

Satellite Command and Control Systems

Market and Technology Forecast to 2032



MARKET
FORECAST

Contents

1 Introduction

- 1.1 Scope
- 1.2 Definitions
- 1.3 Methodology
- 1.4 Who will benefit from this study?

2 Executive Summary

- 2.1 Trends and Insights
- 2.2 Main Findings
- 2.3 Key Conclusions

3 Technologies and Developments

- 3.1 Overview
- 3.2 Technology and Developments
 - 3.2.1 Satellite C2 Software
 - 3.2.2 Elements of Satellite C2 Software
 - 3.2.3 Advanced Telemetry, Tracking, and Control (ATTC) Systems
- 3.3 Ground Station
 - 3.3.1 Software-defined Ground Stations
 - 3.3.2 OpenSpace Ground Stations
 - 3.3.3 Enterprise Ground System

4 Market Overview

- 4.1 Introduction
 - 4.2 Satellite Command and Control System market volume distribution over the forecast period by Region
 - 4.3 Market Activity
 - 4.3.1 SDA Selects SpiderOak Software for Ground C2 Network Security Research
 - 4.3.2 Space Force is Finalising a Plan to acquire C2 Software
 - 4.3.3 Lockheed Martin Unveils Horizon and Compass: Pioneering Commercial Ground Control Software for Satellite Constellations
 - 4.3.4 Northrop Grumman Demonstrates C2 Success in Multinational NATO Exercise
 - 4.3.5 NRL's Blossom Point Tracking Facility Provides Command and Control for Space Development Agency Tranche 0 Mission Launch
- 2

5 Market Analysis and Forecast Factors



5.1 Market Segmentation

5.2 Space Segment

- 5.2.1 Relay Satellites
- 5.2.2 Mission Satellites
- 5.2.3 Satellite Constellations
- 5.2.4 Government Satellites Types
- 5.2.5 Commercial Satellite Types

5.3 Ground Segment

- 5.3.1 Ground Station (Satellite Control and Tracking Centre)
- 5.3.2 Ground Station as a Service (GsaaS)

5.4 Command and Control Software

5.5 Drivers

5.6 Trends

5.7 Opportunities

5.8 Challenges

6 Country Analysis

6.1 The US

- 6.1.1 Space C2 program
- 6.1.2 R2C2 program
- 6.1.3 USSF's Enterprise Ground System

6.2 UK

6.3 Germany

6.4 France

7 Global and Regional Market Forecast to 2032

7.1 Introduction

7.2 Satellite Command and Control System market by Region overview

7.3 Satellite C2 System Market Regions by Application

- 7.3.1 North America Satellite C2 System Market by Application
- 7.3.2 Europe Satellite C2 System Market by Application
- 7.3.3 APAC Satellite C2 System Market by Application
- 7.3.4 MEA Satellite C2 System Market by Application
- 7.3.5 RoW Satellite C2 System Market by Application

7.4 Satellite C2 System Market Regions by End-Use

- 7.4.1 North America Satellite C2 System Market by End-Use
- 7.4.2 Europe Satellite C2 System Market by End-Use
- 7.4.3 APAC Satellite C2 System Market by End-Use
- 7.4.4 MEA Satellite C2 System Analytics Market by End-Use



7.4.5 RoW Satellite C2 System Market by End-Use

7.5 Opportunity Analysis

8 Market Forecast to 2032 by Application

8.1 Introduction

8.2 Satellite Command and Control System Technologies Market by Region

8.2.1 Communication Satellite C2 System Market by Region

8.2.2 Earth Observation Satellite C2 System Market by Region

8.2.3 Navigation Satellite C2 System Market by Region

8.2.4 Space Science Satellite C2 System Market by Region

8.2.5 Surveillance Satellite C2 System Market by Region

8.3 Global Satellite C2 System Application Market by End-Use

8.3.1 Communication Satellite Command and Control System Market by End-Use

8.3.2 Earth Observation Satellite Command and Control System Market by End-Use

8.3.3 Navigation Satellite Command and Control System Market by End-Use

8.3.4 Space Science Satellite Command and Control System Market by End-Use

8.3.5 Surveillance Satellite Command and Control System Market by End-Use

8.4 Opportunity Analysis

9 Market Forecast to 2032 by End-User

9.1 Introduction

9.2 Satellite Command and Control System market by End-User overview

9.3 Satellite Command and Control System End-Users Market by Region

9.3.1 Civil Satellite Command and Control System Market by Region

9.3.2 Commercial Satellite Command and Control System Market by Region

9.3.3 Government Satellite Command and Control System Market by Region

9.3.4 Military Satellite Command and Control System Market by Region

9.4 Satellite Command and Control System End-users Market by Application

9.4.1 Civil Satellite Command and Control System Market by Application

9.4.2 Commercial Satellite Command and Control System Market by Application

9.4.3 Government Satellite Command and Control System Market by Application



9.4.4 Military Satellite Command and Control System Market by Application

9.5 Opportunity Analysis

10 Impact Analysis

10.1 Introduction

10.2 Forecast Factors and Market Impact

11 Leading Companies

11.1 Kratos

11.1.1 Introduction

11.1.2 Satellite C2 Systems and Services

11.1.3 Recent Developments and Contracts

11.1.4 SWOT Analysis

11.2 L3Harris

11.2.1 Introduction

11.2.2 Satellite C2 Systems and Services

11.2.3 Recent Developments and Contracts

11.2.4 SWOT Analysis

11.3 Lockheed Martin

11.3.1 Introduction

11.3.2 Satellite C2 Systems and Services

11.3.3 Recent Developments and Contracts

11.3.4 SWOT Analysis

11.4 Parsons

11.4.1 Introduction

11.4.2 Satellite C2 Systems and Services

11.4.3 SWOT Analysis

11.5 Raytheon technologies

11.5.1 Introduction

11.5.2 Satellite C2 Systems and Services

11.5.3 SWOT Analysis

11.6 Safran

11.6.1 Introduction

11.6.2 Satellite C2 Systems and Services

11.6.3 SWOT Analysis

11.7 Terma

11.7.1 Introduction

11.7.2 Satellite C2 Systems and Services

11.7.3 SWOT Analysis



11.8 Ground Stations

- 11.8.1 Amazon Ground Station as a Service
- 11.8.2 Azure Orbital Ground Station
- 11.8.3 Kongsberg Satellite Services AS (KSAT)
- 11.8.4 Viasat RTE GSaaS
- 11.8.5 Spacelink
- 11.8.6 Leaf Space

