

Networking Technologies, 3D Printing & Robotics

3Q16 3D Printing Survey: SSYS & DDD System Demand Down-Ticks Off Q2 Lows

CONCLUSION

We believe system demand remained challenged in Q3 with the number of below plan responses significantly outnumbering resellers indicating above plan quarters. In fact, our September quarter survey had the lowest percentage of above plan responses in the history of us conducting this survey. We believe the system shortfall during Q3 continued to be driven by the same factors affecting demand in prior quarters, such as sustained weakness in the prototyping industry, increased competition, as well as macro headwinds. The results were extremely discouraging for both Stratasys and 3D Systems, and both companies' survey results down ticked off Q2 historical lows. Following another quarter of poor system results we would be cautious on this group heading into the Q3 print. Given SSYS' low valuation we see limited downside, but due to DDD's internal issues and premium valuation we see more downside in DDD shares and reiterate our UW rating.

- Survey Demographics.** We conducted our 3Q16 3D printing industry survey and collected feedback from 68 3D printing resellers and service bureau operators, of which 84.0% of our survey respondents were located in North America, 13.0% in Europe and 3.0% in APAC. We had 21 Stratasys resellers and 15 3D Systems VARs participate in this quarter's survey.
- Total System Demand Remains Weak, But Materials Strong** - In 3Q16, 13.0% (5) of resellers reported an above plan quarter versus 50.0% (20) indicating they were below plan. The remaining 38.0% (15) indicated the quarter was in-line with expectations. These results equate to a net negative of 38.0%, which is 2 percentage points higher than our June survey results. Looking ahead, Q4 has historically been the largest quarter for system sales, but we believe the headwinds currently affecting demand will prevail for the remaining of the year, which is displayed by resellers once again lowering their 2016 expectations for system sales. On a positive note, we are encouraged by the growth materials are seeing, which we believe indicates utilization rates remain strong.
- SSYS (Neutral) Takeaways** - Our SSYS results set a new record for the lowest percentage of resellers above plan, and are the poorest results we have ever seen. In 3Q16, 10.0% (2) of SSYS resellers indicated an above plan quarter, 48.0% (10) were below plan and 43.0% (9) of VARs indicated they were in-line. While last quarter a few of Stratasys' largest resellers had better than expected quarters, we believe most of the Stratasys larger resellers fell below expectations in Q3. Given these poor survey results, we would be cautious heading into the Q3 print. While more cautious on revenues, we believe EPS will be less at risk due to the company's cost cutting initiatives.
- DDD (Underweight) Takeaways** - Our most recent DDD checks indicate demand may have reached new lows. In 3Q16, 7.0% (1) of VARs reported an above plan quarter, 67.0% (11) were below plan and remaining 27.0% (4) were in-line with expectations. We believe DDD weakness was spread across the US and Europe due to the number of below plan response indicated by the company's biggest channel partners in these two regions. Given our quarterly survey pointed to weakening system sales, we expect the company to once again report revenues below Street estimates, but due to the company's ongoing restructuring initiatives we believe EPS will be less at risk. Regardless, we believe meaningful downside remains in shares and would reiterate our UW rating.

Troy D. Jensen, CFA

Sr Research Analyst, Piper Jaffray & Co.
612 303-6291, troy.d.jensen@pjc.com

Austin R. Bohlig

Research Analyst, Piper Jaffray & Co.
612 303-6987, austin.r.bohlig@pjc.com

Related Companies:	Share Price:
ARCM SS	186.00
DDD	15.65
MTLS	7.68
PRLB	56.45
SSYS	22.00
VJET	4.49

INDUSTRY RISKS

Competition, macro weakness and the potential for third party material suppliers.

Table of Contents

Piper Jaffray's 3Q16 3D Printing Survey	4
3Q16 Industry Survey Demographics	4
Reseller Composition Diverse, But Still Led By SSYS & DDD.....	4
3Q16 System & Material Sales	6
Believe Same Factors Driving Poor Demand	6
Quick Look Into SSYS and DDD System Demand.....	7
System Demand Weak across NA and Europe.....	7
Y/Y System Growth Rates Uptick Q/Q	8
2016 Expectations for System Sales Continue To Decline	8
Material Sales Improve Q/Q, Indicate Utilization Rates Remain Robust.....	9
Quick Look Into SSYS and DDD Material Demand.....	9
Y/Y Material Sales Accelerate Q/Q in 3Q16.....	10
Material Sales Expectations Decelerate.....	10
Competition Remains Large Industry Headwind, But HP Launch Likely Delayed	11
Channel Confusion.....	11
GE Making Big Moves in Q3	11
General Reseller Quotes from Our 1Q16 VAR Survey.....	12
3Q16 3D Service Bureau Demand.....	13
North America vs Europe	13
Y/Y Service Bureau Growth Accelerates.....	14
Stable Pricing Seen In the Quarter.....	15
DDM vs Prototyping.....	15
Year/Year DDM and Prototyping Growth.....	15
Service Bureau Outlook Unchanged.....	17
Stratasys (SSYS) – System Sales Reach New Lows, Reseller 2016 Outlook Worsens	18
SSYS Y/Y System Sales Accelerates.....	18
SSYS System Demand Weakness Spread Across The Entire Portfolio.....	19
SSYS Reseller 2016 System Growth Forecasts Slows.....	20
SSYS Material Sales Upbeat.....	21
Y/Y Material Growth Accelerates, And Pricing Remains Stable.....	21
SSYS Reseller Material Growth Forecasts Decelerates	22
3D Systems (DDD) – System Demand Downticks Off Q2 Lows, System Quality and Channel Dissatisfaction Remains	23
Average DDD System Sales Down 0.7% Y/Y	24
Extremely Weak Demand Across All Technologies.....	24
DDD Reseller 2016 System Growth Forecasts Accelerates.....	25
DDD Material Sales Unchanged Q/Q	26
DDD Material Business Up 2.1% Y/Y, Material Pricing Stable	26
DDD Reseller Material Growth Forecasts Slow Again.....	27
Final Thoughts on 3Q16, Expectations for Q4	28
Ratings, Price Targets and Risks.....	29
Stratasys	29
3D Systems	29
Voxeljet.....	29

Materialise.....	29
Arcam.....	29
Proto Labs.....	29
Comp Table Valuation.....	29

Exhibits

1. Survey Demographics – Location & Market Segment	4
2. Which 3D Printer Manufacturer Do You Work With?	5
3. 3Q16 Total System Sales vs. Plan.....	6
4. 3Q16 North America & Europe System Sales vs. Plan	7
5. 3Q16 Year/Year System Growth.....	8
6. 1-Year System Growth Projections - Aggregate.....	8
7. 3Q16 Total Material Sales vs. Plan	9
8. 3Q16 Material Sales vs. Plan – SSYS & DDD	9
9. 3Q16 Year/Year Material Growth.....	10
10. 1-Year Material Growth Projections – Aggregate	10
11. 3Q16 3D Printed Service Sales vs. Plan	13
12. 3Q16 Year/Year Service Bureau Growth - Aggregate	14
13. 3Q16 Year/Year Service Bureau Growth – North America vs. Europe.....	14
14. How Has The Pricing Environment For 3D Printed Parts Changed During Q3?.....	15
15. 3Q16 Year/Year Growth - DDM	16
16. 3Q16 Year/Year Growth - Prototyping.....	16
17. 1-Year Service Growth Projections - Aggregate.....	17
18. 1-Year Service Growth Projections – North America vs. Europe.....	17
19. Stratasys 3Q16 System Sales vs. Plan.....	18
20. 3Q16 System Year/Year Growth - Stratasys	19
21. Stratasys 3Q16 Printer Growth By Technology	19
22. 1-Year System Growth Projections - Stratasys	20
23. 1-Year System Growth Projections By Product Segment - Stratasys.....	20
24. Stratasys 3Q16 Material Sales vs. Plan	21
25. Year/Year Material Growth - Stratasys.....	21
26. 1-Year Material Projections - Stratasys.....	22
27. 3D Systems 3Q16 System Sales vs. Plan.....	23
28. 3Q16 System Year/Year Growth – 3D Systems.....	24
29. 3D Systems VAR 2Q16 Printer Growth by Technology	24
30. 1-Year System Growth Projections – 3D Systems.....	25
31. 1-Year System Growth Projections By Product Segment – 3D Systems	25
32. 3D Systems 3Q16 Material Sales vs. Plan.....	26
33. Year/Year Material Growth – 3D Systems.....	26
34. 1-Year Material Growth Projections – 3D Systems.....	27
35. 3D Universe Comp Table.....	29

