

# 3D Printing in Healthcare

## 3D PRINTING EVOLUTION

Birth of 3D Printing Techniques

1980

Emergence of the Main 3D Printers Manufacturers & CAD tools

3D printed engineered organs: The first lab-grown organ is implanted in humans

1990

3D Printing Gains Media Visibility

2000

Working 3D Kidney

The first person walks on a 3D-printed prosthetic leg

3D bioprinter is able to print the first blood vessel

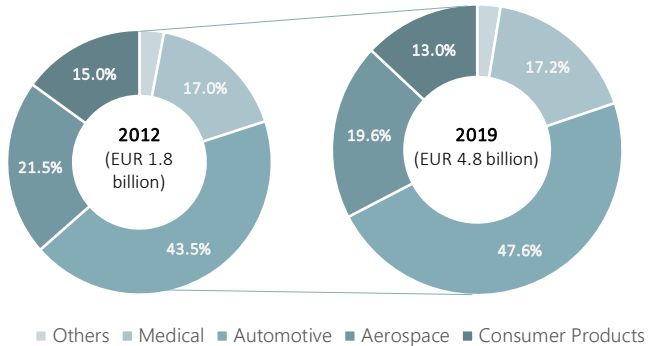
2010

Years of Visibility, Innovation and Hopes for 3D Printing in healthcare

Many medical 3D printing applications: tissues, organs and low-cost prosthesis

## 3D PRINTING MARKET

3D printing is anticipated to have a significant impact on the health industry in the following years - in particular, the medical technology sector



### Drivers

Demand for personalized medical devices  
 Technological advances  
 Reduction in time and cost  
 Rise in Medical Applications  
 Government funding

### Restrains

High costs  
 Lack of trained professionals  
 Stringent regulatory guidelines

## 3D PRINTING IN THE MEDICAL SECTOR

Main Applications

Bioprinting Tissues and Organs  
Customized Implants and Prostheses  
3D Printed Drugs  
3D Printing of medical devices  
Anatomical Models for Surgical Planning  
3D Printed models in teaching healthcare



### 3D PRINTING FOR SURGICAL PLANNING

*the purpose and benefits*

#### PATIENT COMMUNICATION

Patient understanding and satisfaction is increased by seeing and interacting with models of their anatomy

#### ANATOMIC FAMILIARITY

Models promote increased familiarity with unique anatomies, which reduces unexpected surgical complexity

#### TRAINING/EDUCATION

Understanding the exact anatomical features helps improving the education environment

#### PROCEDURE PRACTICE

Opportunity for clinicians to refine surgical techniques and supplementary procedures

#### PROCEDURE SELECTION

Determining the appropriate intervention strategy and assessing surgical feasibility