12 Results and Conclusions

13 About Market Forecast

- 13.1 General
- 13.2 Contact us
- 13.3 Disclaimer
- 13.4 License

Appendix A: Companies Mentioned

Appendix B: Abbreviations

Sample Page



List of figures

Figure 1: Satellite Command and Control Market Summary by Region

Figure 2: Market volumes over the forecast period per region

Figure 3: Market Segmentation and Sub-Segmentation Satellite C2 Market

Figure 4: Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 5: Global Market Forecast for Active Protection Systems to 2031 by Region [%]

Figure 6: North America Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 7: Europe Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 8: APAC Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 9: MEA Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 10: RoW Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 11: North America Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 12: Europe Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 13: APAC Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 14: MEA Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 15: RoW Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 16: Satellite C2 market size, 2024-2032 (US\$ million) by region

Figure 17: Satellite C2 System market CAGR, 2024-2032 by region

Figure 18: Communication Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 19: Earth Observation Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]



Figure 20: Navigation Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 21: Space Science Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 22: Surveillance Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 23: Communication Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 24: Earth Observation Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 25: Navigation Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 26: Space Science Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 27: Surveillance Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 28: Satellite C2 market size, 2024-2032 (US\$ million) by region

Figure 29: Satellite C2 System market CAGR, 2024-2032 by region

Figure 30: Satellite C2 System Market Forecast to 2032 by End-use [US\$ million]

Figure 31: Civil Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 32: Commercial Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 33: Government Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 34: Military Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

Figure 35: Civil Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 36: Commercial Satellite C2 System Market Forecast to 2032 by Application [US\$ million]



Figure 37: Government Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 38: Military Satellite C2 System Market Forecast to 2032 by Application [US\$ million]

Figure 39: Satellite C2 market size, 2024-2032 (US\$ million) by region

Figure 40: Satellite C2 System market CAGR, 2024-2032 by region

Figure 41: Satellite C2 System Market Forecast to 2032 Scenario I Vs. Scenario II

Sample Page



List of tables

Table 1: Satellite Command and Control System market summary by Region [US\$ billion]

Table 2: Count of Satellites by Countries

Table 3: Count of Satellites by Application

Table 4: Count of Satellites by End-use

Table 5: Global Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 6: North America Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 7: Europe Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 8: APAC Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 9: MEA Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 10: RoW Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 11: North America Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 12: Europe Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 13: APAC Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 14: MEA Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 15: RoW Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 16: Communication Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 17: Earth Observation Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 18: Navigation Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]



Table 19: Space Science Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 20: Surveillance Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 21: Communication Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 22: Earth Observation Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 23: Navigation Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 24: Space Science Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 25: Surveillance Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 26: Satellite C2 Software Market Forecast to 2032 by End-use [US\$ million]

Table 27: Civil Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 28: Commercial Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 29: Government Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 30: Military Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

Table 31: Civil Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 32: Commercial Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 33: Government Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 34: Military Satellite C2 Software Market Forecast to 2032 by Application [US\$ million]

Table 35: Satellite c2 Market Forecast to 2032 Scenario I Vs. Scenario II [US\$ million]



Table 36: Kratos Company SWOT Analysis

Table 37: L3Harris Company SWOT Analysis

Table 38: Lockheed Martin Company SWOT Analysis

Table 39: Parsons Company SWOT Analysis

Table 40: Raytheon Company SWOT Analysis

Table 41: Safran Company SWOT Analysis

Table 42: Terma Company SWOT Analysis

Sample Page



1 Introduction

1.1 Scope

This market study offers a detailed analysis of the global Satellite Command and Control System market for two reference years and over the next eight years. The market volumes are determined, and market dynamics, industry, technological development, and government programs are analysed.

In particular, it provides an in-depth analysis of the following:

- **Overview:** Snapshot of the satellite command and control system market during 2023-2034, including highlights of the demand drivers, trends, and challenges. It also provides a snapshot of the spending with respect to regions as well as segments and sheds light on the emergence of new technologies.
- **Market Dynamics:** Insights into the technological developments in the satellite command and control system market and a detailed analysis of the changing preferences of governments around the world. It also analyses changing industry structure trends and the challenges faced by the industry participants.
- **Segment Analysis:** Insights into the satellite command and control system market from a segmental perspective and a detailed analysis of factors influencing the market for each segment.
- **Regional Review:** Insights into modernization patterns and budgetary allocation for top countries within a region.
- **Regional Analysis:** Insights into the satellite command and control system market from a regional perspective and a detailed analysis of factors influencing the market for each region.
- **Impact Analysis:** Analysis of how certain events will impact the satellite command and control system market. This will give you an indication of which factors are important for the forecast.
- **Key Program Analysis:** Details of the top programs in each segment expected to be executed during the forecast period.
- **Competitive landscape Analysis:** Analysis of the competitive landscape of this industry. It provides an overview of key companies, together with insights such as key alliances, strategic initiatives, and a SWOT analysis.