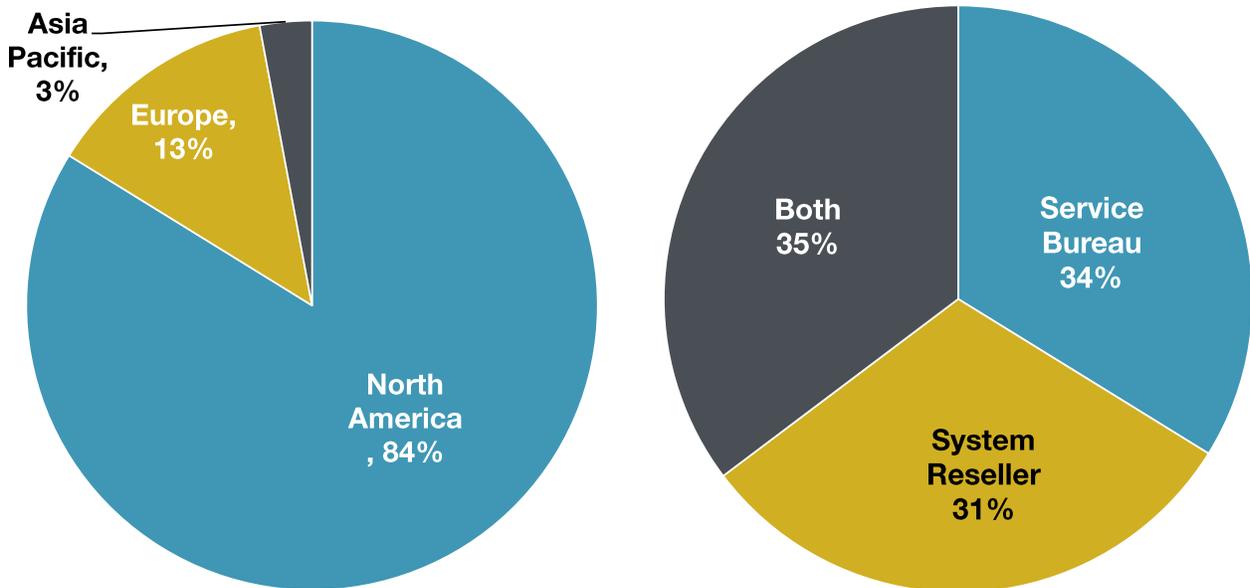
Piper Jaffray's 3Q16 3D Printing Survey

3Q16 Industry Survey Demographics

We conducted our end-of-the-quarter 3D printing industry survey and received feedback from 68 different industry contacts within the broader 3D printing and Additive Manufacturing (AM) markets. Of the 68 respondents, 84.0% were located in North America, 13.0% in Europe and the remaining 3.0% from the Asia Pacific. Roughly 35.0% of respondents classified themselves as both a system reseller and service bureau operator (very common within the industry) with 34.0% indicating their primary business was exclusively operating a service bureau and the remaining 31.0% are solely system resellers. The exhibit below highlights the demographics from our 3Q16 industry survey.

Exhibit 1

Survey Demographics – Location & Market Segment



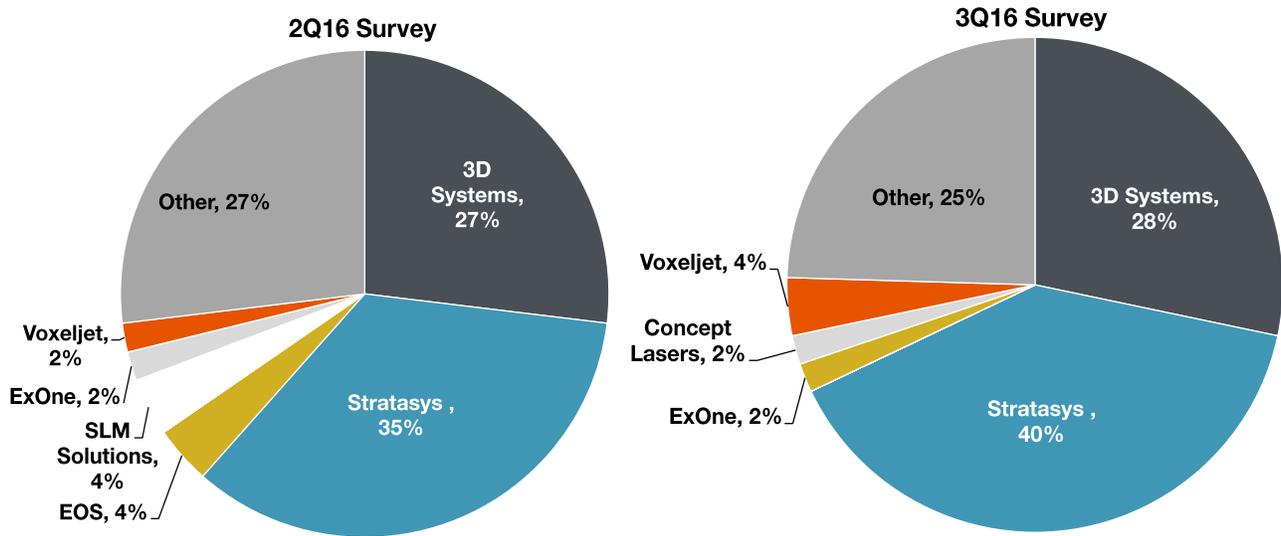
Source: Piper Jaffray 3Q16 3D Printing Survey; Q33 Location n=68, Q39 Market n=68

Reseller Composition
Diverse, But Still Led
By SSYS & DDD

Our survey has typically been skewed toward Stratasys (SSYS) and 3D Systems (DDD), and this quarter was no exception; however, we continue to receive feedback from a diverse set of other vendors. **Of the 53 respondents that answered this question, 40.0% (21) were Stratasys resellers and 28.0% (15) were 3D Systems resellers.** This compares to 37.0% (21) Stratasys resellers and 26.0% (15) 3D Systems resellers in our 2Q16 survey. **We do want to highlight our survey respondents in 3Q16 were from some of the biggest Stratasys and 3D Systems resellers/distributors in North America and Europe.** We would also like to point out that although we captured the same number of 3D Systems respondents, we heard from several contacts that a number of DDD resellers have decided to discontinue their relationship with the company. We do believe some of these reseller breakups were led by DDD as they wanted to get rid of their poorer performing channels, but we do believe several of these breakups were decided by the resellers due to continue dissatisfaction with poor system quality and unreliable support. Our survey also captured feedback from resellers that have exposure to Voxeljet (VJET), Concept Lasers (Private), ExOne (XONE - not covered) and others, but these other 3D printing manufacturers typically have more of a direct sales approach and use fewer resellers. On the following page, we display the results of our 3Q16 survey in comparison with our 2Q16 results.

