

Unmanned Ground Vehicles Market Report by Mobility (Wheeled, Tracked, Legged, Hybrid), Size (Small (10-200 lbs), Medium (200 - 500 lbs), Large (500 – 1,000 lbs), Very Large (1,000 – 2,000 lbs), Extremely Large (>2,000 lbs)), Mode of Operation (Tethered, Teleoperated, Autonomous), System (Payloads, Control System, Navigation System, Power System, and Others), Application (Military, Law Enforcement, Federal Law Enforcement, Commercial), and Region 2024-2032

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Abstracts

The global unmanned ground vehicles market size reached US\$ 2.7 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 4.4 Billion by 2032, exhibiting a growth rate (CAGR) of 5.6% during 2024-2032. Increasing investments in the defense and military sector, the implementation of various government initiatives, significant growth in insurgency and terrorist activities, and rapid technological advancements are some of the major factors propelling the market.

Unmanned ground vehicles (UGVs) are robotic vehicles that operate on land without the need for a human operator. They are commonly equipped with sensors, cameras, and other technologies to navigate and perform tasks autonomously. These vehicles have sensors that help observe the environment and navigate from one place to another. UGVs are used to perform a wide range of tasks, such as surveillance, reconnaissance, bomb disposal, cargo delivery, identification, warning, confinement, threat destruction, and mapping. These vehicles offer enhanced safety, increasing efficiency and

productivity, cost-effectiveness, flexibility, improved data collection, adaptability, and easy remote operations. As a result, UGVs are extensively used in various fields, including military applications, exploration, agriculture, and industrial automation.

The rising safety and security concerns across the globe are one of the key factors driving the market growth. UGVs are widely deployed in hazardous environments, such as disaster zones, nuclear facilities, or areas affected by chemical or biological hazards. In line with this, the widespread product utilization in military applications, including surveillance, reconnaissance, and combat operations, is acting as another growth-inducing factor. Moreover, increasing urbanization and infrastructural development activities are facilitating the demand for UGVs in the construction, transportation, and maintenance sectors. UGVs are widely used for tasks such as surveying, site inspection, material handling, and maintenance of critical infrastructure, which in turn is favoring the market growth. Apart from this, the introduction of advanced UGVs with sensors, such as light detection and ranging (LiDAR), radar, a global positioning system (GPS), and various other environmental and proximity sensors to improve the resolution, accuracy, and range of UGV perception systems, are providing an impetus to the market growth. Other factors, including advancements in robotics and automation, increasing investments in the defense and military sector, rising need for improved operational efficiency and reduced human intervention in military operations, and enhanced focus on research and development (R&D) activities, are presenting remunerative growth opportunities.

Unmanned Ground Vehicles Market Trends/Drivers: Significant growth in the defense and military sector

UGVs are increasingly being utilized for various military applications, including reconnaissance, surveillance, target acquisition, explosive ordnance disposal, logistics support, and combat operations. In line with this, various military organizations across the globe are placing greater emphasis on UGVs as part of their force modernization efforts, which is positively influencing the market growth. Apart from this, the widespread product utilization in challenging and hazardous environments, such as battlefields, disaster zones, and areas contaminated with chemical or biological agents, is providing a thrust to the market growth. Furthermore, the increasing urban warfare and counterterrorism operations are facilitating the product demand owing to its present complex challenges, including narrow streets, confined spaces, and the need for precision strikes.

Increasing demand for security and surveillance in industrial settings

UGVs are increasingly being utilized in various industries for security and surveillance purposes due to their ability to operate in hazardous environments, carry out remote monitoring, and provide real-time data. Moreover, various industrial facilities, such as manufacturing plants, warehouses, and critical infrastructure, require robust security measures to protect against theft, vandalism, and unauthorized access, which is providing a considerable boost to the market growth. Besides this, UGVs are employed for monitoring and inspecting industrial processes, such as chemical or petroleum plants, as they can navigate through hazardous areas, monitor equipment conditions, and detect leaks or abnormalities, which in turn is creating a positive outlook for the market.

Extensive research and development (R&D) activities

The global unmanned ground vehicle market is continuously evolving due to the extensive R&D activities leading to various innovations to enhance capabilities and address emerging challenges. Moreover, various technological advancements in sensor technology, artificial intelligence (AI), and perception systems to operate in complex scenarios without constant human intervention are positively influencing the market growth. Furthermore, the integration of cameras, LIDAR, radar, ultrasonic and sensor technologies to enable better perception, mapping, and object recognition capabilities is propelling the market growth. Apart from this, the utilization of UGVs for automated guideways, on-road collision warning and avoidance, and highway transit, as well as bus rapid transit systems, is acting as another growth-inducing factor.