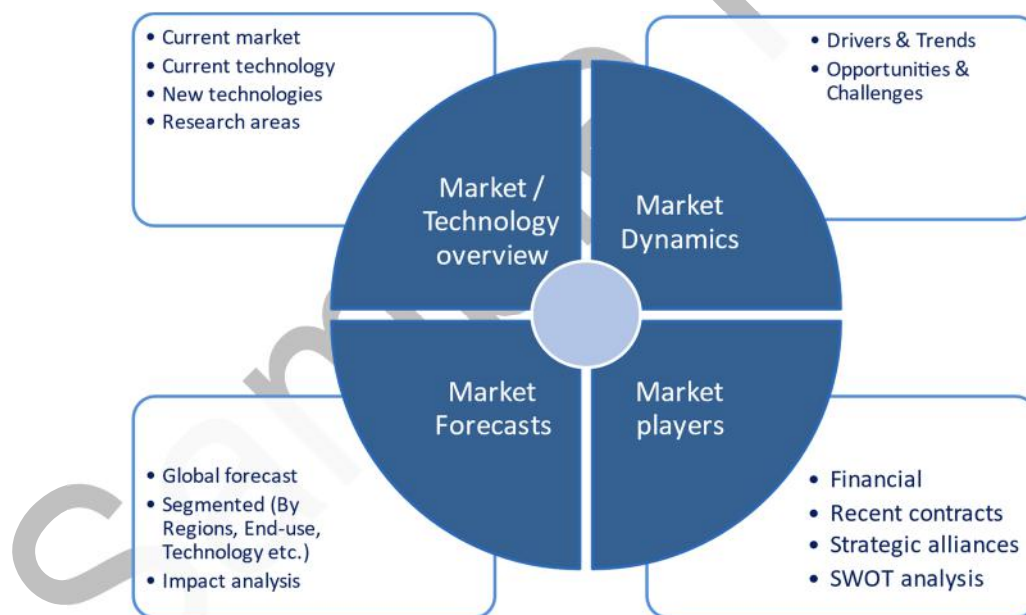
1.2 Definitions

Satellite command and control (C2) refers to the systems and processes used to operate and manage satellites in space. It involves a combination of ground-based facilities, software, and personnel to ensure that satellites function as intended and can carry out their missions effectively.

1.3 Methodology

The Market Forecast team that researched, analysed, and wrote this report, combines a range of skills and talents in all relevant areas, including defence-, aerospace-, space-, and aviation technology, economics, politics and policymaking, business, and general intelligence, as well as industry/market research and analysis.

In general, our market studies consist of four main parts: an analysis of the market and technologies, an analysis of the market dynamics (current and future factors that will have an impact on the market size), the market forecasts, and the key companies in the respective market.



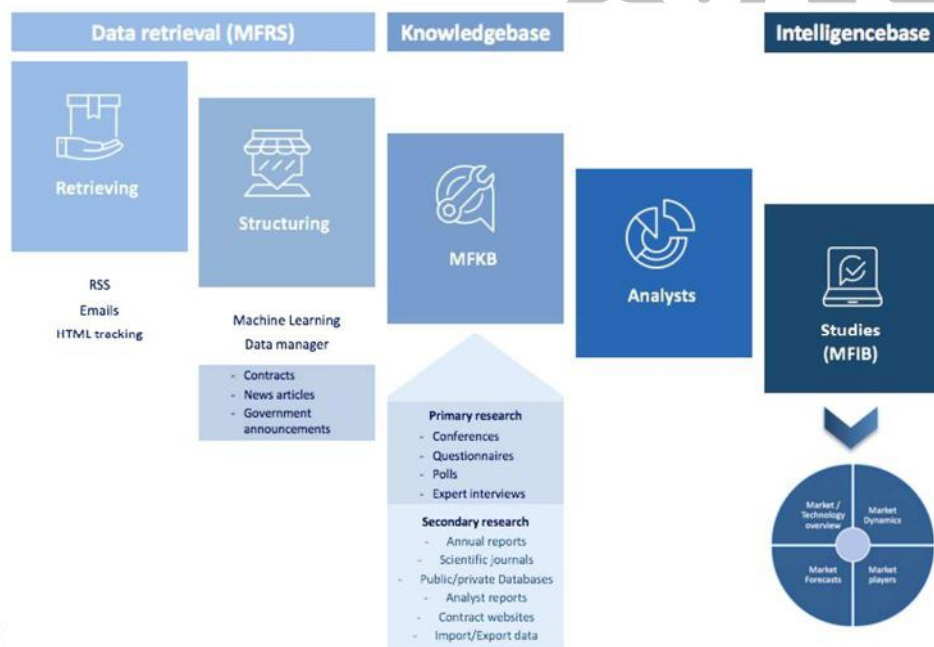
The Market Forecast methodology uses market-tailored approaches to assess the impact of new technologies, major socioeconomic or political events, force structures in creating trends and new opportunities, or the needs generated by the existing inventories according to a capabilities-based approach. In most cases, we can base our forecast on data triangulation of requirements-, production-, and trends data, with each one of them weighing differently, depending on the market characteristics.

Unique to the defence and aerospace market is the availability of a considerable amount of information on government requirements and plans. When this information (requirements data) is available then it weighs more in market-sizing. However, when

there is a scarcity of information, then the analysts will rely on trends which are based on data collected during reference years in combination with market factors, like drivers and inhibitors.

In our data structuring process, we define *programmes* for countries where we combine the requirements data from governments (customers) and production data from companies into one data set. This data set is the basis for further analysis based on *trends*. The *programmes* will in general be similar to the programmes that the defence organisations have in a country to fulfil a certain requirement, but they also could be fictitious *programs* when the requirement is not official or when it's about a civil *program*.

Since data is the fuel of forecasting, we have developed a proprietary knowledgebase and forecast tool: MF Knowledgebase (MFKB). This is part of a platform that contains a Data Retrieval module (MFRS) and the Intelligencebase (MFIB). The MFIB is used by our customers to access the studies.



Processing data in a structured manner in combination with expert procedures and skilled analysts leads to the best possible predictions, but not all the quantitative information is available for reasons of protection and confidentiality, therefore forecasts, even the best-researched ones, are still exactly that - forecasts. Only the future will judge their accuracy. You should read our analysis and conclusions with an open mind and realize that unpredictable events could impact the market.

Impact Analysis

In addition to the main market forecast, we discuss and analyse relevant scenarios to show what the impact of certain events is on the market. The focus is on describing cases and explaining what their impact on the market is. Where the main market forecast is based on a combination of traceable data and trends from predictable

forecast factors so does the *Impact Analysis* which considers disruptive scenarios that are less like to happen, but with great impact if they do, such as an geopolitical event or a financial crisis reducing the availability of funding. These events are less likely, but still feasible and therefore of interest to understand the market.

