

# THE ADDITIVE MANUFACTURING MARKET **EVOLUTION & CHALLENGES**

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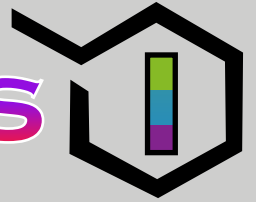
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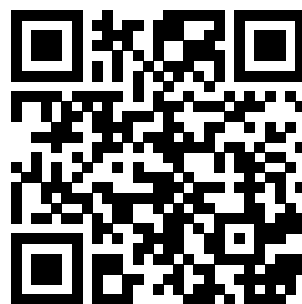
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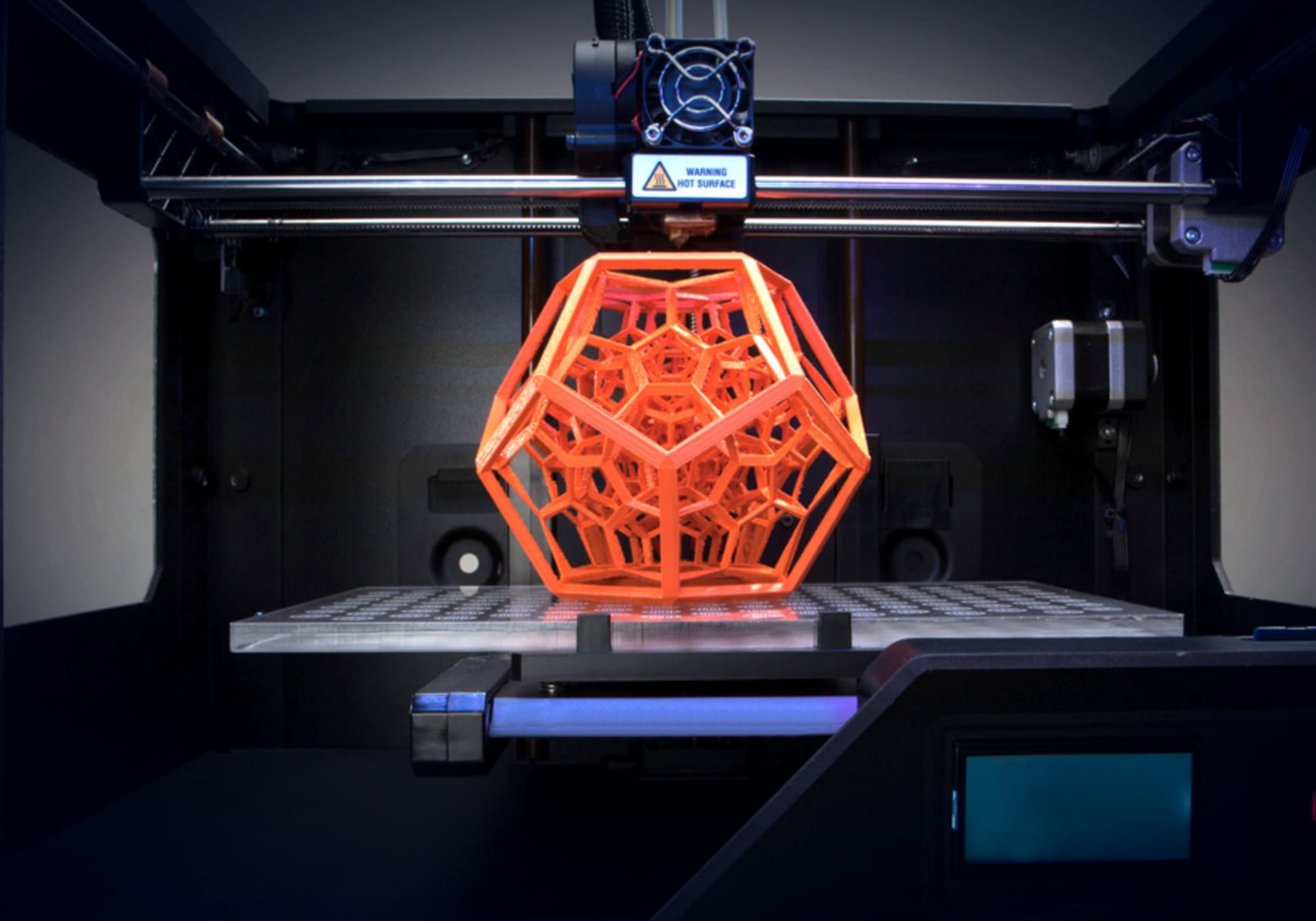


