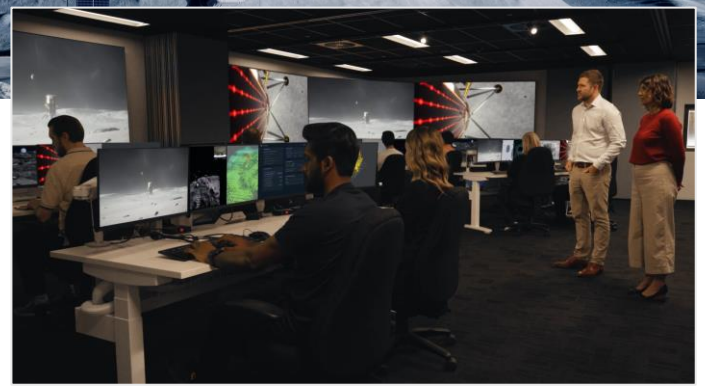
Unlocking the Future of Space & Remote Operations from Australia

The **Space Automation, Artificial Intelligence & Robotics Control Complex (SpAARC)** is Fugro's world-class facility, leading the next generation of autonomous operations, AI-driven mission control, and robotics across space, maritime, and terrestrial domains. Located in Perth, Western Australia, SpAARC is a sovereign capability hub, providing high-assurance command, control, and automation for uncrewed systems in the most extreme environments.



Why SpAARC?

- ✓ **Flight-Proven NASA Expertise**
  Experience across NASA NPR 7120.5 & 7120.8 missions, supporting high-risk human & robotic spaceflight.
- ✓ **Deep Systems Engineering & Mission Assurance**
  Full lifecycle capabilities from concept of operations and requirements development to mission operations.
- ✓ **World-Leading Ground & Mission Operations Systems**
  High-reliability ground data networks & mission autonomy systems.
- ✓ **Multi-Domain Remote Operations Leader**
  Space, maritime, defence, and energy sector expertise in AI, robotics & high-assurance autonomy.
- ✓ **Strategic Indo-Pacific Hub**
  A key partner for international commercial and government (civil and defence) applications.

Technical Focus & Development

- Mission Operations as a Service (MOaaS): Supporting satellite, lunar, and autonomous maritime operations.
- AI-Driven Flight Software & Planning: Advancing automation, V&V, and autonomous system safety.
- Critical Systems Engineering for Space & Defence: Trusted by Intuitive Machines, Australian Space Agency, Western Australia, and global defense leaders.

Key Technical Capabilities

Mission Control, AI-Driven Planning & Autonomy

- Core Flight Software Expertise (CFE/CFS): Proven NASA flight software framework, customized for real-time mission operations and safety-critical autonomy.
- Embedded systems engineering tailored for high-reliability, space-grade applications.
- Constraint-Based AI Decision-Making for advanced mission planning & scheduling tools for robotic and human spaceflight.
- AI-driven operational workflows that dynamically optimize execution under uncertainty.
- Autonomy Verification & Validation (V&V): Ensuring reliability, fault tolerance, and safety compliance for autonomous spacecraft, lunar rovers, and remote operations.
- Simulation-based validation and hardware-in-the-loop (HIL) testing to de-risk mission execution.

Ground Data & Mission Operations Systems (MOS)

- Scalable Mission Control & Ground Systems Architecture:
  - Supporting satellite, lunar, and autonomous system operations with real-time telemetry processing, event detection, and fault management.
  - Fully interoperable with NASA, ESA, & commercial mission architectures.
- Full Lifecycle Mission Support:
  - Expertise across the entire mission lifecycle, from requirements development and design through to integration, testing, and operational sustainment.
  - End-to-end risk assessment ensuring high-confidence mission execution.
- Streamlined Systems Engineering Workflows:
  - Advanced tools and methodologies to simplify complex multi-mission systems, while maintaining rigorous verification and assurance.
  - AI-enhanced engineering automation for rapid design iteration and fault-tolerant mission planning.

Sovereign, Secure, & Interoperable Infrastructure

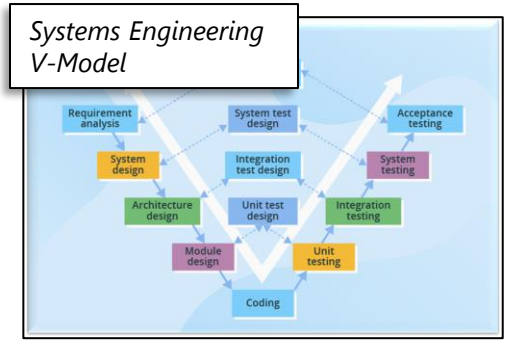
- Government-Compliant & Secure Operations Hub: Defense-grade cybersecurity & encrypted command/control links.
- Sovereign Australian capability for autonomous mission operations.
- Seamless interoperability with NASA, ESA, and commercial space operators.

High-Fidelity Digital Mission Simulation & Digital Twin Technology

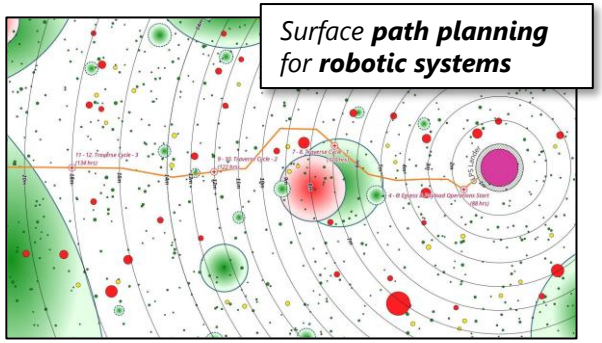
- Physics-based digital twin ecosystem.
- AI-driven synthetic environments for mission rehearsal, verification, and optimization.
- Real-time hardware-in-the-loop (HIL) testing for spacecraft, ground systems, and autonomy platforms.

Facility Location	Perth, Western Australia
Primary Operations	Mission Control, AI Planning, Robotics Automation
Remote Ops for…	Space, Maritime, Energy, & Defence Sectors
AI & Autonomy	AI-driven Mission Planning, Autonomous Robotic Control
Communications Infrastructure	Satellite RF Comms, Geo-diverse Redundant Dark Fibre Links, Direct Connect to Privately Managed Cloud
Digital Twin Capabilities	High-fidelity Mission Simulation & Predictive Analysis
Cybersecurity	Defence-grade Encryption & Secure Networks

Systems Engineering V-Model



*Surface **path planning** for **robotic systems***



Contact Us

Fugro SpAARC – Space Automation, AI & Robotics Control Complex

Perth, Western Australia

www.fugro.com

contact@fugro.com