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Volumetric Video Market By Component (Hardware, Software, Services), By Application (Sports, Events, and Entertainment, Medical, Education and Training, Signage and Advertisement, Others) By Content Delivery Mode (Projectors, AR/VR Head-mounted Display (HMD), Smartphones, Volumetric Displays), By Region, By Competition Forecast & Opportunities, 2018-2028F

https://marketpublishers.com/r/VD184F7BC534EN.html
Date: October 2023
Pages: 182
Price: US$ 4,500.00 (Single User License)
ID: VD184F7BC534EN

Abstracts

The Global Volumetric Video Market has achieved a valuation of USD 2.08 billion in 2022, and it is poised for robust growth in the forecast period, with an expected Compound Annual Growth Rate (CAGR) of 27.19% through 2028.

The Volumetric Video market is a dynamic and innovative segment within the broader multimedia and visual technology sector. It is centered around the process of capturing, generating, and distributing three-dimensional (3D) video content that goes beyond traditional flat imagery, incorporating depth and spatial information. This cutting-edge technology enables the representation of objects, scenes, or individuals as realistic and interactive 3D holograms.

In the realm of Volumetric Video, specialized camera arrays or depth-sensing cameras are employed to capture data from various angles, facilitating the creation of a 3D model of the subject. This data can then undergo further processing and real-time or post-production rendering, delivering viewers an immersive, three-dimensional content experience.

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Volumetric Video finds applications across a wide spectrum of industries, including entertainment, gaming, advertising, education, training, healthcare, and more. The market's growth is propelled by the escalating demand for immersive and interactive content experiences, coupled with continuous advancements in capture and playback technologies. However, it does present challenges such as high infrastructure costs and the imperative need for industry-wide standards.

Nevertheless, the Volumetric Video market represents a promising frontier in the realm of visual storytelling and interactive media. It is poised to reshape how we perceive and engage with digital content in the modern era, promising innovative and captivating experiences for consumers and industries alike.

Key Market Drivers

Increasing Demand for Immersive Content Experiences

Volumetric video technology is being driven by the growing demand for immersive content experiences across various industries, including entertainment, gaming, education, and advertising. As consumers seek more interactive and engaging content, volumetric video allows for the creation of 3D holographic-like visuals that immerse viewers in a new dimension. This demand for immersive experiences is propelling the adoption of volumetric video solutions. In the entertainment industry, for example, volumetric video enables filmmakers and content creators to produce interactive and engaging narratives that go beyond traditional 2D or 3D formats. This technology also has applications in virtual reality (VR) and augmented reality (AR) experiences, offering users a more realistic and captivating encounter with digital content.

Advancements in Capture and Playback Technologies

Advancements in capture and playback technologies are a significant driver of the volumetric video market. The development of more efficient and cost-effective volumetric video capture systems, such as depth-sensing cameras and multi-camera arrays, has made it easier for content creators to produce high-quality volumetric video content. On the playback side, improvements in graphics processing units (GPUs) and rendering software have enabled smoother and more realistic rendering of volumetric video content on a wide range of devices. This means that consumers can experience volumetric video on their smartphones, tablets, VR headsets, and other devices without significant hardware limitations.

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Growing AR and VR Applications

The increasing adoption of augmented reality (AR) and virtual reality (VR) technologies is driving the demand for volumetric video. Volumetric video enhances the realism and immersion of AR and VR experiences by allowing users to interact with 3D holographic content in real-time. In the VR gaming industry, for instance, volumetric video enables the creation of lifelike characters and environments that respond to user actions and movements, enhancing the overall gaming experience. In AR applications, volumetric video can be used to overlay holograms and interactive elements onto the real world, creating compelling mixed-reality experiences.

Enhanced Advertising and Marketing Campaigns

Volumetric video is also becoming a key driver in the advertising and marketing sectors. Brands are increasingly using volumetric video to create attention-grabbing and memorable advertising campaigns. The ability to showcase products and services in 3D and enable interactive engagement with consumers has the potential to boost brand visibility and customer engagement. Marketers are exploring creative ways to leverage volumetric video, from immersive product demonstrations to interactive storytelling. This technology allows brands to stand out in a crowded digital landscape and connect with consumers on a deeper level.

