

Small Satellites Market 2023 Global Analysis, Opportunities and Forecast to 2030 | Boeing, OHB AG, Geooptics Inc.

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According to Coherent Market Insights study, Global Small Satellites market was valued at US\$ 3,900 Mn in 2022 and is forecast to reach a value of US\$ 12,491 Mn by 2030, exhibiting CAGR of 15.7% between 2023 and 2030.

Small satellites, also known as smallsats, are miniaturized satellites that are much smaller than conventional satellites. There are

primarily two types of small satellites - mini satellites and micro satellites. Mini satellites have a wet mass between 100kg to 500kg, while micro satellites have a mass below 100kg.

Small satellites offer various advantages over conventional large satellites. Since they are much smaller in size and weigh less, the launch cost of small satellites is much lower. This makes access to space more affordable for universities, research organizations and small companies. Smallsats also have shorter development timelines and can be developed and launched within 1-2 years. Their compact size allows smallsat operators to launch multiple satellites together during a single rocket launch, improving launch flexibility. Additionally, newer microsatellite components and technologies allow them to perform similar functions as large satellites despite their smaller size.

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However, small satellites also have some disadvantages. Their smaller size limits power generation and payload capability. They also have a shorter operational life of 1-5 years due to smaller batteries and components. Communication capabilities are also more basic due to smaller antennas and solar panels. Their low-earth orbits below 2000km mean faster orbital decay and shorter mission durations.



The major players operating in the market include:

- Harris Corporation Airbus Defense and Space
- Boeing
- Geoptics Inc.
- Lockheed Martin Corporation
- Millennium Space Systems Inc.
- Northrop Grumman Corporation
- OHB AG
- Oneweb Ltd
- Planet Labs Inc.
- Sierra Nevada Corporation
- Singapore Technologies Engineering Limited
- Space Exploration Technologies Corp. (Space X)
- Surrey Satellite Technology Ltd.
- Thales Alenia Space.

Drivers:

Affordability of Launch

As satellite technology progresses, the overall costs of developing and launching small satellites are decreasing significantly. Traditionally, developing and launching even a small satellite used to cost tens of millions of dollars, restricting it only to large government space agencies and well-funded private firms. However, newer technologies and private launch services have helped drive down these costs substantially. Miniaturization of components has reduced the satellite size and weight, bringing down development costs. Additive manufacturing and COTS sourcing of components allows for simpler assembly and mass production. Dedicated small satellite launch vehicles can piggyback such payloads along with primary large payloads, making launch more affordable. Several new private launch startups now offer launches specifically targeting the smallsat market, with current price points as low as few million dollars depending on payload weight and orbit. This newfound affordability at multiple phases of the small satellite lifecycle has opened up the sector to a whole new set of potential customers including universities, tech startups and even individuals. No longer restricted by high barriers of entry, more organizations and businesses now see potential to leverage smallsats for various commercial and non-commercial applications. The lower upfront investment has helped proliferate small satellite missions for technology demonstration, Earth observation, connectivity constellations and beyond. Overall, dramatic decrease in costs has been a key driver fueling growth of the small satellite sector.

Proliferation of New Applications

As small satellites become more affordable and capable, an array of new commercial applications are emerging that utilize their benefits. Earth observation constellations with frequent revisit times are providing valuable imagery and monitoring services. Small satellite networks are starting to deliver global connectivity services, especially targeting remote locations. In-space manufacturing and assembly concepts are being tested using smallsats. Beyond traditional communications and Earth observation roles, smallsats are now enabling completely new applications such as planetary and deep space science, on-orbit servicing of larger satellites, edge computing platforms and in-orbit demonstrations. Even societal benefits are accruing from their use in areas like environmental monitoring, disaster management and educational research programs. Multiple industries beyond just space such as agriculture, oil & gas, maritime are leveraging these new opportunities. The business case is strengthening for companies across domains to invest in small satellite constellations tailored to their industry needs such as IoT, logistics etc. Overall, the rising number of viable use cases is attracting more commercial investment and creating lasting demand which will propel further growth. Increased utilization of smallsats signals a paradigm shift where they will no longer remain a niche.

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Analyst Viewpoint:

The [small satellite market](#) is experiencing significant growth due to many positive drivers. The declining costs of building small satellites and launch vehicles is making space more affordable. The miniaturization of components is allowing greater capabilities to be packed into smaller packages. Further, governments and commercial players are increasingly recognizing the benefits that small satellites can provide for applications such as Earth observation, communication, and technology demonstration. This growing demand is spurring private sector investment and innovation.

