



## 3D Printing Moves From Hype To An Innovative, Disruptive Force


Keith Kmetz  
Program VP  
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## Agenda

- Industry & Market Overview
- Competitive Landscape
- Buyer Perspective
- Future View of the Market
- What Does It Mean To Me?



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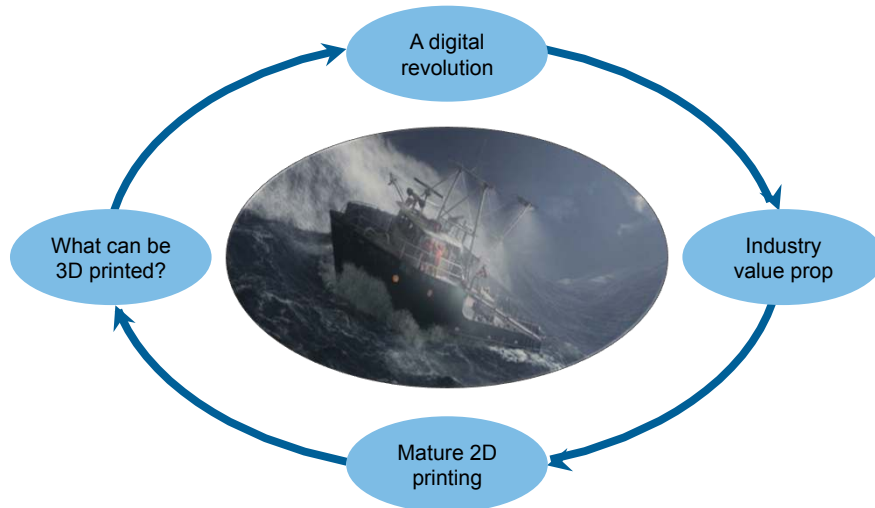
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## IDC's 3D Printer Definition

- Creation of objects by layering materials
- Several print technologies
- Requires a digital model or blueprint
- Design, prototyping, production, and aftermarket services



## A "Perfect Storm" Fuels Innovation and Disruption



## A Digital Revolution to Create

Input ← Capture → Output



## Key Value Propositions Made Possible by 3D Printing

- Quick changes during production
- Prototyping at a low cost
- Creation opportunities in the home or small business
- 3D printing services



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## Key 3D Printer Markets

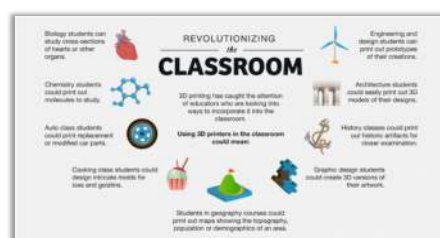
### ■ Manufacturing



### ■ Health care



### ■ Education



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## A Fragmented Market

Current & established market leaders



...but 150+ others with a piece of the market

• FlashForge	• Beijing TierTime
• XYZ Printing	• Shining 3D
• Xery 3D	• ZBOT
• Prusa 3D	• Aleph
• Ultimaker	• Zortrax
• FormLabs	• EnvisionTEC
• M3D	• Solidoodle
• MakerGear	• Leapfrog
• Printbot	• Airwolf
• Mcor Technologies	• Voxeljet
• DWS Systems	• Arcam
• ExOne	• SLM Solutions



Conventional print leaders with pending entry

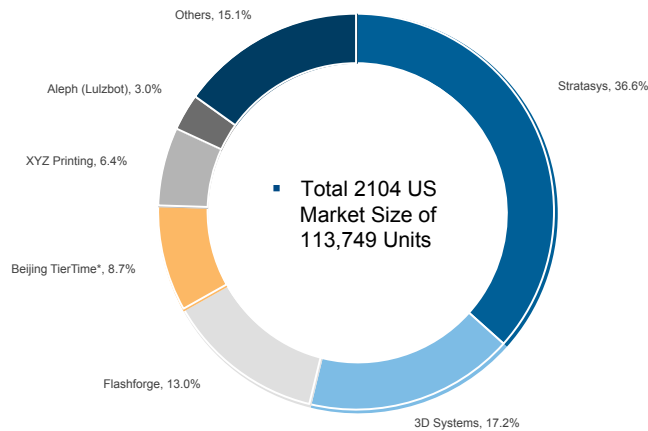


Software and "The Annuity"