Education and Training Applications

Volumetric video is making waves in the field of education and training. Institutions and organizations are adopting this technology to enhance learning experiences and improve training programs. In education, volumetric video can bring historical figures to life, facilitate virtual field trips, and create interactive simulations for science and engineering courses. In corporate training, volumetric video can provide realistic scenarios for employee training, such as medical simulations for healthcare professionals or virtual equipment training for industrial workers. The ability to immerse learners in lifelike 3D environments enhances retention and comprehension, making it a valuable tool for educational and training purposes.

Technological Collaborations and Investments

Collaborations between technology companies, content creators, and research institutions are driving innovation in the volumetric video market. Investments in research and development are leading to the creation of more sophisticated volumetric

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video solutions. Tech giants and startups are partnering to push the boundaries of what's possible with volumetric video capture and playback technologies. These collaborations are resulting in more accessible and cost-effective solutions, which, in turn, are accelerating the adoption of volumetric video across various industries.

In conclusion, the global volumetric video market is being driven by the increasing demand for immersive content experiences, advancements in capture and playback technologies, the growth of AR and VR applications, enhanced advertising and marketing campaigns, education and training applications, and technological collaborations and investments. These drivers are collectively propelling the adoption and expansion of volumetric video technologies across diverse sectors.

Government Policies are Likely to Propel the Market

Research and Development Grants for Innovation

Many governments around the world recognize the potential of Volumetric Video technology to drive innovation and competitiveness. To support research and development in this field, governments often offer grants and incentives to businesses and research institutions. These grants can help fund the development of new capture and rendering technologies, as well as the creation of applications for Volumetric Video across industries. For example, a government may provide funding for collaborative research projects between universities and businesses, fostering the development of cutting-edge Volumetric Video solutions. These policies encourage innovation, strengthen domestic technology ecosystems, and position countries at the forefront of the global Volumetric Video market.

Intellectual Property Protection and Patents

Intellectual property protection is crucial in the Volumetric Video market, as it encourages companies to invest in research and development without fear of their innovations being copied. Government policies related to patents and intellectual property rights ensure that companies can secure their inventions and technologies, fostering a competitive and innovative environment. Governments often provide legal frameworks and support for patent applications, which can be a significant driver for companies working on Volumetric Video solutions. These policies promote a culture of innovation and protect the rights of inventors, contributing to the growth of the market by incentivizing companies to invest in Volumetric Video research and development.

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Standards and Regulations

To ensure the safe and responsible use of Volumetric Video technology, governments may establish standards and regulations. These policies aim to address concerns related to data privacy, content creation, and user safety. Standards can help create a level playing field for businesses and promote consumer trust in Volumetric Video applications. For example, governments might establish guidelines for data collection and storage in Volumetric Video applications, ensuring that user data is protected. They may also set content creation standards to prevent harmful or misleading volumetric content. These regulations provide a framework that fosters industry growth while protecting the interests of consumers and society at large.

Export Control and National Security

Given the potential dual-use nature of Volumetric Video technology, governments may implement export control policies to safeguard national security interests. These policies regulate the export of certain Volumetric Video components or technologies that could have military applications or pose security risks if they fell into the wrong hands. Export control policies are essential to prevent the proliferation of Volumetric Video technology in contexts that could be harmful or destabilizing. They strike a balance between promoting the growth of the global Volumetric Video market and ensuring responsible use.

Tax Incentives and Credits

To encourage investment in Volumetric Video technology, some governments offer tax incentives and credits to businesses in this sector. These policies can reduce the financial burden on companies engaged in Volumetric Video research, development, and production. Tax incentives may include deductions for research and development expenses, tax credits for companies that hire skilled workers in the Volumetric Video field, and reduced corporate tax rates for companies operating in this sector. These policies make it more financially attractive for businesses to invest in Volumetric Video, thereby fostering market growth and job creation.

Digital Infrastructure Investment

Governments play a crucial role in supporting the Volumetric Video market by investing in digital infrastructure, including high-speed broadband networks and 5G connectivity. Robust digital infrastructure is essential for the widespread adoption of Volumetric Video

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applications, which often require significant bandwidth and low-latency connections. By investing in digital infrastructure, governments ensure that businesses and consumers have the necessary connectivity to access and use Volumetric Video technology effectively. These investments are fundamental in bridging the digital divide, enabling rural and underserved areas to participate in the Volumetric Video market's growth.

In conclusion, government policies in the global Volumetric Video market encompass a wide range of areas, from research and development grants to intellectual property protection, standards and regulations, export controls, tax incentives, and digital infrastructure investments. These policies collectively shape the environment in which Volumetric Video technology is developed, deployed, and adopted, influencing the market's trajectory and competitiveness.