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The main problem for future manufacturing engineering is additive manufacturing. 3D printing is already in effective operation in many advanced industries such as medicine, automotive, and aviation increasingly complementing conventional manufacturing techniques. The 3D printing potential has been also recognized by the foundry, steel, and aluminum industry. 3D Printing creates fresh opportunities for the metal industries, whether forging businesses or sheet-processing, from aluminum and steel to titanium and specialty products. Structures are created on the basis of digital design information layer by layer using 3D printers. The material is used only where necessary. The strengths of additive technology lie in standard production procedures like casting, milling, or forging. The infinite geometric liberty of 3D printing provides designers with many advantages.

The leadership race is wide open for the growing, prosperous AM companies. All players in the fragile ecosystem have the chance to rethink strategies to compete for more profits. It is vital for achievement to master the interaction between products and printing systems. This interaction determines the characteristics of printing components which affect the stability of processes and product quality directly. The winners will be those having developed and implemented innovative approaches that tackle unprecedented users' needs and guarantee the high quality of the printed components with profound knowledge of this interplay.

Most aspects of the Additive Manufacturing value chain have been dominated by equipment suppliers. In order to process materials used in AM procedures, in relation to manufacturing 3D printers, specific raw materials have been provided by chemical industries. In some instances, equipment suppliers have functioned as service offices by printing end-user goods. Large material-related firms, such as BASF and DSM Somos, sell printable materials qualified for specific technologies directly to end customers, rather than providing materials solely through equipment manufacturers. These suppliers offer a broader range of materials than equipment providers and typically have access to end users (such as production companies), giving them a strong position in the value chain<sup>1</sup>.

