24 May 2018

Spookfish continues to be at the forefront of technology developments within the aerial imaging industry

Highlights

- Upgrades to Spookfish's sensor and lens technology are delivering increased capture productivity and image quality

- EagleView's second order incorporates updated control systems, delivering material cost reductions and enhanced productivity

- Upgrades to Spookfish's capture technology have eliminated visual cutlines, balancing increased productivity and high-quality imagery

- Spookfish is exploring a sales strategy for Oblique Mosaics that allow the direct measurement of imagery by end users

- Spookfish continues to develop its machine learning / artificial intelligence [AI] capabilities to further enhance productivity and image quality

- US Federal Aviation Authority (FAA) certification enables Spookfish's camera system to be rolled out at any scale in Australia, the US and other countries accepting FAA certification.

Spookfish Limited ("Spookfish" or the "Company") (ASX: SFI) is pleased to provide the following update on its technology developments, that showcase how the Company is continuing to be at the forefront of the aerial imaging industry while also accelerating commercialisation of the Company's product-suite.

Commenting on the significant technological achievements and advancements by Spookfish, Chief Executive Officer Jason Waller said: "Spookfish continues to successfully invest in research and development initiatives that further strengthen our market-leading position as a provider of next generation, premium geospatial imagery. We are excited by the advancements we are achieving on our already state-of-the-art aerial imaging technologies, and will continue to update the market as we both commercialise and continue to enhance our product offering."

Technology at the forefront of the aerial imaging industry

In late 2017 Spookfish flew the first test flight of a new upgraded and bespoke sensor and lens package. Demonstrating the market-leading position of Spookfish's technology, the upgrades have increased capture productivity and delivered higher image quality.

Developed in conjunction with North American partner, EagleView Technologies, Inc. ("EagleView") the new optics provide 2-3x the resolvable resolution of the previous generation technology.

In addition, the new sensor package provides increased environmental tolerances suitable for higher altitude use. This enhances Spookfish's ability to capture data in difficult airspace such as Sydney and Brisbane, due to the ability to fly higher and capture larger areas more quickly. The new sensor and optics package is being flown currently in the US, with full deployment in Australia scheduled to commence early in the third quarter of 2018.

Image 1: Sample Oblique from custom Sensor & Optics Package

EagleView camera system update

The second EagleView order incorporates a range of updated control systems that demonstrate the ongoing evolution of our camera system and deliver material cost reductions and enhanced productivity.

The new order consists primarily of upgraded configuration camera systems that incorporate an updated, more compact control system. These updates have significantly reduced the camera system's weight and complexity, as well as materially reducing the per system cost. The new control system is also scalable to future generation 3+ tube camera systems.

The remainder of EagleView's second order consists of the next evolution of our camera system that incorporate an all-new tube design optimised for the new custom sensor package, allowing for the use of larger optics than the original design. This optics upgrade will provide a 35% improvement in capture altitude and productivity, further improving capture capability in difficult airspace. The new design has a significantly reduced part count and weight, simplified assembly and maintenance, and an increase in axial stiffness of more than 30%. This evolution of our camera system is scheduled to be test flown in the third quarter of 2018, with the first production items expected to be shipped in the fourth quarter of 2018.

OrthoMosaic quality enhancements

Upgrades to Spookfish's capture technology have eliminated visual cutlines – the joins between photos. This allows the Company to balance productivity with high-quality imagery.

A new bespoke method for OrthoMosaic production, introduced in the first quarter 2018, allows Spookfish to generate seamless and high-quality orthomosaics and oblique mosaics over wide areas, even with wider, higher-productivity flight line spacing. The image quality constraints with wide flight line spacing is often the limiting factor inherent in legacy systems in the market.

Spookfish's new technology automatically generates the joins between photos using a smart algorithm that efficiently selects the optimal solution from hundreds of input photos.

Demonstrating Spookfish's advantage over competitors, other systems typically require either manual cutline adjustment or utilise basic blending algorithms to attempt to reduce the impact of joins. This often requires a high level of manual intervention, increases throughput time and reduces mosaic quality – problems Spookfish's system has overcome.
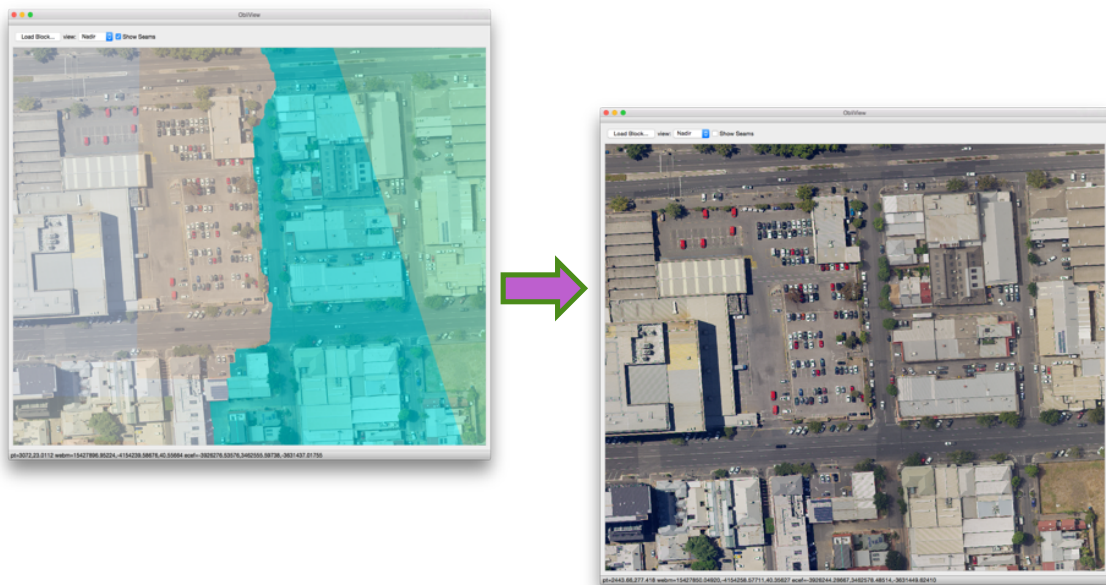
Image 2: Cutlines for a single output tile over Adelaide

Measurable oblique mosaics

Spookfish's proprietary OrthoMosaic cutline process allows the production of Oblique Mosaics that can be directly measured, which eliminates the cumbersome requirement to use individual oblique frames for measurement.

