



CAPABILITY STATEMENT  
**ENVIRONMENT & AGTECH**



USING REMOTE SENSING TO IMPROVE AGRICULTURAL OUTPUTS  
AND TO MONITOR THE NATURAL ENVIRONMENT.

**Improving productivity  
on our farms and  
protecting our  
environment.**

**Australia is home to one of the most diverse flora and fauna in the world and we have a mandate to protect it by better understanding our impact on the environment. At the same time, a growing population requires smarter approaches to farming.**

Next-generation technology is allowing for efficient and real-time monitoring of air and water quality, improved harvesting efficiency, and quality assurance in the food chain.

**At the heart of it all are smart sensors, and NSW universities are at the forefront of smart sensing research**, deploying the latest advances in photonic and chemical sciences to create sensors that are cheaper, smaller, more portable, more sensitive and require less power.

Partnering with the NSSN, companies can access expertise and technology from across NSW's leading universities and gain an enduring competitive advantage. Some of the exciting R&D projects already taking place throughout the network include:

Measuring soil nutrient content (e.g. moisture content, nitrogen, phosphorus and potassium levels) accurately and in real time is a grand challenge for agriculture. **Researchers at the University of Newcastle** are working on detecting contaminants in soil, and creating a high resolution map in a range of environmental media. Methods such as electrochemical sensors and infrared spectroscopy are used, enabled by smart-phone based applications. This provides real-time smart metrics to help farmers make decisions that improve overall yield efficiency for their crops.

**The Australian Centre for Field Robotics (ACFR), headquartered at the University of Sydney**, are pioneers in robotics and artificial intelligence for AgTech applications. Autonomous systems, equipped with a variety of sensors, are being tested to patrol farms, monitor vegetation health and optimise yield procedures.

Livestock monitoring is also enabled by autonomous systems which will be equipped with thermal and motion sensors to measure the health of cattle, a task which is often only done a few times per year. With the ever-increasing demand from a rapidly growing population, the agriculture industry is dependent on the revolutionary changes enabled by these smart, sensor-based technologies.





**Working with the NSSN simplifies the process of engaging with universities** by creating a single point-of-contact for the leading research-intensive universities in NSW. A team of NSSN researchers at [the University of Sydney](#) are working with the NSW Office of Environment and Heritage (OEH) to improve air quality sensing in and around Sydney.

In recent years, increasing numbers of motor vehicles and higher population densities have raised air quality concerns in NSW. Low cost particle counters deployed over a massive network have emerged as a powerful new technology in detecting particulate matter in the air. Photonics researchers at the NSSN are engineering, testing and validating this technology to help the OEH better understand and deploy this technology.

Access to cutting-edge research equipment can be difficult to arrange without university partners, and with over 50 centres of excellence, collaborative research centres and industrial training centres spread across the NSSN, access to world-class equipment is readily available.

**Navigating the ever-changing envirotech and agtech space is challenging, working with universities should not be.** With the support of the NSW Government, the NSSN is your one-stop shop for multi-disciplinary expertise and technology.

To find out how the NSSN can help solve your challenges, please contact Tomonori Hu at (02) 9351 6049 or [tomonori.hu@nssn.org.au](mailto:tomonori.hu@nssn.org.au)

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