However, certain restraints still persist that could potentially limit faster growth in the small satellite sector. Regulatory compliance remains challenging particularly for cross-border data transmission and sharing of satellite capabilities. Further, the reliability of small satellites and components is still being proven out over long durations in space. Spacecraft assembly, integration, and testing also represents a bottleneck for some manufacturers to scale rapidly.

Going forward, opportunities around satellite constellations and new space-based applications are expected to drive growth. North America currently accounts for the largest share of the small satellite launch activity but Europe and Asia Pacific are emerging as significant contenders. Within Asia Pacific, China has shown the most aggressive push to develop capabilities around small satellites supporting government and military programs. New space startups are also flourishing globally and helping to expand the set of participants in the small satellite ecosystem. Overall, the small satellite market remains one of the most dynamic and

Segment Analysis:

Affordability drives growth in nano-small satellites

In terms of mass the Small Satellite Market is segmented into nano-small and small satellites. Among these segments nano-small satellites contribute the highest share of the market owing to their low development and launch costs. Nano-small satellites weigh less than 10 kilograms and can be built and launched for a fraction of the cost of traditional small satellites. Their small size allows them to piggyback on launches with larger satellites, further reducing costs. This affordability has made them accessible for educational institutions, research organizations and small companies to carry out projects that were previously not feasible. Various new space startups are focusing on developing low-cost nanosatellite networks for earth observation, communication and other applications. Their cost-effectiveness compared to traditional satellites is driving rapid growth within this segment.

Commercial applications fuel growth in small satellites

In terms of application the Small Satellite Market is segmented into earth observation, communication, science & exploration and technology demonstration. Among these segments commercial earth observation satellites contribute the highest share of the market. A variety of companies have sprung up offering high-resolution multispectral earth imaging services for agriculture, insurance, infrastructure monitoring and other commercial verticals. This has created lucrative opportunities for satellite operators to capture a share of the burgeoning commercial earth observation applications market. In addition, the falling costs of deploying small communication satellites is allowing new constellation plans for global broadband connectivity through Low Earth Orbit satellites. Such commercial applications are expected to be the major demand driver of the small satellite segment going forward.

Government programs increase satellite constellations

Additionally, in terms of end-use the Small Satellite Market is segmented into commercial, civil, defense and military segments. Among these segments government programs contribute the highest share of the market. Various countries are pursuing ambitious small satellite constellation projects for strategic and security priorities. For instance, civil space agencies are engaged in developing networks of small satellites for continuity of critical services like weather monitoring. Similarly, several defense modernization plans rely on small satellites for dual-use surveillance, communication and intelligence assets. International cooperation and partnerships are also witnessing increasing use of nanosatellites and cubesats for joint scientific missions. Sustained government investments to enhance national space capabilities through satellite constellations are a key factor propelling the overall small satellite industry.

Regional Analysis:

North America has long dominated the global small satellite market due to significant government and private sector spending on space technologies in the US. Major players like Lockheed Martin, Northrop Grumman, and Maxar have established production facilities and research centers in the region to cater to the large defense and intelligence budgets directed towards smallsat programs. Agencies like NASA, NOAA and NSF also support technology development through competitive grants and pathfinder missions. In recent years, private companies like SpaceX, Planet and Terra Bella have further enhanced the region's leadership with ambitious plans for constellations in LEO and VLEO. The presence of capable launch providers and availability of risk-tolerant venture capital has made North America extremely conducive for smallsat startups to test new form factors and payload technologies.

The Asia-Pacific region has emerged as the fastest growing market for small satellites driven by national initiatives from China, India, Japan and South Korea. Even though some capabilities are imported, these nations are bolstering their domestic space industries through preferential policies. For example, the Chinese government has set ambitious milestones for remote sensing, communication and technology demonstration missions as part of its military modernization and infrastructure development goals. Similarly, India has used PSLV and GSLV launches to gain experience with imaging, navic and science satellites while nurturing companies like Pixxel and Anthropic. Countries like Australia are also leveraging their geographical advantage to serve as ground stations for NewSpace companies. With expected rise in demand from governments as well as commercial sectors like agriculture, insurance and energy, the Asia-Pacific market share is projected to steadily increase in the coming years.

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Frequently Asked Questions (FAQs):

- What are the key factors hampering growth of the Small Satellite market?
- What are the major factors driving the global Small Satellite market growth?
- Which is the leading component segment in the Small Satellite market?
- Which are the major players operating in the Small Satellite market?
- Which region will lead the Small Satellite market?
- What will be the CAGR of Small Satellite market?
- What are the drivers of the Small Satellite market?

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