At the recent Locate conference (the premier spatial industry event in Australasia) in Adelaide, Spookfish demonstrated measurable oblique mosaics to gauge market interest in these products. Spookfish has captured Obliques simultaneously with Nadir imagery since the first test flights in the first quarter of 2014, but historically there has been insufficient market demand to provide obliques as a product in Australia.

The Spookfish Product Management team is now working with key customers during this current quarter who have expressed interest in oblique imagery to refine a strategy for the sale of oblique products in Australia.


Image 3: Measurable Oblique Mosaics in the Spookfish ObliView Application
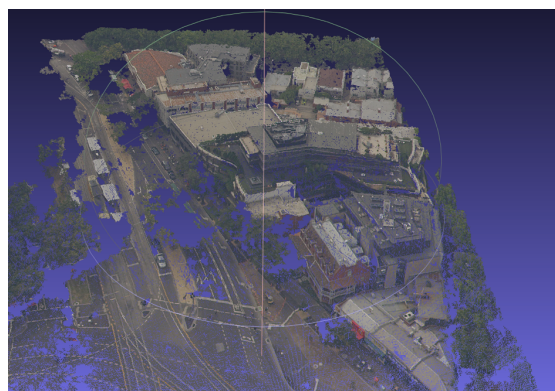
Sparse and dense point clouds

Also shown at the Locate conference in Adelaide was a Spookfish generated Sparse point cloud, a by-product of the Company's unique scalable Auto-Triangulation (AT) process that can generate over 1.3 million tie points per square kilometre or 1.3 points per square metre.

This average density of points is on par with LIDAR data capture and allows for the fully automated processing of the Spookfish imagery to a range of high-accuracy output products with no requirement for additional input such as ground control points. Output has now been significantly upgraded by utilising multi-ray matching techniques, such that point densities of over 1,000 points per square metre are now regularly produced to output Digital Surface Models and 3D point clouds.
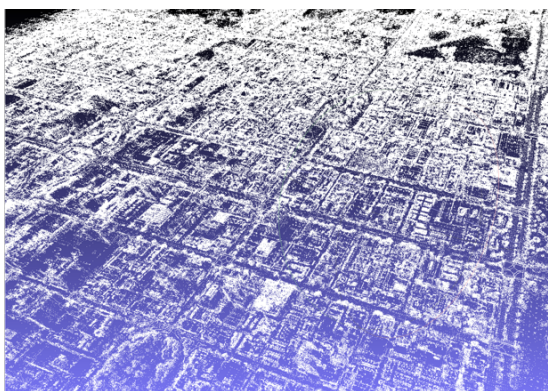
Image 4: Sparse Point Cloud over Adelaide   *Image 5: Partial Dense Point Cloud over Melbourne*

Dense 3D Point Clouds, Digital Surface Models and 3D Mesh products are scheduled for release in the second half of 2018.

Machine learning and artificial intelligence [AI]

Spookfish continues to develop its machine learning and artificial intelligence [AI] learning capabilities to open up enormous new market opportunities.

The Company has begun working with third parties to leverage its high quality and highly accurate data to help progress Spookfish's rapidly evolving AI strategy. The strategy has a three-pronged operational approach:

1. Development of in-house applications for specific applications;
2. Licensing AI technologies from third parties to deploy into the Australian market; and
3. Partnering with third parties to directly support them in the Australian and international markets.

Initial results by third parties using Spookfish imagery instead of contemporary data sources has demonstrated impressive results with errors reduced by a factor of 5x against satellite imagery:

Aerial example

Satellite example

Image 6: Comparison of Building Footprints Spookfish vs Satellite

In another rapid proof of concept that was developed by Spookfish for a potential infrastructure foundation customer, an infrastructure asset detection success rate of 95.5% was achieved. This clearly demonstrates the substantial benefits to customers from combining machine learnings / AI with the Company's high resolution and accurate imagery.

Certification updates

With the recent approval of Supplementary Type Certificate (STC) #2 covering the Spookfish camera system's components, the entire camera system can now be rolled out at any scale in Australia, the US and any other countries accepting FAA STCs with no further compliance requirements for the system.

In addition to this, the Spookfish lead project team now has the in-house capabilities to perform conformity inspections and issue amendments to the STC for future updates to the system without requiring further input from CASA.

For more information, please contact:

Jason Waller
Chief Executive Officer
E: jason.waller@spookfish.com

Ronn Bechler
Investor relations, Market Eye
E: ronn.bechler@marketeye.com.au
P: +61-400 009 774

About Spookfish

Spookfish Limited (ASX: SFI) is an Australian listed public company focused on the development and commercialisation of premium next generation geospatial imagery products and services. By starting from a clean sheet and challenging what was thought impossible, Spookfish's revolutionary technology enables rapid imaging of vast areas in high resolution from a multitude of angles at a fraction of the cost of contemporary systems. Spookfish aims to use these capabilities to make it easy for organisations of all sizes to gain access to premium imagery content and pervasive 3D models allowing concise, accurate and cost effective decision-making.