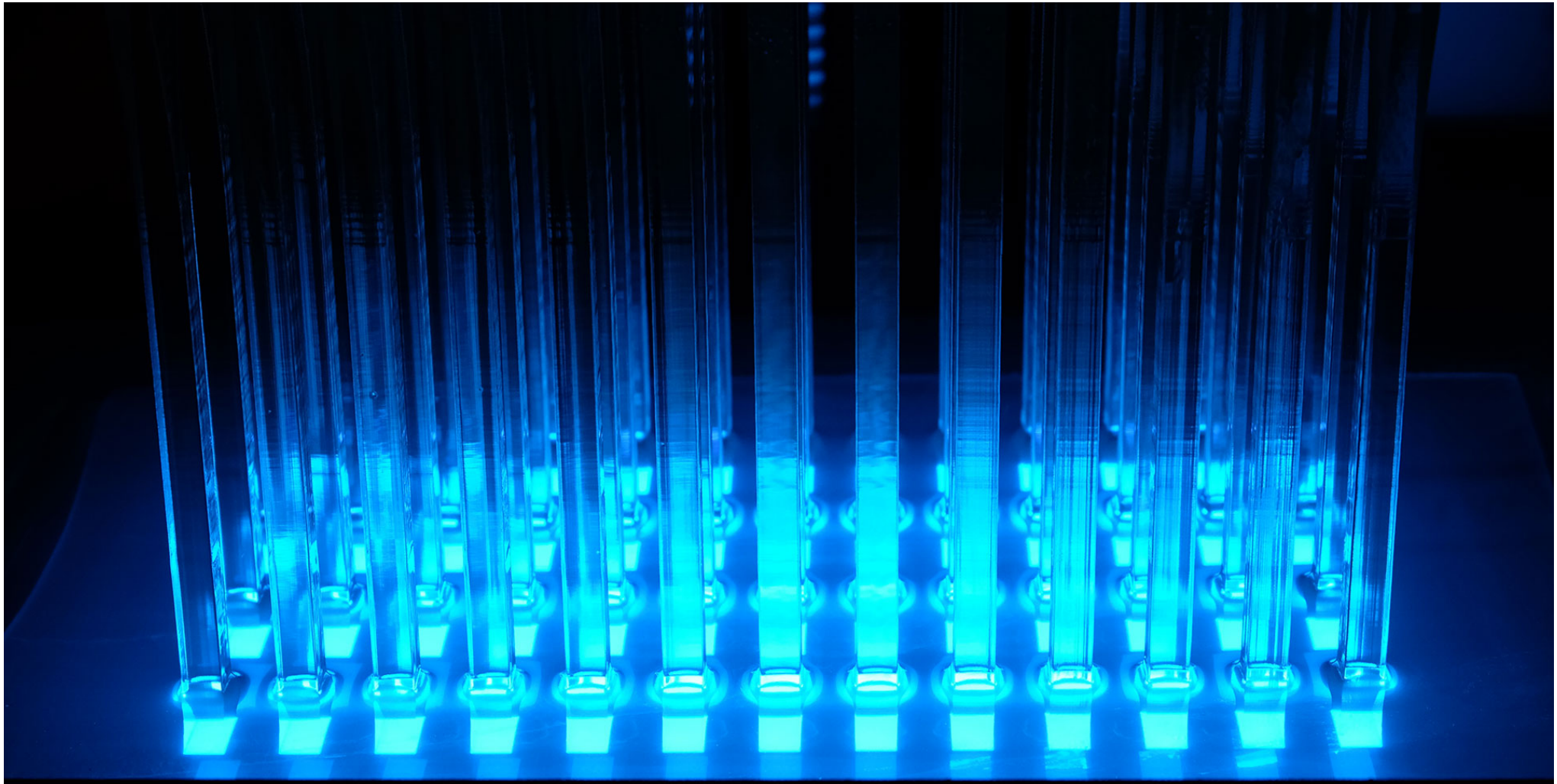


Supporting 3D-printing

How, when and why to add supports in SLA printing

Chad Sinclair

TRENDS 2017

3D PRINTING MARKET IS MATURING

+72%
expect their spendings on additive manufacturing to increase for 2018

+47%
saw a greater Return on Investment than last year

+49%
of respondents increased their expenses in 3D Printing this year

+90%
consider 3D Printing as a **competitive advantage** in their strategy

