

# **4D Printing in Healthcare Market by Component (Equipment, 3D printer SMM, Hydrogels, Software, Service, Cells), Technology (FDM, SLS, Stereolithography), Application (Research Model, Implant), End user (Hospital, Dental Lab, ASC) - Global Forecast to 2026**

<https://marketpublishers.com/r/486FD5BDD7EEN.html>

Date: June 2019

Pages: 106

Price: US\$ 5,650.00 (Single User License)

ID: 486FD5BDD7EEN

## **Abstracts**

“Technological advancements in 3D printing technology, such as the development of smart programmable materials are expected to drive the overall growth of the global 4D printing in healthcare market.”

The 4D printing in healthcare market is estimated to reach USD 32 million by 2026 from USD 9 million in 2021, at a CAGR of 29.9% during the forecast period. Growth in this market is driven mainly by technological advancements in 3D printing technology, such as the development of smart, programmable materials. On the other hand, high development & production costs, need for compliance with regulatory & performance standards that will slow product launches, and potential safety hazards are expected to restrain the growth of this market to a certain extent

“The PolyJet segment is expected to grow at the highest CAGR during the forecast period.”

Based on technology, the FDM segment is expected to account for the largest share of the 4D printing in healthcare market in 2021. However, the PolyJet segment is expected to register the highest growth during the forecast period. This technology enables the development of complex shapes with intricate details and delicate features. It offers products with a variety of colors and materials into a single model. The reduced material

wastage due to the higher accuracy of deposition and the ability to use multiple materials and colors are the major advantages of this process.

“The medical & research models segment is expected to account for the largest share of the 4D printing in healthcare market in 2021.”

Based on application, the 4D printing in healthcare market is segmented into medical and research models, surgical guides, and patient-specific implants. In 2021, medical & research models segment is expected to account for the largest share of the 4D printing in healthcare market. These models can be customized as per the patient's pathology, which will further help in delivering efficient patient care. The ability of the 4D printing technology in manufacturing smart medical models will bring significant transformation in the medical field and will support the growth of this segment in the forecast period.

“North America to witness high growth during the forecast period.”

By region, the global 4D printing in healthcare market is segmented into North America, Europe, Asia, and the Rest of the World (RoW). North America is estimated to be the largest regional market for 4D printing in healthcare. This can be attributed majorly to the continuous technological advancements, growing demand for organ transplantation, efforts taken in the research & development of the 4D printing technology in the healthcare sector, and the presence of highly developed healthcare infrastructure in the region.

The primary interviews conducted for this report can be categorized as follows:

By Company Type: Tier 1 (28%), Tier 2 (42%), and Tier 3 (30%)

By Designation: C-level (30%), D-level (34%), and Others (36%)

By Region: North America (56%), Europe (24%), Asia (12%), and RoW (8%)

#### List of Companies Profiled in the Report

3D Systems (US)

Organovo Holdings Inc. (US)

Stratasys Ltd. (US and Israel)

Dassault Systèmes (France)

Materialise (Belgium)

EOS GmbH Electro Optical Systems (Germany)

EnvisionTEC (Germany)

Poietis (France)

#### Research Coverage:

This report provides a picture of the global 4D printing in healthcare market. It aims at estimating the size and future growth potential of the market across different segments, such as component, technology, application, end user, and region. The report also includes an in-depth competitive analysis of the key market players, along with their company profiles, recent developments, and key market strategies.

#### Key Benefits of Buying the Report:

The report will help market leaders/new entrants by providing them with the closest approximations of the revenue numbers for the overall 4D printing in healthcare market and its subsegments. This report will also help stakeholders better understand the competitive landscape and gain more insights to position their business better and make suitable go-to-market strategies. It will also enable stakeholders to understand the pulse of the market and provide them with information on the key market drivers, restraints/challenges, and opportunities.

## Contents

### 1 INTRODUCTION

- 1.1 OBJECTIVES OF THE STUDY
- 1.2 MARKET DEFINITION
- 1.3 MARKET SCOPE
  - 1.3.1 MARKETS COVERED
  - 1.3.2 YEARS CONSIDERED FOR THE STUDY
- 1.4 CURRENCY
- 1.5 LIMITATIONS
- 1.6 STAKEHOLDERS

### 2 RESEARCH METHODOLOGY

- 2.1 RESEARCH DATA
  - 2.1.1 SECONDARY SOURCES
    - 2.1.1.1 Key data from secondary sources
  - 2.1.2 PRIMARY SOURCES
    - 2.1.2.1 Key data from primary sources
    - 2.1.2.2 Key industry insights
- 2.2 MARKET SIZE ESTIMATION
- 2.3 MARKET BREAKDOWN AND DATA TRIANGULATION
- 2.4 ASSUMPTIONS FOR THE STUDY