1.4 Who will benefit from this study?

The study on satellite command and control technology and markets will benefit a wide range of stakeholders in the space industry and beyond. The primary beneficiaries include:

- **Aerospace and Defense Companies:** Companies operating in the aerospace and defence sector, especially those involved in satellite manufacturing, space technology, and command and control systems development, will gain valuable insights into market trends, technologies, and potential areas for growth.
- **Government Agencies:** Space agencies and government bodies responsible for space exploration, national security, and satellite programs can utilize the study to understand technological advancements, market dynamics, and potential collaborations within the satellite command and control domain.
- **Technology Providers:** Companies offering satellite command and control technologies, software, and solutions will find the study beneficial for market analysis, identifying opportunities for innovation, and staying informed about competitors and emerging trends.
- **Satellite Operators and Service Providers:** Companies involved in satellite operations, communication services, and satellite-based applications can gain insights into advancements in command and control technologies, helping them enhance their operational efficiency and services.
- **Investors and Financial Institutions:** Investors seeking opportunities in the space industry can use the study to assess the market potential, evaluate key players, and make informed investment decisions. Financial institutions can benefit from insights into the financial landscape of satellite command and control markets.
- **Research and Development Organizations:** Entities engaged in research and development related to satellite technologies, communications, and control systems will find the study useful for understanding current technologies, identifying gaps, and exploring areas for further innovation.



- **Academic and Educational Institutions:** Universities and educational institutions focusing on aerospace engineering, space science, and related fields can use the study as a reference for curriculum development, research projects, and staying updated on industry trends.
- **Regulatory Bodies:** Regulatory authorities overseeing space activities and satellite operations can benefit from understanding the technological landscape, regulatory challenges, and best practices in satellite command and control.
- **Professional Associations:** Industry associations and forums dedicated to the aerospace and space sectors can leverage the study to provide valuable information to their members, facilitate networking, and contribute to industry knowledge.

Sample Page



3.2.2 Elements of Satellite C2 Software

Satellite C2 software encompasses a range of elements designed to facilitate the effective management and operation of satellites in orbit. Here are key components and features found in Satellite C2 software:

- **Telemetry Processing:** Capabilities for receiving, processing, and interpreting real-time telemetry data sent by the satellite, providing critical insights into the satellite's health and performance.
- **Command Generation:** A command interface for operators to generate commands for the satellite, including instructions for orbital adjustments, payload operations, and system configurations.
- **Orbit Management:** Tools for analyzing and predicting the satellite's orbital parameters, allowing operators to plan and execute orbital adjustments as needed.
- **Automation and Autonomy:** Features that enable automated execution of predefined commands based on specific conditions, reducing the need for constant manual intervention.
- **Communication Protocols:** Integration with communication protocols like Space Data Link to establish reliable and secure communication links between the ground control centre and the satellite.
- **Security Measures:** Security features to ensure secure communication, incorporating encryption and authentication measures to protect against unauthorized access and cyber threats.
- **Anomaly Detection:** Algorithms designed to automatically detect anomalies or deviations from expected behaviour, triggering alerts for timely operator intervention.
- **Visualization and Monitoring:** A user-friendly interface that provides operators with visual representations of telemetry data, orbital information, and the overall health and status of the satellite.
- **Scheduling and Optimization:** Tools for scheduling satellite activities based on mission priorities, communication windows, and payload requirements. Optimization features to maximize payload utilization.
- **Reporting and Analysis:** Tools for generating comprehensive reports on satellite performance, mission achievements, and potential issues, aiding in data-driven decision-making.



- **Integration with Ground Stations:** Integration with Space Link Extension (SLE) services, extending the reach of the Space Data Link and ensuring effective communication with ground stations.

3.2.3 Advanced Telemetry, Tracking, and Control (ATTC) Systems

Telemetry and command processing are integral components of satellite operations, facilitating communication between ground control stations and orbiting satellites. Satellites continuously transmit telemetry data, including health status, position, and sensor readings, to ground stations. Ground stations use C2 software to receive, process, and analyze telemetry data, gaining insights into the satellite's operational status.

Advanced Telemetry, Tracking, and Control (ATTC) systems are instrumental in shaping the evolution of C2 software and ground stations by providing advanced monitoring capabilities, enabling autonomous operations, optimizing resource management, enhancing security measures, improving orbit determination, facilitating data fusion, promoting interoperability, and reducing communication latency. These advancements collectively contribute to more efficient, secure, and responsive satellite operations.

ATTC systems are catalyzing a transformative evolution in the landscape of C2 software and ground stations for satellite operations. These sophisticated systems deliver real-time telemetry data with heightened precision and frequency, empowering C2 software and ground stations to monitor satellite health, performance, and position with unprecedented accuracy. The integration of advanced algorithms and artificial intelligence in ATTC systems facilitates autonomous operations, reducing reliance on manual intervention for routine tasks. This autonomy extends to dynamic resource management, allowing C2 software and ground stations to optimize power usage, data transmission, and bandwidth allocation based on real-time insights.

Security measures receive a significant boost with ATTC systems, incorporating advanced encryption and authentication protocols to safeguard communication links between ground stations and satellites. Enhanced orbit determination and prediction capabilities contribute to more efficient satellite tracking and command execution. Moreover, ATTC systems facilitate data fusion from diverse sources, enabling comprehensive situational awareness for informed decision-making.