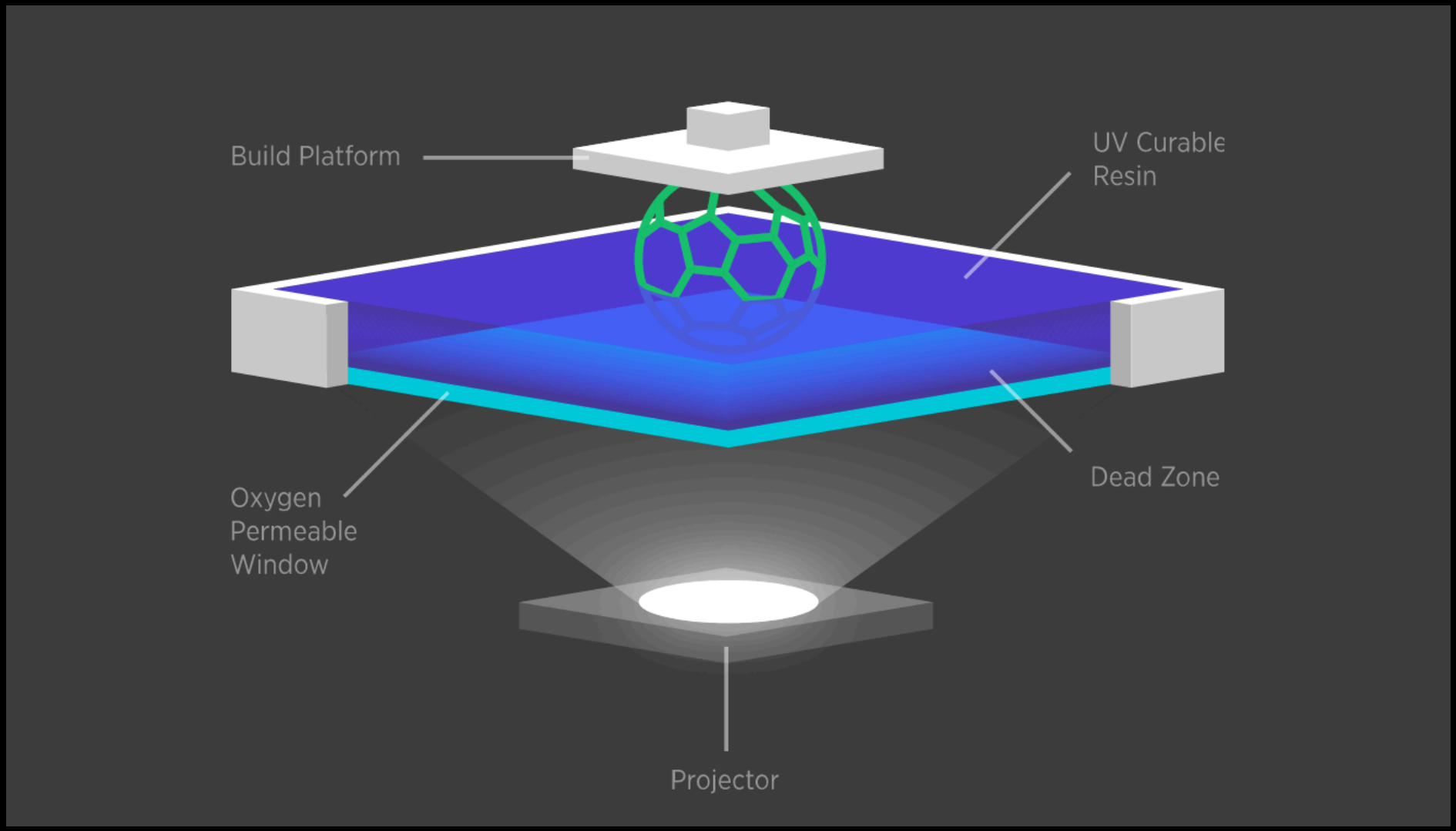
$9,504
is the average budget for 2017 compared to $6,132 in 2016

Additive manufacturing is still ramping up. 49% of our respondents increased their expenses in 3D Printing this year. And this trend is here to stay: 72% of them expect their spendings to increase again next year. Last year, almost the same amount of respondents had the same expectation (77%).