### 3 EXECUTIVE SUMMARY

### 4 PREMIUM INSIGHTS

- 4.1 4D PRINTING IN HEALTHCARE: MARKET OVERVIEW
- 4.2 4D PRINTING IN HEALTHCARE, BY COMPONENT
- 4.3 4D PRINTING IN HEALTHCARE, BY TECHNOLOGY AND REGION, 2021
- 4.4 GEOGRAPHIC SNAPSHOT: 4D PRINTING IN HEALTHCARE

### 5 MARKET OVERVIEW

- 5.1 INTRODUCTION
- 5.2 MARKET DYNAMICS
  - 5.2.1 MARKET DRIVERS

- 5.2.1.1 Technological advancements in 3D printing
- 5.2.2 MARKET RESTRAINTS AND CHALLENGES
  - 5.2.2.1 High development and production costs
  - 5.2.2.2 Potential safety hazards
  - 5.2.2.3 Compliance with regulatory and performance standards
- 5.2.3 MARKET OPPORTUNITIES
  - 5.2.3.1 Growing demand for organ transplants
  - 5.2.3.2 4D-printed medical implants
  - 5.2.3.3 Applications of 4D printing technology in dentistry

## **6 4D PRINTING IN HEALTHCARE MARKET, BY COMPONENT**

### **6.1 INTRODUCTION**

#### **6.1.1 SOFTWARE & SERVICES**

6.1.1.1 Software & services segment to witness the highest growth during the forecast period

### **6.2 EQUIPMENT**

#### **6.2.1 3D BIOPRINTERS**

6.2.1.1 3D bioprinters aid in the production of complex living and non-living biological products

#### **6.2.2 3D PRINTERS**

6.2.2.1 Continuous technological advancements in existing 3D printers to support market growth

### **6.3 PROGRAMMABLE MATERIALS**

#### **6.3.1 LIVING CELLS**

6.3.1.1 Living cells have the ability to fabricate human-scale tissues in a defined and stable method

#### **6.3.2 HYDROGELS**

6.3.2.1 Smart hydrogels are current areas of focus for researchers in the 4D printing in healthcare market

#### **6.3.3 SHAPE-MEMORY MATERIALS**

6.3.3.1 Shape-memory materials have the ability to get back to their original shape in response to an appropriate stimulus

## **7 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY**

### **7.1 INTRODUCTION**

### **7.2 FUSED DEPOSITION MODELLING**

#### **7.2.1 ABILITY OF FDM TO PROVIDE BIOCOMPATIBLE, DURABLE AND STABLE**

PRODUCTS IS RESPONSIBLE FOR THE GROWTH OF THIS MARKET

### 7.3 POLYJET

7.3.1 ADVANTAGES OF POLYJET PRINTING WILL DRIVE ITS USE IN THE COMING YEARS

### 7.4 STEREOLITHOGRAPHY

7.4.1 INCREASING DEMAND FOR STEREOLITHOGRAPHY IN MANUFACTURING OF MEDICAL DEVICES IS A MAJOR MARKET DRIVER

### 7.5 SELECTIVE LASER SINTERING

7.5.1 MANUFACTURING BENEFITS OF SLS TECHNOLOGIES FORM THE MAJOR GROWTH DRIVER

## **8 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION**

### 8.1 INTRODUCTION

### 8.2 MEDICAL AND RESEARCH MODELS

8.2.1 MEDICAL & RESEARCH MODELS IS THE LARGEST & FASTEST-GROWING APPLICATION SEGMENT OF THE 4D PRINTING IN HEALTHCARE MARKET

