With the global civil UAV industry set to reach revenues of $15 billion in 2022 according to a new report by Interact Analysis, many traditionally government and defence-orientated companies are setting up commercial business units in order to tap into this lucrative market.

By Beth Maundrill

While government contracts usually involve the acquisition of UAS hardware, the commercial market is leaning towards providing a whole service, which includes the use of UAVs, typically for data-gathering. Interact Analysis’ report predicts that ‘revenues generated by UAV services will exceed $8 billion by 2022 – almost double the revenues coming from the UAV hardware itself’.

Large defence and aerospace firms such as Airbus, Insitu, Leonardo and Textron are all seeking to make gains in this market and have, in one form or another, set up commercial business units (CBUs), with Insitu and Textron both making a big splash with their new business models.

Hunting stability

Speaking to UV, Alastair Hayfield, research director at Interact Analysis said: ‘[CBUs] make a lot of sense for them. It is fairly well known that defence budgets are tightening globally and [government] drone projects can be quite unpredictable, so they are looking for more predictability. The commercial market gives that opportunity.’

Hayfield noted that these large companies not only have a wealth of experience in the unmanned market place, they also have good relationships on the legislative side with various aerospace bodies, which can help with activities such as BVLOS and autonomous operations.

Commenting on the report, Hayfield said: ‘Due to the immaturity of the downstream market – eg service providers capable of effectively employing UAVs – UAV vendors are having to work directly with end-customers and provide services...’
There are a lot of people buying small drones, but I don’t yet know that industry has matured enough to see where there are real value propositions of those devices.

The company’s chief growth officer, Jon Damush, commented: ‘Given the hype around the small drone market, people tend to focus on the small hand-launched commoditised drones. There are certainly value propositions there and there are a lot of people buying drones, but I don’t yet know that industry has matured enough to see where there are real value propositions of those devices and I think we are still at the peak of the hype curve.’

He added: ‘Our focus and our remit is much broader than what people typically see as the drone space and we see tremendous opportunity across industry for that.’ Damush stated that there is such great potential and value in unmanned systems that the company feels a responsibility to help industry ‘do it right’. ‘Because we are at the top of the hype curve and so many eyes are on the industry, there is pretty significant risk if someone does something silly that that will have a detrimental effect.’

Insitu believes it has valuable experience to offer and help shape how people carry out operations within the rules and regulations set by legislative bodies. ‘You have to integrate carefully, and carefully is informed by experience,’ said Damush.

Vertical challenge
Another company with significant know-how in the unmanned sector is Textron Systems Unmanned Systems, which formally stepped up its CBU around 12 months ago. Textron’s senior director of the civil and commercial product line, Dennis Racine, said that the company has put its focus on four main verticals: oil and gas; disaster response; agriculture; and security and surveillance.

Despite industry looking to the agricultural market, this could be one of the more difficult sectors to tap into. Interact’s evaluation states: ‘Agriculture, which has been tipped to lead industry growth by other industry reports, was not viewed quite as positively by this report. Although fast growth is still predicted for UAVs in agriculture, it will remain one of the smaller verticals, according to the report.’

Hayfield explained that the use case for unmanned services in the agricultural market as well as supplying UAV services to the agricultural industry. Insitu first announced the formation of a new CBU within its corporate structure in May 2016.

The less expensive end of the market, which includes offerings from Chinese company DJI, is likely to appeal to many users as the capabilities of these UAVs are sufficient for a number of activities. It will be a challenge for companies to put fixed prices on their offerings and it is unlikely to be done on a price-per-flight-hour basis. Pricing is more likely to be market-driven, and the profit margin which is the norm on large military government contracts will not be guaranteed.

However, the Interact report demonstrates a number of industrial applications for UAVs, and according to Hayfield, end-users may well desire a better quality of product for these, on which they are willing to spend more.

Interact predicts that the building and infrastructure vertical will be the largest by 2022, as well as being the major driver of UAV industry growth. This vertical includes the inspection and surveying of items such as mobile phone towers, bridges and buildings.

Companies such as Insitu, however, are looking at tapping into the oil and gas market as well as supplying UAV services to the agricultural industry. Insitu first announced the formation of a new CBU within its corporate structure in May 2016.

Reconnaissance in support of fire-fighting is one key role for the ScanEagle. (Photo: Insitu)
The Falco UAS has been employed in Africa as part of UN surveillance missions. (Photo: Leonardo)

The Falco UAS has been employed in Africa as part of UN surveillance missions. (Photo: Leonardo)

market is strong but that a greater number of competitors providing the required services, such as satellite imagery, and the sector being more price-conscious than other industries mean ‘revenues coming from agriculture may be a little slower’. 

There are also stark differences between the requirements from government military users and the commercial market. Racine pointed out that due to its experience providing military solutions, ‘Textron has the capability to provide 3cm resolution, while most [commercial customers] are perfectly happy with 10 or 20cm.’ He added: ‘[On the agriculture side] it’s a similar solution but the requirements and the specification of the equipment is a little different. We don’t have to have the level of performance and capability on the commercial side that we have on the military side.’