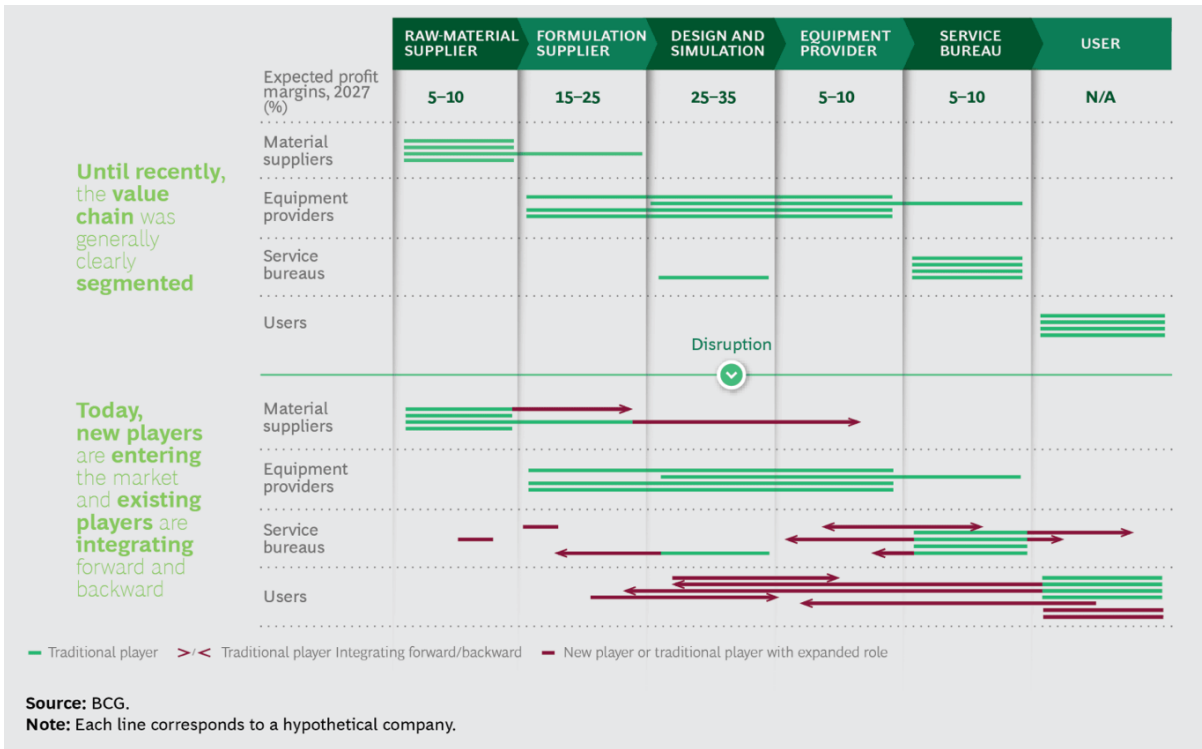


Fig 1. The Am Value. Boston Consulting Group. (2019). Surviving Disruption in Additive Manufacturing.



## THE AM VALUE CHAIN IS BEING DISRUPTED

Although there can be no doubt about the effect of additive manufacturing on the product life cycle, companies who use 3D printing have seen their traditional supply chain stay comparatively unchanged owing to a slowly changing perception of the business value of technology by corporate officials. There are difficulties that need to be resolved before 3D printing can have a wider effect on activities, such as machinery and cost of materials. When these costs are assessed together with the advantages of 3D printing, more enterprises will understand how 3D printing can boost their enterprise.

As the 3D printing vision develops, full acceptance of additive manufacturing continues to grow. In the early 1980s and 1990, the first 3D printing markets that were producing prototypes and printed parts quickly, emerged and were developed beyond the standard dominant stream of Stereolithography (SL). Commercial 3D printing came to a fresh maturity in the middle of 2000 when consumer 3D printers hit the market. In the future, the use of the digital thread in the industrial "Internet of Things" or the internet of physical machines and structures with items that collect information helps advance this vision by acting as one major physical factor.

THE LATEST ESTIMATES  
ATTRIBUTE  
**approximately 37%**  
OF THE TOTAL ANNUAL 3D  
PRINTING REVENUE TO 3D  
PRINTING SERVICE  
PROVIDERS.

