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Technology Commercialisation Opportunity – Expression of Interest

Mobile ground-based platform for the phenotyping of crops
phenoMobile[®] Technology

All queries regarding this Request for Expression of Interest should be directed to:
Contact officer: Ms Marni Tebbutt
Contact address: Marni.Tebbutt@csiro.au

SUBMISSION CLOSING TIME: 5:00pm AEDT on Friday 19 April 2019

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CSIRO's phenoMobile[®] Technology is an advanced phenotyping buggy, light and portable to provide high resolution and high throughput data collection yielding values of crop height, fractional coverage and biomass index in various crops species, enabling companies to improve efficiencies in collecting crop data *in situ*.



This Opportunity is for:

We are seeking companies that want to obtain a licence for the manufacture and commercial distribution of the phenoMobile[®] Technology.

1. The phenoMobile[®] Technology

1.1. Background

- 1.1.1. The Commonwealth Scientific and Industrial Research Organisation (**CSIRO**) acting through its High Resolution Plant Phenomics Centre, a member of the Australian Plant Phenomics Facility, has developed a ground-based data acquisition system for the measurement of crops *in situ*, the phenoMobile[®] Technology (**Technology**).
- 1.1.2. The Technology comprises hardware design, system integration components (including software, middleware, cabling, harnesses, mounts), sensor configuration, hardware configuration, acquisition and control software, calibration methodology and operation protocols. Data acquisition and camera/sensor control and monitoring is achieved through a customised java graphical user interface (GUI) running on a touch-screen tablet.
- 1.1.3. CSIRO owns the design of the Technology. Once your Expression of Interest (EOI) has been received and validated, the reference design will be made available under a Non-Disclosure Agreement to those validated parties as part of the EOI process.
- 1.1.4. Elements of the Technology are covered by patent applications, trademark, copyright (in software and documentation) and confidential know-how.
- 1.1.5. The Technology was originally developed as a single custom research vehicle at CSIRO to address the requirements of agricultural scientists to acquire remote sensing and image data from field grown crops. This process is known as 'phenotyping'. Over the last decade the Technology has undergone multiple design iterations within CSIRO and has benefited from inputs from third-party engineering firms commissioned by CSIRO. Successive generations of the Technology are now in operation across Australia.
- 1.1.6. The Technology is designed to address the most pertinent technical challenges associated with ground-based field phenotyping, including – but not limited to – a rugged frame with an electronically adjustable wheel base to accommodate variable crop widths and heights, operated from rechargeable batteries, single user operation (autonomous operation enabled), easily transportable on a trailer and sensor payload up to 50kg.
- 1.1.7. The Technology has been trialled in a number of different environments; it has been validated by CSIRO in CSIRO's research for application in respect of the following crops: grapes, cotton, wheat, barley, triticale, corn (early stage), rice, canola, legumes. Testing of the system in Horticulture (except for grapes) and Forestry environments remains to be undertaken.
- 1.1.8. The current sensory payload consist of light-detection and ranging (LiDAR; SICK LMS400).

1.2. Key specifications for the Technology

1.2.1	4 wheel system with a variable operating speed in the range of 1-6 km/hr; ability to select and set a constant speed of travel;
1.2.2	A foldable mechanism which constraints the geometry to a parallelogram and maintain the geometry of the acquisition system constant;
1.2.3	Easily transportable (design for shipping crates and trailer transport); secured via tie-down points and wheel lock;
1.2.4	Turn-key, simple operation, to the extent that extensive training is not required to drive the vehicle or operate the sensors;
1.2.5	Adaptable to a variety of field terrain conditions including different slopes (up to 10 degree), moderately rough ground, dry arid soils, and wet and sticky soils;
1.2.6	Adaptable to a variety of experimental/field setups: adjustable wheelbase range of ~1.2 – 2.4m and plant heights during various growth stages (ground – 1.5m clearance);
1.2.7	Ability to operate continuously for up to 4 hours, and/or extend the power supply of the machine;
1.2.8	Capable of carrying a flexible sensor payload; and
1.2.9	Designed to Australian safety standards.

