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# Military 4D Printing Market Size Expected to Reach $673.4 Million by 2040

*Military 4D printing market is expected to be valued at $16.1 1million in 2030, and is expected to reach $673.4 million by 2040, growing at a CAGR of 45.2%*

WILMINGTON, DE, UNITED STATES, June 26, 2025 /EINPresswire.com/ -- By technique, the fused deposition modeling (FDM) segment is expected to dominate the global [Military 4D Printing market](#) in 2030, in terms of revenue. By material, the hydrogels segment is anticipated to lead the market in 2030. By properties, the self-assembly segment is projected to incur higher share in 2030. By application, the army segment is expected to occupy higher share in 2030. In 2030, North America is expected to be the highest revenue contributor, followed by Asia-Pacific.

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4D printing is an advancement of 3D printing technology that creates 3D shapes that can change in form when triggered by environmental stimuli. The purpose of this technology is to combine technology and design to invent self-assembly and programmable material technologies aiming at reimagining construction, manufacturing, product assembly, and performance. This printed object can change shape due to many factors such as air, heat, pressure, and magnetism. Although this technology is predominantly still in the research stages, it has already been used for several useful applications. Currently, the surge in investments by armed forces to simplify weapons & equipment in the defense industry along with high demand for lightweight parts is likely to help armies gain an upper hand, which is expected to drive the 4D printing market growth for military applications.

North America is projected to dominate the market, in terms of revenue, followed by Asia-Pacific, Europe, and LAMEA. U.S. is projected to dominate the global military 4D printing market share in 2030. However, Asia-Pacific is expected to grow at a significant rate during the forecast period, owing to continuous development in military infrastructure across Asian countries.

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In addition, the military 4D printing market has witnessed significant growth in recent years, owing to investments by several nations in producing guns, machinery, and other defense

technologies. In addition, constant advancements in material science & simulation software capabilities, which empower a range of materials to be programmed to change their form, appearance, or other characteristics, propel the demand for 4D printing technology for military applications. Furthermore, the companies operating in the military 4D printing market have adopted several contracts, investments, and product launches to increase their market share and expand their geographical presence. For instance, in August 2021, Stratasys collaborated with Autodesk, provider of software products and services for architecture, engineering, construction, defense, manufacturing, media & education segment, and MIT's Self-Assembly Lab, to create 4D structures. These structures had self-transformational capabilities and were able to respond to environmental changes with respect to light, humidity, and pressure.

Factors such as surge in military application to boost the product demand, increase in investments by armed forces into technology, and rise in adoption of lightweight components are expected to drive the market 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 and emergence of Industry 5.0 are expected to offer lucrative opportunities for military 4D printing market growth.

COVID-19 Impact Analysis:

The COVID-19 crisis has created uncertainty in the market. Governments of different regions have already announced total lockdown and temporary shutdown of industries, thereby adversely affecting the overall production and sales. Countries around the globe have posed stringent restrictions ranging from days to months of lockdown periods. Owing to this pandemic, many businesses are halted and are waiting for the market conditions to improve. Majority of the developing facilities & research centers were shut down during the pandemic due to commute restrictions, workforce unavailability, and supply chain disturbance. Private and commercial security industries were one of the most severely affected industries by the pandemic and they observed a decline of investments initially. Furthermore, the reduced GDP of major economies such as the U.S., the UK, China, France, India, Germany, and others, in 2020 resulted to a decline in investment in the defense industry, thereby affecting the 4D printing market, which led to major losses throughout the year.

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However, military 4D printing production is expected to be more agile after the end of COVID-19. Although industry participants experienced short-term disruption in delivery systems and roll-outs, such disruption has created new opportunities for 4D printing technology within defense sector and has boosted usage of technology across different commercial sectors. For instance, in 2022, the U.S. Navy released a plan to pair suppliers who cannot meet growth in demand for submarine parts with 3D & 4D printing companies that can print the metal parts around the

clock to boost supply. Hence, a rise in the usage of addictive manufacturing technology (4D printing) across different aerospace and defense applications is expected to bolster the demand for military 4D printing market during the forecast period.

KEY FINDINGS OF THE STUDY

By technique, stereolithography (SLA) segment is expected to dominate the global military 4D printing market in 2040, in terms of growth rate.
On the basis of material, the others segment is anticipated to exhibit a remarkable growth during the forecast period.
On the basis of properties, the self-repair segment is expected to be the highest contributor to the military 4D printing market in terms of growth rate.
By application, the navy segment is anticipated to exhibit a remarkable growth during the forecast period.
By region, Asia-Pacific is anticipated to exhibit a remarkable growth during the forecast period.

3D Systems, Inc., ABB, ARC Centre of Excellence for Electro material Science (ACES), Autodesk Inc., Dassault Systems, ExOne, Fracktal Works Private Limited, General Electric (GE), Hewlett Packard Enterprise Development LP, Höganäs AB, Massachusetts Institute of Technology, Materialise, Merck KGaA, Optomec, Inc., Organovo Holdings, Inc., Proto Labs, and Stratasys are some of the leading key players operating in the military 4D Printing market.

David Correa
Allied Market Research
+ 1800-792-5285
email us here
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