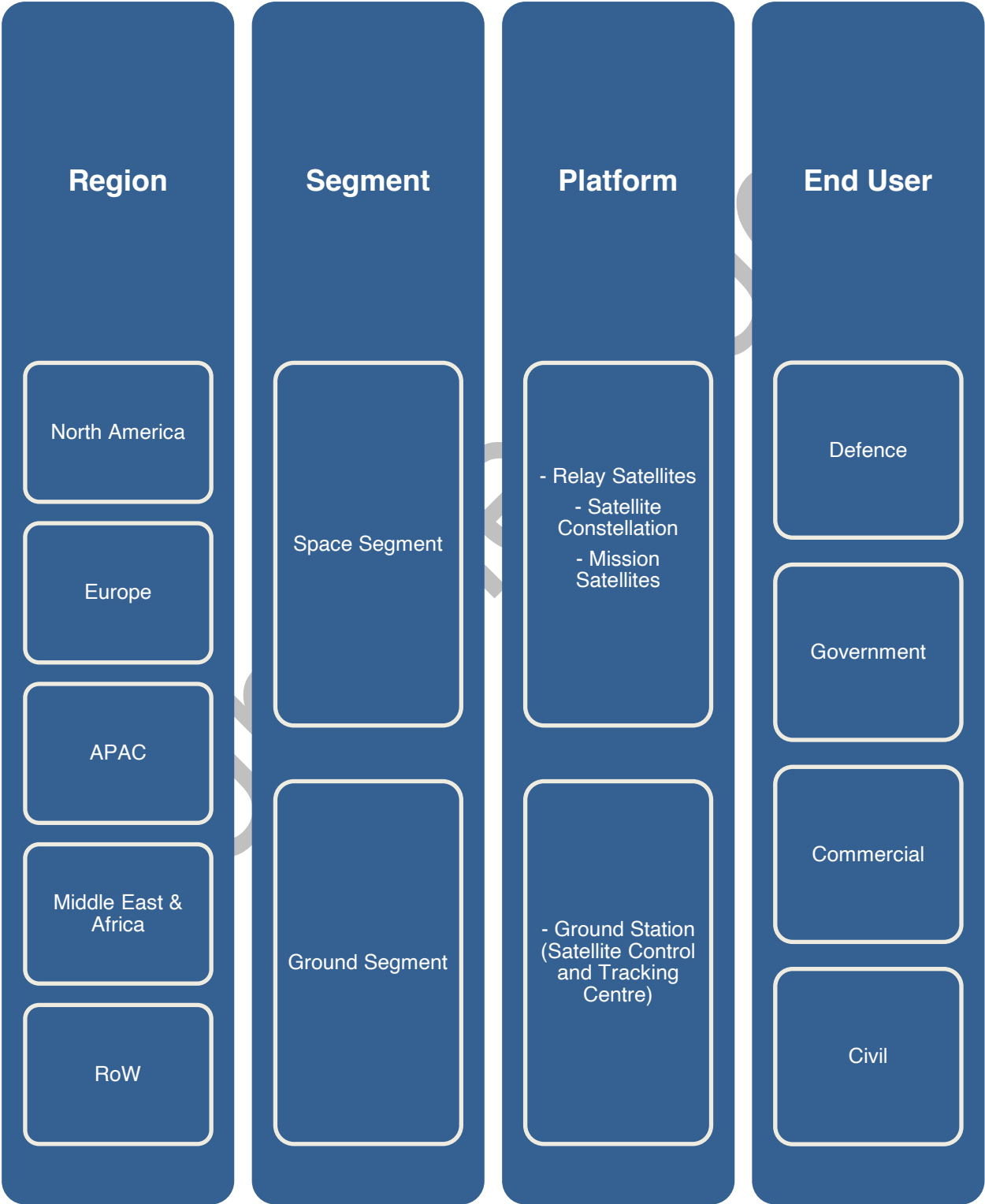
Embracing interoperability standards, ATTC systems promote seamless communication between various components of the satellite system. This interoperability extends to C2 software, fostering a more integrated and scalable architecture. The reduction in communication latency achieved by ATTC systems with advanced tracking capabilities further empowers C2 software to execute commands promptly and respond swiftly to evolving mission conditions. In essence, the integration of Advanced Telemetry, Tracking, and Control systems introduces a new era of efficiency, security, and responsiveness in satellite operations, driving the continual evolution of C2 software and ground stations.



5 Market Analysis and Forecast Factors

5.1 Market Segmentation

Figure 3: Market Segmentation and Sub-Segmentation Satellite C2 Market



5.5 Drivers



Increasing Number of Satellite Constellations

The operational landscape of space has witnessed a remarkable surge in the number of satellites, marked by the increasing prevalence of satellite constellations. As of the latest data, a staggering 6,718 operational satellites are orbiting the Earth, representing a diverse array of missions and functions. This proliferation is primarily attributed to the rise of satellite constellations, a strategic deployment of interconnected satellites working in tandem to deliver enhanced capabilities and coverage.

The trend of increasing satellite constellations is expected to continue in the coming years and estimations suggest that about 3000 satellites are in development.

Mega-constellations, characterized by the deployment of thousands of small satellites, represent a significant trend. These constellations aim to create large-scale satellite networks capable of delivering a broad range of services. Notable examples include SpaceX's Starlink, OneWeb, and Amazon's Project Kuiper.

As technology advances, new entrants, both governmental and commercial, are likely to contribute to the expansion of satellite fleets. Innovation in satellite design, propulsion systems, and sustainable practices will shape the future of satellite constellations.

6.4 France

The French Space Command (*Commandement de l'Espace*—CDE) was established in July 2019. It supersedes the Joint Space Command established in 2010. The French Space Command plays a crucial role in advancing France's capabilities and activities in the realm of space.

French Space Command holds the responsibility of maintaining control over military assets and conducting space surveillance. Its functions extend to providing timely alerts in the event of potential threats originating from space. Additionally, the command is entrusted with the planning and execution of military operations in space, ensuring the support of space capabilities, and delivering space assistance to broader operational endeavors.

The initiatives outlined in the Military Planning Act (MPA 2019-2025) serve as a foundational step towards achieving comprehensive capabilities by 2030. The envisaged capabilities, functioning as both sensors and effectors, are poised to be seamlessly integrated into the framework of the prospective military space operations command and control system. The preliminary studies for this system are slated to commence under the umbrella of the MPA 2019-2025, setting the stage for a sustained and fully realized capability by the specified target year, 2030.

The year 2020 marked a significant milestone for France as it joined the Combined Space Operations initiative, showcasing a dedicated commitment to defining the framework for forthcoming multinational military space operations. This collaborative approach not only enhances operational effectiveness but also bolsters resilience in addressing the intricacies of contemporary space endeavours.

Around 2025, the Astreos space operations information system is poised to become the cornerstone of the French military space system, serving as the interconnected operational backbone of the space defence system. It will play a pivotal role in facilitating space operations, environmental control, and supporting multi-domain operations. Specifically developed to bolster the C4 (command, control, communications, and computers) functions of space operations.

Astreos possesses the capability to collect, store, and manage substantial volumes of real-time data. It will seamlessly connect and control all elements of the space system, enabling the real-time direction of sensors and harnessing significant computing power tailored to operational needs. Furthermore, Astreos is designed to foster the exchange of information with other domains and allied command centres.

