

Light Detection and Ranging (LiDAR) Market Forecasts to 2034 – Global Analysis By Type (Solid-State and Mechanical), Component (Navigation and Positioning Systems, Laser Scanners, Digital Cameras, Precision Clocks and Other Components), Range, Installation, Service, Technology, Application and By Geography

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Abstracts

According to Statistics MRC, the Global Light Detection and Ranging (LiDAR) Market is accounted for \$4.06 billion in 2026 and is expected to reach \$18.63 billion by 2034 growing at a CAGR of 21.0% during the forecast period. Light Detection and Ranging, commonly known as LiDAR, is a remote sensing technology that uses laser light to measure distances and generate precise, three-dimensional information about the shape and characteristics of the Earth's surface. The advantages include high precision, quick data collecting, and versatility.

According to the National Oceanic and Atmospheric Administration, (NOAA), system is used for coastal geospatial service and coastal remote sensing.

Market Dynamics:

Driver:

Smart cities and infrastructure development

LiDAR technology plays a pivotal role in advancing smart cities and infrastructure development by providing precise 3D mapping and modelling capabilities. In urban

planning, LiDAR aids in creating detailed representations of cityscapes, optimizing infrastructure projects, and enhancing disaster management. Moreover, its application ensures accurate data for road design, construction, and maintenance, contributing to efficient transportation systems. LiDAR's role in monitoring and managing urban environments aligns with the goals of smart city initiatives, promoting sustainable practices.

Restraint:

Cost of implementation

Procuring and deploying LiDAR systems involves significant upfront expenditures, encompassing the purchase of sophisticated equipment, installation expenses, and ongoing maintenance costs. This financial burden hampers the adoption of LiDAR technology, particularly for smaller enterprises and projects operating within limited budgets. The high initial investment can impede the widespread integration of LiDAR across various industries and applications, limiting its accessibility and hindering the realisation of its benefits.

Opportunity:

Precision Agriculture

LiDAR's high-resolution 3D mapping capabilities enable precise terrain and crop data collection, offering farmers valuable insights for optimised decision-making. LiDAR aids in assessing crop health, monitoring vegetation density, and creating detailed topographic maps, contributing to efficient resource utilisation and sustainable farming practices. Moreover, the technology facilitates accurate crop monitoring, irrigation planning, and yield prediction, enhancing overall agricultural productivity. As the agriculture industry increasingly adopts digital solutions, LiDAR's role in providing detailed and actionable data positions it as a key tool in advancing precision agriculture.

Threat:

Complexities related to miniaturized LiDAR sensing

While miniaturisation is crucial for integration into various devices and applications, it also introduces challenges such as maintaining high precision and accuracy in a reduced form factor. Miniaturised LiDAR sensors may face limitations in range,

resolution, and overall performance, impacting their effectiveness in critical applications like autonomous vehicles and drones. As a result, it acts as a significant barrier to market demand.

Covid-19 Impact

Lockdowns and restrictions slowed down manufacturing and deployment processes, affecting the production and adoption of LiDAR technology. However, the pandemic also accelerated digital transformation trends, increasing the demand for LiDAR in applications like remote sensing and autonomous technologies. The market is expected to rebound as economies recover, driven by the growing importance of spatial intelligence in various sectors, including smart cities, agriculture, and infrastructure development, emphasizing LiDAR's role in shaping post-pandemic technological landscapes.

The navigation and positioning systems segment is expected to be the largest during the forecast period

The navigation and positioning systems segment is estimated to hold the largest share. LiDAR is employed to enhance navigation accuracy and provide precise positioning information for various platforms, including autonomous vehicles, drones, and robotics. By emitting laser beams and measuring their reflections, LiDAR enables real-time mapping of the environment, aiding navigation systems in obstacle detection, localization, and path planning. Furthermore, it is pivotal for sectors that need precise spatial awareness, like industrial automation and driverless cars, where LiDAR's capabilities enhance dependability, efficiency, and safety in challenging conditions.

The 3D LiDAR segment is expected to have the highest CAGR during the forecast period

The 3D LiDAR segment is anticipated to have lucrative growth during the forecast period. By emitting laser beams in multiple directions and measuring their return times, 3D LiDAR generates detailed point clouds, enabling the creation of comprehensive 3D maps. Widely used in applications like autonomous vehicles, urban planning, and environmental monitoring, 3D LiDAR enhances spatial awareness by providing detailed representations of objects and landscapes. Moreover, its ability to perceive depth and geometry makes it instrumental in diverse industries, contributing to advancements in navigation, surveying, and augmented reality applications.