### 8.3 SURGICAL GUIDES

8.3.1 EFFECTIVE ROLE OF SURGICAL GUIDES IN COMPLEX SURGICAL PROCEDURES TO DRIVE THE GROWTH OF THIS APPLICATION SEGMENT

### 8.4 PATIENT-SPECIFIC IMPLANTS

8.4.1 ADVANTAGES OFFERED BY PATIENT-SPECIFIC IMPLANTS OVER STANDARD IMPLANTS TO DRIVE MARKET GROWTH

## **9 4D PRINTING IN HEALTHCARE MARKET, BY END USER**

### 9.1 INTRODUCTION

### 9.2 DENTAL LABORATORIES

9.2.1 APPLICATIONS OF 4D PRINTING IN PRODUCTION OF RESTORATIVE MATERIALS AND PROSTHETICS WILL DRIVE DEMAND

### 9.3 HOSPITALS & CLINICS

9.3.1 GROWING DEMAND FOR ORGAN TRANSPLANTATION TO DRIVE THE DEMAND FOR 4D PRINTING IN HOSPITALS AND CLINICS

### 9.4 OTHER END USERS

## **10 4D PRINTING IN HEALTHCARE MARKET, BY REGION**

### 10.1 INTRODUCTION

### 10.2 NORTH AMERICA

10.2.1 NORTH AMERICA TO DOMINATE THE 4D PRINTING IN HEALTHCARE MARKET DURING THE FORECAST PERIOD

10.3 EUROPE

10.3.1 FAVORABLE DEVELOPMENTS IN THE 3D PRINTING SPACE IN EUROPE ARE CREATING A FAVORABLE ENVIRONMENT FOR MARKET GROWTH

10.4 ASIA

10.4.1 JAPAN IS EXPECTED TO BE A POTENTIAL GROWTH MARKET IN THE ASIAN REGION

10.5 ROW

## **11 COMPETITIVE LANDSCAPE**

11.1 OVERVIEW

11.2 COMPETITIVE SITUATION AND TRENDS

11.2.1 PRODUCT/SERVICE LAUNCHES AND UPGRADES (2016–2019)

11.2.2 PARTNERSHIPS, AGREEMENTS, AND COLLABORATIONS (2016–2019)

11.2.3 ACQUISITIONS (2016–2019)

11.2.4 EXPANSIONS (2016–2019)

## **12 COMPANY PROFILES**

(Business overview, Products and Services offered, Recent developments, MNM view)\*

12.1 3D SYSTEMS, INC.

12.2 ORGANOVO HOLDINGS, INC.

12.3 STRATASYS, LTD.

12.4 DASSAULT SYST?MES

12.5 MATERIALISE NV

12.6 EOS GMBH ELECTRO OPTICAL SYSTEM

12.7 ENVISIONTEC

12.8 POIETIS

\*Business overview, Products and Services offered, Recent developments, MNM view might not be captured in case of unlisted companies.

## **13 APPENDIX**

13.1 DISCUSSION GUIDE

13.2 KNOWLEDGE STORE: MARKETSANDMARKETS' SUBSCRIPTION PORTAL

13.3 AVAILABLE CUSTOMIZATIONS

13.4 RELATED REPORTS

## 13.5 AUTHOR DETAILS



## List Of Tables

### LIST OF TABLES

TABLE 1 4D PRINTING IN HEALTHCARE MARKET, BY COMPONENT, 2020–2026 (USD MILLION)

TABLE 2 4D PRINTING SOFTWARE & SERVICES MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 3 4D PRINTING EQUIPMENT MARKET, BY TYPE, 2020–2026 (USD MILLION)

TABLE 4 4D PRINTING EQUIPMENT MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 5 3D BIOPRINTERS MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 6 3D PRINTERS MARKET, BY REGION, 2020–2026 (USD THOUSAND)

TABLE 7 4D PRINTING PROGRAMMABLE MATERIALS MARKET, BY TYPE , 2020–2026 (USD MILLION)

TABLE 8 4D PRINTING PROGRAMMABLE MATERIALS MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 9 LIVING CELLS MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 10 HYDROGELS MARKET, BY REGION, 2020–2026 (USD THOUSAND)

TABLE 11 SHAPE-MEMORY MATERIALS MARKET, BY REGION, 2020–2026 (USD THOUSAND)

TABLE 12 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY, 2020–2026 (USD MILLION)

TABLE 13 FUSED DEPOSITION MODELLING 4D PRINTING MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 14 POLYJET 4D PRINTING MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 15 STEREOLITHOGRAPHY 4D PRINTING MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 16 SELECTIVE LASER SINTERING 4D PRINTING MARKET, BY REGION, 2020–2026 (USD MILLION)

TABLE 17 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION, 2020–2026 (USD MILLION)

TABLE 18 4D PRINTING IN HEALTHCARE MARKET FOR MEDICAL AND RESEARCH MODELS, BY REGION, 2020–2026 (USD MILLION)

TABLE 19 4D PRINTING IN HEALTHCARE MARKET FOR SURGICAL GUIDES, BY REGION, 2020–2021 (USD MILLION)

