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# Call for Expressions of Interest

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## **Objective**

The Cooperative Research Centre for Spatial Information (CRCSI) Health Program is seeking applied research proposals that will deliver targeted spatial solutions to health agencies in Australia and New Zealand. Project proposals submitted by multiple agencies, research institutions and potentially private technology companies are particularly encouraged.

## **Closing Date**

Interested parties are asked to register notice with the CRCSI Health Program Manager, Paula Fievez: [pfievez@crcsi.com.au](mailto:pfievez@crcsi.com.au) by 5:00 pm (WST) on Friday 12 August 2016, by submission of a 2-page summary using the attached template.

## OVERVIEW

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### RATIONALE

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Spatial information and spatial technologies can bring significant value to health agencies through improved decision support, business intelligence, resource management and allocation, and clinical outcomes.

The CRCSI Health Program aims to spatially enable the health sector through end user driven research. Past research has largely been directed by academic institutions, sometimes resulting in a disconnect between the research outcomes and the intended application. The aim of this expression of interest is to turn this model around by seeking explicit leadership and guidance from end users working in organisations where the research need exists.

To this end, the CRCSI seeks research proposals with a fundamentally spatial focus from health agencies (private or government). The objective is to build collaborative research partnerships that will deliver sustainable solutions to be deployed in an operational setting. Information to guide proposal development is provided below.

### CONSTRAINTS

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- CRCSI cash contribution will be limited to \$200 000 per project
- Projects should be completed by 31 March 2018

### EVALUATION CRITERIA

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Projects that meet the following criteria will be considered favourably:

- Substantial cash co-funding from project partners
- Substantial in-kind contributions from project partners (eg. staff time, equipment)
- Cross-sectoral collaboration between health agencies, academic institutions and the private sector (the CRCSI can assist in connecting relevant parties if required)
- Strong alignment with the CRCSI Health Program research priorities (see below)
- Outcomes that can be sustained beyond the life of the project.

We encourage health agencies with similar needs to consider jointly applying.

### PROCESS

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1. Proponents register interest with the Health Program Manager, Paula Fievez: [pfievez@crcsi.com.au](mailto:pfievez@crcsi.com.au) by 5:00 pm WST on Friday 12 August 2016 through submission of a 2-page summary
2. CRCSI determines viability of the project summaries
3. Successful applicants submit full proposal
4. Full proposal assessed by CRCSI Research Investment Committee.

## RESEARCH PRIORITY AREAS

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### 1. Spatial Modelling to Inform Personalised Health

Traditional medical care has focused on the agent (the disease) and the host (eg. the individual), but has lacked information about the environment at a patient-specific level.

With the plethora of personal health information now available (through personal wearables, environmental sensors and the evolving Electronic Health Record) there is significant opportunity for biomedical informatics to lead in a new era of socially and environmentally personalised healthcare.

**Novel modelling approaches will be required to synthesise genomic information with location-based information on individual environmental exposure and to link these to specific health outcomes.**

### 2. Spatial Uncertainty, Data Modelling & Communication

Spatial uncertainty is the lack of, or the error in, knowledge about an object's geographic position (ie. longitude, latitude and altitude), which leads to uncertainty about the spatial relationship amongst its neighbours. Spatial uncertainty in public health information is ever-present – from data collection and model specification to interpretation, visualisation and communication. Estimates of disease patterns or trends contain a certain degree of uncertainty. Bias may be introduced if the uncertainty is ignored or misunderstood.

The vision of the health program is to facilitate multidisciplinary collaborations amongst scientists to promote research in identifying, quantifying, reducing and communicating spatial uncertainty in health research to improve disease control and prevention.

**In addition, we seek to integrate data collection, information technology, visualisation tools, statistical models and health communication to reduce spatial uncertainty in planning, implementing and evaluating disease control programs.**

### 3. Spatial Imaging

The use of non-invasive spatial imaging techniques such as geometric and spectral analysis have been identified as an area of research with growing applications. The health sector has identified a need for more effective diagnostic, assessment and treatment technologies in a number of priority areas including autism, foetal alcohol syndrome disorders, sleep apnoea, burns and other wound assessment. Applying spatial imagery to solving these problems will significantly improve clinical workflows and importantly patient outcomes.

**It should be noted that this research area extends beyond individual patient imaging and into the realm of sophisticated analytics/algorithms to assist in diagnosis, treatment evaluation and surgery planning. It will involve building data repositories to enable comparative assessment and diagnosis.**

### 4. Inequality of Health Services (Mapping & Gapping)

There is almost universal agreement that the healthcare system must focus on prevention and better management of chronic illness, however there is increasing evidence that there are *geographical disparities* in healthcare provision that contribute to poor physical health outcomes.

The process of mapping enables decision makers to visualise and identify clusters of disease incidence or areas of high service needs. Intersect this information with data on health service locations and areas of *service inequality* can be identified.

**This information will allow resource managers to target populations with the greatest need, especially Indigenous communities, establishing better links between primary, acute and rehabilitative services, and developing innovative ways of delivering healthcare to rural and remote communities.**

#### **5. Methods for Tracking & Tracing in Real-Time**

There is a need to provide up to date/real-time information to clinicians and decision makers to guide both clinical intervention and decision support. Capabilities to be able to monitor (Track) actual patients through their care journey and map this pathway spatially (Trace) in near real-time would provide significant decision support for resourcing and service delivery. This area of research leverages the CRCSI Rapid Spatial Analytics Program research and aligns with the 'People Movement' research priority area.

**Tracing and tracking patient care pathways could be used to evaluate models of care in key priority areas where the care pathway is clearly defined and data is captured through routine collection such as colonoscopy, breast and prostate screening.**