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# A SPACE ECOSYSTEM MATURITY INDEX: PROPOSITION TO ASSESS AND IDENTIFY THE DEVELOPMENT LEVEL OF SPACE INNOVATION ECOSYSTEMS AROUND THE WORLD

**Abstract**

With the advent of NewSpace and the pressing global challenges the space industry is seeking to solve, we are seeing a widening gap between space-faring nations and those that aspire to built a space ecosystem. This highlights the need for a maturity index to help aspiring space nations assess and identify areas of strengths, need and opportunities to participate in the global space industry. It can also be beneficial for developed nations to understand where to focus resources and investments of space assets both upstream and downstream. As part of the Team Project "Creating a Space Innovation Ecosystem" carried out during the Southern Hemisphere Space Studies Program (SHSSP23) in Adelaide, Australia, offered by the International Space University (ISU), in cooperation with the University of South Australia (UniSA), the team focused on identifying some of the key pillars of a space innovation ecosystem and developed a "maturity index" as a tool for others to create a short- and long-term plan.

Together with profitability, sustainability is underpinned within the index, in line with the United

Nation's sustainable development goals. Ecosystems were assessed based on five key pillars: Political, Funding Instruments, Legal Framework, Education  Outreach, and Innovation, RD. The Index explores these key indicators for different levels of ecosystems, evaluates them and weights them over time. The proposed maturity index also incorporates other established metrics relating to the pillars, such as the Educational index, European space index, and the Space Sustainability Rating.

The result of the self-assessment can be a starting point for any space innovation ecosystem, to create a strategy, and a business plan at a macroscopic and microscopic level. Thus, targeting initiatives (e.g., financial, political, or educational) in the critical areas that would yield the maximum impact. As we believe that ultimately space is for Earth, we wish and envisage that the maturity index will promote cooperation, awareness, and knowledge transfer among states by identifying areas for partnerships as more actors contribute to the growing global space economy.

Lastly, we provide some actionable steps for private, especially start-ups, and public stakeholders, such as governments, to take. We also account for the major role that space enthusiasts, non-governmental organizations (NGO's) and others can play in ecosystem building. These recommendations are not prescriptive and may be applicable to different extents depending on the maturity level of the space innovation ecosystem, the nation's governmental structure, and other instrumental variables.