Global Space Situational Awareness (SSA) Market Share, Size, Trends, Industry Overview, Growth and Challenges by 2030

UNITED STATES, December 1, 2023 /EINPresswire.com/ -- Market Overview:

Global Space Situational Awareness (SSA) Market12

Space situational awareness refers to knowledge and characterization of space objects and their operational environment to support safe, stable and sustainable space activities. It includes detection, tracking and identification of natural and artificial objects in space, such as space debris, resident space objects and deep space objects such as asteroids.

The Global Space Situational Awareness (SSA) Market size is expected to reach US$ 2.2 billion by 2030, from US$ 1.3 billion in 2023, at a CAGR of 7.8% during the forecast period.

Market Dynamics:

The growth of the global SSA market is driven by the growing amount of space debris orbiting the earth and increasing number of satellites being launched every year. As of 2020, there were approximately 125 million pieces of space debris smaller than 1 cm, 900,000 pieces of space debris 1-10 cm according to size, and around 34,000 pieces of space debris larger than 10 cm orbiting the Earth. Moreover, there has been significant rise in satellite launches in recent past. For instance, over 8,000 satellites are projected to be launched between 2018 and 2022 according to estimates by Space Foundation. This rapid increase in number of objects in space necessitates effective monitoring and tracking solutions to avert hazards of collision which is fueling demand for space situational awareness.

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Increasing debris population in Low Earth Orbit (LEO) driving the need for Space Situational Awareness (SSA)

The growing population of space debris and orbiting objects in low Earth orbit poses risks to operational satellites and spaceships. According to estimates, there are over 27,000 pieces of debris larger than 10 cm being tracked. In addition, millions of smaller pieces between 1 mm to 1 cm pose collision threats. This severely congested environment has increased the possibility of collisions. For example, in 2009, an inactive Russian satellite collided with an Iridium satellite causing significant debris. Such incidents underline the need for better surveillance of the orbital environment. Space situational awareness capabilities are critical to monitor congestion and address risks of debris proliferation through developing mitigation strategies.

Increasing government investments and public-private partnerships for SSA networks

Governments and space agencies across major space faring nations have significantly ramped up investments to develop robust SSA networks over the past decade. For instance, the U.S. government has invested billions of dollars to enhance the Space Surveillance Network through new radars, optical sensors and data processing capabilities. The European Union has established space surveillance and tracking (SST) programs like SST control center. Growing public-private tie-ups indicate increased commercialization of SSA data and services. Startups are launching constellations of small satellites with onboard sensors for continuous monitoring. Established players are also forming partnerships to offer downstream services integrating aerospace defense data. Such trends point towards continued growth in global SSA market to effectively governance of orbital activities.

Top Key Players:

Lockheed Martin, Northrop Grumman, Analytical Graphics, ExoAnalytic Solutions, Schafer, Etamax Space, Vision Engineering Solutions, Applied Defense Solutions, Spire Global, Harris

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Stringent regulations on post-mission disposal posing challenges

Compliance with regulations mandating safe and reliable post-mission disposal of spacecraft has become challenging with increasing complexities. International guidelines require maneuvering non-functional spacecrafts into so called “graveyard” orbits at end of life. However, limited propellant onboard older satellites and absence of disposal mechanisms design constrain compliance. Many satellites are left in usable altitudes as dumping them carries risk of fragmentation. While regulations aim to reduce orbital clutter, ambiguous guidelines and technical difficulties have slowed pace of proper deorbiting. This has contributed to growing debris population posing restraints on further launches. Space agencies and manufacturers will need innovative solutions to securely dispose and remediate non-functional objects remaining in

operational orbits.

Commercialization of SSA data and services opening new opportunities

Establishment of private SSA consortia indicate opening of commercial opportunities around data and downstream services. Startups are tapping growing demands from commercial launch providers and satellite operators for accurate orbital data and collision avoidance information. Commercial satellite mega-constellations will drive requirements for independent monitoring and tracking. New space companies can subscribe to private SSA services as affordable alternatives to publicly available basic data. Emerging opportunities lie in integrating proprietary defense data into value-added products. Partnerships forging between private sensor networks and government agencies also suggest monetizing excess SSA capabilities. Standardizing data formats and accessibility norms can stimulate commercially viable applications and analytics around space traffic management.

Incorporation of artificial intelligence and big data analytics to improve SSA

Space agencies and private consultancies are applying modern techniques like AI, computer vision and big data analytics to process increasing volumes of SSA data. Tasks like detection and tracking of objects against complex backgrounds, prediction of orbital trajectories far into the future pose challenges that can benefit from machine learning algorithms. AI powered tools and Neural networks can automate surveillance operations through continuous learning. They help discover patterns, detect anomalies and improve accuracy of conjunction assessments. Advanced analytics also support decision making around space policy, mitigation of orbital congestion and end of life management. Going forward, SSA networks will increasingly rely on AI assimilation of diverse datasets to gain comprehensive insights about near real-time space environment.

Key Questions Addressed in the Market Report:

What is the expected size, share, and CAGR of the Global Space Situational Awareness (SSA) Market over the forecast period?
What are the key trends expected to influence the Global Space Situational Awareness (SSA) Market between 2023 and 2030?
What is the expected demand for various types of products/services in the Global Space Situational Awareness (SSA) Market?
What long-term impact will strategic advancements have on the Global Space Situational Awareness (SSA) Market?
Who are the key players and stakeholders in the Global Space Situational Awareness (SSA) Market?
What are the different segments and sub-segments considered in the Global Space Situational

Awareness (SSA) Market research study?

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