Region with largest share:

Asia Pacific commanded the largest market share during the extrapolated period owing to rapid infrastructure development, smart city initiatives, and a burgeoning interest in precision agriculture. Countries like China, Japan, and India are witnessing increased adoption of LiDAR in applications such as autonomous vehicles, urban planning, and environmental monitoring. Furthermore, as industries across Asia-Pacific recognise the importance of spatial intelligence, the LiDAR market in the region continues to evolve, presenting opportunities for technological advancements and market penetration.

Region with highest CAGR:

North America is expected to witness profitable growth over the projection period. The prevalence of advanced technology industries, smart city initiatives, and robust research and development activities contribute to the region's prominence. LiDAR's role in infrastructure development, precision agriculture, and defence applications further propels its demand. Additionally, with a well-established market ecosystem, a strong investment landscape, and increasing awareness of spatial intelligence, North America continues to be a key driver of innovation and growth in the LiDAR market.

Key players in the market

Some of the key players in the Light Detection and Ranging (LiDAR) Market include Trimble Inc., FARO, Teledyne Optech, Leica Geosystems AG, SICK AG, Velodyne Lidar, Inc., SureStar, GeoKno, YELLOWSCAN, LeddarTech Inc., Phoenix LiDAR Systems, NV5 Global, Inc., Quanergy Systems, Inc., Vaisala, ZX Lidars, Innoviz Technologies Ltd., Waymo LLC, Ouster, Inc., Valeo and Hexagon AB.

Key Developments:

In October 2023, FARO announced the release of the FARO Orbis Mobile Scanner, a groundbreaking advancement to redefine 3D reality capture. Orbis is the first to market a hybrid SLAM scanner that can be used for mobile and stationary data capture in one device. It offers local or cloud-based data processing and collaboration. The product is the latest evolution in FARO's industry-leading Simultaneous Localization and Mapping (SLAM)-enabled LiDAR technology.

In April 2023, Teledyne Optech introduced the marine lidar sensor, CL-360 for marine applications. This lidar sensor can be seamlessly integrated with high-resolution

multibeam systems and the CARIS Ping-To-Chart workflow, allowing full above and below-water image capture with survey-grade accuracy in a single workflow.

Types Covered:

Solid-State

Mechanical

Components Covered:

Navigation and Positioning Systems

Laser Scanners

Digital Cameras

Precision Clocks

Other Components

Ranges Covered:

Short (
Medium (200-500 m)

Long (> 500 m)

Installations Covered:

Ground-Based

Airborne

Services Covered:

Asset Management

Aerial Surveying

Ground-based Surveying

Geographic Information Systems

Environmental Consultancy

Reverse Engineering

System Integration

Non-Destructive Testing Services

Other Services

Technologies Covered:

2D LiDAR

3D LiDAR

3D LiDAR

Applications Covered:

Corridor Mapping

Engineering

ADAS & Driverless Cars

Urban Planning

Meteorology

Cartography

Exploration

Environment

Other Applications

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2021, 2022, 2023, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment

Opportunities, and recommendations)

- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

2 PREFACE

- 2.1 Abstract
- 2.2 Stake Holders
- 2.3 Research Scope
- 2.4 Research Methodology
 - 2.4.1 Data Mining
 - 2.4.2 Data Analysis
 - 2.4.3 Data Validation
 - 2.4.4 Research Approach
- 2.5 Research Sources
 - 2.5.1 Primary Research Sources
 - 2.5.2 Secondary Research Sources
 - 2.5.3 Assumptions

3 MARKET TREND ANALYSIS

- 3.1 Introduction
- 3.2 Drivers
- 3.3 Restraints
- 3.4 Opportunities
- 3.5 Threats
- 3.6 Technology Analysis
- 3.7 Application Analysis
- 3.8 Emerging Markets
- 3.9 Impact of Covid-19

4 PORTERS FIVE FORCE ANALYSIS

- 4.1 Bargaining power of suppliers
- 4.2 Bargaining power of buyers
- 4.3 Threat of substitutes
- 4.4 Threat of new entrants
- 4.5 Competitive rivalry

5 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY TYPE

- 5.1 Introduction
- 5.2 Solid-State
- 5.3 Mechanical

6 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY COMPONENT

- 6.1 Introduction
- 6.2 Navigation and Positioning Systems
- 6.3 Laser Scanners
- 6.4 Digital Cameras
- 6.5 Precision Clocks
- 6.6 Other Components

7 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY RANGE

- 7.1 Introduction
- 7.2 Short (7.3 Medium (200-500 m)
- 7.4 Long (> 500 m)