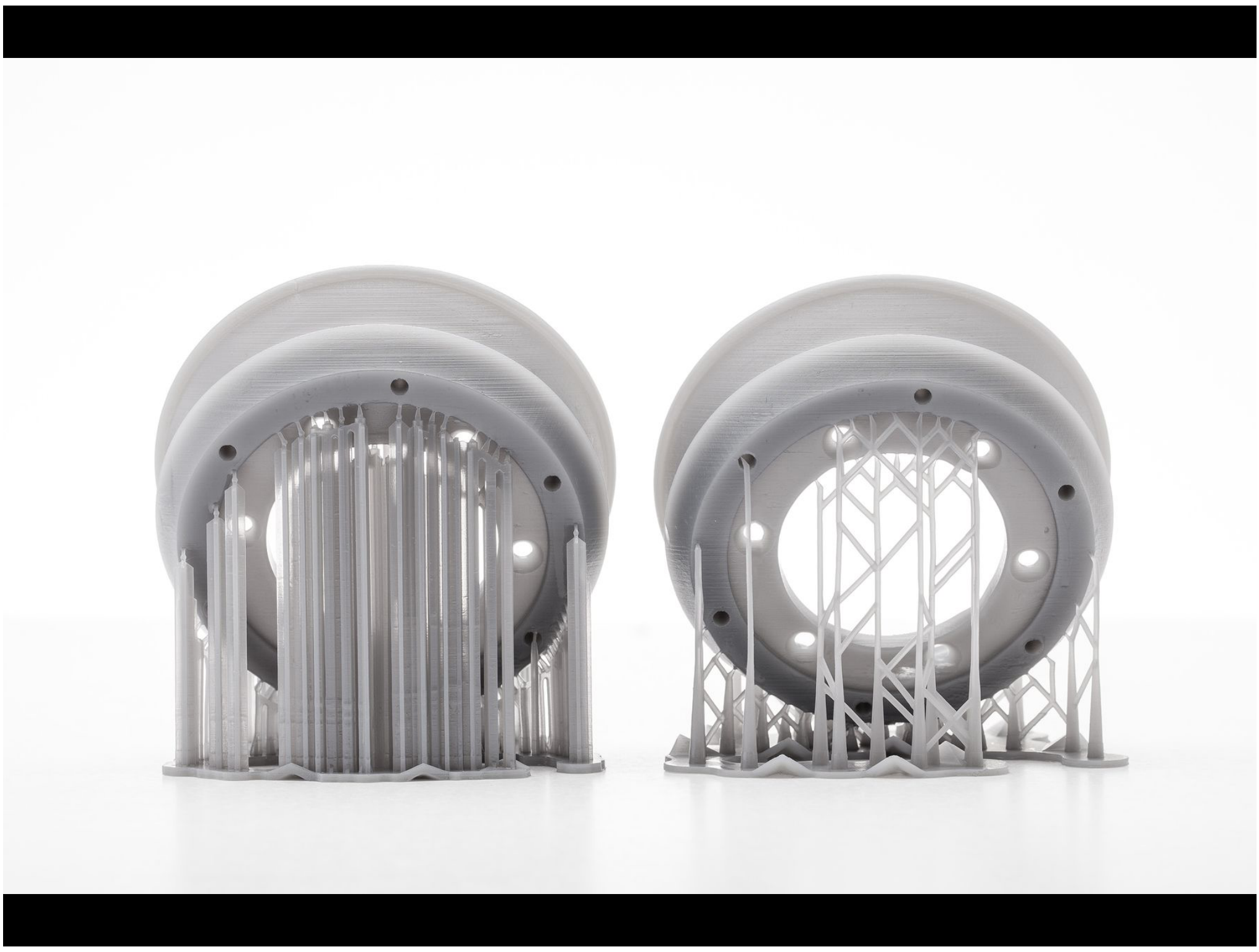
Additive manufacturing is showing positive results. Indeed, 47% of the respondents saw a greater return on investment than last year. Moreover, 90% of them consider 3D Printing as a competitive advantage in their strategy.