Exhibit 2

Which 3D Printer Manufacturer Do You Work With?



Source: Piper Jaffray 3Q16 3D Printing Survey Q2; 3Q16 n=53, 2Q16 n=57

3Q16 System & Material Sales

Our 3Q16 3D printing survey once again indicates system demand remained challenged in the September quarter with the number of below plan responses significantly outnumbering resellers indicating above plan quarters. Although we did see a modest net uptick sequentially, our September quarter survey had the lowest percentage of above plan responses in the history of us conducting this survey. **In 3Q16, 13.0% (5) of resellers reported an above plan quarter versus 50.0% (20) indicating they were below plan. The remaining 38.0% (15) indicated the quarter was in-line with expectations. These results equate to a net negative of 38.0%, which is 2 percentage points higher than our June survey results (24% above plan - 64% below plan = -40% in 2Q16).** From a specific vendor perspective, the aggregate results were extremely discouraging for both Stratasys and 3D Systems, and we believe the weakness was spread across almost all technologies (FDM, Polyjet, SLA, SLS, MJP and DMLS). Given the discouraging results and commentary from Stratasys' and 3D Systems' biggest channel partners, we believe both companies' system sales fell below expectations. The exhibit below highlights the results from our 3Q16 industry survey.

Exhibit 3

3Q16 Total System Sales vs. Plan

	3Q15	4Q15	1Q16	2Q16	3Q16
Above Plan	8	8	9	10	5
In-Line	17	15	15	5	15
Below Plan	18	22	23	27	20
Total	43	45	47	42	40
Above Plan	19%	18%	19%	24%	13%
In-line	40%	33%	32%	12%	38%
Below Plan	42%	49%	49%	64%	50%
Net Score	-23%	-31%	-30%	-40%	-38%

Source: Piper Jaffray 3Q16 3D Printing Survey Q34

Believe Same Factors
Driving Poor Demand

We believe the system shortfall during the September quarter continued to be driven by the same factors affecting demand in prior quarters, such as sustained weakness in the industry, the entrance of HP, Carbon and others, sub \$1,000 machines eating into the \$5,000-20,000 segment of the system market, as well as CapEx has been constrained given uncertain macroeconomic conditions and the upcoming U.S. election. Of all these characteristics, we believe the biggest headwind continues to be increased competition, and believe the entrance of HP, Carbon as well as newer entrants have caused customers to pause spending on tradition brands and assess these new offerings. With the expectation that system sales fall below Q3 expectations, we believe both Stratasys and 3D Systems are likely to miss top-line estimates, but due to both companies' cost cutting initiatives we believe EPS will be less at risk. Looking ahead, Q4 has historically been the largest quarter for system sales, but we believe the headwinds currently affecting demand will prevail for the remaining of the year. We believe this is displayed by resellers once again lowering their 2016 expectations for system sales. We believe sustained weakness could likely cause another estimate cut in the upcoming quarter.

Quick Look Into SSYS and DDD System Demand

For the June quarter, we had a total of 36 respondents indicate they are either a Stratasys or 3D Systems reseller. **Of the 36 respondents, 3 resellers had an above plan quarter when it came to system sales, 2 of which were Stratasys resellers and 1 was a 3D Systems reseller.** This compares to 5 Stratasys resellers and 3 3D Systems resellers in 2Q16. **On the flip side, we had a total of 20 resellers report below plan quarters, of which 10 were Stratasys resellers and 10 were 3D Systems resellers.** This compares to 11 Stratasys and 11 3D Systems resellers in our prior survey. **We would like to highlight that both vendors saw a healthy sequential uptick in the number of resellers that had in-line quarters, but the net score for both Stratasys and 3D Systems down ticked again sequentially.** Note the slight discrepancy in the number of Stratasys and 3D Systems above plan responses and total system responses is due to VARs selling more than one brand. In later sections we dive deeper into Stratasys' and 3D Systems' individual results.

System Demand Weak across NA and Europe

Taking a look at the geographic breakdown for system sales, we believe North America and Europe both experienced tough quarters. Note that 84.0% of our survey respondents are from North America, which means our European sample size is much smaller, but we believe our survey captured data from some of the largest European 3D printing resellers. **Beginning in North America, 52.0% (16) of resellers indicated a below plan quarter, while 10.0% (3) of resellers indicated sales were above expectations. The remaining 39.0% (12) of resellers indicated Q3 was in-line with expectations. These results equate to a net negative of 42%, which is 8 percentage points higher than our June survey results (22.0% above plan – 72.0% below plan = -50.0% in 2Q16).** Of the 3 above plan response, 1 came from Stratasys resellers and the remaining 2 came from other vendor resellers. Meanwhile, 8 North American Stratasys resellers were below plan and 6 North American 3D Systems resellers fell below expectations.

Although our North American results improved modestly quarter/quarter, our European survey data suggested system demand down ticked on a sequential basis. **In 3Q16, 50.0% (4) indicated a below plan quarter, while 25.0% (2) indicated sales were above prior expectations. These results equate to a net negative of 25%, which is 8 percentage points higher than our 2Q16 survey results (33.0% above plan – 50.0% below plan = -17.0%).** We would like to highlight 1 of the above plan European responses was from a 3D Systems reseller, while the 4 below plan responses included 2 3D Systems VARs and 1 Stratasys reseller. The exhibit below highlights the geographic results from our 3Q16 industry survey.

Exhibit 4

3Q16 North America & Europe System Sales vs. Plan

	North American System Sales					Europe System Sales					
	3Q15	4Q15	1Q16	2Q16	3Q16	3Q15	4Q15	1Q16	2Q16	3Q16	
Above Plan	4	7	9	7	3	Above Plan	4	2	0	2	2
In-line	15	12	11	2	12	In-line	2	2	4	1	2
Below Plan	15	17	22	23	16	Below Plan	1	3	1	3	4
Total	34	36	42	32	31	Total	7	7	5	6	8
Above Plan	12%	19%	21%	22%	10%	Above Plan	57%	29%	0%	33%	25%
In-line	44%	33%	26%	6%	39%	In-line	29%	29%	80%	17%	25%
Below Plan	44%	47%	52%	72%	52%	Below Plan	14%	43%	20%	50%	50%
Net Score	-32%	-28%	-31%	-50%	-42%	Net Score	43%	-14%	-20%	-17%	-25%