Astreos serves as tangible evidence of the strengthening of space defence within the armed forces, showcasing our capabilities and space expertise. Consequently, the development and integration of Astreos to unify command and control of military space operations are pivotal considerations that will shape French Space Command's strategic approach in the coming years.



7.2 Satellite Command and Control System market by Region overview

Table 5: Global Satellite C2 Software Market Forecast to 2032 by Region [US\$ million]

	2024	2025	2026	2027	2028	2029	2030	2031	2032	Σ24-32	CAGR 24-32
North America	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
Europe	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
Asia	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
Middle East	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
RoW	xx	xx	xx	xx	xx	xx	xx	xx	xx	23.9	xx
Total	465.0	xx	xx	xx	xx	xx	xx	xx	xx	7182.7	xx

Figure 4: Satellite C2 System Market Forecast to 2032 by Regions [US\$ million]

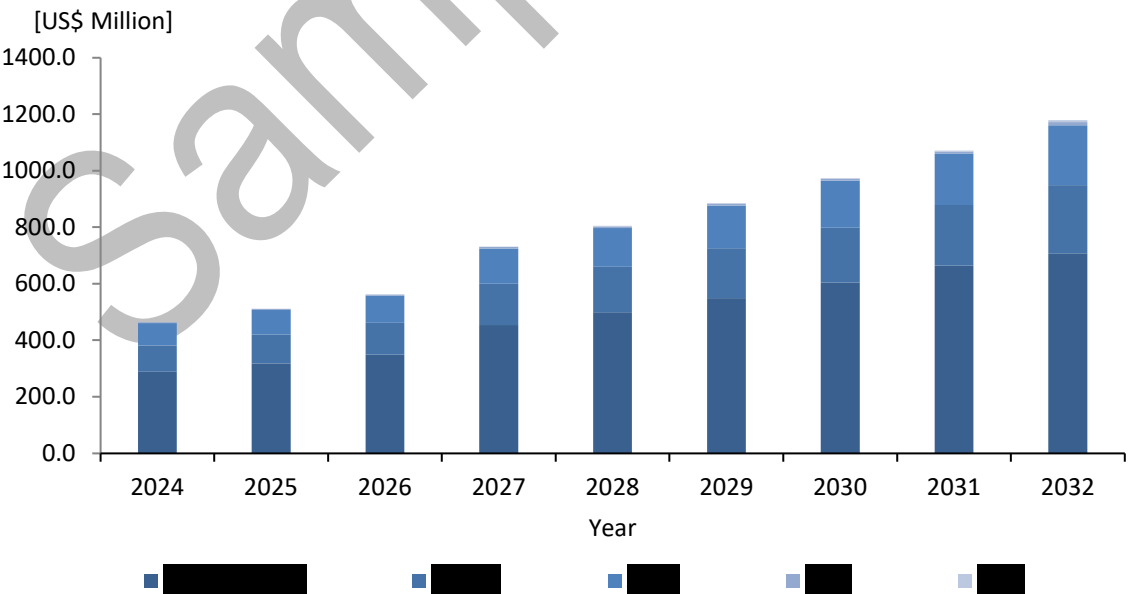
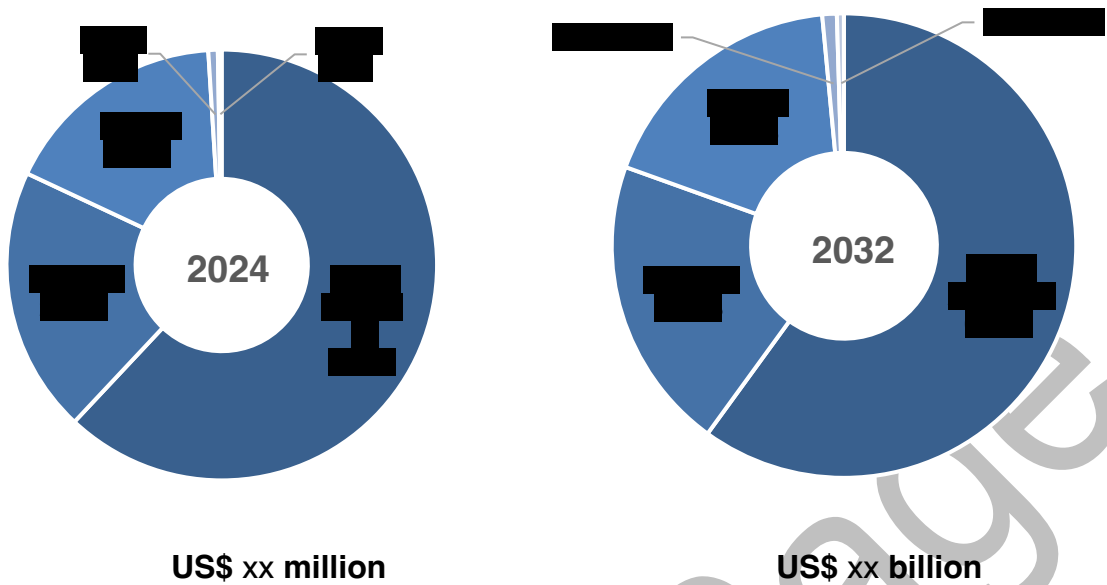


Figure 5: Global Market Forecast for Active Protection Systems to 2031 by Region [%]



- The total global expenditure on satellite C2 is expected to reach US\$ xx million by the end of 2032, with a CAGR of xx %.
- North America with a substantial share from the US is projected to have the highest total expenditure over the forecast period, with a cumulative sum of US\$ xx million.
- Asia and Europe also show notable CAGRs of xx % and xx %, respectively, indicating robust growth in these regions.
- Europe follows North America in total expenditure, with a cumulative sum of US\$ xx million. There will be significant investments in the APAC region of about US\$ xx million during the forecasted period.
- The Middle East is expected to have the highest CAGR of xx %, indicating considerable growth in satellite C2 market expenditures in the coming years.
- The Rest of the World (RoW) is projected to have the highest CAGR of xx %, suggesting substantial annual growth in satellite C2 market expenditures over the forecasted period.

