

21st IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND
DEVELOPMENT (D3)

Space Technology and System Management Practices and Tools (3)

Author: Mr. Erik Kulu
Estonia, erikkulu@gmail.com

Ms. Martina Lofqvist
Switzerland, martinatyralfqvist@gmail.com

IN-SPACE ECONOMY IN 2023 - STATISTICAL OVERVIEW AND TRENDS

Abstract

A new in-space economy is emerging, with nascent industries including orbital transfer vehicles, commercial space stations, in-space manufacturing, satellite servicing, commercial rovers landers, and many more.

Factories in Space is the most extensive online database of commercial entities operating in the in-space economy, space resources, and in-space manufacturing sectors. Launched in 2018, the directory includes over 700 entries, more than double the previous version of this research presented at IAC in 2021. Seraphim recently published their version of the in-space economy ecosystem map, indicating growth and interest in this field.

The first part of the paper will update the definition of the in-space economy, including its classification and glossary. There continues to be a great deal of variation in how these new space industries are grouped and defined, making it more challenging to determine competitors and estimate market sizes.

The second part of the paper will present an updated statistical overview of the companies that are currently active or aspire to be active in the emerging in-space economy. Within each classification, a comparison will be made between the development status, geographical distribution, and funding.

In the third section, based on a previous publication from 2021, some trends and space market booms are apparent. For instance, microgravity flight services and re-entry capsules appear to experience a proliferation, more space tugs are being announced, and space-based solar power has become an active topic. Redwire announced a crystal grown in space as their first microgravity-manufactured product to be sold, and Ispace launched the first commercial lunar lander. However, while the number of startups in the new space economy is rapidly increasing, only a few new services have been demonstrated in space.

The fourth section delves deeper into selected markets. Despite a proliferation of startups in these sectors, revenues appear to be growing at a slower pace. Market analyses, including those focused on in-space transportation, satellite servicing, and space stations, have been published, and the paper will examine the estimates made in these reports. It's worth noting that the number of companies operating in these markets may not necessarily correlate with market opportunity, and there may be signs of market bubbles forming.

Comprehensive analytical overviews and taxonomies for the emerging in-space economy are rare, as far as the authors know. The aim of this study is to conduct a thorough industry survey and analyze the developments in this dynamic field bi-annually.