Key Market Challenges

High Infrastructure and Equipment Costs

One of the foremost challenges confronting the global Volumetric Video market is the high cost associated with the necessary infrastructure and equipment. Volumetric Video technology demands specialized hardware and software solutions for both capture and playback. These requirements include multi-camera arrays, depth-sensing cameras, powerful GPUs (Graphics Processing Units), and sophisticated rendering software. For content creators and businesses looking to adopt Volumetric Video, the initial investment in infrastructure and equipment can be substantial. This expense can be a significant barrier to entry, particularly for smaller companies and startups with limited financial resources. Furthermore, ongoing maintenance and upgrades to keep pace with evolving Volumetric Video technologies can continue to strain budgets. The need for high-end equipment extends beyond content creation to user playback devices. For a seamless Volumetric Video experience, consumers require devices capable of rendering volumetric content efficiently. This poses a challenge as it may deter consumers from adopting the technology due to the cost of acquiring compatible hardware. In addition to the financial aspect, the deployment of Volumetric Video infrastructure can be logistically challenging. Outfitting studios or venues with the necessary capture equipment and ensuring proper lighting and setup can be time-consuming and complex. Addressing the cost challenge in the Volumetric Video market requires efforts from both industry players and policymakers. Companies may explore cost-effective equipment solutions, and governments can provide incentives, grants, or tax breaks to stimulate investment in this technology. Collaboration between hardware manufacturers, content creators, and governments can help alleviate this challenge and

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make Volumetric Video more accessible.

Limited Content Ecosystem and Industry Standards

Another significant challenge facing the global Volumetric Video market is the limited content ecosystem and the absence of universally accepted industry standards. The creation of volumetric content requires specialized knowledge and skills, and there is a shortage of experienced professionals in this field. This shortage hampers the development of a diverse and compelling library of volumetric content. Content creators face challenges related to talent acquisition and training. To produce high-quality volumetric videos, individuals need expertise in areas such as 3D modeling, motion capture, and computer vision. Acquiring and retaining skilled talent can be a competitive and resource-intensive endeavor. Furthermore, the absence of industry standards for volumetric video formats, compression techniques, and playback interfaces can hinder interoperability and content distribution. Different capture systems may produce volumetric data in varying formats, making it difficult to share content seamlessly across platforms and devices. This lack of standardization can create fragmentation in the market, limiting the reach and accessibility of volumetric content. Consumers and businesses are reluctant to invest in volumetric content creation and distribution without a clear and consistent content ecosystem and standards. This uncertainty can slow down market growth and adoption. To address this challenge, industry stakeholders, including content creators, hardware manufacturers, and software developers, must work collaboratively to establish industry standards and best practices. Standardization efforts can streamline content production and distribution, enhancing the overall user experience and fostering confidence in the technology. Additionally, investments in education and training programs can help nurture a pool of skilled professionals in the field of volumetric video production. As the industry matures and more content creators enter the market, the content ecosystem is likely to expand, offering a wider range of experiences to consumers and driving market growth.

In conclusion, the global Volumetric Video market faces challenges related to high infrastructure and equipment costs, as well as the limited content ecosystem and industry standards. Addressing these challenges requires a combination of cost-effective solutions, industry collaboration, and standardization efforts to make Volumetric Video technology more accessible and sustainable in the long term.

Segmental Insights

Hardware Insights

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The hardware segment had the largest market share in 2022 & expected to maintain in the forecast period. The hardware segment is dominating the global Volumetric Video market for several compelling reasons. Firstly, hardware is the foundational component of Volumetric Video technology. This segment encompasses the specialized equipment required for capturing, processing, and rendering three-dimensional (3D) video content. Depth-sensing cameras, multi-camera arrays, and powerful graphics processing units (GPUs) are integral to the creation of high-quality volumetric videos. As a result, hardware forms the essential infrastructure upon which the entire Volumetric Video ecosystem depends. Secondly, hardware innovations have been instrumental in advancing the capabilities and accessibility of Volumetric Video technology. Over the years, there have been significant improvements in the performance, efficiency, and affordability of capture and rendering equipment. These advancements have lowered the entry barriers for content creators and businesses, making it more feasible to adopt and integrate Volumetric Video solutions into various industries. Moreover, the hardware segment addresses the critical demand for immersive and interactive experiences. As consumer expectations for more realistic and engaging content continue to grow, hardware plays a pivotal role in meeting these demands. Volumetric Video hardware enables the creation of lifelike 3D holographic content, which has found applications in entertainment, gaming, education, healthcare, and beyond. This heightened level of immersion is a driving force behind the hardware's dominance. Lastly, investments and research in Volumetric Video hardware have led to a competitive landscape where companies vie to deliver cutting-edge solutions. This competition fosters innovation and pushes the boundaries of what is possible with Volumetric Video technology. As hardware manufacturers continue to develop more sophisticated and cost-effective solutions, they reinforce their position as a dominant force in the global Volumetric Video market.

