Paper ID: 82296
student

IAF SYMPOSIUM ON EMERGING SPACE ECOSYSTEMS (E11)
Connecting Emerging Space ecoSystems (1)

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THE YOUTH ARE OUR FUTURE: EMERGING PIONEERS AND THEIR ROLE IN EMERGING SPACE ECOSYSTEMS

Abstract

Australia, like many emerging space nations, has a small but rapidly growing space ecosystem. There are significant advantages to this timeline, such as the ability to build without being encumbered by legacy infrastructure. These benefits have been noted by organisations like the Australian Space Agency and Space Industry Association of Australia, and enshrined in the Civil Space Strategy and Defence Space Strategy. These and similar internationally similar groups also note the need for youth talent development, a need matched by the desire of these young people to make an impact on the regional and global space ecosystem.

The students and young professionals of Australia, brought together by the Space Generation Advisory Council, see this opportunity to build our own future. We also recognise the pitfalls of development in other countries and industries, often reacting to political and economic pressures, preventing effective planning and futureproofing. We propose a development methodology for emerging space nations, especially focused on the role of young people, and applied to the Australian context to present an example implementation approach.

To avoid the trap others were forced into as their critical infrastructure was established, we take inspiration from lean manufacturing design paradigms. Designing for long-term adaptability and sustainably maintaining capability relies on modular design and agile feedback systems to detect when updates are needed and enable this change just-in-time. Feedback systems to enable proactive development will encompass geopolitical and socioeconomic context, technical capability, talent development, industrial investment and support, and more.

Approaches like these have been made difficult in the past for many reasons. However, distinctions are made on the following terms:

- Probabilistic machine learning models and other modern technologies will prioritise development and review stages, rather than rigid timelines leading to uncertain cost-benefit ratios,
- Talented young stakeholders in diverse fields are already incentivised through the current balance of organisation, uncertainty, and opportunity, and
- The smart prototyping approach for implementation, establishing value for the country with each phase of development, producing a compounding benefit over time.

The generalised principles and structures for adaptable and sustainable capability development will be presented. A strategic analysis will be presented, highlighting the current Australian space ecosystem through a holistic SWOT approach, and a guiding development paradigm will be provided. This direction will guide the aims and phases of development, as well as the information pathways to enable proactive adaptation.