

Promoting Space Sustainability

Space Centre Australia

SpaceOz Pty Ltd

15 June 2021

Implementation of the Guidelines for the Long-term Sustainability (LTS) of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space

Operational Case Studies

Development of Space Centre Australia, Weipa, North Queensland, Australia. Providing access to Space Services and Launch Capability for Domestic and International Partners

SpaceOz Pty Ltd an Australian owned company is currently running a large program which intends to develop and deliver an international Space Port Complex with the capability of developing, testing, and launching Large to Small space payloads. The facility named Space Centre Australia will provide a multi-tenant launch and mission control facility, a satellite communications station, datacentre facilities, vehicle tracking systems, earth and space weather observation systems which links to a data fusion system that provides operators with a real time common operating picture.

The site is in a very low population density area 40km northeast of the township of Weipa, North Queensland, Australia. Design of the facility has commenced, and construction of the site is due to commence in January 2022 with an initial operating capability realised by Q4 2024.

The facility will provide access to domestic and international customers leveraging the technology systems deployed at the site. The facilities on site are aimed at to fostering business and collaboration opportunities with research and development projects, foreign aid programs for access to space, operational space programs, and Government programs.

The Program has already achieved significant milestones including obtaining traditional landowner approvals for access, design milestones and customer partnerships. Further, the project is on track for an anticipated availability for operational launch services by Q3 2022.

The sole purpose of Space Centre Australia is to develop and foster open collaboration across the greater space industry at a domestic and international level. Our open-door approach to collaboration and business provides vehicle providers and payload developers an opportunity to access a unique area where space vehicle systems can be built, tested, certified, launched and managed from a centralised location whilst maintaining the highest possible standards of safety and security.

In addition, SCA provides a proven team that integrates technical, engineering, project management, financial and safety into a single Governance package including the:

- Development of Strategic Security Management and Security Operations within the Space Industry
- Collaboration with existing Secure Operations Centres, Data Centres and Mission Control Centres
- Collaboration on continual development and improvement of the Australian Space Industry Sector jointly with the Australian Space Agency, Industry and Academia

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- Fostering of further research, development, futureproofing and improvement of the Australian Space Industry Supply Chain leading to a new Sovereign Australian Industrial Capability.

Developing new Educational and Academia capability for the Future Workforce

Throughout the ongoing operation of SCA we have identified risks in maintaining a skilled and competent workforce within Australia to service the Space Industry Sector. These skill sets are diverse and range across electrical, mechanical, and environmental trades, engineering, administration and many more. The limited availability of skilled personnel is already being experienced in Australia and notably in other countries. To help address that issue in the short term we are developing an education platform that caters to all ages and skill levels where we identify transferrable skills, experience, and abilities to supplement the current workforce for SCA whilst developing a strategic partnership with schools and universities to implement:

- Tailored courses in Astrophysics, Aeronautics, Engineering and Business related to the Space Industry.
- Development of specific Trade based qualifications through local community colleges.
- Development of Science, Technology, Engineering and Mathematics (STEM) for local and regional Junior, Middle and Senior Schools.
- Development of access and pathway programs at SCA to enable students and young professionals to gain real-world space industry experience.

Developing New Hybrid Supply Chain Opportunities

Whilst undertaking feasibility studies and analysis of the local and regional areas we have found that there is a full turnkey supply chain; however, in many cases the local businesses will need to pivot their approach to ensure that they meet the requirements of supplying into the Australian Space Industry Sector. In the local and regional areas, we have identified the following potential service providers:

- Scientific Analysis Services
- Human Resources Management
- Information Communications and Technology Service and Product Providers
- Petrochemical product providers
- Fabrication and Manufacturing
- RAW material mining
- Environmental and Land Management Consultancy
- Space Tourism Industry

II. Connection with the LTS Guidelines

During operations Space Centre Australia will provide opportunity for further development of the following guidelines as outlined in the UNOOSA Long Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space.

A. Policy and regulatory framework for space activities

Guideline A.3 - Supervise national space activities.

Space Centre Australia is designed and intended on providing a common operation picture system that monitors and manages all space activities related to SCA and if required as a hand off station from other launch providers.

Guideline A.5 - Enhance the practice of registering space objects.

Through our daily operations scope we are developing our own space object register and tracking system. This system will also enhance the safety of our operations and we envisage a level of open access to this database once it has been verified.

B. Safety of space operations

Guideline B.1 - Provide updated contact information and share information on space objects and orbital events.

Guideline B.2 - Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects.

Guideline B.3 - Promote the collection, sharing and dissemination of space debris monitoring information.

As part of our internal Flight Operations framework and Safety Management System we are developing an accessible database of space objects / debris locations and orbital tracking events that can potentially impact SCA's launch and mission operations. To complement this system, we are providing controlled access to the data obtained for additional external Space Domain Awareness Management.

C. International cooperation, capacity-building, and awareness

Guideline C.1 - Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities.

Guideline C.2 -Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange.

Guideline C.3 -Promote and support capacity-building.

Guideline C.4 - Raise awareness of space activities.

Space Centre Australia plans on developing and implementing the following:

1. An open-door approach to collaboration and partnership with domestic and international space industry organisations and businesses.
2. Enabling best business practices for the Australian Space Industry and greater international market.
3. Accessing space should not be cost prohibitive and Space Centre Australia will strive to ensure that accessing its facilities are achievable for small to large vehicle providers, satellite developers and other related industry partners.
4. new and efficient management frameworks, processes and procedures for development, operations, safety, financial accountability, and long-term sustainability.
5. A Space Discovery Centre that will foster education, R&D collaboration, and industry heritage preservation.

III. Lessons learned

The Space Centre Australia project is highly ambitious and contains a number of risks to the first phase of the projects success, subsequent phases and ongoing operations. We have a wealth of experience in complex project delivery and following on lessons learned on other complex programs we have taken a flexible approach to the development of the facility ensuring that we maintain the following:

- We are clear and concise with our design and construction partners on our requirements.
- The Supply Chain management is actively managed at all times.
- Project finances are reviewed regularly and reported accurately.
- Current and future customer expectations are managed and the deliver on what we promise.

Further, to date we have learned that the space industry in Australia is still developing and whilst we are currently undertaking regulatory licensing and approvals for launch activities we are continually learning. We have found that taking an open-door approach that fosters collaboration and information sharing assists greatly in the ongoing development and delivery of the project and our capabilities.
