

IAF SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)  
Integrated Applications End-to-End Solutions (2)

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AUSTRALIAN REMOTE OPERATIONS CAPABILITY REPORT

**Abstract**

Australia is a world leader in the development and application of Remote Operations technology at an industrial scale. The Australian Remote Operations for Space and Earth (AROSE) consortium undertook an in-depth national review of advanced technology and capabilities in the field of Remote Operations. The study included applications across many industry sectors including the resource industry (mining and energy), agriculture, medical services, transport, and defence. The aim of this multilateral capability study was to support the growing Australian space industry to solve common space exploration challenges utilising world leading Remote Operations.

This paper provides an independent technology and capability baseline to catalyse cross industry growth in Remote Operations. The report outcomes will facilitate technology transfer and collaboration between traditional sectors and the burgeoning Australian space industry.

This paper was developed in collaboration with leading industry and academic experts in energy, mining, agriculture, defence, medical and space industries who either utilise or supply Remote Operations capabilities and/or enabling technologies. Our methods included, but are not limited to, literature reviews, stakeholder interviews and surveys, consultation with subject matter experts, and the aggregation of public data.

It was clear from this capability study that end-to-end Remote Operations in Australia is world-leading and cuts heavily across multiple major sectors to improve safety, reliability productivity and sustainability. Fundamentally, the same challenges faced by many of the sectors, particularly mining and energy, are mirrored by the space industry for missions focused on foundational and construction services, exploration and excavation, and ISRU. Solving these cross-sector challenges through multi-lateral collaborations will enable a broader impact on complementary industrial sectors and Australia's space industry.

This Remote Operations capability study significantly improved the understanding of current capability in Australia and the spin-in opportunity for space operations. The report identifies emerging challenges for industry in the field of Remote Operations; identifies research and development focus areas for innovation that will deliver maximum return on investment; and highlights the criticality of collaboration and technology transfer between sectors to synthesise solutions for space Remote Operations and automation.