1.3. Complementary product offering from CSIRO

- 1.3.1 CSIRO has a complementary product called the phenoSMART® data visualisation and analytics platform. This is a cloud based e-infrastructure offered through a subscription payment model.
- 1.3.2 The phenoSMART® platform is akin to an app store, offering users access to advanced analytical and data visualisation tools. These are being continually developed as part of the product offering to include new features and support new sensor payloads and data types.
- 1.3.3 The phenoSMART® platform currently offers an application called phenoMobile® Data Analysis Tools, which enables current phenoMobile® Technology users to upload and analyse LiDAR data for crop canopies such as rice and wheat, and calculate metrics for plant height, biomass and fractional cover.
- 1.3.4 When powered by the phenoSMART® platform, the Technology is an end-to-end phenotyping solution.
- 1.3.5 For access to the beta-version (a release version will be offered in quarter 1 of 2019):
- Web page: <https://www.phenosmart.org.au/>
- Username: guest
- Password: 2019
- 1.3.6 Requests for more information about the phenoSMART® platform should be addressed to the Contact Officer.
- 1.3.7 Access to the phenoSMART® platform with the phenoMobile® Technology is subject to a separate agreement with CSIRO.

2. Opportunity – EOI phenoMobile® technology

- 2.1.1. CSIRO is seeking responses from suitable interested parties capable of working with us to commercialise the phenoMobile® Technology.
- 2.1.2. CSIRO is looking for a commercial partner that has the technical know-how, manufacturing, marketing and financial capacity to sell and support the Technology. This opportunity includes the potential option to further develop and commercialise the Technology for specific applications, market segments and territories around the world.
- 2.1.3. This is a two-stage process where an initial expression of interest is sought (Stage 1), followed by a more detailed discussion with shortlisted parties to determine where they see value in deploying the Technology and how this could be achieved (Stage 2).

3. Information to be provided with a Submission

In their submission interested parties should address the following:

- 3.1.1. A complete list describing the range of services required for commercialising the Technology including:
 - i. Ability to manufacture the Technology (scale of production);
 - ii. Ability to distribute;
 - iii. Ability and intent to provide post-sale services to the platform;
 - iv. Ability to market the product; and
 - v. Warranty conditions for manufactured product.
- 3.1.2. Previous experience in commercialising a similar technology.
- 3.1.3. Quality Deliverables – evidence of good work quality that complies with industry standards.
- 3.1.4. Resources – evidence that there are enough staff to execute the project.
- 3.1.5. Geography – evidence that there is appropriate geographical presence to successfully commercialise the Technology.
- 3.1.6. Customer Interface – evidence that there a suitable customer interface for the Technology.
- 3.1.7. Processes – including project management, account management, design and build.
- 3.1.8. Technical Status – infrastructure, development environment, security.
- 3.1.9. Financial & Commercial – sustainability, ownership structure and history, cash flow, intellectual property, non-disclosure.
- 3.1.10. Organisational structure and viability.

4. EOI Process

- 4.1.1. The intent of the EOI is for CSIRO to formally review interested parties for the process of the commercialisation of the phenoMobile® technology.
- 4.1.2. Submissions must be lodged no later than 5 pm AEDT on Friday 19 April 2019 (Submission Closing Time) by email to:

Submission Officer: Marni Tebbutt, Business Operations Manager

Contact address: marni.tebbutt@csiro.au

- 4.1.3. The Submission Closing Time, at the absolute discretion of CSIRO, may be extended without notice.
- 4.1.4. After the Submission Closing Time, all Submissions will be reviewed by a panel of CSIRO officers. This panel has absolute discretion whether or not to proceed to Stage 2 with the interested party.
- 4.1.5. Late Submissions will not be admitted to the review process.
- 4.1.6. All enquiries for information should be addressed to the Contact Officer:

Contact Officer: Marni Tebbutt

Contact Address: Marni.Tebbutt@csiro.au

- 4.1.7. All interested parties may seek clarification of the meaning of the content of this EOI from the Contact Officer up until 5 Business Days (a Business Day being a day on which the banks are open for business in the ACT) before the Submission Closing Time. All enquiries must be in writing via email. CSIRO reserves the right not to respond to queries, comments or questions which CSIRO considers to be unreasonable, including if there is insufficient time to respond before the Submission Closing Time.
- 4.1.8. CSIRO will not accept or respond to requests for information on the status and progress of this EOI.
- 4.1.9. If you wish to lodge a complaint at any stage please contact the Complaints Officer below and these will be handled in accordance with CSIRO's complaint handling procedure.

