Military 4D Printing Market: Navy Application to Rake at 47.3% CAGR During 2030 - 2040

Military 4D printing market is to be valued at $16.1 million in 2030, and is set to reach $673.4 million by 2040; By Stereolithography to rake at 47.7% CAGR.

PORTLAND, ORAGON, UNITED STATES, August 29, 2022 /EINPresswire.com/ -- Allied Market Research published a report, titled, "Military 4D Printing Market by Technique (Fused deposition modeling (FDM), Stereolithography (SLA), Selective laser sintering (SLS) and selective laser melting (SLM), Others), by Material (Hydrogels, Thermo-responsive, Photo-responsive, Electro & magneto responsive, Others), by Properties (Self-assembly, Self-repair, Self-adaptability), by Application (Army, Navy, Air Force): Global Opportunity Analysis and Industry Forecast, 2030-2040". According to the report, the global military 4D printing industry is estimated to generate $16.1 million in 2030, and is anticipated to generate $673.4 million by 2040, witnessing a CAGR of 45.2% from 2030 to 2040.

Prime determinants of growth

Surge in military applications, increase in investments by armed forces into technology, and rise in adoption of lightweight components are expected to drive the military 4D printing industry growth. However, complex design of both hardware & software section and lack of standardization in process are some of the factors that hinder the market growth. Furthermore, technological advancements, rise in demand for Industry 4.0 standards, and the emergence of Industry 5.0 are expected to offer lucrative opportunities for military 4D printing market growth.

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Covid-19 Scenario

· The outbreak of the Covid-19 pandemic had a negative impact on the global military 4D printing market. In 2020, the reduced GDP of major economies such as the U.S., the U.K., China, France, India, Germany, and others, resulted in a decline in investment in the defense industry, thereby affecting the 4D printing market negatively.

· However, military 4D printing production is expected to be more agile in the post-pandemic period than before. Although industry participants experienced short-term disruption in delivery systems and roll-outs, such disruption has created new opportunities for 4D printing technology within the defense sector and boosted the usage of technology across different commercial sectors.

· For instance, in 2022, the U.S. Navy released a plan to pair suppliers who cannot meet the growth in demand for submarine parts with 3D & 4D printing companies that can print the metal parts around the clock to boost supply. Hence, rise in the usage of additive manufacturing technology (4D printing) across different aerospace and defense applications is expected to bolster the demand for military 4D printing market post-pandemic.

The fused deposition modeling (FDM) segment to maintain its leadership status throughout the forecast period

Based on technique, the fused deposition modeling (FDM) segment is expected to hold the highest market share in 2030, accounting for nearly two-fifths of the global military 4D printing market, and is estimated to maintain its leadership status throughout the forecast period. this is attributed to advantages associated with FDM technology including high speed, accuracy, low cost of production, expiring patents, availability of multiple color options, easy-to-maintain attribute, lightweight, endurance to heat, chemicals, dry & humid environment, and negligible hazardous waste generation. However, the stereolithography (SLA) segment is projected to manifest the highest CAGR of 47.7% from 2030 to 2040, due to use of a wide range of materials, high resolution, shortened development cycles, high accuracy, and durable outputs.

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The self-assembly segment to maintain its leadership status throughout the forecast period

Based on properties, the self-assembly segment is expected to hold the highest market share in 2030, accounting for around two-thirds of the global military 4D printing market, and is estimated to maintain its leadership status throughout the forecast period, owing to chemical complementarity and structural compatibility such as specific surface characteristics, surface charge, polarizability, mass, and surface functionalities. However, the self-repair segment is expected to portray the largest CAGR of 52.4% from 2030 to 2040, due to the fact that self-repair is one of the most powerful functionalities that gives the ability to check and fix broken packages automatically by saving the valuable development time.

The army segment to maintain its lead position during the forecast period

Based on application, the army segment is expected to account for the largest share in 2030,

contributing to nearly half of the global military 4D printing market, and is projected to maintain its lead position during the forecast period. This is attributed to increased demand for advanced weapons to be present with the army across the globe. However, the navy segment is expected to portray the largest CAGR of 47.3% from 2030 to 2040, due to the increased trend toward upgradation of naval services across the globe.

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North America to maintain its dominance by 2031

Based on region, North America is expected to hold the highest market share in terms of revenue in 2030, accounting for around two-fifths of the global military 4D printing market. Increase in investment in arm forces in the U.S. to establish dominance on the battlefield drive the market growth. However, the Asia-Pacific region is expected to witness the fastest CAGR of 49.1% from 2030 to 2040. This is due to rise in defense expenditure across the region to tackle growing terrorism and regional disputes in countries such as India, South Korea, and China.

Leading Market Players: -

Organovo Holdings, Inc.
Protolabs
Stratasys Ltd.
Voxelijet AG
Heineken N.V. (Key Innovators)
Aerojet Rocketdyne Holdings Inc. (Key Innovators)
3D Systems Corp.
ARC Centre of Excellence for Electromaterials Science (ACES)
Arcam AB
Autodesk, Inc.
Dassault Systemes SA
ExOne Company
Hewlett Packard Corp.
Hoganas AB
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