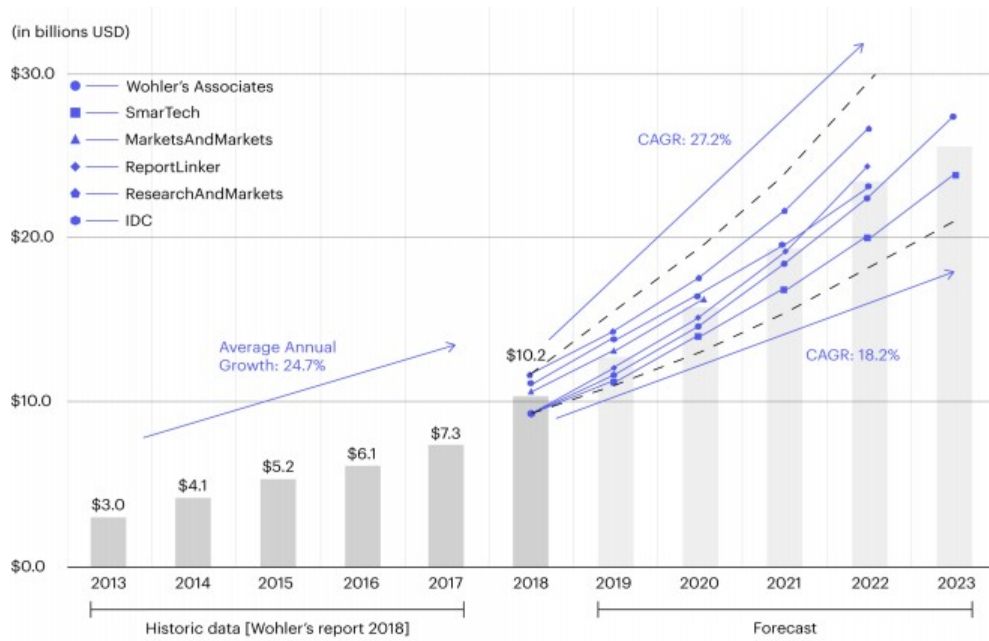


Fig 2. 3D Printing Market Size and forecast. 3D Hubs. (2019).3D Printing Trends Q1 2019.

The present annual income from the worldwide 3D printing industry is estimated by various analysts between USD 9.3 billion and USD 11.5 billion in 2018. These numbers comprise sales of 3D printers, hardware, software, and services. A more precise estimate of present market size can be measured at around USD 10.2 billion by averaging these assessments. At USD 12.7 trillion, the worldwide manufacturing industry presently represents less than 0.1% of the worldwide global manufacturing. If the printing industry succeeds in capturing only 1 percent of that market- which many specialists believe will be feasible- then, annual sales of USD 125 billion can be achieved. This is five times the optimistic 5-year prediction. Online 3D printing falls under "3D printing service providers" which belongs in the "services" segment. The latest estimates attribute approximately 37% of the total annual 3D printing revenue to 3D printing service providers<sup>2</sup>.

REFERRING TO  
GLOBAL DISTRIBUTION  
OF 3D PRINTING  
DEMAND, THE NORTH  
AMERICAN AND  
EUROPEAN LEADERS  
REPRESENT THE ALMOST

**90% of the  
global demand**

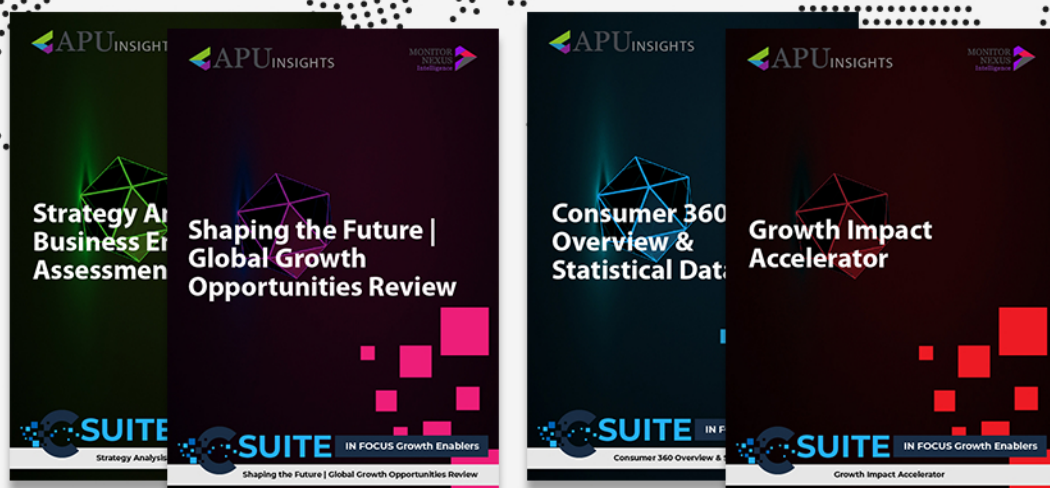
WHILE ASIAN AND  
PACIFIC MARKETS ARE  
AGGRESSIVELY  
EMERGING.

Referring to global distribution of 3D printing demand, the North American and European leaders represent the almost 90% of the global demand while Asian and Pacific markets are aggressively emerging. According to Paul Heiden, VP of Product Management of Ultimaker, R&D developments will boost the opportunities for taking the full advantage of making the 3D printing easier.

## REFERENCES

1. Boston Consulting Group. (2019). Surviving Disruption in Additive Manufacturing.
2. 3D Hubs. (2019). 3D Printing Trends Q1 2019.







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