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## 2014 US 3D Printer Market Shares



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## A Few Vendors to Watch and Why

Vendor	Why?
3DP	<ul style="list-style-type: none"> <li>Very large build size (39" x 39" x 20") at a low price (&lt;\$20,000)</li> </ul>
Autodesk	<ul style="list-style-type: none"> <li>Important software supplier to the CAD market</li> <li>Spark (open software platform) and Ember (its own 3D printer)</li> </ul>
BQ	<ul style="list-style-type: none"> <li>Electronics manufacturer from Spain, planning to come to America</li> <li>Desktop FDM printer with large build size</li> </ul>
Blueprinter	<ul style="list-style-type: none"> <li>Denmark-based company, not yet in the US market</li> <li>Selective heat sintering technology (low cost of operation)</li> </ul>
Carbon3D	<ul style="list-style-type: none"> <li>New approach to polymer-based 3D printing (CLIP)</li> <li>Faster, commercial quality and broad range of material support</li> </ul>
EOS	<ul style="list-style-type: none"> <li>Established SLS vendor (1,600 installed)</li> <li>Expanding global footprint...new operations in China</li> </ul>
Massivit3D	<ul style="list-style-type: none"> <li>Leadership comes from Objet, Idanit, HP-Scitex</li> <li>Focus on large-sized output (vehicles)</li> </ul>
Optomec	<ul style="list-style-type: none"> <li>Proprietary Aerosol-jet 3D printing</li> <li>Hundreds installed...standalone and part of automated solutions</li> </ul>
Piecmake	<ul style="list-style-type: none"> <li>Focused on large build size (45" x 39" x 47") at \$36,000, BigRep 3D printer</li> </ul>
Sciaky	<ul style="list-style-type: none"> <li>Electron Beam Additive Manufacturing technology, aerospace and defense industry customers</li> <li>Fastest metal printers</li> </ul>
Sedgwick	<ul style="list-style-type: none"> <li>Low priced SLA printers (\$1,499)</li> </ul>
Voxel8	<ul style="list-style-type: none"> <li>3D printer for printed electronics market with conductive inks, partner to Autodesk</li> </ul>



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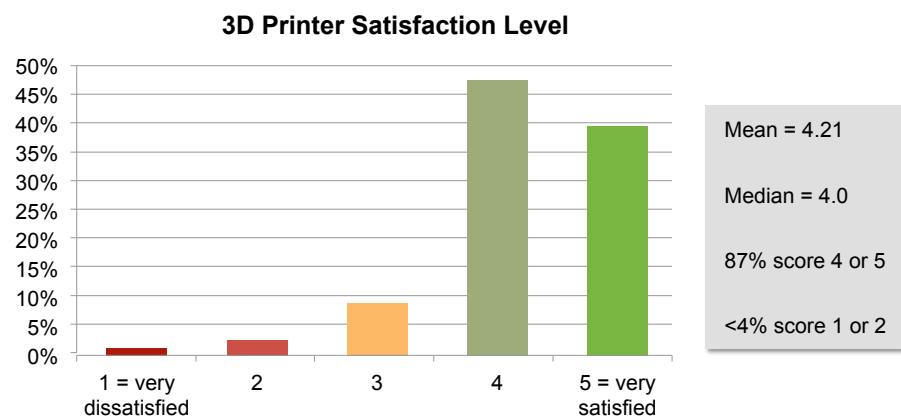
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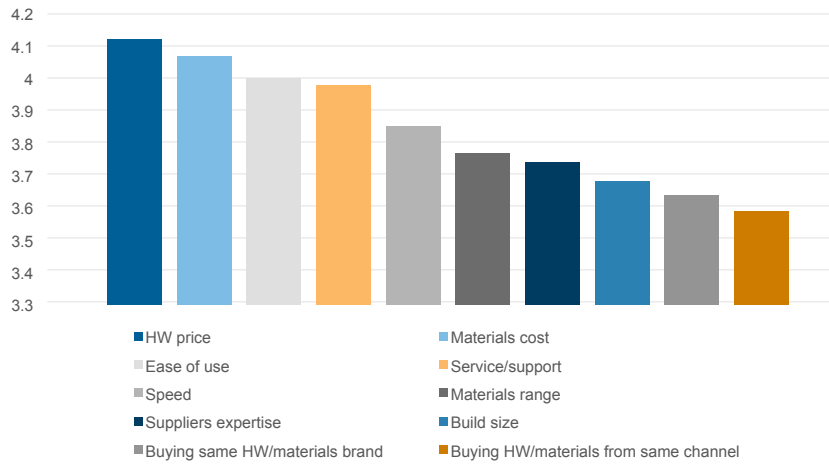
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## High Satisfaction Among Users!



