

# Vital Sign Monitoring Challenge

## 2022 NSW Small Business Innovation & Research program

### Background

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The NSW Small Business Innovation and Research (SBIR) program is a NSW Government initiative that provides competitive grants to small and medium-sized enterprises (SMEs) to find and commercialise innovative solutions to well-defined challenges identified by NSW Government agencies. This document sets out the Vital Sign Monitoring Challenge for the 2022 SBIR Program.

### Challenge summary

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Corrective Services NSW (CSNSW) is seeking non-invasive technology solutions to monitor the vital health signs of inmates while in their cells. This technology will be used to monitor 'at-risk' inmates and help prevent inmates committing self-harm, which could result in suicide.

Possible technology solutions might include, but are not limited to:

- Artificial intelligence
- Radar
- Advanced body health sensing

### Challenge details

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CSNSW is committed to ensuring the safety of inmates while incarcerated and faces the challenge of effectively monitoring the vital health signs of inmates identified as having a high risk of self-harm. Currently, NSW correctional centres have several monitoring systems, including cell cameras, monitoring rooms manned by officers, and routine physical cell checks performed by officers. However, the monitoring of vital health signs for at-risk inmates is currently reliant on camera or human vision that monitors numerous inmates in cells simultaneously.

A real-time, technologically advanced system placed in high-risk settings would allow CSNSW to provide an advanced level of monitoring of inmates' vital health signs that has not been possible before. The solution needs to non-invasively monitor for movement, heartbeat, and respiration, and report and raise alarms in real-time, assisting officers and Justice Health staff to effectively respond and deliver early intervention health care to inmates. Further, the solution needs to meet prison cell safety guidelines and anti-ligature standards.

## Solution requirements

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The solutions should deliver cost-effective technologies or methodologies to non-invasively monitor vital health signs such as movement, heartbeat, and respiration (e.g. non-wearable devices).

Proposals must:

- Demonstrate the scientific basis of the technology to address the problem
- Demonstrate that the technology:
  - Is non-invasive
  - Will not increase the physical risk to inmates or officers
  - Will not have to be individually set up for each inmate
  - Does not require electronic connection outside of the correctional centre to operate

This challenge is agnostic to the type of technology used and is seeking the most effective and efficient ways to monitor vital signs. Applicants may propose a single technology or device, or an integrated suite of technologies and devices.

Proposed solutions that can be scaled for deployment in correctional centres across NSW will be highly regarded.

The solution would be required to report to a monitored dashboard system that is located within existing correctional centre monitoring rooms.

## Benefits of the solution

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A solution would increase CSNSW and Justice Health's ability to provide advanced health care monitoring of at-risk inmates and further prevent the risk of inmates committing an act of self-harm that could result in suicide. The successful implementation of this technology across CSNSW and detailed analysis of outcomes would allow for potential expansion into other government departments and private organisations (for example, organisations in the health and aged care sectors who provide care for at-risk patients) or correctional facilities in other Australian jurisdictions and internationally.

## How to apply

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Applications to the NSW 2022 SBIR Program will be made through the smartygrants platform, online applications forms can be found at <https://chiefscientist.smartygrants.com.au/SBIR2022Round>.

For more information, please visit [chiefscientist.nsw.gov.au/sbir](https://chiefscientist.nsw.gov.au/sbir)