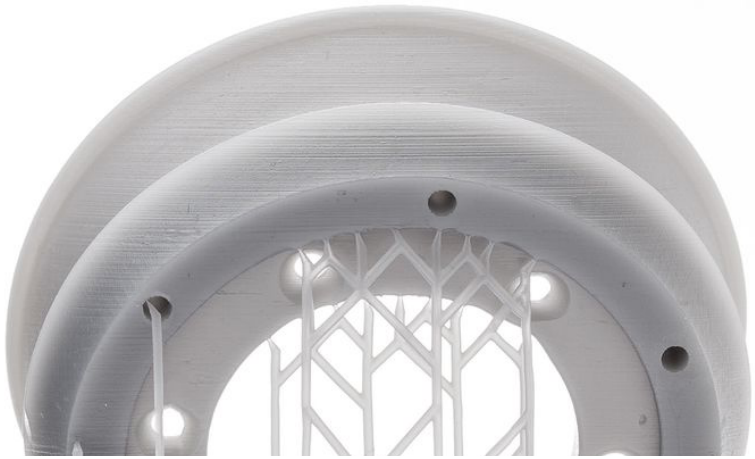
These elements show that the respondents are loyal to additive manufacturing and that they consider this technology as a real partner for their activity. As a result, we can say that the market is becoming more stable and mature.

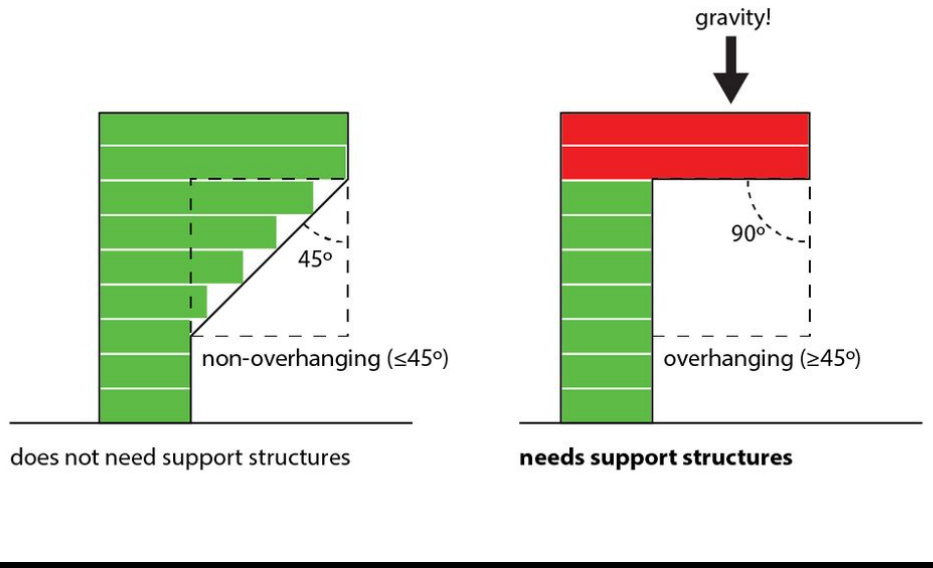
17.4% growth in worldwide revenues in 2016 - less than in 2015 (25.9%)
Let's Make Additive-Manufacturing Great Again (MAGA)!


Build Platform
UV Curable
Resin
Oxygen
Permeable
Window
Dead Zone
Projector

NewPro 3D






gravity!
45°
non-overhanging (≤45°)
90°
overhanging (≥45°)
does not need support structures
needs support structures

Optimization

Support structures are required to ensure

1. Geometry of print is maintained
2. Successful printing

Optimization

Support structures add…

1. Expense
2. Waste

Project Goals

1. Identify failures that are likely to occur due to under support in SLA printing
2. Provide simple validation tests that can be performed to determine necessary minimum level of support structure
   - Considering self loading
   - Considering separating forces
3. Evaluate the potential cost/waste savings arising from reduction in supports.