FRONTIER SI >

CAPABILITY STATEMENT – DEFENCE

WHO WE ARE

FrontierSI believes in the power of collaboration and a strong network to bring the best teams together to solve problems. We are a pioneering collaborative social enterprise that builds innovative solutions using our geospatial and locational expertise with applications in defence.

With deep expertise in positioning & geodesy, earth observation data analytics and data infrastructures, our initiatives span diverse domains. As an independent organisation, with DISP membership, we have a longstanding track record in translating research and innovation into actionable solutions, positioning us well to deliver valuable insights and strategic capability systems to meet defence needs.

OUR EXPERTISE

Positioning, Navigation, and Timing (PNT)

FrontierSI is a recognised leader in PNT internationally, with proficiency within the Indo-Pacific region. We have deep knowledge and experience in mature satellite navigation technologies such as Global Navigation Satellite Systems (GNSS), Space-Based Augmentation Systems (SBAS), and their potential interactions with cutting-edge alternative solutions such as, Signals of Opportunity and celestial navigation.

FrontierSI managed the industry testing and economic benefits assessment of the Australian and New Zealand Satellite Augmentation System Testbed, which led to the procurement of SouthPAN, the first SBAS in the Southern Hemisphere and Australia's largest civil space infrastructure investment.

FrontierSI has successfully completed several important Resilient PNT initiatives which include a utilisation study for SmartSat CRC in quantum precision timing, development of the Ginan high-precision analysis centre software for Geoscience Australia, and real-world testing of the satellite-based Emergency Warning Service (EWS) using the Japanese regional navigation constellation, QZSS.

AI/ML Analytics & Insights – using Earth Observation (EO)

FrontierSI's data science team is specialised in developing fit-for-purpose solutions that leverage satellite imagery, aerial photography, lidar data with state-of-the-art machine learning (ML) and artificial intelligence (AI) algorithms. Our expertise in this area has been applied to mapping land surface features, improving environmental awareness, damage assessment, and surveillance. Using needs-based co-design and adapting methods for efficient operational use, our team excels at co-developing practical solutions that ensure trustworthy and client-oriented outcomes.

CASE STUDIES

AGO Labs

Client: Australian Geospatial-Intelligence Organisation (AGO)

FrontierSI has collaborated with the AGO on two Innovation Labs programs to identify geospatial intelligence (GEOINT) priorities that are critical to defence and national security. Through four successful technology showcase projects with FrontierSI, AGO gained exposure to a diverse pool of Australian industry and academic organisations, improved capability development within AGO and enhanced access to capabilities for automated geospatial intelligence. Key outcomes for AGO encompassed a deeper understanding of local industry AI/ML strengths, identification of technologies implemented within the defence environment, an effective mechanism for industry engagement, internal problem definition, heightened staff awareness of cutting-edge AI/ML approaches, and improved collaboration with small businesses unfamiliar with defence and intelligence processes.

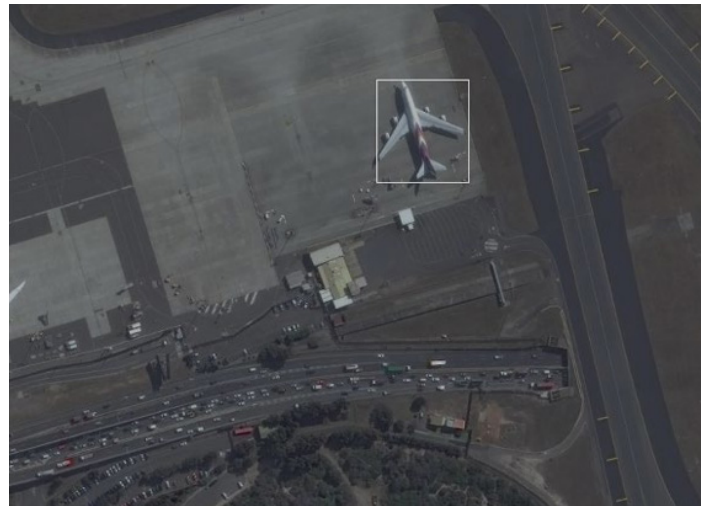### Satellite Based Augmentation System (SBAS) Testbed

Client: Geoscience Australia, Land Information New Zealand

FrontierSI has managed the industry component of the SBAS Testbed liaising directly with the service providers Lockheed Martin, Inmarsat and GMV to help deliver three navigation services across Australia and New Zealand. Two of the services were novel, which meant new receivers were prototyped and successfully tested for these services be used. FrontierSI managed 27 projects with over 100 different industry clients across 10 different industry sectors in Australia and New Zealand testing accuracy and integrity of the SBAS service. This pioneering work led the governments of both countries to jointly procure an operational SBAS.

AusHydroid

Client: Australian Hydrographic Office

AusHydroid, scoped for the AHO, pioneers an innovative model that unifies Australia's land and sea vertical datums, ensuring accurate positioning within the National Chart Datum. By addressing coastal datum inconsistencies, this initiative not only aligns with key industry priorities but also promises heightened efficiency in maritime navigation, supports offshore oil and gas production, and provides critical insights into littoral mapping and coastal inundation risks associated with sea level rise and tide surges.

3d Point Clouds For Geospatial Intelligence Operations

Client: Australian Geospatial-Intelligence Organisation

Through a series of projects with the AGO, we established advancements in automated generation of 3D point cloud technology, addressing the growing challenges posed by the increasing volume, resolution, and accuracy of remotely sensed data. Our projects boosted AGO's efficiency, minimising manual processing and elevating image-based point cloud generation, classification, and change detection. We improved 3D reconstruction and information extraction from full-motion video, delivering software tools that now actively power AGO's production operations.

Partners & Past Clients

Australian Space Agency, UNSW Canberra Space, Bureau of Meteorology, CSIRO, Malaysia, Vanuatu, Papua New Guinea.

OPPORTUNITIES TO COLLABORATE

FrontierSI leverages two decades of experience to develop practical solutions for government and industry. As an Australian Defence Industry Security Program (DISP) member, FrontierSI enforces robust security policies regarding data location, personnel controls, physical and information segregation. We welcome collaboration opportunities in space-related initiatives, digital technologies, and spatial innovation. By partnering with us, gain access to our extensive network, industry expertise, and transformative solutions to build capability and meet your defence priorities.

FRONTIERSI

We know where.

GET IN TOUCH
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