Complaints Officer – Dr Richard James

Email: Richard.James@csiro.au

- 4.1.10. CSIRO may, at its absolute discretion, issue an addenda to this EOI. Interested parties who have submitted a complete EOI before Submission Closing Time will be notified of this addenda providing they have correctly recorded their contact details. CSIRO accepts no responsibility if an interested party fails to come aware of any addendum notice.
- 4.1.11. CSIRO has discretion in respect of any matter in this EOI, however that discretion will not be exercised in a manner that is unfair, unreasonable or inconsistent with the rules of CSIRO.
- 4.1.12. CSIRO will not accept more than one Submission from an interested party.

All submission are required to be written in English and to express Australian legal units.

5. Interested Parties Acknowledgement

- 5.1. Each interested party submits its Submission on the basis that it acknowledges and agrees that:
 - 5.1.1. It has examined this EOI and any documents referred to in their EOI, and any other information made available in writing by CSIRO to interested parties for the purposes of submitting a Submission;
 - 5.1.2. It has read, taken appropriate advice on and fully understood this EOI and its requirements;

- 5.1.3. It has sought and examined all further information which is obtainable by making reasonable enquiries relevant to the risks, contingencies and other circumstances having effect on its Submission;
- 5.1.4. In lodging its Submission, it did not rely on any express or implied statement, warranty or representation, whether oral, written, or otherwise made by or on behalf of CSIRO, its officers, employees, agents or advisers other than any statement, warranty or representation contained in this EOI;
- 5.1.5. It did not use the improper assistance of CSIRO or employees or ex-employees or contractors or ex-contractors, or information unlawfully obtained from CSIRO in compiling its submission;
- 5.1.6. It does and will comply with all conditions set out in the EOI;
- 5.1.7. CSIRO relies on the information provided by the interested party in the evaluation of the Submission;
- 5.1.8. It is responsible for all costs and expenses related to;
- a) The preparation and lodgement of its Submission;
 - b) Any subsequent negotiation; and
 - c) Any other action including and dispute or response in relation to this EOI
- 5.1.9. CSIRO is not responsible for any costs or expenses incurred by an interested party or any other person in responding to or taking any other action in relation to this EOI process, including this EOI and an interested party's Submission, even if CSIRO exercise or fail to exercise any of their rights under this EOI.

6. Submission Form

Interested parties should include in the Submission details of any assumptions or other caveats on which its Submission is based. Respondents must complete clause 3.0 requirements and also provide documentation to support information requirements.

Name
Position within Business
Australian Company Number (ACN) - (NOTE: For International Companies, please provide equivalent detail)
Australian Business Number (ABN) (NOTE: For International Companies, please provide equivalent detail)
Legal/registered entity name

Business name	
Are you registered for GST?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Contact Details - phone:	
Business Email Address	
Business Street Address (Australian Head Office)	
Business website address (if applicable)	

Please select which option applies to your business;

Sole Trader Partnership Private Company Public Company Trust

Indicate which of the following applies to you:

- A non-tax-exempt company that is registered for GST¹.
- A commercialisation office².
- An eligible partner entity³ that is a company⁴.
- An individual who warrants they will form a non-tax-exempt company⁴ if the application is successful.
- A researcher who warrants they will form a non-tax-exempt company⁴ if the application is successful.
- A partnership that warrants they will form a non-tax-exempt company⁴ if the application is successful.