## Mean Feature Importance Ratings

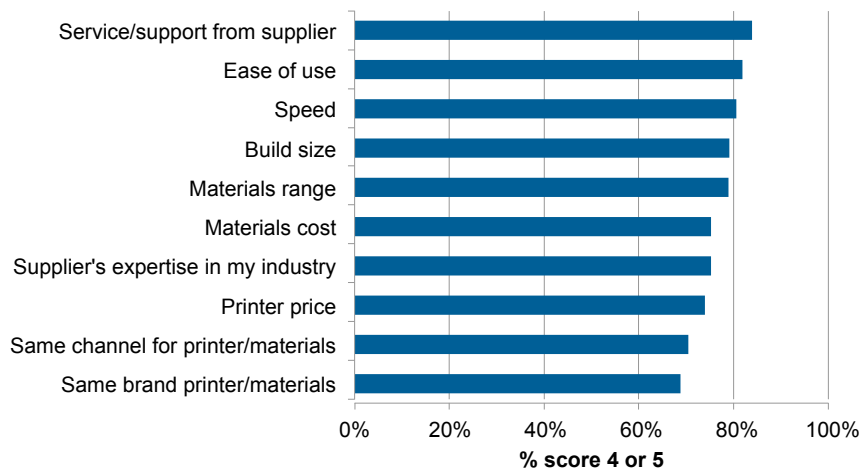
(1=not at all important, 5=very important)



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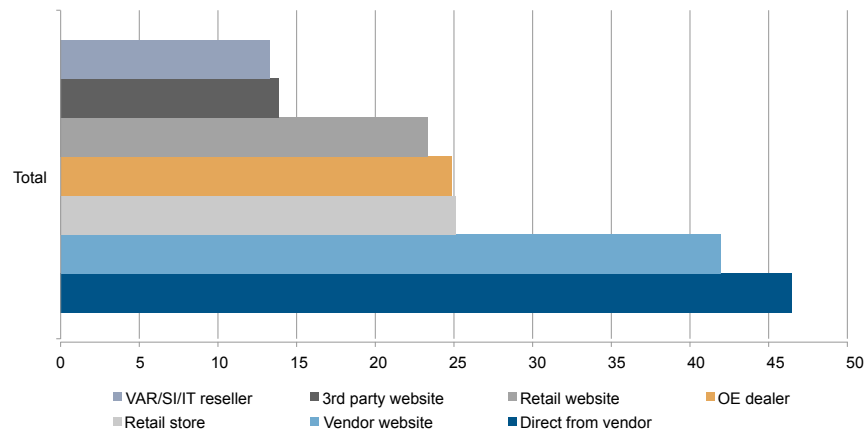
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## What's Important From the Perspective of a User?