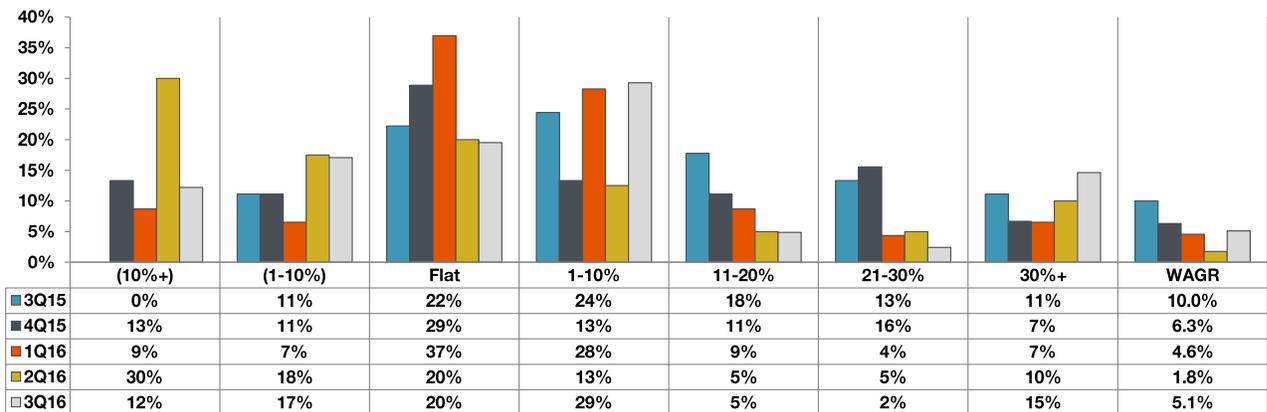
Source: Piper Jaffray 3Q16 3D Printing Survey Q34

Y/Y System Growth Rates Uptick Q/Q

Although most resellers' system sales fell below expectations, our data suggests year/year system growth improved over 2Q16. **On a weighted average basis, resellers' system sales grew 5.1% year/year in the September quarter, which is up from 1.8% in 2Q16.** Although this data may seem conflicting to our above/below plan responses, we believe the discrepancy is due to our survey now capturing data from newer resellers that are working off a smaller revenue base. In addition, given the second half of the year is typically seasonally stronger, we wouldn't be surprised to see growth rates improve off of Q2, but continue to believe system demand fell below expectations. In the exhibit below, we display reseller's year/year growth rates from our prior 5 surveys.

Exhibit 5

3Q16 Year/Year System Growth



*Weighted Average Growth Rate (WAGR)

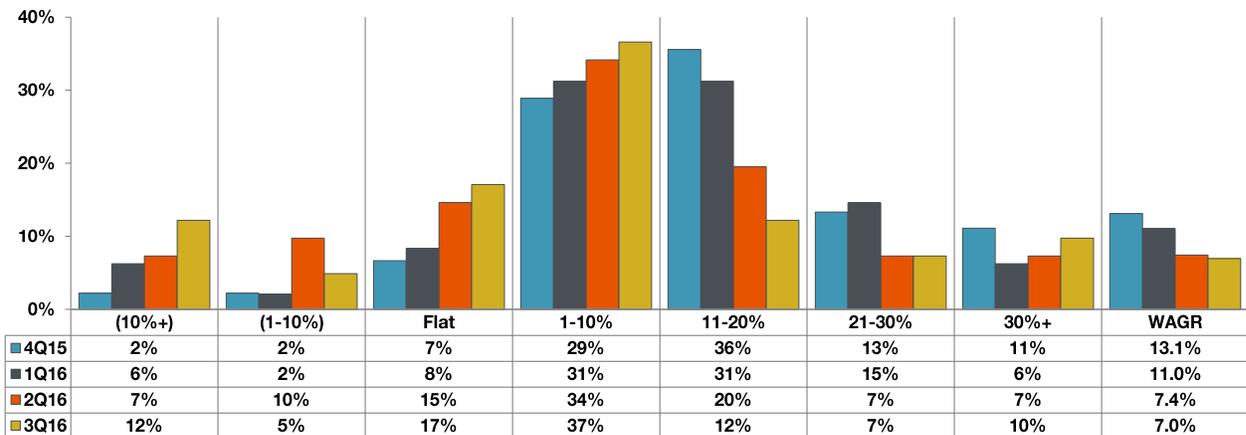
Source: Piper Jaffray 3Q16 3D Printing Survey Q10; 3Q16 n=41, 2Q16 n=40, 1Q16 n=46, 4Q15 n=45, 3Q15 n=45

2016 Expectations for System Sales Continue To Decline

While 3Q16 system sales accelerated, for the third consecutive quarter, resellers have become less optimistic on growth expectations for the full year. **Cumulatively, VARs are now expecting to grow 7.0% year/year in 2016, which is down from 7.4% in the prior quarter.** Most resellers (37.0%) expect system sales to increase 1-10%, while 34% expect to not grow. The chart below highlights 1-year aggregate growth projections over the past 4 quarters.

Exhibit 6

1-Year System Growth Projections - Aggregate



*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q83; 3Q16 n=41, 2Q16 n=41, 1Q16 n=48, 4Q15 n=45

Material Sales
Improve Q/Q, Indicate
Utilization Rates
Remain Robust

Although our data indicates system sales fell well below plan in Q3, we were encouraged to see our material results improve meaningfully quarter/quarter, which we believe indicates utilization rates remain robust. **In 3Q16, 33.0% (13) of respondents indicated they had an above plan quarter in material sales, while 13.0% (5) were below plan. Meanwhile, 54.0% (21) were in-line with expectations. These results equate to a net positive of 21.0%, which is 24 percentage points higher than our June survey results (26.0% above plan – 28.0% below plan = -3.0% in 2Q16).** While we anticipate system sales to fall below expectations, we believe strong utilization rates can offset some of the material sales that were lost due to the lower than expected system demand. The exhibit below highlights material sales results from our 3Q16 3D printing industry survey.

Exhibit 7

3Q16 Total Material Sales vs. Plan

	3Q15	4Q15	1Q16	2Q16	3Q16
Above Plan	8	8	9	10	13
In-line	27	32	25	18	21
Below Plan	9	5	14	11	5
Total	44	45	48	39	39
Above Plan	18%	18%	19%	26%	33%
In-line	61%	71%	52%	46%	54%
Below Plan	20%	11%	29%	28%	13%
Net Score	-2%	7%	-10%	-3%	21%

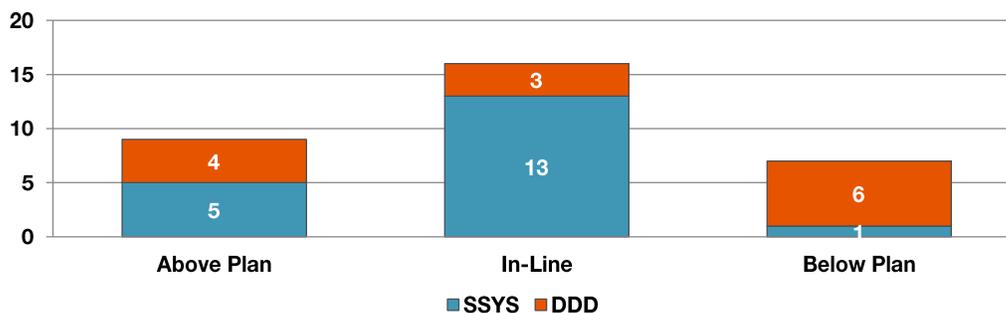
Source: Piper Jaffray 3Q16 3D Printing Survey Q34

Quick Look Into SSYS
and DDD Material
Demand

For the September quarter, we had a total of 32 respondents indicate they are either a Stratasys or 3D Systems reseller and sold materials. **Of the 32 respondents, 9 resellers had an above plan quarter when it came to material sales, 5 of which were Stratasys resellers and 4 were 3D Systems resellers.** This compares to 4 Stratasys resellers and 3 3D Systems resellers in our 2Q16 survey. **On the flip side, we had a total of 7 resellers report below plan quarters, of which 1 was Stratasys reseller and 6 were 3D Systems resellers.** Meanwhile the majority, 16, of respondents indicated material sales were in-line with expectations, of which 13 were Stratasys resellers and the remaining 3 were 3D Systems channel partners. In later sections, we dive deeper into Stratasys and 3D Systems individual material results.