TABLE 20 4D PRINTING IN HEALTHCARE MARKET FOR PATIENT-SPECIFIC IMPLANTS, BY REGION, 2020–2026 (USD MILLION)

TABLE 21 4D PRINTING IN HEALTHCARE MARKET, BY END USER, 2020–2026  
(USD MILLION)

TABLE 22 4D PRINTING IN HEALTHCARE MARKET FOR DENTAL LABORATORIES,  
BY REGION, 2020–2026 (USD MILLION)

TABLE 23 4D PRINTING IN HEALTHCARE MARKET FOR HOSPITALS & CLINICS,  
BY REGION, 2020–2026 (USD THOUSAND)

TABLE 24 4D PRINTING IN HEALTHCARE MARKET FOR OTHER END USERS, BY  
REGION, 2021–2026 (USD MILLION)

TABLE 25 4D PRINTING IN HEALTHCARE MARKET, BY REGION, 2020–2026 (USD  
MILLION)

TABLE 26 NORTH AMERICA: 4D PRINTING IN HEALTHCARE MARKET, BY  
COMPONENT, 2020–2026 (USD MILLION)

TABLE 27 NORTH AMERICA: 4D PRINTING EQUIPMENT MARKET, BY TYPE,  
2020–2026 (USD MILLION)

TABLE 28 NORTH AMERICA: 4D PRINTING PROGRAMMABLE MATERIALS  
MARKET, BY TYPE, 2020–2026 (USD MILLION)

TABLE 29 NORTH AMERICA: 4D PRINTING IN HEALTHCARE MARKET, BY  
TECHNOLOGY, 2020–2026 (USD MILLION)

TABLE 30 NORTH AMERICA: 4D PRINTING IN HEALTHCARE MARKET, BY  
APPLICATION, 2020–2026 (USD MILLION)

TABLE 31 NORTH AMERICA: 4D PRINTING IN HEALTHCARE MARKET, BY END  
USER, 2020–2026 (USD MILLION)

TABLE 32 EUROPE: 4D PRINTING IN HEALTHCARE MARKET, BY COMPONENT,  
2020–2026 (USD MILLION)

TABLE 33 EUROPE: 4D PRINTING EQUIPMENT MARKET, BY TYPE, 2020–2026  
(USD MILLION)

TABLE 34 EUROPE: 4D PRINTING PROGRAMMABLE MATERIALS MARKET, BY  
TYPE, 2020–2026 (USD MILLION)

TABLE 35 EUROPE: 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY,  
2020–2026 (USD MILLION)

TABLE 36 EUROPE: 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION,  
2020–2026 (USD MILLION)

TABLE 37 EUROPE: 4D PRINTING IN HEALTHCARE MARKET, BY END USER,  
2020–2026 (USD MILLION)

TABLE 38 GERMANY: 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY,  
2020–2026 (USD MILLION)

TABLE 39 GERMANY: 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION,  
2020–2026 (USD MILLION)

TABLE 40 GERMANY: 4D PRINTING IN HEALTHCARE MARKET, BY END USER,

2020–2026 (USD MILLION)

TABLE 41 UK: 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY,  
2020–2026 (USD MILLION)

TABLE 42 UK: 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION,  
2020–2026 (USD MILLION)

TABLE 43 UK: 4D PRINTING IN HEALTHCARE MARKET, BY END USER, 2020–2026  
(USD MILLION)

TABLE 44 ROE: 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY,  
2020–2026 (USD MILLION)

TABLE 45 ROE: 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION,  
2020–2026 (USD MILLION)

TABLE 46 ROE: 4D PRINTING IN HEALTHCARE MARKET, BY END USER,  
2020–2026 (USD MILLION)

TABLE 47 ASIA: 4D PRINTING IN HEALTHCARE MARKET, BY COMPONENT,  
2020–2026 (USD MILLION)

TABLE 48 ASIA: 4D PRINTING EQUIPMENT MARKET, BY TYPE, 2020–2026 (USD  
MILLION)

TABLE 49 ASIA: 4D PRINTING PROGRAMMABLE MATERIALS MARKET, BY TYPE,  
2020–2026 (USD MILLION)

TABLE 50 ASIA: 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY,  
2020–2026 (USD MILLION)

TABLE 51 ASIA: 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION,  
2020–2026 (USD MILLION)

TABLE 52 ASIA: 4D PRINTING IN HEALTHCARE MARKET, BY END USER,  
2020–2026 (USD MILLION)

TABLE 53 ROW: 4D PRINTING IN HEALTHCARE MARKET, BY COMPONENT,  
2020–2026 (USD MILLION)