7.5 Opportunity Analysis

Figure 16: Satellite C2 market size, 2024-2032 (US\$ million) by region

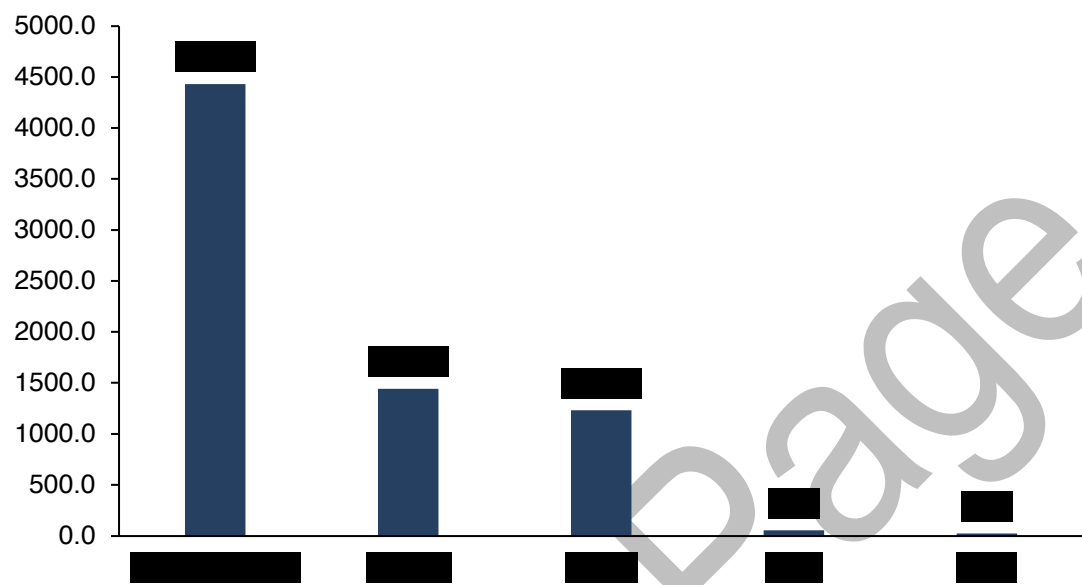
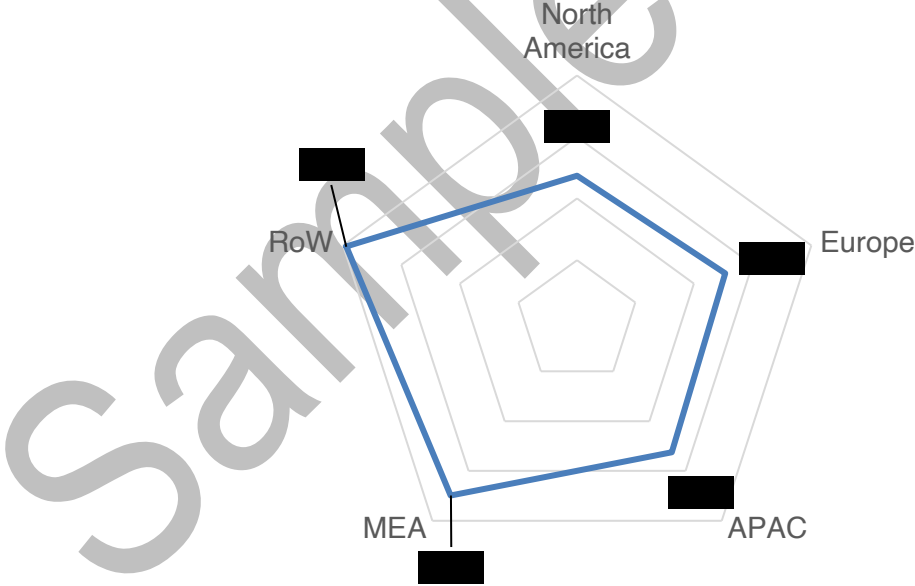


Figure 17: Satellite C2 System market CAGR, 2024-2032 by region



North America is expected to hold the highest market share with a revenue of around US\$ xx billion followed by Europe with US\$ xx billion and APAC with US\$ xx billion.

11.4 Parsons

11.4.1 Introduction

Founded in 1944 Parsons is an American company offering technology solutions, cybersecurity services, and engineering support for defense and intelligence agencies. The company leverages advancements in areas such as artificial intelligence, data analytics, and cybersecurity to address evolving challenges.

11.4.2 Satellite C2 Systems and Services

Ace CtrlPoint

Ace CtrlPoint is an automated C2 software designed for space vehicle and ground station operations. Notable for its plug-in architecture, this application facilitates nearly lights-out telemetry, tracking, and commanding (TT&C) operations. The solution is engineered to offer comprehensive situational awareness for satellite operations centres (SOC), covering both hardware and software aspects, including ground station status and satellite vehicle data. The result is an automated, user-friendly, and customizable product, ensuring operators can focus on the mission's critical aspects.

Ace CtrlPoint aligns with the Space and Missile Systems Center Enterprise Ground Services (EGS) UI/UX standards. This compliance ensures compatibility with a variety of ground system environments, accommodating both legacy and modern hardware.

AceFCT

AceFCT introduces a cutting-edge approach as a factory compatibility tester, seamlessly integrating hardware and software components. This innovative system establishes communication with an accredited space vehicle prior to launch, ensuring thorough testing and validation of compatibility. By combining advanced technology and meticulous testing procedures, AceFCT plays a pivotal role in enhancing the reliability and performance of space missions.

Optimyz

Optimyz is a sophisticated system that facilitates fully automated event-based scheduling, allowing operators to efficiently assess available resources. By automating scheduling tasks, Optimyz™ streamlines operations and optimizes resource utilization, contributing to enhanced efficiency in managing satellite missions.