Exhibit 8

3Q16 Material Sales vs. Plan – SSYS & DDD



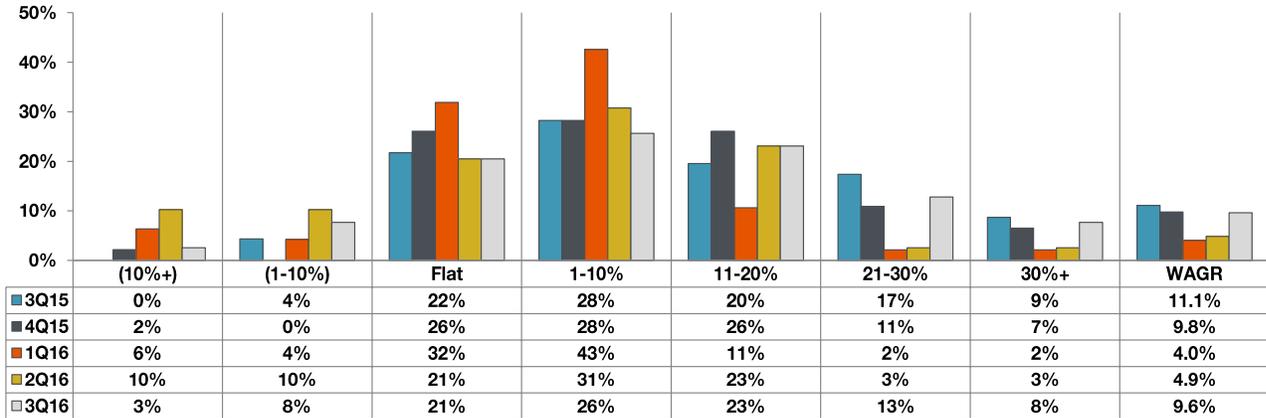
Source: Piper Jaffray 3Q16 3D Printing Survey Q34

Y/Y Material Sales
Accelerate Q/Q in
3Q16

We were also encouraged to see resellers material sales accelerate meaningfully year/year on a weighted average basis in our 3Q16 survey. **Cumulatively, resellers' material business grew 9.6% year/year in September, which is up from 4.9% in the prior quarter.** Comparing resellers 9.6% growth in materials to the 5.1% grow in systems is another data point that suggests utilization rates were robust in the current quarter. In the exhibit below, we display resellers' growth in their material sales on a weighted average basis going back for the prior 5 quarters.

Exhibit 9

3Q16 Year/Year Material Growth



*Weighted Average Growth Rate (WAGR)

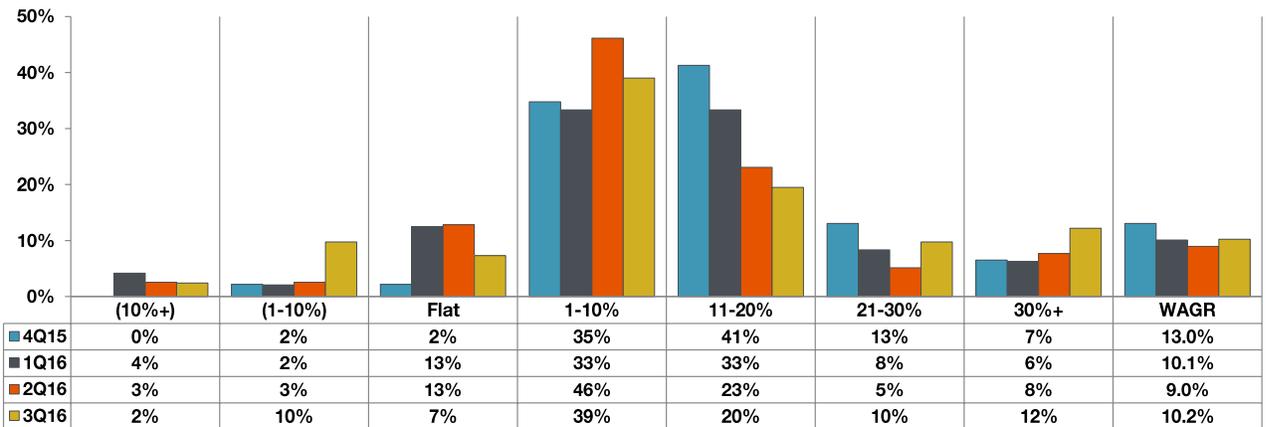
Source: Piper Jaffray 2Q16 3D Printing Survey Q10; 3Q16 n=41, 2Q16 n=39, 1Q16 n=48, 4Q15 n=46, 3Q15 n=46

Material Sales
Expectations
Decelerate

Despite resellers lowering their expectations for system sales in 2016, we are upbeat to see material sales move upward. **On a weighted average basis, resellers are now targeting 10.2% year/year growth in their materials business in 2016, which is up 120 basis points from our 2Q16 results.** The majority of resellers (39.0%) are expecting material growth of 1.0-10.0%, while an additional 22.0% are expecting to grow 20%+. The exhibit below highlights resellers' cumulative 1-year material growth expectations over the course of 2016.

Exhibit 10

1-Year Material Growth Projections – Aggregate



*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q10; 3Q16 n=41, 2Q16 n=39, 1Q16 n=48, 4Q15 n=46

Competition Remains
Large Industry
Headwind, But HP
Launch Could Be
Delayed

We believe one of the biggest factors affecting demand remains the entrance of HP and increased competition from Carbon3D and others. As a result of HP's aggressive price points and impressive printing characteristics, we believe HP continues to generate a lot of interest since launching, and believe many customers who were previously pursuing other 3D technologies have decided to pause orders in order to evaluate HP's Fusion Jet technology. While we ultimately believe Fusion Jet will be most competitive to SLS, the remaining uncertainties around Fusion Jet likely affected demand outside this technology. In addition to HP, we believe Carbon3D is having a similar effect for professional grade SLA, Polyjet and other polymer prototyping systems. That said, HP has publicly stated they plan on shipping systems in Q4, but according to industry contacts, we believe this launch date has been pushed out till 2017. We believe initial orders will begin to ship in latter half of 1Q17, with volumes shipping in Q2. Although this delay could be viewed as an opportunity for Stratasys and 3D Systems, we believe increased competition from Carbon3D, as well as other macro headwinds will continue to affect system sales into Q4.

Channel Confusion

Although we believe there is a modest delay in availability, we believe HP remains in the process of building out their distribution channel, which will likely include pursuing current Stratasys and 3D Systems channel partners. We started asking Stratasys' and 3D Systems' VARs whether or not they had been approached by HP to resell their Fusion Jet printers in 3Q15, and since then, the number of resellers being approached by HP has continued to increase quarter/quarter. Following conversations with industry contacts, we believe some of Stratasys' and 3D Systems' biggest channel partners are highly considering adding Fusion Jet to their portfolio, and we believe some have already made the decision to bring on HP. We don't believe the larger resellers will stop reselling Stratasys or 3D Systems machines in order to capture future service/support and material sales; however, we believe adding additional technologies to the portfolio will result in less focus and fewer resources on Stratasys' or 3D Systems' machines, which we believe in the long run will affect demand.