Unmanned Ground Vehicles Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global unmanned ground vehicles market report, along with forecasts at the global, regional and country levels from 2024-2032. Our report has categorized the market based on mobility, size, mode of operation, system, and application.

Breakup by Mobility:

- Wheeled
- Tracked
- Legged
- Hybrid

Tracked dominates the market

The report has provided a detailed breakup and analysis of the market based on mobility. This includes wheeled, tracked, legged, and hybrid. According to the report, tracked represented the largest market segment.

Tracked UGVs offer superior off-road performance as they provide better traction, stability, and maneuverability on various terrains, including rough, uneven, or slippery surfaces. Additionally, the widespread adoption of tracked UGVs as they have a larger ground contact area that helps to increase contact surface, and improve traction and weight distribution, which further enhances the UGV's stability and reduces the risk of getting stuck in soft or loose surfaces, is supporting the market growth. Besides this, the increasing demand for tracked UGVs in industries such as defense, agriculture, mining, construction, and search and rescue, where mobility and adaptability are crucial for operational success, is positively influencing the market growth.

Breakup by Size:

Small (10-200 lbs)

Medium (200 - 500 lbs)

Large (500 – 1,000 lbs)

Very Large (1,000 – 2,000 lbs)

Extremely Large (>2,000 lbs)

Small (10-200 lbs) represent the leading segment

The report has provided a detailed breakup and analysis of the market based on the size. This includes small (10-200 lbs), medium (200 - 500 lbs), large (500 – 1,000 lbs), very large (1,000 – 2,000 lbs), and extremely large (>2,000 lbs). According to the report, small (10-200 lbs) represented the largest market segment.

The increasing demand for small-size UGVs that are easily accessible in narrow corridors or underground environments to perform tasks in complex and constrained settings is contributing to the market growth. In line with this, they are widely used as they can be quickly deployed and repositioned, allowing for rapid response and operational flexibility. Furthermore, the increasing demand for small-size UGVs in various industries, including defense, security, agriculture, inspection, and disaster response, owing to their enhanced maneuverability, portability, cost-effectiveness, versatility, and safety benefits, is creating new possibilities for the UGVs market.

Breakup by Mode of Operation:

Tethered
Teleoperated
Autonomous

Teleoperated dominates the market

The report has provided a detailed breakup and analysis of the market based on the operation. This includes tethered, teleoperated, and autonomous. According to the report, teleoperated represented the largest market segment.

Teleoperated operation refers to the use of remote control or teleoperation technology to operate UGVs. These operations allow workers to control and maneuver UGVs from a distance, eliminating the need for direct human presence in potentially hazardous or remote environments. Additionally, teleoperated UGVs are widely used in different tasks and missions, such as surveillance, inspection, reconnaissance, or remote handling of hazardous materials, which is contributing to the market growth. Besides this, the widespread adoption of teleoperated UGVs in complex or dynamic environments, such as disaster response, search and rescue operations, or military missions where real-time adaptability and situational awareness are critical, is favoring the market growth.

Breakup by System:

Payloads
Control System
Navigation System
Power System
Others

Navigation system represent the leading segment

The report has provided a detailed breakup and analysis of the market based on the system. This includes payloads, control system, navigation system, power system, and others. According to the report, navigation system represented the largest market segment.

Navigation systems enable UGVs to operate autonomously without constant human intervention. These systems utilize various sensors, such as global positioning systems

(GPS), inertial measurement units (IMUs), and vision sensors, to perceive the environment, determine the UGV's position and orientation, and plan optimal paths. Moreover, the navigation system also assists UGVs in navigating through complex environments, avoiding obstacles, and reaching their desired destinations, which contributes to the market growth. Apart from this, various technological advancements in navigation systems that enable UGVs to adapt to changing environments by sensing, analyzing, detecting, and responding to obstacles and dynamic factors such as moving objects or traffic are further providing a thrust to the market growth.

Breakup by Application:

Military

Law Enforcement

Federal Law Enforcement

Commercial

Military represents the leading segment

The report has provided a detailed breakup and analysis of the market based on the application. This includes military, law enforcement, federal law enforcement, and commercial. According to the report, military represented the largest market segment.

