

SOR Demonstrates AxV Potential for Global Agriculture Sector

Perth, Australia, 25th March 2020 – Strategic Elements Ltd (ASX:SOR) subsidiary Stealth Technologies has successfully demonstrated the potential of its automation & robotics platform (AxV) to be leveraged for the multi-billion dollar global agriculture sector.

Work with collaborators¹ the Australian Herbicide Resistance Initiative and the University of Western Australia School of Agriculture and Environment has assisted the Company to achieve early stage validation. Further optimisation and engineering leading to an expanded technology demonstration across multiple potential end user reference sites is to be conducted.

Stealth has also filed **patent protection** covering a weed detection device, including the arrangement of sensors on a moving vehicle platform, algorithms, methods of weed detection, and software to process crop data from a moving vehicle to estimate locations of weeds.

Technology Background

Available advanced weed detection technologies typically use RGB cameras and different forms of imaging that distinguish weeds and crops via colour. This has serious limitations in broadacre cropping where weeds are often the same colour as crops. The Company is taking a different approach by leveraging the sophisticated sensor, mapping and localisation technology already built and used in its Autonomous Security Vehicle collaboration² with US Fortune 100 Company 'Honeywell'.

The need for excessive use of chemicals and production loss costs are significant issues for the global agricultural industry. The estimated cost of weeds in Australian cropping systems alone is at **AUD\$3.3 billion³ annually**. Total annual cost of weeds in the United States are estimated at **\$US34.5 billion³**.

Development Update and Progress

Stealth, UWA and AHRI collected logistics and in-field scoping data from a large scale broadacre farm in WA (reference farm) to enable detection of weeds protruding above the canopy of a barley crop. Weed detection prototype hardware was developed and installed onto a combine harvester during harvest.

Algorithms were then developed, tested and validated by comparing the location of weeds detected by the technology with known locations of weeds with visual confirmation. On a limited data set the technology was able to detect 100% of weeds with a height threshold of 20cm above crop canopy.

Significantly, the technology was able to detect weeds from the barley crop notwithstanding the fact that both were brown in colour and barely distinguishable to the human eye. Currently available technologies using computer vision solutions would be unable to replicate these results.



Opportunity

Traditionally, farmers have treated weeds in large-scale crop farming with the mass universal application of herbicides, however weeds are becoming herbicide resistant. This means that farmers have to use targeted herbicides that are more expensive and can lead to new generations of weeds resistant to these new herbicides. A solution is to use alternative agronomic techniques to target weeds. This can include spot application of herbicides, increasing the seed rate over known weed areas when planting crops to starve out weeds during the season and increasing fertiliser rates within paddocks over weed locations during the season.

All these techniques require accurate knowledge of weed locations, that to date is lacking in farm management. The technologies that Stealth and its collaboration partners are developing are designed to solve this problem in large-scale crop farming whilst keeping the work-rate at the required levels.

The value proposition for Stealth is to deploy this technology to farms around the world where large-scale crop farming exists. This includes not just crops such as wheat and barley but could be extended to corn, canola, and other large-scale crop types. The usage of this technology together with agronomic techniques that can leverage weed location knowledge could dramatically decrease herbicide input costs to farming whilst maximising crop yields making farming more efficient and profitable for farmers.

Milestones and Schedule of Work for the Collaboration

1. Optimisation of the weed detection technology – further work to optimise the technology for different environments, crop types and deployment scenarios. **Q2**
2. Product engineering – advancing the technology into a versatile and easy to use package that can be installed by farmers onto a wider range of farm equipment – from combine harvesters to sprayers and other farm equipment. **Q3 and Q4**
3. Demonstration scale-up – increase end user reference sites at multiple sites and in different environments. A program is being developed to deploy the weed detection technology to at least ten potential end customer reference sites in the November 2021 harvest. **Q3 and Q4**

Managing Director Charles Murphy said: *“Our strategy to build a platform that had applications across multiple industry sectors is starting to fulfil its promise. Our commercialisation strategy is to collaborate closely with end users to solve a real, existing problem with automation. From an Australian domestic market context other sectors like logistics and mining also have attractive opportunities and we are very active in seeking the right partners with which to collaborate”.*

About Strategic Elements Ltd

The Australian Federal Government has registered Strategic Elements as a Pooled Development Fund with a mandate to back Australian innovation. Strategic Elements operates as a ‘venture builder’ where it generates high risk-high reward ventures and projects from combining teams of leading scientists or innovators. The Company has 100% owned subsidiary companies developing:

1. **Robotics and automation** technology for mining, security, agriculture, transport. Collaboration with Fortune 100 Company ‘Honeywell’ for Autonomous Security Vehicles³. Further agreements with UWA and CSIRO.
2. **Self-charging battery** technology in collaboration with the UNSW and CSIRO⁴. Uses humidity in air to generate electricity. Extremely small, thin, light weight flexible battery cells.
3. **Transparent flexible memory** technology working with the UNSW, CSIRO⁵ and VTT (Finland). Enabling flexible plastic and glass surfaces to store and process data instead of needing silicon chips.
4. **Data related** technology acquisition/development has been noted by the Company as its next potential area for venture generation.

Most investors in SOR pay no tax on capital gains from selling their SOR shares as the Company operates under a Federal Government program setup to encourage investment into innovation. The Company is listed on the ASX under the code “SOR”. More information on the Pooled Development Program should be read on the Company’s website www.strategicelements.com.au. More information on this release: Mr Charles Murphy, Managing Director Phone: +61 8 9278 2788 admin@strategicelements.com.au

This announcement was authorised for release by Strategic Elements’ Board of Directors.

¹Announced 19/10/2020²Announced 16/10/2020³<https://invasives.com.au/wp-content/uploads/2019/01/Cost-of-weeds-report.pdf>

⁴Announced 1/12/2020⁵Announced 30/07/2020