GE Making Big Moves
in Q3

On September 6th, GE made a big move within the 3D printing industry after they announced they will acquire Arcam and SLM Solutions. While not entirely surprised by these acquisitions, we were slightly caught off guard that GE decided to purchase two of the top four leading metal AM OEMs at once. While GE has publicly disclosed they plan to continue to resell Arcam and SLM metal machines, some industry contacts believe GE will first fulfill their internal needs. If this is true, we believe this could open an opportunity to the other leading metal OEMs such as 3D Systems, Concept Lasers and EOS to gain market share. Regardless, we believe GE has positioned itself as a clear leader in the space, but believe this acquisition more importantly brought much needed validation to the 3D printing industry. Although the 3D Printing industry has experienced a significant slowdown in system sales over the last 18 months, we continue to remain believers in this technology and are extremely upbeat on metals. We believe metal AM technologies continue to inflect in the Aerospace and Healthcare vertical, and believe the future remains bright for companies with healthy exposure to metals.

General Reseller
Quotes from Our
1Q16 VAR Survey

The sections below highlight the various quotes we received from our 3D Printing VAR Survey.

"The market is definitely in flux, with new machines and new technologies entering the field. I expect things to normalize in 2017."

"3D Systems needs to pick up the pace to become a sales organization. The few employees they have that are hurting the reseller channel need to go. They can't become world class without strong resellers who are losing patience with their tactics."

"Wish they were faster to market."

"Fixturing and work-holding is beginning to emerge."

"Rarely see 3D Systems competitively, frustration with Stratasys' margins."

"Stratasys and 3D systems had the market to themselves for a long time, that is about to change next year. Competition will spur them, specifically 3D Systems, to get better."

"Importance of meeting full-spectrum of AM process from part build to post-processing to QC/Test & traceability."

"Channel Dissatisfaction."

"The larger OEMs are moving to production for various metals/processes and smaller OEMs are starting to get into qualification."

"Equipment sales continue to be a challenge - both professional and production. We had a slight uptick in September but not sure it's a trend. Was looking for a better end of year but not so confident that will happen."

*"SSYS' channel management changing strategies again, time will tell if they benefit the reseller."
"3D is becoming HP south."*

"Additive manufacturing is at a point where the acceptance of the viability of the materials is beginning to be incorporated into the product offerings of manufacturing companies and their tier 1 and OEM partners. This is going to increase exponentially in the next few years and the growth seen in higher end units is going to be astounding; it is a great time to be on this side of the additive market."

"Customer demand for SLA and FDM is strong, Customers are reluctant to spend on new and un-researched technologies."

"Open Systems for supplies for FDM is helping FDM sales."

3Q16 3D Service Bureau Demand

In our September quarter survey, 23.0% (11) of service bureaus reported an above plan quarter versus 30.0% (14) indicating they were below plan. The remaining 47.0% (22) of service bureaus indicated Q3 was in-line with expectations. These results equate to a net negative of 6.0%, which is 6 percentage points lower than our June survey results (28.0% above plan – 28.0% below plan = 0.0% in 2Q16). Although our data suggests demand for 3D services down-ticked modestly quarter/quarter, our survey has historically seen more below plan responses versus above plan, but leading 3D service bureaus such as Proto Labs and Materialise have seen robust growth over the past year. We believe a stronger indicator of demand is displayed on the following page, where service bureau year/year growth accelerated over Q2.

Following conversations with industry contacts, we specifically feel service bureaus with high metal exposure were the companies that likely outperformed and will continue to experience the strongest growth as demand for metal printed parts continues to inflect within Aerospace and Medical verticals. That being said, we continue to believe service bureaus in general are a great way to get exposure to 3D technology without encountering the high upfront capital investment. We believe as companies continue to delay their system orders, they will outsource their 3D printing needs, which bodes well for many in the service bureau industry. The exhibit below highlights the results from our 3Q16 3D printing industry survey.

Exhibit 11

3Q16 3D Printed Service Sales vs. Plan

	3Q15	4Q15	1Q16	2Q16	3Q16
Above Plan	12	7	13	11	11
In-line	27	36	19	18	22
Below Plan	14	11	16	11	14
Total	53	54	48	40	47
Above Plan	23%	13%	27%	28%	23%
In-line	51%	67%	40%	45%	47%
Below Plan	26%	20%	33%	28%	30%
Net Score	-4%	-7%	-6%	0%	-6%

Source: Piper Jaffray 3Q16 3D Printing Survey Q34

North America vs
Europe

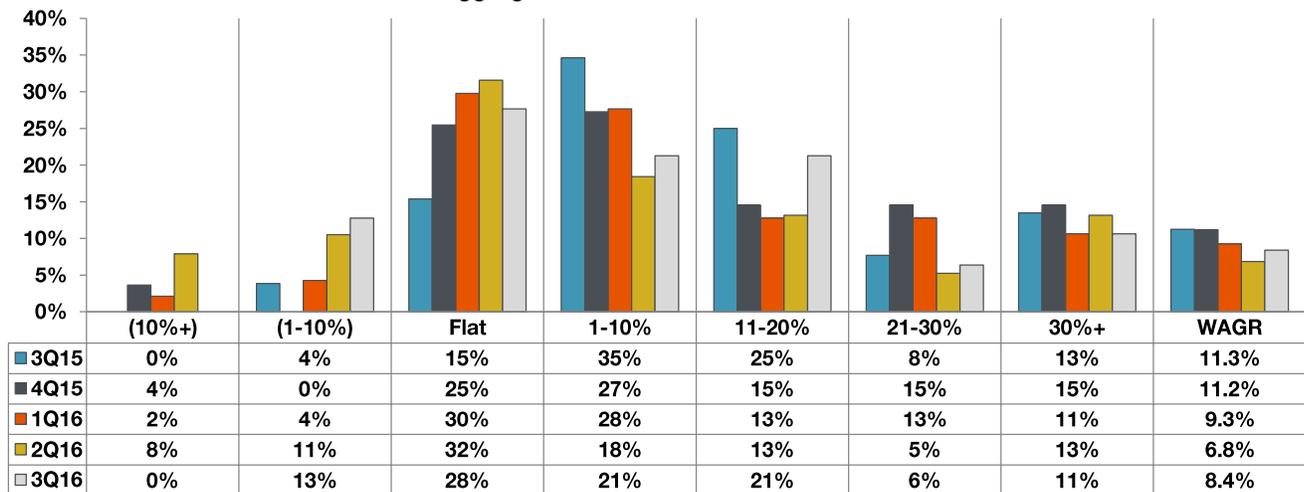
From a geographic perspective, North America service bureau results declined quarter/quarter, and in 3Q16, 25.0% (10) of responses indicated the September quarter was above plan, while 33.0% (13) experienced lower than expected demand. Meanwhile, 43.0% (17) were in-line with prior expectations. Our 2Q16 survey had 35.0% (11) North American service bureaus above plan, with only 23.0% (7) below and the remaining 42.0% (13) were in-line. That said, we were encouraged our European results improved quarter/quarter with data suggesting demand in the September quarter was mostly in-line with expectations. **Although the sample size is significantly smaller, 1 service bureau exceeded expectations, while 3 were in-line and 1 fell below plan.** Last quarter, 0 European service bureaus were above plan, while 1 was below and 3 were in-line with expectations.

Y/Y Service Bureau
Growth Accelerates

We were encouraged to see year/year growth rates accelerate for the first time in over a year. **In our 3Q16 survey, service bureaus on an average weighted basis grew 8.4% year/year, which is up from 6.8% in 2Q16.** From a geographic perspective, North American service bureau growth unfortunately decelerated modestly from 8.3% to 7.8% quarter/quarter in 3Q16. Meanwhile, European service bureau weighted average growth was 11.0% in the quarter; however, our sample size was relatively smaller with only 5 European service bureaus responding to the survey. That said, we continue to believe service bureaus that primarily print prototypes can grow 10.0 – 15.0% annually, but as companies begin to print more end-use parts we believe some service bureaus could grow in excess of 15.0%+. Below we highlight, service bureau year/year weighted average growth trends, as well as growth rates broken out by geography.