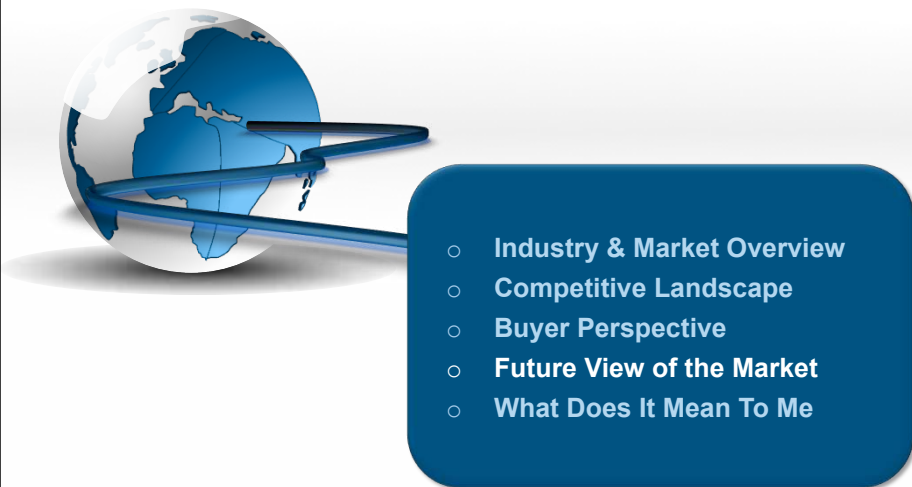
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## 3D Printer Channel Preferences



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## Market Assumptions Are Drivers

Assumption	Impact
Manufacturers, designers, educators and creativity professional all want to increase the speed of product design and development	<ul style="list-style-type: none"> <li>The demand for faster cycle times will continue to increase.</li> <li>The awareness of 3D printing as a solution is evident.</li> <li>Materials expansion will increase the utility of the technology</li> </ul>
The "open" nature of 3D printing versus conventional printing markets	<ul style="list-style-type: none"> <li>Open approach to product and market development across the 3D printer market</li> <li>Some of the fastest growing 3D printer and materials providers share details of what they are developing</li> <li>3D printer vendors allow customers to source filaments and materials</li> <li>Expect an adjustment in this socialistic attitude in the coming years, but open development will continue to drive growth in the near term</li> </ul>
3D printer services will expand	<ul style="list-style-type: none"> <li>3D Hubs, Sculpteo, Ponoko, Shapeways, i.materialise are thriving services providers</li> <li>Resellers/dealers offering services due to customer requests</li> <li>Vendor own solutions</li> <li>Anticipate specialty service providers to offer 3D printer services to their customer base (e.g., Home Depot/Lowe's, Staples, UPS)</li> </ul>
Expansion of capabilities in the printer and in the materials	<ul style="list-style-type: none"> <li>Faster, high quality, more reliable 3D printing experience</li> <li>Expansion of materials offerings...stronger, more colors, more flexibility, more finishes</li> </ul>
Driving down costs	<ul style="list-style-type: none"> <li>Printer average selling values to decline, but increase capabilities could stabilize pricing</li> <li>Annuity costs (materials and service) will be more aggressively priced with more mainstream adoption</li> </ul>