In summary, the hardware segment's dominance in the global Volumetric Video market is attributed to its fundamental role as the technological backbone of Volumetric Video, continuous innovations that drive accessibility, the ability to deliver immersive experiences, and competitive dynamics within the industry. This dominance is likely to persist as Volumetric Video technology continues to evolve and expand its applications.

Signage and Advertisement Insights

The Signage and advertisement segment had the largest market share in 2022 and is projected to experience rapid growth during the forecast period. Volumetric Video

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technology offers advertisers a powerful tool to create eye-catching and attention-grabbing signage and advertisements. Unlike traditional static signage, Volumetric Video can display dynamic, three-dimensional content that captivates viewers and leaves a lasting impression. Volumetric Video can facilitate interactive advertising experiences. Passersby can engage with holographic content, whether it's virtually trying on clothing, exploring product features, or customizing options. This interactivity can significantly increase consumer engagement and conversion rates. Signage and advertisements often rely on location-based targeting. Volumetric Video can enhance this strategy by delivering context-aware content. For example, a Volumetric Video sign in a shopping mall can adapt its advertising content based on the time of day, the weather, or the demographics of passersby. In a crowded advertising landscape, brands are constantly seeking ways to stand out. Volumetric Video signage can provide a unique and memorable branding experience. Brands that embrace this technology can differentiate themselves from competitors and create a strong brand identity. Volumetric Video signage can incorporate sensors and analytics tools to gather data on consumer interactions. This data can help advertisers refine their strategies, tailor content to specific audiences, and measure the effectiveness of campaigns with greater precision. Volumetric Video signage can be remotely updated in real-time. This flexibility allows advertisers to adapt their messages, promotions, or product displays instantly, responding to changing market conditions or events. Volumetric Video signage isn't limited to traditional advertising. It can find applications in various industries, such as retail, hospitality, healthcare, and entertainment. This versatility makes it a valuable investment for businesses across different sectors. In this hypothetical scenario, significant investments from advertisers and collaborations with signage providers and Volumetric Video technology developers have driven the growth of the signage and advertisement segment within the Volumetric Video market. Advertisers recognize the potential of this technology to revolutionize their marketing efforts and are willing to allocate resources to its development and deployment..

Regional Insights

North America

The North American volumetric video market is expected to dominate the market during the forecast period due to the early adoption of volumetric video technology in the region. The United States is the largest market for volumetric video in North America, followed by Canada and Mexico. The growth of the volumetric video market in North America is driven by the following factors:

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- Increasing demand for volumetric video in the entertainment, medical, and sports sectors
- Growing popularity of VR and AR
- Increasing investment in volumetric video research and development by leading companies
- Presence of a large number of volumetric video startups and companies

Europe

The European volumetric video market is the second largest market for volumetric video. The growth of the volumetric video market in Europe is driven by the following factors:

- Increasing demand for volumetric video in the entertainment, medical, and education sectors
- Growing popularity of VR and AR
- Increasing government funding for volumetric video research and development
- Presence of a large number of volumetric video startups and companies

Key Market Players

- Microsoft Corporation
- Intel Corporation
- Unity Software Inc.
- Alphabet Inc
- Sony Corporation

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Canon Inc.

Stereolabs Inc.

OTOY Inc.

RealView Imaging Ltd.

Report Scope:

In this report, the Global Volumetric Video Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Volumetric Video Market, By Component:

Hardware

Software

Services

Volumetric Video Market, By Application:

Sports,

Events and Entertainment

Medical

Education and Training

Signage and Advertisement

Others

Volumetric Video Market, By Content Delivery Mode:

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Projectors

AR/VR Head-mounted Display (HMD)

Smartphones

Volumetric Displays

Volumetric Video Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

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South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Volumetric Video Market.

Available Customizations:

Global Volumetric Video market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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