TABLE 54 ROW: 4D PRINTING EQUIPMENT MARKET, BY TYPE, 2020–2026 (USD  
THOUSAND)

TABLE 55 ROW: 4D PRINTING PROGRAMMABLE MATERIALS MARKET, BY TYPE,  
2020–2026 (USD THOUSAND)

TABLE 56 ROW: 4D PRINTING IN HEALTHCARE MARKET, BY TECHNOLOGY,  
2020–2026 (USD MILLION)

TABLE 57 ROW: 4D PRINTING IN HEALTHCARE MARKET, BY APPLICATION,  
2020–2026 (USD MILLION)

TABLE 58 ROW: 4D PRINTING IN HEALTHCARE MARKET, BY END USER,  
2020–2026 (USD MILLION)

TABLE 59 EXCHANGE RATE (USED FOR THE CONVERSION OF EUR TO USD)

TABLE 60 EXCHANGE RATE (USED FOR THE CONVERSION OF EUR TO USD)



## List Of Figures

### LIST OF FIGURES

FIGURE 1 4D PRINTING IN HEALTHCARE: MARKET SEGMENTATION

FIGURE 2 RESEARCH DESIGN

FIGURE 3 BREAKDOWN OF PRIMARY INTERVIEWS

FIGURE 4 BOTTOM-UP APPROACH

FIGURE 5 TOP-DOWN APPROACH

FIGURE 6 DATA TRIANGULATION METHODOLOGY

FIGURE 7 4D PRINTING IN HEALTHCARE, BY COMPONENT, 2021 VS. 2026 (USD MILLION)

FIGURE 8 4D PRINTING IN HEALTHCARE, BY TECHNOLOGY, 2021–2026 (USD MILLION)

FIGURE 9 4D PRINTING IN HEALTHCARE, BY APPLICATION, 2021 VS. 2026 (USD MILLION)

FIGURE 10 4D PRINTING IN HEALTHCARE, BY END USER, 2021 VS. 2026 (USD MILLION)

FIGURE 11 GEOGRAPHICAL SNAPSHOT: 4D PRINTING IN HEALTHCARE MARKET

FIGURE 12 TECHNOLOGICAL ADVANCEMENTS IN 3D PRINTING TECHNOLOGY IS DRIVING MARKET GROWTH

FIGURE 13 SOFTWARE & SERVICES TO DOMINATE THE 4D PRINTING IN HEALTHCARE IN 2021

FIGURE 14 NORTH AMERICA TO HOLD THE LARGEST SHARE OF THE MARKET IN 2021

FIGURE 15 NORTH AMERICA TO REGISTER THE HIGHEST GROWTH DURING THE FORECAST PERIOD

FIGURE 16 4D PRINTING IN HEALTHCARE MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

FIGURE 17 SOFTWARE & SERVICES SEGMENT WILL CONTINUE TO DOMINATE THE 4D PRINTING IN HEALTHCARE MARKET IN 2026

FIGURE 18 FDM TO DOMINATE THE 4D PRINTING IN HEALTHCARE MARKET IN 2021

FIGURE 19 MEDICAL & RESEARCH MODELS SEGMENT TO WITNESS THE HIGHEST GROWTH IN THE 4D PRINTING IN HEALTHCARE MARKET

FIGURE 20 NORTH AMERICA: 4D PRINTING IN HEALTHCARE MARKET SNAPSHOT

FIGURE 21 KEY DEVELOPMENTS IN THE 4D PRINTING MARKET BETWEEN 2016 AND 2019

FIGURE 22 3D SYSTEMS, INC.: COMPANY SNAPSHOT (2018)

FIGURE 23 ORGANOVO HOLDINGS, INC.: COMPANY SNAPSHOT (2018)

FIGURE 24 STRATASYS LTD.: COMPANY SNAPSHOT (2018)

FIGURE 25 DASSAULT SYST?MES: COMPANY SNAPSHOT (2018)

FIGURE 26 MATERIALISE: COMPANY SNAPSHOT (2018)

## I would like to order

Product name: 4D Printing in Healthcare Market by Component (Equipment, 3D printer SMM, Hydrogels, Software, Service, Cells), Technology (FDM, SLS, Stereolithography), Application (Research Model, Implant), End user (Hospital, Dental Lab, ASC) - Global Forecast to 2026

Product link: <https://marketpublishers.com/r/486FD5BDD7EEN.html>

Price: US\$ 5,650.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/486FD5BDD7EEN.html>