

## “3D PRINTING: BOOSTER FOR MANUFACTURING”



**Mr. Rohit Chaudhari** (Alumni 2019-20)

B.E. (Mechanical Engineering)

System Engineer,

Infosys Limited

Typical manufacturing techniques are known as ‘subtractive manufacturing’ because the process is removing material from a preformed block/raw-material. Processes such as Milling and Cutting are subtractive manufacturing techniques. This type of process creates a lot of waste, since the material that is cut off generally cannot be used for anything else and is simply sent out as scrap.

3D printing the additive manufacturing technology is the construction of a three-dimensional object from a CAD model or a digital 3D model. The term "3D printing" can refer to a variety of processes in which material is deposited, joined or solidified under computer control to create a three-dimensional object with material being added together (such as plastics, liquids or powder grains being fused together) typically layer by layer. Additive manufacturing is the solution to all the challenges, it is flexible and faster.

As additive manufacturing technology has advanced, barriers have successively fallen away and 3-D printing now finds itself playing a transformative role in industries as diverse as toys to airplanes. “The U.S. hearing aid industry converted to 100% additive manufacturing (3D printing) in less than 500 days, and not one company that stuck to traditional manufacturing methods survived.”

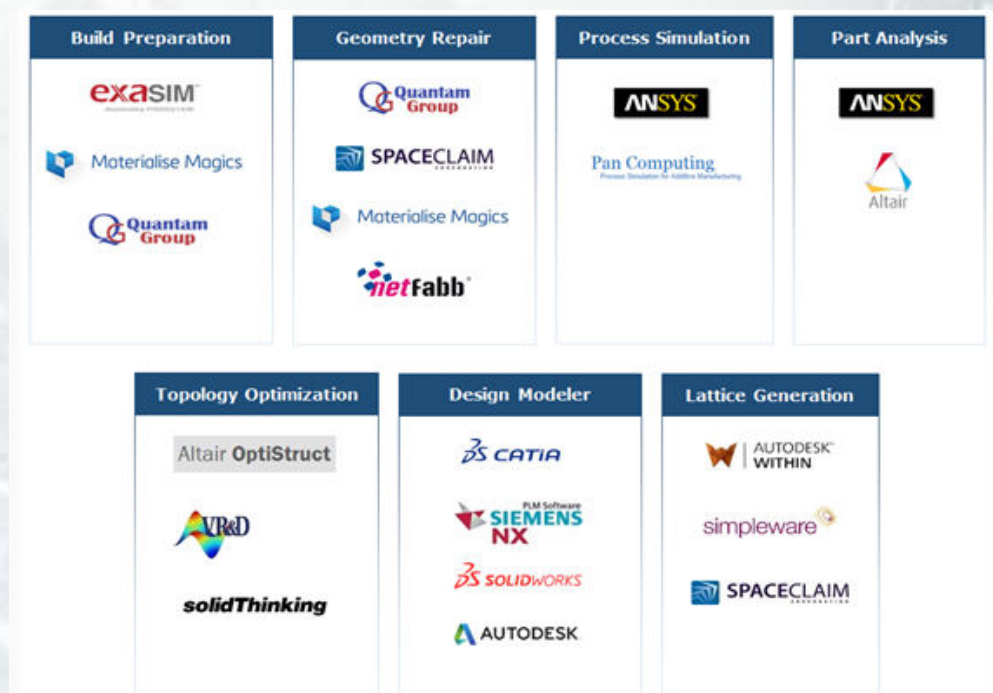


Source: Forbes, MIT Technology Review

Because prototyping has always been more about direction than precision, manufacturers were quick to deploy 3D printers to test new concepts. And because prototyping typically only requires a few units to be produced, additive manufacturing's superior responsiveness is able to successfully reduce prototype lead times from days or weeks to hours.

- ◆ **Speed:** The time it takes to produce parts via 3D printing is rapidly accelerating.
- ◆ **Materials:** The materials available to 3D printing is expanding beyond plastics into a broad range of metals: stainless steel, gold, bronze, nickel and even carbon fiber.
- ◆ **Tolerances:** In the early days, 3D printing tolerances were quite loose. Today, however, 3D printing is enabling dimensional tolerances beyond +/- 0.2mm, bringing additive manufacturing into the higher value-add production.
- ◆ **Design:** The sophistication and more importantly, flexibility of plans available in the market is rapidly expanding, providing the building blocks of higher-order design.

There are over 25 software solutions available and being used for different aspects of Additive manufacturing. Those can be categorized as per below sequential categorization.



Additive manufacturing benefits every step of the product development process, enabling easy scalability in rapid prototyping to full-scale manufacturing. If you're interested in diving deeper into the topic, go and learn the terminologies related to 3D printing.