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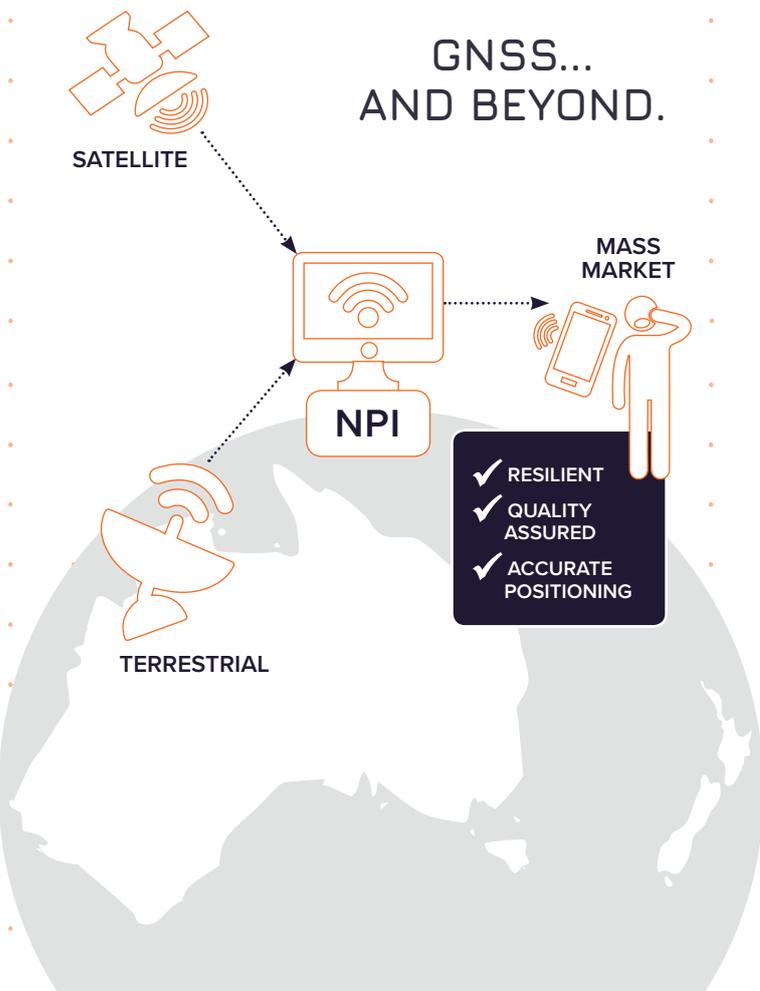
POSITIONING



THE POSITIONING REVOLUTION

Autonomous vehicles, consumer robotics, machine automation and drone-based parcel delivery are just some technologies that explicitly rely on a knowledge of where. Consumers, and businesses alike, will increasingly depend on instant, 3D, fit-for-purpose location information, with certified accuracy and integrity. Robust, reliable, ubiquitous positioning is becoming a fundamental element to our spatially dependent world. This future will require us to exploit the benefits of global and regional navigation satellite systems (GNSS).

Working with our partners, we will play a lead role in providing Australia and New Zealand with precise position information – anywhere, anytime. Our positioning program will conduct user-driven research to expand the capability, usability and functionality of multi-system, multi-sensor positioning infrastructure to realise our vision of “GNSS... and beyond.”



THEMES

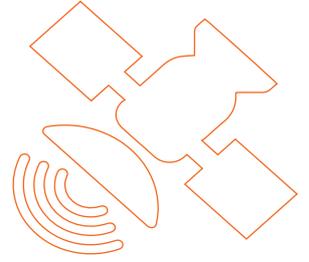
- System and sensor integration.
- Error models and error mitigation.
- Resilience and robust positioning.
- Quality assurance and integrity.
- Technology testing and evaluation.
- Cross-sector applications.

OUTCOMES

- New approaches for seamless 3D positioning in any environment.
- New models for multi-sensor, multi-system integration.
- Dependable measures for quality assured positioning.
- Prototype integrated positioning systems.
- More resilient positioning infrastructure.
- Sovereign positioning capability.

OUR CONTRIBUTION

Early research focussed on understanding and securing the benefits of integrating all global and regional navigation satellite systems (multi-GNSS). We have been working with partners to create a multi-GNSS-enabled National Positioning Infrastructure (NPI), founded on a new approach to real-time positioning. While significant progress has been made, several challenges remain. Solving these challenges will be an early priority of the positioning program. We will prepare Australia and New Zealand for new and modernised satellite systems as they come online.



We know that multi-GNSS offers unprecedented, real-time accuracy and availability, but it is not a positioning panacea. GNSS suffers from several limitations, including vulnerability to jamming, interference and spoofing and the reality that it does not work reliably in obstructed environments or indoors. So, while the rise of GNSS has led to a growth in diverse applications of real-time positioning, another frontier awaits – seamless, ubiquitous positioning in any environment. Success in realising this objective will require multi-system, multi-sensor integration using terrestrial and space-based systems.

RESEARCH FOCUS

In collaboration with industry and government partners, our research teams will work with current and emerging positioning technologies and solution providers to achieve high level system and multi-sensor integration, enabling real-time, robust positioning in any environment with known quality. Research outcomes will equip users to exploit the potential of ubiquitous positioning in a range of settings for new and demanding applications. This will grow capacity for our partners and create new market opportunities.

AIMS

- Gain deep practical and theoretical understanding of the characteristics and capabilities of emerging positioning technologies – including measurement principles, error sources, error mitigation techniques and system performance.
- Build efficient and robust methods for multi-system and multi-sensor integration – including new mathematical and stochastic models.
- Develop methods to determine and deliver real-time 3D quality indicators to ensure integrity of positioning.
- Run field trials to validate and demonstrate performance of new solutions in real-world settings – including those outside traditional application domains.

OUTPUTS

- Prototype integrated positioning systems that overcome the limitations of stand-alone systems (e.g. enabling users to move seamlessly and routinely from indoors to outdoors).
- Algorithms, procedures and proof of concept software to demonstrate the operational performance of integrated systems and sensors.
- Tools to inform users of the quality and integrity of real-time integrated positioning.
- Increased adoption of integrated positioning solutions in traditional and non-traditional markets.

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We know where.

FOR MORE DETAILS CONTACT

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