

Report Information

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4D Printing Market Research Report- Global Forecast 2030

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Description:

4D Printing Market Size and Overview

Globally, the size of 4D printing market is set to grow at a CAGR of 43.1%, estimated to reach USD 510 Million by 2030 driven by the rise in demand for resource management. 4D printing which is also known as 4-dimensional printing and it uses the techniques of 3D printing with the help of the computer programmed deposition of material in consecutive layers to fabricate 3-dimensional objects and 4-dimensional printing adds the dimension of transformation over time. 4D printing is an advanced version of 3D printing, 4D printing permits the constituent to modify into another shape when revealed to humidity or heat or any other environmental impulses.

According to the study, the 4D printing business technology is predicted to be profit-oriented by 2019. 4D printing technology is considered as the revolutionize printing technology, and it offers the end-users or customers an intensify quality, efficiency, and better abilities of performance through manufacturing techniques. The increase in demand from the software solution suppliers and hardware manufacturers due to the advancement in technologies is likely to drive the 4D printing market growth. Moreover, the advancements in technology include the digitization of 3D that offers high resolutions is likely to put positive impact on the 4D printing market growth.

This report contains all the information on the global 4D printing market analysis and the market strengths. The report also contains the culmination of dynamics, segmentation, key players, regional analysis, and other important factors. And a detailed analysis of the global 4D printing business and forecast to 2030 is also included in the report.

Covid 19 Analysis

The outbreak of the global pandemic covid 19, many industries around the globe have been affected, and due to that, the healthcare session required advanced technology to fulfill the requirements and manufacturing of various medical types of equipment and devices. According to the reports, the Leitai Technology Center has designed ventilators with the help of 3D technology, merging it with other parts found in the market. The amalgamation of these parts is very quick and near about 100 ventilators are expected to be produced in a day, currently.

Market Dynamic

• Drivers

The 4D printing market is expected to witness tremendous growth due to the rise in demand for resource management. The 4D technology allows the end-users to print things which is able to reshape or self assemble themselves with the passing time, and this is considered as the positive inference for areas including furniture, construction of buildings, and robotics, these are predicted to drive the 4D printing market growth.

The prerequisite to condense the processing and manufacturing costs because of the severe competition between the industry players is predicted to be a major key factor for the 4D printing market growth. The 4D printing is based on the 3D printing technology which provides lesser marketing time, inventories and the requirements for the capital is likely to boost the efficiency of the business.

• Opportunities

4D printing technology gives authorization to its consumers to use the restricted materials for different purposes and it also helps in developing materials that have the potential to change the properties and behavior patterns based on the external stimuli including temperature, changes in pressure, and others. These highly advanced features generate great opportunities for the global 4D printing market trends.

• Restraints

The rise in the insecurity of the policymakers due to the advanced technology which is not being commercialized, the rise in the development costs, and issues related to the intellectual rights of the property are the major restraints of the 4D printing market development.

Moreover, the rise in opportunities for the major key players is predicted to subdue the factors and hence can support the propelling 4D printing market industry growth over the forecast period.

- **Challenges**

The technology used in 4D printing is basically a structural design that includes software section and hardware section., which can be considered as the major challenge in the 4D printing market. In order to design the hardware part, there are special measures required which need to be addressed.

- **Cumulative Growth Analysis**

The 4D printing market is expected to grow at a CAGR of 43.1% between 2022 and 2030. In the year 2020, The programmable carbon fiber segment is predicted to be the largest contributor in the market by holding the largest share of ~62% of the market. According to the researcher, the increase in the adaptation of the highly advanced technology due to the rapid changes of the environment is the major key factor for the growth of the market, and accordingly, the market is predicted to witness tremendous growth over the forecast period. The developments of new products and the vast scope of innovations are likely to add fuel to the growth of the market over the coming years.

- **Value Chain Analysis**

According to the market reports, the 4D printing market is segmented on the basis of application, programmable material, and region. Based on the application, the global 4D printing market is segmented into automotive, clothing utility, aerospace and defense, construction, healthcare, and others. Several research centers like NASA are considering working over 4 D printing technologies in order to develop new products. According to the report, in April 2017, NASA is willing to develop a sort of chainmail in order to protect the spacecraft from meteors with the help of 4D printing.

Based on the programmable material, the market is segmented into programmable carbon fiber, programmable wood - custom printed wood grain, and programmable textiles market.

Military and defense are predicted to accounts for the largest share in the global 4D printing market, by the end of 2025, due to the benefits related to technology, key benefits including the ability to repair and the self-replicating response to the external environmental conditions. Aerospace is predicted to hold the global 4D printing market share of over 25% by the end of 2030. The self-deploying structure can be built with the help of the space memory technique used in the 4D printing, which is required in the aerospace segment to create air ventilation, is likely to boost the market growth.

Segmentation Overview

The market is segmented on the basis of the application, and region. The global 4D printing market segment is expected to witness decent growth during the forecast period.

By Application

Based on the application, the market is segmented into automotive, clothing utility, aerospace and defense, construction, healthcare, and others.**By end-users**

Based on the propulsion types, the market is segmented into programmable carbon fiber, programmable wood - custom printed wood grain, and programmable textiles market.

Regional Analysis

According to the latest report, the global 4D printing market is segmented on the basis of regions such as Asia Pacific, North America, Europe, and the rest of the world. The North American segment is expected to dominate the global 4D printing market due to the advancement in technology in 3D printing and along with that the adoption of 3D printing in large amounts can also boost the growth of the 4D printing market in this region.

The European market is considered the second-largest market in the 4D printing market due to technological advancement. A considerable amount of growth in the 4D printing market can be witnessed in the Asia Pacific region, by the end of the forecast period.

Competitive landscape

The major companies are participating in the manufacturing of 4D printings and the key players of the 3D printings are enlarging their capabilities by investing in R&D for 4D printings. The global 4D printing market is comparative even without any dominating players in the market. Hence the global 4D printing industry market is fragmented.

Major Key Players

- Stratasys Ltd. (U.S)
- Hewlett Packard Corp. (U.S.)
- 3D Systems Corporation (U.S.)
- ExOne Co. (U.S.)
- Autodesk, Inc. (U.S.)
- Organovo Holdings, Inc. (U.S.)
- Materialise NV (Belgium)
- Dassault Systèmes SA (France)

- Among others.

Report Overview

The following report comprises of

- Market overview
- Covid 19 Analysis
- Market Dynamic
- Drivers
- Opportunities
- Restraints
- Challenges
- Cumulative Growth Analysis
- Value Chain Analysis
- Segmentation Overview
- By Application
- By End-Users
- Regional Analysis
- Competitive Landscape

Recent Developments

April 2019 - 3-D printing startup, Fast Radius raised USD 48 million to scale its printing capabilities and application engineering.

Material Outlook (Revenue, USD Million; 2021 - 2030)

- Programmable Carbon Fiber
- Programmable Wood - Custom Printed Wood Grain
- Programmable Textiles

End-Use Outlook (Revenue, USD Million; 2021 - 2030)

- Military & Defense
- Aerospace
- Automotive
- Textile
- Healthcare
- Others

Regional Outlook (Revenue, USD Million; 2021 - 2030)

North America

o The U.S.o Canada

Europe

o UKo Germanyo France

Asia Pacific

o Chinao Indiao Japano Singaporeo Korea

Latin America

o Brazilo Mexico

Middle East & Africa

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