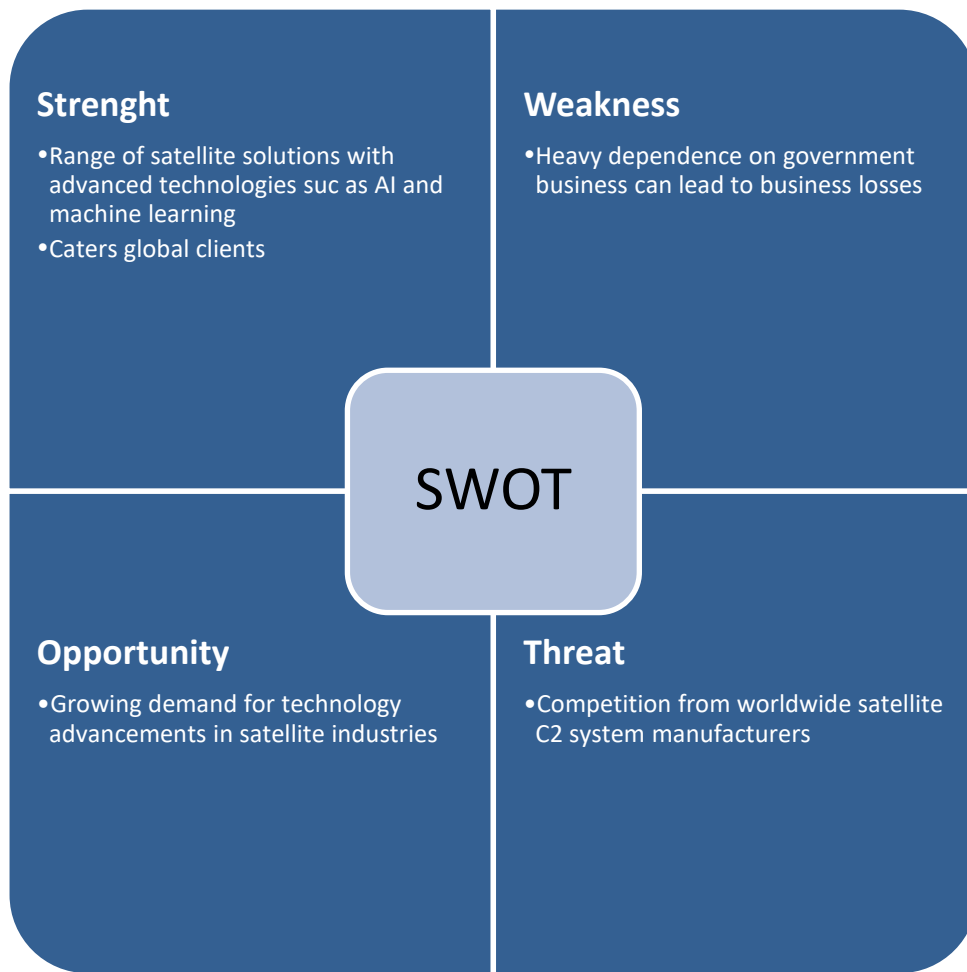
Programmable Telemetry Processor (PTP)

The Programmable Telemetry Processor (PTP) emerges as a versatile and modular telemetry and command front-end processor. Designed for utilization in remote tracking stations and satellite operations centres, the PTP offers adaptability and functionality. Its modular architecture allows for customization, meeting the unique requirements of diverse telemetry and command processing needs. This versatile processor enhances the capabilities of tracking stations and satellite operations centres, contributing to the seamless management of satellite missions.



11.4.3 SWOT Analysis

Table 39: Parsons Company SWOT Analysis



13 About Market Forecast

13.1 General

Market Forecast provides intelligence studies on the Defence and Aerospace market to private and public sector organizations.

Our studies display opportunities to expand in existing markets or to develop new markets and support you in developing your market strategy.

To be able to make important business decisions you require reliable market forecasts and intelligence. Market Forecast reports provide information on stakeholders, customer requirements/potential, current inventory, available products, industry analysis, expert views and technological developments. Our research is based on a structured, consistent, and detailed research approach performed by experienced analysts.

Details on our standard research methodology are available as download on our website.

Market Forecast is a brand of the private owned company ASD Media BV and is located in Amsterdam, The Netherlands, Europe. The company exists for over fifteen years and has a long history on market research, computer models, and online products.

In our philosophy, the quality of the analyst is key for our product. Besides the unquestionable required market and analytical skills of our analysts we invest in the development of data collection and analysis technology to offer market research that is cost-effective, of high quality, up to date and instantly available.

New technology in combination with solid analyst expertise forms market intelligence that creates your competitive advantage.

13.2 Contact us

If you have any queries about this study, or would like any further information, please contact us at: contact@marketforecast.com

Address:

Market Forecast
Veemkade 356
1019HD Amsterdam
The Netherlands



Appendix A: Companies Mentioned

Amazon

Kongsberg

Kratos

L3Harris

LeafSpace

Lockheed Martin

Microsoft

Northrop Grumann

OrbitSecure

Parsons

Raytheon

RBC Signals

Safran

Space Development Agency

Spacelink

Spideroak

Terma

Viasat



Appendix B: Abbreviations

ATLAS - Advanced Tracking and Launch Analysis System

AWS - Amazon Web Services

BPTF - Blossom Point Tracking Facility

C2 - Command and Control

CDE - Commandement de l'Espace

CWIX - Coalition Warrior Interoperability eXercise

Dstl - Defence Science and Technology Laboratory

DLR - German Aerospace Center

EGS - Enterprise Ground Station

ESA - European Space Agencies

GNSS - Global Navigation Satellite Systems

GsaaS - Ground Station as a Service

GSOC - Deutsches Zentrum für Luft- und Raumfahrt

ISRO - Indian Space Research Organisation

MPA - Military Planning Act

NATO - North Atlantic Treaty Organization

NRL - Naval Research Laboratory

RAF - Royal Air Force

SATCOM - Satellite Communications

SDA - Space Development Agency

SDR - Software-defined Radio

Space C2 - Space Command and Control

SPADOC - Space Defense Operations Center

SpRCO - Space Rapid Capabilities Office



UK SpOC - UK Space Operations Centre

USSF - United States Space Force

Sample Page



Battlespace Technologies

General

BATTLESPACE is an international defence electronics news service providing our readers with up to date developments in the defence electronics industry. The publications and associated e-mail services reach an international readership across the world. Our readers range from military electronic specialists through defence research establishments to the defence industry. BATTLESPACE provides a layered news service to its readers. More on: <https://battle-updates.com/about-us/>

Contact

If you would like to purchase this study or need any further information, please contact:

Julian Nettlefold

Tel/Fax: +44 (0)207 6105520

Mobile: +44 077689 54766

e-mail: j.nettlefold@battle-technology.com