8 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY INSTALLATION

- 8.1 Introduction
- 8.2 Ground-Based
 - 8.2.1 Static
 - 8.2.2 Mobile
- 8.3 Airborne
 - 8.3.1 Bathymetric
 - 8.3.2 Topographic

9 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY SERVICES

- 9.1 Introduction
- 9.2 Asset Management
- 9.3 Aerial Surveying
- 9.4 Ground-based Surveying

- 9.5 Geographic Information Systems
- 9.6 Environmental Consultancy
- 9.7 Reverse Engineering
- 9.8 System Integration
- 9.9 Non-Destructive Testing Services
- 9.10 Other Services

10 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY TECHNOLOGY

- 10.1 Introduction
- 10.2 2D LiDAR
- 10.3 3D LiDAR
- 10.4 3D LiDAR

11 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY APPLICATION

- 11.1 Introduction
- 11.2 Corridor Mapping
- 11.3 Engineering
- 11.4 ADAS & Driverless Cars
- 11.5 Urban Planning
- 11.6 Meteorology
- 11.7 Cartography
- 11.8 Exploration
- 11.9 Environment
- 11.10 Other Applications

12 GLOBAL LIGHT DETECTION AND RANGING (LIDAR) MARKET, BY GEOGRAPHY

- 12.1 Introduction
- 12.2 North America
 - 12.2.1 US
 - 12.2.2 Canada
 - 12.2.3 Mexico
- 12.3 Europe
 - 12.3.1 Germany

- 12.3.2 UK
- 12.3.3 Italy
- 12.3.4 France
- 12.3.5 Spain
- 12.3.6 Rest of Europe
- 12.4 Asia Pacific
 - 12.4.1 Japan
 - 12.4.2 China
 - 12.4.3 India
 - 12.4.4 Australia
 - 12.4.5 New Zealand
 - 12.4.6 South Korea
 - 12.4.7 Rest of Asia Pacific
- 12.5 South America
 - 12.5.1 Argentina
 - 12.5.2 Brazil
 - 12.5.3 Chile
 - 12.5.4 Rest of South America
- 12.6 Middle East & Africa
 - 12.6.1 Saudi Arabia
 - 12.6.2 UAE
 - 12.6.3 Qatar
 - 12.6.4 South Africa
 - 12.6.5 Rest of Middle East & Africa

13 KEY DEVELOPMENTS

- 13.1 Agreements, Partnerships, Collaborations and Joint Ventures
- 13.2 Acquisitions & Mergers
- 13.3 New Product Launch
- 13.4 Expansions
- 13.5 Other Key Strategies

14 COMPANY PROFILING

- 14.1 Trimble Inc.
- 14.2 FARO
- 14.3 Teledyne Optech
- 14.4 Leica Geosystems AG

- 14.5 SICK AG
- 14.6 Velodyne Lidar, Inc.
- 14.7 SureStar
- 14.8 GeoKno
- 14.9 YELLOWSCAN
- 14.10 LeddarTech Inc.
- 14.11 Phoenix LiDAR Systems
- 14.12 NV5 Global, Inc.
- 14.13 Quanergy Systems, Inc.
- 14.14 Vaisala
- 14.15 ZX Lidars
- 14.16 Innoviz Technologies Ltd.
- 14.17 Waymo LLC
- 14.18 Ouster, Inc.
- 14.19 Valeo
- 14.20 Hexagon AB

List Of Tables

LIST OF TABLES

Table 1 Global Light Detection and Ranging (LiDAR) Market Outlook, By Region (2023-2034) (\$MN)

Table 2 Global Light Detection and Ranging (LiDAR) Market Outlook, By Type (2023-2034) (\$MN)

Table 3 Global Light Detection and Ranging (LiDAR) Market Outlook, By Solid-State (2023-2034) (\$MN)

Table 4 Global Light Detection and Ranging (LiDAR) Market Outlook, By Mechanical (2023-2034) (\$MN)

Table 5 Global Light Detection and Ranging (LiDAR) Market Outlook, By Component (2023-2034) (\$MN)

Table 6 Global Light Detection and Ranging (LiDAR) Market Outlook, By Navigation and Positioning Systems (2023-2034) (\$MN)

Table 7 Global Light Detection and Ranging (LiDAR) Market Outlook, By Laser Scanners (2023-2034) (\$MN)

Table 8 Global Light Detection and Ranging (LiDAR) Market Outlook, By Digital Cameras (2023-2034) (\$MN)

Table 9 Global Light Detection and Ranging (LiDAR) Market Outlook, By Precision Clocks (2023-2034) (\$MN)