He pointed out that the company’s Aerosonde UAS has been utilised in the military by USSOCOM and USN for ISR programmes. The UAS has a total endurance of around 14h, which is not necessarily required by commercial customers, for whom six to eight hours is usually sufficient.

The latest iteration of the Aerosonde UAV, the Mk 4.7, is capable of carrying multiple payloads and was first demonstrated in 2009. It was developed and is produced by personnel at the Textron Systems Unmanned Systems HQ in Hunt Valley, Maryland, and Aerosonde, the company’s small UAS business unit in Melbourne, Australia.

While the new CBU is relatively small in comparison to the established business, Racine said that the company has set some ‘aggressive growth goals’. He added: ‘There are a lot of discussions from a railroad infrastructure perspective that have similarities to energy. We have also had enquiries from customers in the mining business.

‘I think we have the equipment that is capable today, but neither of those industries are where we have any past performance, so it is about trying to understand how applicable our equipment and our technology is and [whether] it transfers over fairly well or if there is a significant learning curve we have to go through.’

In the commercial sector, the solution provided – usually in the form of an entire service – needs to be flexible to meet various industry needs. Damush told UV that the commercial services that Insitu offers are ‘less about the wings and the engine and more about understanding the answer that [the customer] is trying to get’.

**Data demands**

For the commercial sector, the capability to collect and render raw data is key. Companies tapping into this market often have a background data distribution capability and analytical tools, which can be packaged with an unmanned vehicle. In May 2017, Insitu announced the formation of Inexa Solutions, a company which will gather raw data, providing analysis and actionable intelligence. In doing so, it will draw upon experience gained in Australia, where Insitu Pacific has been utilising its most renowned UAS, the ScanEagle, for oil and gas operations. A contract was originally signed with the Queensland Gas Company (QGC) in May 2016 after 18 months of trials, which began in 2014.

The QGC has been conducting BVLOS operations using the ScanEagle in the Surat Basin of south-west Queensland on inspection and monitoring tasks. The company worked with Australia’s Civil Aviation Safety Authority to arrange for the BVLOS operations.

The ScanEagle made its first flight in 2002. It has been in service with both the USMC and the USN since 2005, as well as with multiple foreign military users. In August 2017, Insitu reached a milestone when the ScanEagle, Integrator and RQ-21A Blackjack unmanned platforms hit a collective one million operational flight hours.

Insitu’s entrance into the commercial market comes with lessons learned through more than 20 years of experience flying unmanned aircraft. ‘Certainly, lessons about operating and flying unmanned systems but also lessons about logistics and supporting people and moving spares, and mean time to failure for specific components,’ Damush explained. ‘All of those things that go into being able to actually deliver to an industrial scale.’

The company has also teamed with FireWhat and Esri to improve UAS-based wildfire fighting capability services, it was announced in August 2017. These will be offered by Inexa Solutions using the ScanEagle UAS to carry payloads such as the new High Accuracy Photogrammetry sensor and FireWhat’s geographic information system (GIS) customised for firefighters and hosted on Esri’s ArcGIS platform.

According to Insitu, ‘the aim is to combine these technologies to dramatically increase strategic and tactical awareness and decision-making for firefighters and first responders’.

While fire-fighting and oil and gas services are on the agenda for Insitu, one industry which it is not looking to at the moment is insurance. ‘We’re not interested in taking photos of someone’s
house. You could say the insurance business and assisted claims adjustments are still difficult for us to see enough value to go build bespoke capabilities for that industry,’ said Damush.

Insitu is likely to continue to focus on the larger industrials requiring assistance. ‘That’s kind of our sweet spot because we know how to deploy the right mix of sensors to get that answer to the customer.’

Textron Systems’ Aerosonde UAS with remote video technologies has also been utilised to support wildfire deterrence and response. In 2015, the system was used in support of a multi-day wildfire response and decision support effort in Idaho with the US Department of Interior and the US Forest Service.

Textron’s CBU has been drawing on expertise within its parent corporation to enhance its offering to the commercial market. Racine explained: ‘We have leveraged Textron as an enterprise... we reached out to Geospatial Solutions, who specialise in GISS. We also reached out and are working with Textron Aviation.

‘We found in the agriculture space, for example, there is a need to be able to capture a lot of imagery over a lot of acreage. In some cases, for some projects, in order to cover the millions of acres we want to, it is better to use a manned aircraft. So we reached out to Cessna, our sister company, to lease airplanes to do projects.’

This gives the company the ability to scale up its efforts worldwide for large amounts of linear inspection, surveying or mapping.

Fee for service
Meanwhile, Leonardo is taking its experience of providing unmanned services to the United Nations for peacekeeping operations in the Democratic Republic of Congo. This was operated under a fee-for-service deal.

At the 2017 Paris Air Show, Leonardo revealed it had opened a new business unit within its airborne and space systems division, the air service operations unit, which will play a pivotal role in its strategy for the commercial use of its Falco UAS.