Exhibit 12

3Q16 Year/Year Service Bureau Growth - Aggregate

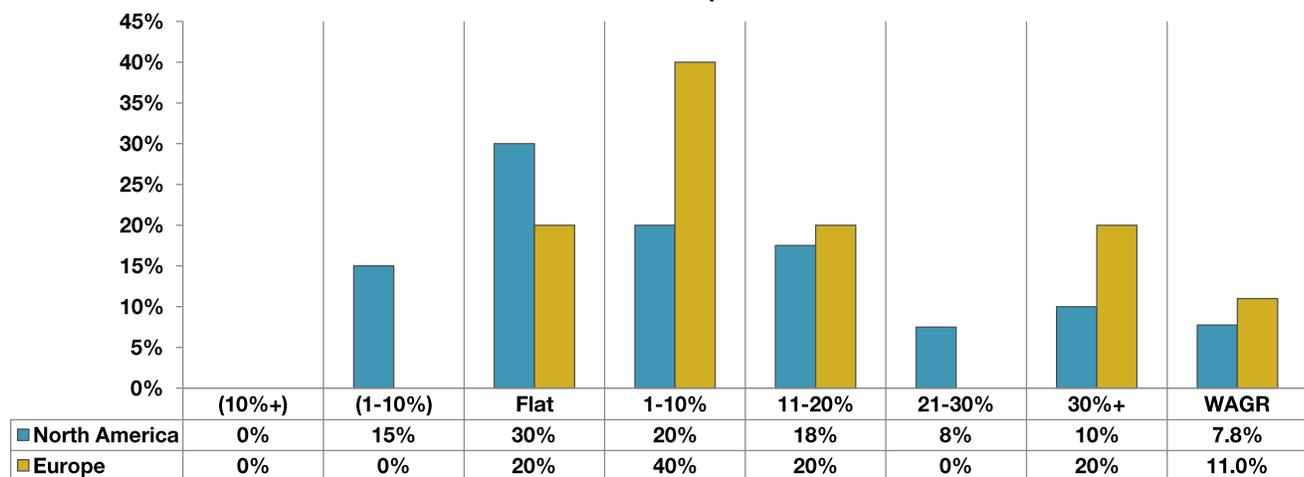


*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q11; 3Q16 n=47, 2Q16 n=38, 1Q16 n=47, 4Q15 n=55, 3Q15 n=52

Exhibit 13

3Q16 Year/Year Service Bureau Growth – North America vs. Europe



*Weighted Average Growth Rate (WAGR)

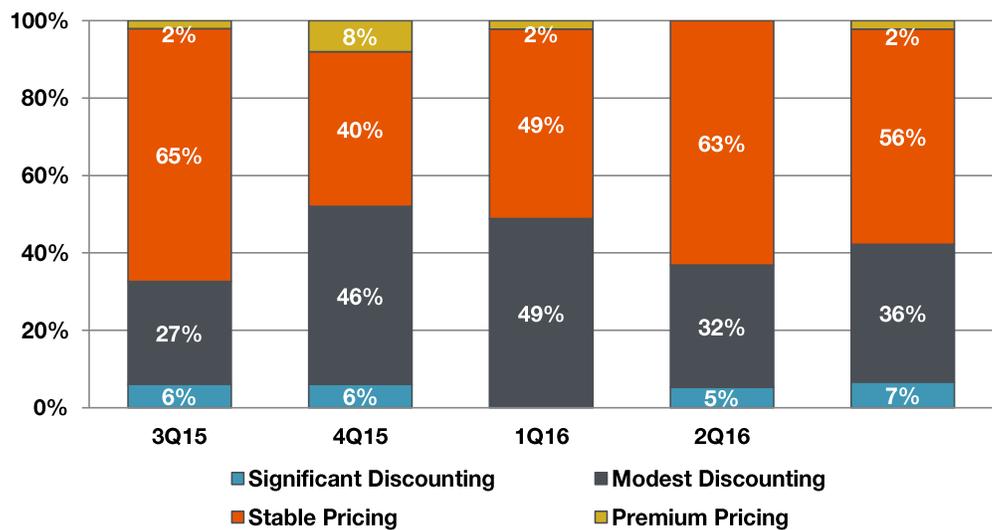
Source: Piper Jaffray 3Q16 3D Printing Survey Q10; North America n=40, Europe n=5

Stable Pricing Seen In the Quarter

While the barriers to entry are higher for companies looking to pursue the metal market, the barriers to compete in traditional 3D printing services such as SLA, FDM or SLS is considerably lower. To get a sense of competition and pricing, we asked service bureaus how the pricing environment for 3D printing services changed in recent quarters. **As displayed in the exhibit below, 56.0% of service bureaus believed pricing was stable, which is down from 63.0% in 2Q16. Meanwhile, 43.0% of service bureaus saw any discounting in the September quarter, which is up from 37.0% in the prior quarter.** Based on this data we believe some service bureaus may have experienced above average discounting, but the majority continue to believe pricing remains stable and don't expect to see material gross margin erosion in the upcoming quarter.

Exhibit 14

How Has The Pricing Environment For 3D Printed Parts Changed During Q3?



Source: Piper Jaffray 3Q16 3D Printing Survey Q79; 3Q16 n=45, 2Q16 n=38, 1Q16 n=45, 4Q15 n=50, 3Q15 n=49

DDM vs Prototyping

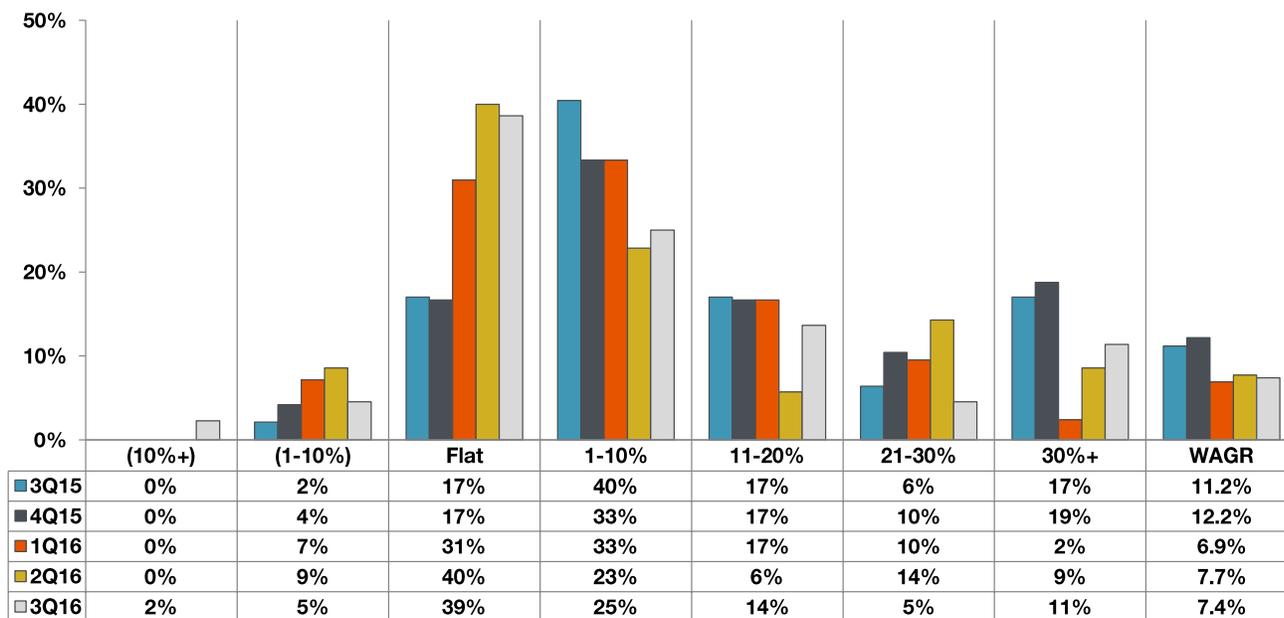
As we previously mentioned, we believe service bureaus will eventually be printing more end-use parts for DDM applications. In order to see where we are in this cycle we asked service bureaus what percentage of their sales are DDM (end-used parts) versus prototyping applications. **While just over 75.0% of parts printed remain prototypes, we saw a modest downward shift in our September survey results with approximately 25.0% of all printed parts going into end-use applications.** This is down from 29.0% in 2Q16. We believe the downtick is not related to a slowdown in DDM growth, but more related to our survey respondents more exposed to the prototyping market. Although we have yet to see an inflection in our survey data, we are confident over time DDM will begin to accelerate, and will not be surprised to see it outweigh prototyping one day.

