3D natives

# 40 YEARS OF 3D PRINTING

Source: 3DPrint.com

## *1980 - 1990s*
# *SETTING THE FOUNDATIONS*

## 1981

## THE FIRST CONCEPT OF 3D PRINTING

The first documented idea of layer-by-layer fabrication was introduced by Dr. Hideo Kodama in Japan. It becomes the blueprint for modern additive manufacturing. His work sparks the race to develop real machines capable of automated fabrication.

## 1984

## THE BIRTH OF SLA

Chuck Hull invents stereolithography (SLA), the first technology capable of turning digital files into solid objects with UV-curable resin. This milestone marks the official birth of 3D printing as we know it. It becomes the foundation for making highly-detailed prototypes used in industry and research.

## 1989

## THE BIRTH OF FDM AND SLS

Scott Crump patents Fused Deposition Modeling (FDM), enabling the growth of rapid prototyping. At the same time, Selective Laser Sintering (SLS) emerges, a powder-based process capable of creating strong and complex industrial parts without tooling.

Source: EOS Store

## *1990 - 2000s*
# *THE BEGINNING OF METAL AM*

## 1994

## EOS PRINTS A METAL PART THROUGH DMLS

Metal components are produced directly from digital files without molds. This unlocks new possibilities for lightweight aerospace and medical applications.

## 1995

## SANDIA NATIONAL LABORATORY INVENTS DED TECHNIQUE

Engineers develop a process that can both manufacture and repair large metal structures. It is adopted by industries that need to rapidly restore high-value components, like turbines.

## 1997

## ARCAM BRINGS THE FIRST EBM MACHINE TO THE MARKET

A new way to print dense metal parts using an electron beam is introduced to the commercial market. It becomes especially valuable for producing customized titanium implants and aerospace components.

Source: CNN

## *2000 - 2010s*
# *DEMOCRATIZATION AND FIRST MILESTONES*

## 2001

## Z CORPORATION INTRODUCES FULL-COLOR 3D PRINTING

Z Corp releases the Z402C, and later the ZPrinter 310, pioneering affordable full-color 3D prints using binder jetting technology.

## 2002

## THE FIRST FUNCTIONAL MINIATURE KIDNEY IS 3D PRINTED

Researchers at the Wake Forest Institute create a lab-made kidney that can filter blood and produce urine, leading to hope that 3D printing could one day address organ shortages.

## 2005

## DR. ADRIAN BOWYER DEVELOPS THE REPRAP MOVEMENT

RepRap is a community-driven, open-source initiative that makes it possible to build a printer that can reproduce many of its own parts. It ignites the maker movement and accelerates the global spread of desktop 3D printing.

Source: dezeen

## 2010 - 2020s
# USING 3D PRINTING FOR REAL LIFE APPLICATIONS

## 2011

### THE FIRST 3D PRINTED PLANE, READY TO FLY

A research team uses AM to build an unmanned aircraft that is ready for flight. It demonstrates that complex structures can be assembled without traditional tooling or assembly.

## 2014

### THE FIRST 3D PRINTER SENT IN SPACE

Made in Space creates the Zero-G, a compact printer, and it is sent to the International Space Station. This enables astronauts to produce tools and spare parts on demand, reducing dependency on deliveries from Earth.

## 2018

### 3D PRINTED HOUSE FOR THE FIRST TIME IN FRANCE

A 95m² house in France becomes the first fully habitable example of large-scale printed construction. It demonstrates faster and more affordable building methods that could help address housing crises.


Source: mesago

# 2020 - 2025
# MATURITY OF AM

## 2020

## BMW OPENS ITS AM CAMPUS IN GERMANY

The facility integrates around 50 industrial systems for processing metal and plastics. Additive manufacturing in the automotive sector is no longer used for experimentation but for real serial output.

## 3D PRINTED VEGAN SALMON IS AVAILABLE IN SUPERMARKETS

## 2023

The Austrian startup Revo Foods launches plant-based salmon produced with food extrusion technology. Additive manufacturing enters mainstream food retail as a sustainable alternative to seafood.

## 2025

## FORMNEXT, CELEBRATES ITS 10TH ANNIVERSARY.

The world’s leading AM trade show marks a decade of industry growth and global collaboration. Its tenth edition highlights the maturity of the market, with industrial applications and case studies.