Table 10 Global Light Detection and Ranging (LiDAR) Market Outlook, By Other Components (2023-2034) (\$MN)

Table 11 Global Light Detection and Ranging (LiDAR) Market Outlook, By Range (2023-2034) (\$MN)

Table 12 Global Light Detection and Ranging (LiDAR) Market Outlook, By Short (Table

13 Global Light Detection and Ranging (LiDAR) Market Outlook, By Medium (200-500 m) (2023-2034) (\$MN)

Table 14 Global Light Detection and Ranging (LiDAR) Market Outlook, By Long (> 500 m) (2023-2034) (\$MN)

Table 15 Global Light Detection and Ranging (LiDAR) Market Outlook, By Installation (2023-2034) (\$MN)

Table 16 Global Light Detection and Ranging (LiDAR) Market Outlook, By Ground-Based (2023-2034) (\$MN)

Table 17 Global Light Detection and Ranging (LiDAR) Market Outlook, By Static (2023-2034) (\$MN)

Table 18 Global Light Detection and Ranging (LiDAR) Market Outlook, By Mobile (2023-2034) (\$MN)

Table 19 Global Light Detection and Ranging (LiDAR) Market Outlook, By Airborne (2023-2034) (\$MN)

Table 20 Global Light Detection and Ranging (LiDAR) Market Outlook, By Bathymetric (2023-2034) (\$MN)

Table 21 Global Light Detection and Ranging (LiDAR) Market Outlook, By Topographic (2023-2034) (\$MN)

Table 22 Global Light Detection and Ranging (LiDAR) Market Outlook, By Services (2023-2034) (\$MN)

Table 23 Global Light Detection and Ranging (LiDAR) Market Outlook, By Asset Management (2023-2034) (\$MN)

Table 24 Global Light Detection and Ranging (LiDAR) Market Outlook, By Aerial Surveying (2023-2034) (\$MN)

Table 25 Global Light Detection and Ranging (LiDAR) Market Outlook, By Ground-based Surveying (2023-2034) (\$MN)

Table 26 Global Light Detection and Ranging (LiDAR) Market Outlook, By Geographic Information Systems (2023-2034) (\$MN)

Table 27 Global Light Detection and Ranging (LiDAR) Market Outlook, By Environmental Consultancy (2023-2034) (\$MN)

Table 28 Global Light Detection and Ranging (LiDAR) Market Outlook, By Reverse Engineering (2023-2034) (\$MN)

Table 29 Global Light Detection and Ranging (LiDAR) Market Outlook, By System Integration (2023-2034) (\$MN)

Table 30 Global Light Detection and Ranging (LiDAR) Market Outlook, By Non-Destructive Testing Services (2023-2034) (\$MN)

Table 31 Global Light Detection and Ranging (LiDAR) Market Outlook, By Other Services (2023-2034) (\$MN)

Table 32 Global Light Detection and Ranging (LiDAR) Market Outlook, By Technology (2023-2034) (\$MN)

Table 33 Global Light Detection and Ranging (LiDAR) Market Outlook, By 2D LiDAR (2023-2034) (\$MN)

Table 34 Global Light Detection and Ranging (LiDAR) Market Outlook, By 3D LiDAR (2023-2034) (\$MN)

Table 35 Global Light Detection and Ranging (LiDAR) Market Outlook, By 3D LiDAR (2023-2034) (\$MN)

Table 36 Global Light Detection and Ranging (LiDAR) Market Outlook, By Application (2023-2034) (\$MN)

Table 37 Global Light Detection and Ranging (LiDAR) Market Outlook, By Corridor Mapping (2023-2034) (\$MN)

Table 38 Global Light Detection and Ranging (LiDAR) Market Outlook, By Engineering

(2023-2034) (\$MN)

Table 39 Global Light Detection and Ranging (LiDAR) Market Outlook, By ADAS & Driverless Cars (2023-2034) (\$MN)

Table 40 Global Light Detection and Ranging (LiDAR) Market Outlook, By Urban Planning (2023-2034) (\$MN)

Table 41 Global Light Detection and Ranging (LiDAR) Market Outlook, By Meteorology (2023-2034) (\$MN)

Table 42 Global Light Detection and Ranging (LiDAR) Market Outlook, By Cartography (2023-2034) (\$MN)

Table 43 Global Light Detection and Ranging (LiDAR) Market Outlook, By Exploration (2023-2034) (\$MN)

Table 44 Global Light Detection and Ranging (LiDAR) Market Outlook, By Environment (2023-2034) (\$MN)

Table 45 Global Light Detection and Ranging (LiDAR) Market Outlook, By Other Applications (2023-2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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