periods of time but also be very reliable and capable of completing very precise flight plans.

You can find out on page 36 how the group managed to find a UAV and camera that would do the job, cut inspection times by 50% and reduce post-processing times by 30%.

At the time they were made, Easter Island's famous 'moai' statues were themselves cutting edge technology – how exactly they were constructed and put in place is something about which historians and archaeologists are still arguing. But UAVs are now shedding light on the moai, as well as providing planners with the information they need to boost eco-tourism on the island. Erik Dahlberg investigates Rapa Nui in our cover story on page 40.

As you read these articles, keep in mind that what these innovators are doing could one day be as commonplace as using Google Maps on your smartphone – thanks to their hard work and vision.

I hope you enjoy the issue.