¹ For Accelerating Commercialisation, a company is:

- Incorporated under the *Corporations Act 2001*; and
- its trading activities:
 - form a sufficiently significant proportion of its overall activities as to merit it being described as a trading corporation; or
- are a substantial and not merely peripheral activity of the corporation

² A Commercialisation Office is an entity of a publicly funded research organisation (PFRO) or a company controlled by one or more PFROs, that assists researchers in commercialising their intellectual property. A PFRO is a higher education provider listed in Table A and Table B of the *Higher Education Support Act 2003* as well as Federal, State and Territory Government departments or agencies which undertake publicly funded research.

³ An eligible partner entity is an entity whose primary purpose is research but also looks to commercialise the resultant intellectual property.

⁴ A Non-Tax exempt company means a company, except a company to which Division 50 of the Income Tax Assessment Act 1997 applies, that is incorporated in Australia.

- An unincorporated trustee who warrants they will form a non-tax-exempt company⁴ if the application is successful.
- An incorporated trustee applying on behalf of a trust.

Has the company existed for a complete financial year?

Yes ► If yes, enter the latest complete financial year, then complete the table below.

- E.g. 2017-18

No ► If no, enter the number of months completed in the financial year to date, then complete the table below:

Months

Latest Financial Year Figures and Turnover

All amounts in the table below must show a whole dollar value e.g. \$2 million should be presented as \$2,000,000. List the **turnover value** of the incorporated company and each of its related entities over each of the last three financial years. Turnover is the revenue earned from ordinary activities⁴⁵. Extra rows may be added to the table if needed.

Name of entity	Financial year 1	Financial year 2	Financial year 3
<i>For example, ABC Pty Ltd</i>	-	-	-
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$

6.1 Notices and disclaimers

- 6.1.1 This EOI is not an offer to enter into a contract, or any sort of recommendation. Nothing in this EOI will be considered to create any binding contract (express or implied) between CSIRO and any interested party.
- 6.1.2 This EOI contains information concerning CSIRO and its needs. It has been prepared for the sole use of interested parties in deciding whether to proceed with a Submission. This EOI does not, and does not purport to contain all the information that an interested party would desire, or require, to assess the opportunity.

- 6.1.3 Should an interested party find or reasonably believe it has found any discrepancy, error, ambiguity, inconsistency or omission in this EOI or any other information given or made available by CSIRO, the interested party must promptly notify the CSIRO Contact Officer in writing (including email). CSIRO will take whatever corrective action, if any, it deems appropriate.
- 6.1.4 CSIRO, their officers, employees, agents and advisors:
- a. are not, and will not be responsible, or liable for the accuracy or completeness of the information;
 - b. make no express or implied representation or warranty that any estimate or forecast will be achieved or that any statement as the future matters will prove correct;
 - c. expressly disclaim any and all liability arising from the information including, without limitation, errors in, or omission from , the information;
 - d. except so far as liability under any statute cannot be excluded, accept no responsibility arising in any way from errors in, or omissions from this EOI, the Information, or in negligence;
 - e. do not represent that they apply any expertise on behalf of any interested party;
 - f. accept no liability for any loss or damage suffered by any person as a result of that person, or any other person, placing any reliance on the contents of this EOI, or other information provided by or on behalf of CSIRO; and
 - g. assume no duty of disclosure or fiduciary duty to any interested party.
- 6.1.5 Each interested party should independently satisfy itself as to the accuracy of this EOI, and should conduct its own enquiries, investigations, analysis and appraisal of, and should seek appropriate professional advice about, this EOI including:
- a. the information issued by CSIRO in relation to this EOI;
 - b. the services to be provided; and
 - c. any assumptions, uncertainties and contingencies which may affect CSIRO's future business.
- 6.1.6 All submission documents become the property of CSIRO on lodgement, except for intellectual property which will remain the property of the interested party. CSIRO may
- (a) use information in the EOI submitted by the interested party in CSIRO's review and evaluation process in connection with the EOI;
 - (b) disclose any part of the EOI submitted to CSIRO's responsible Minister, in response to a request by a House of Parliament of the Commonwealth of Australia or to comply with any Senate Order, or otherwise as required or authorised by law.
- 6.1.7 By submitting an EOI, the interested party accepts the terms and conditions set out in this EOI.