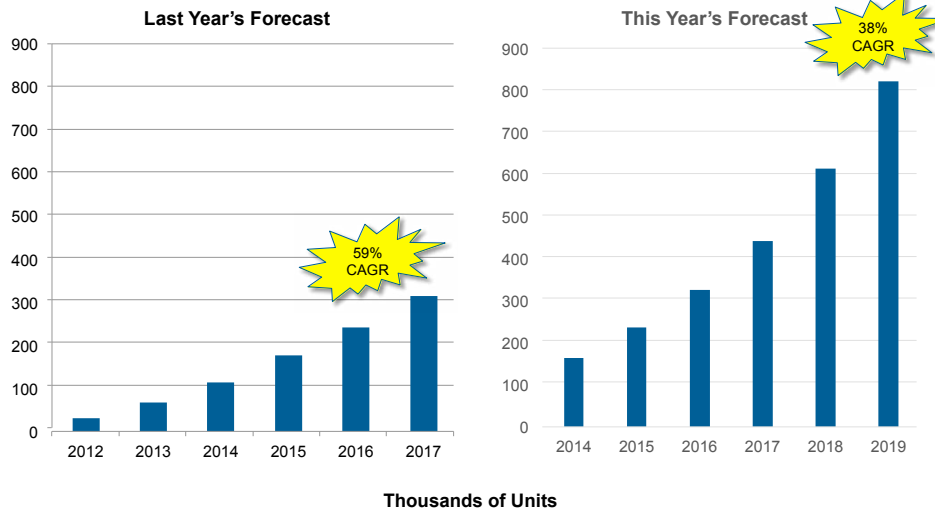


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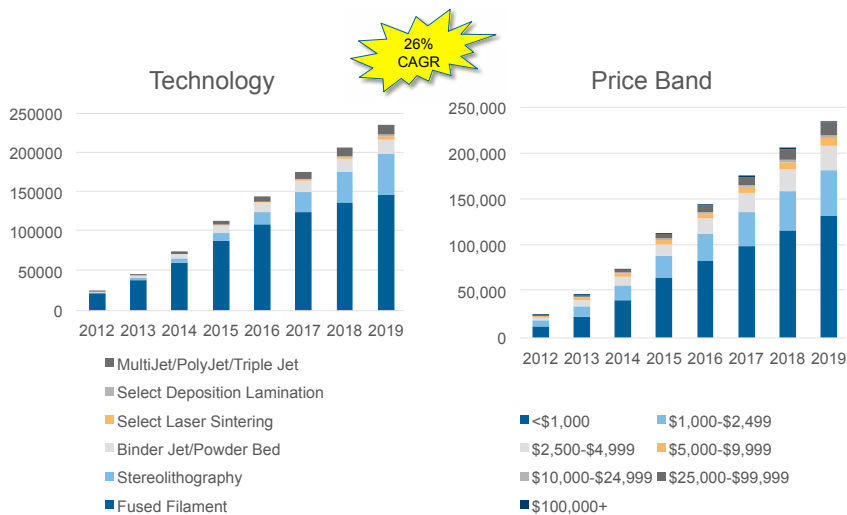
## WW 3D Printer Market Opportunity

Last Year's Forecast Versus This Year's Forecast



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## US 3D Printer Unit Forecast



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## 3D Printer Market Predictions

- Completely new 3D printer market leadership will be in place by 2018/2019. Conventional print vendors as well as large IT manufacturers will take WW market share control through M&A activity and/or their own new product entries that commence in 2016 and expand over the next few years.
- Place your bets on the 3D printer commercial market segment (not the consumer market) as this category will dominate the market's hardware and annuity value (85+%)
- 3D printers' market reach expands considerably through the service bureau model with familiar national/regional brands offering general as well as market-specialty 3D printer services
- The 3D printer annuity opportunity is expanding with no clear winner on the horizon. There is ample room for greater market participation and solid profitability from printer vendors, third party materials vendors and large chemical suppliers to provide for the considerable 3D print possibilities still in the making. It won't be possible for any one organization to offer the wide breadth and depth of annuity options required for all 3D printing creativity...even on their own branded printers.
- By 2018, 3D printing will be a serious disruptor to the medical industry by changing established health care processes and offering substantive cost efficiencies.



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## 3D Printing Possibilities

*Only Limited By the Imagination!*



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## Essential Guidance

- Pace of change is fast and furious, patents expiring
- Market shakeout expected, prepare for new players
- Government activities drives localized manufacturing and SMB innovation (especially China)
- Materials expansion
- Communal market spirit shifts to a more aggressively targeted market opportunity
- Channel is still figuring out its market play



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## Thank You



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