UGVs are extensively used in military applications for various purposes such as reconnaissance, surveillance, logistics support, and bomb disposal. They are also employed in explosive ordnance disposal (EOD) operations to handle and neutralize improvised explosive devices (IEDs) and other hazardous explosives. Furthermore, the widespread product utilization to help reduce the physical burden on soldiers, maintain logistics efficiency and ensure a constant supply of critical resources during military operations is positively influencing the market growth. Besides this, UGVs have become an integral component of modern military operations to enhance capabilities, reduce risks to human personnel, and enable more effective and efficient mission execution.

Breakup by Region:

North America

United States

Canada

Asia Pacific

China

Japan
India
South Korea
Australia
Indonesia
Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

North America exhibits a clear dominance in the market, accounting for the largest unmanned ground vehicles market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa.

Unmanned Ground Vehicles (UGVs) are utilized in various applications across North America, including military, law enforcement, border security, and research. Moreover, the widespread product utilization for border surveillance and security along the U.S.-Mexico and U.S.-Canada borders that are equipped with cameras, thermal imaging sensors, and other detection systems that help to monitor and patrol border areas, detect unauthorized crossings, and assist border patrol agents in maintaining situational awareness is propelling the market growth. Apart from this, the U.S. Department of Defense (DoD) employs UGVs for reconnaissance, surveillance, explosive ordnance disposal (EOD), and combat support, which in turn is providing a considerable boost to the market growth.

Competitive Landscape:

Several key market players are significantly investing in research and development (R&D) projects to drive innovation, enhance capabilities, and address emerging challenges in the global unmanned ground vehicle market. Moreover, researchers are developing algorithms to improve the perception, decision-making, and planning capabilities of UGVs, enabling them to operate in complex and dynamic environments autonomously, which is acting as a growth-inducing factor. Furthermore, several manufacturers and key players are developing advanced cameras, LiDAR, radar, and other sensor systems with higher resolution, improved range, and enhanced accuracy is providing an impetus to the market growth.

The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

ASELSAN A.S

Boston Dynamics

Cobham Plc (Eaton Corporation PLC)

DOK-ING Ltd.

Teledyne FLIR LLC

General Dynamics Corporation

L3Harris Technologies Inc.

ICOR Technology Inc.

Lockheed Martin Corporation

Nexter Systems

Northrop Grumman Corporation

Oshkosh Corporation

QinetiQ Group Plc

RE2 Inc (Sarcos Technology and Robotics Corporation)

Robo-Team Ltd.

Recent Developments:

In June 2020, QinetiQ Group Plc completed an Army Warfighting Experiment, with an airborne team comprising a manned helicopter and semi-autonomous unmanned aircraft working together to identify targets.

At Eurosatory 2022, Nexter presents its ambition in the field of low altitude air defence and antidrone warfare through the exhibition of its weapon systems such as the ARX 30 and RAPIDFire, equipped with medium-calibre guns. These solutions offer surface-to-

surface and surface-to-air capabilities to counter new threats, such as drones, missiles, or loitering munitions, at short and medium range.

Since 2022, ASELSAN A.S has been focusing on advancing short-wave infrared (SWIR) technology, which includes numerous new applications in civil areas, fusion with visible wavelengths, and integration with active imaging systems.

Key Questions Answered in This Report:

How has the global unmanned ground vehicles market performed so far, and how will it perform in the coming years?

What are the drivers, restraints, and opportunities in the global unmanned ground vehicles market?

What is the impact of each driver, restraint, and opportunity on the global unmanned ground vehicles market?

What are the key regional markets?

Which countries represent the most attractive unmanned ground vehicles market?

What is the breakup of the market based on mobility?

Which is the most attractive mobility in the unmanned ground vehicles market?

What is the breakup of the market based on the size?

Which is the most attractive size in the unmanned ground vehicles market?

What is the breakup of the market based on mode of operation?

Which is the most attractive mode of operation in the unmanned ground vehicles market?

What is the breakup of the market based on the system?

Which is the most attractive system in the unmanned ground vehicles market?

What is the breakup of the market based on application?

Which is the most attractive application in the unmanned ground vehicles market?

What is the competitive structure of the global unmanned ground vehicles market?

Who are the key players/companies in the global unmanned ground vehicle market?

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