Five export customers currently operate the Falco UAS, all of whom are outside the US and Europe. Its latest iteration, the Falco Evo, has been selected by two countries in the Middle East – including one Gulf state – both of which already operate the legacy Falco.

The new business unit is intended to focus primarily on surveillance missions outside of the military domain, and will involve the gathering and management of data for missions such as fire-fighting, environmental monitoring, migration flows, humanitarian relief and border control. Leonardo has also spoken with the European Maritime Safety Agency about utilising the Falco in maritime pollution detection, which could require the addition of a hyperspectral camera.

The upgraded Falco Evo model is capable of surveillance over land and maritime
environments. The Evo has real advantages over the older model, with increases in endurance and payload, and future developments could include an improved satellite data link.

Speaking to UV, Fabrizio Boggiani, senior VP for support and service solutions at Leonardo said: ‘The advantages that RPAS bring to ISR services compared with current solutions that use manned air vehicles are significant. Bids for ISR services to be performed with RPAS are more and more frequent. Leonardo believes that the RPAS market will continue to significantly grow over the next few years.’

Field experts
The company is working with the Italian aviation authorities to achieve civil certification of the Falco, which it hopes will be completed soon. The commercial offering will focus on larger aircraft. The Falco has an MTOW of 500-650kg, compared with the Aerosonde’s 37kg and ScanEagle’s 22kg.

Like other companies entering into the commercial market, Leonardo has other expertise outside of the design and production of UAS, including access to a wide range of sensors manufactured by the company. The Falco Evo can be fitted with payloads such as the Gabbiano 20 multi-mode surveillance radar, PicoSAR E-scan or Osprey AESA. Falco can also carry the Sage EW system.

Additionally, Leonardo has partnered with certified air operator Heli Protection Europe (HPE) to offer surveillance and reconnaissance services via the operation of RPAS on behalf of civil customers such as police and emergency responders. The company says: ‘By operating with HPE as a certified air operator, Leonardo will demonstrate that its Falco RPAS can, in accordance with HPE’s safety management system and guidelines from international authorities, safely carry out critical operations.’

Leveraging contacts in the regulations sector of aviation is one advantage that these corporations have to offer the commercial market, as bodies such as the FAA continue to work to define rules and regulations around the operation of unmanned aircraft.

Boggiani noted: ‘The systems used for commercial customers are the same as the ones currently used for government customers. The difference relates to safety. Flying over populated areas puts a greater emphasis on safety than in military operations. For that reason, Leonardo has teamed up with (HPE) to offer (when the airspace regulations are issued) data surveillance and reconnaissance services using UAVs.’

Looking to the future, Boggiani said over the next 12 months the company hopes ‘to improve our performance in running ISR service contracts to win additional new bids and to fully position ourselves in view of the expected evolution of ISR services in the commercial market as well’.

He added that the commercial demand ‘is a new market with many unknowns that make it difficult to provide a reliable prediction [on profitability] at this stage, but we are convinced of its future upward trend and significant volumes.’

Aerial aims
Also dipping its toe into the commercial side of unmanned systems is Airbus
Defence and Space, which created a commercial UAV services start-up in May 2017, known as Airbus Aerial, based in Atlanta, Georgia. The CBU has a presence in both the US and Europe and aims to begin operations with imagery services, fusing satellite images and software to bring deeper insights to commercial customers.

Highlighting the use of data-gathering outside of UAV solutions, the company said: ‘These services will leverage the best software and aerospace technology from across the globe to offer actionable data and analysis of information provided by drones, satellites, high-altitude aircraft and other sources.’

Dirk Hoke, CEO of Airbus Defence and Space, said that the focus on commercial UAS ‘is bringing together partners from across the industry – ranging from vehicle manufacturers, data analytics companies, service providers and others – to enable data-focused services at large scale’.

While imagery services are at the forefront of the company’s ambitions at the moment, additional pillars of Airbus Aerial activities will be in the area of cargo drones and providing connectivity via aerial assets.

The imagery services will target typical commercial industries, such as insurance, agriculture, oil and gas, and utilities, as well as state and local governments. While Insitu has said it is less interested in the insurance industry, it could suit an Airbus offering as it could utilise its satellite capabilities and HAPS system, the Zephyr, for this purpose.

As part of its strategy, Airbus Aerial is seeking partners. Stating ‘we can’t do it alone’, the company is looking to data analytics companies, field services firms or small drone manufacturers to join its team. With an industry full of start-ups, it is likely that some of the larger players may want to acquire some of that expertise.

Hayfield believes that over the next three to five years the industry is likely to see consolidation. ‘Some of these larger defence companies may look at start-ups and think they have an interesting business model and an interesting reach to market, and that is something we can go and acquire.

‘There are a number of start-ups who are acquiring customers and experience in the market at the moment, so there will be some competition, but as we found, there is a pretty big market opportunity here, and there will be a lot of space for these companies to grow side by side.’

At the moment, the commercial services offerings make up a small part of these larger businesses and it is unclear whether any more defence conglomerates will throw their hats into the commercial unmanned ring, but with the right mix of capabilities, contacts and industry know-how, it certainly looks like a very lucrative future market.