Year/Year DDM and Prototyping Growth

To help get a better understanding on how DDM and prototyping is growing, we asked service bureaus what type of growth they are experiencing in these respective segments. **As displayed in the exhibits on the following page, DDM applications grew 7.4% year/year on weighted average basis, which is down 30 basis points from our previous survey. Meanwhile, demand for prototyping parts grew 7.0% year/year in Q3, which is up 230 basis points from our June results.** Similar to our prior thesis, we believe the modest year/year declaration in DDM and upward lift in prototyping is due to our survey pool more exposed to the prototyping market.

Exhibit 15

3Q16 Year/Year Growth - DDM

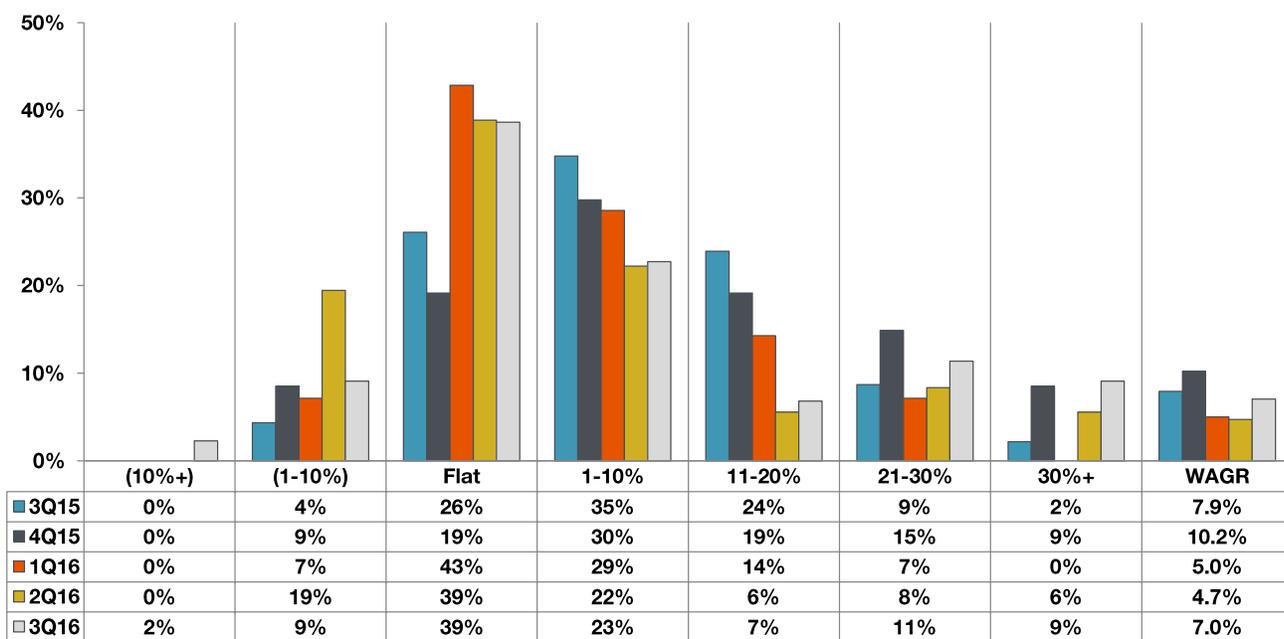


*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q38; 3Q16 n=44, 2Q16 n=35, 1Q16 n=42, 4Q15 n=48, 3Q15 n=47

Exhibit 16

3Q16 Year/Year Growth - Prototyping



*Weighted Average Growth Rate (WAGR)

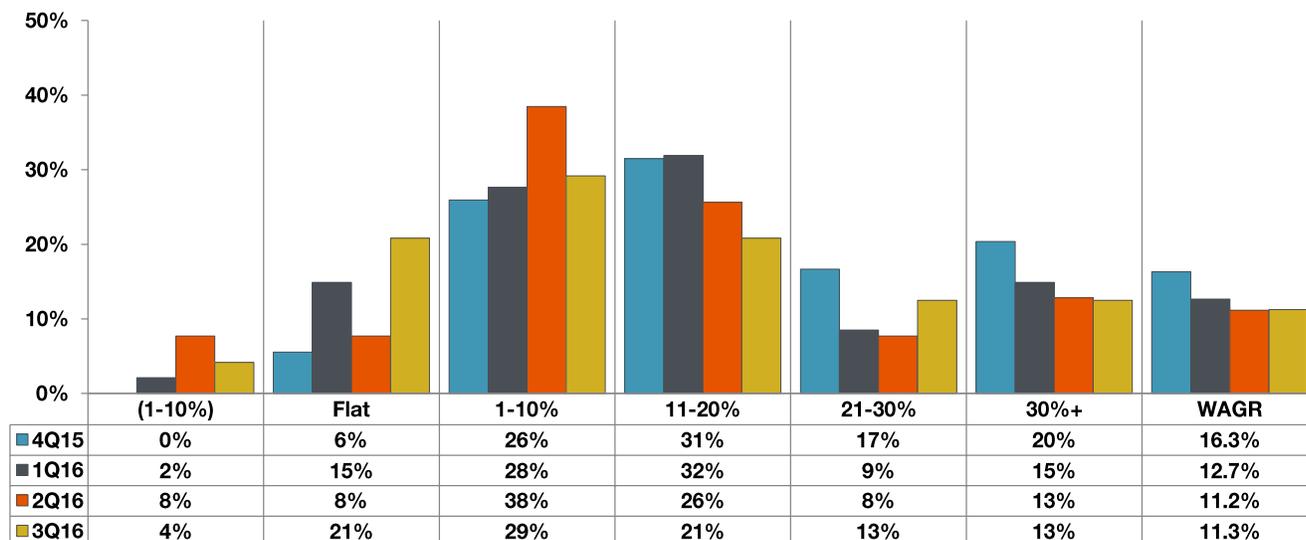
Source: Piper Jaffray 3Q16 3D Printing Survey Q38; 3Q16 n=44, 2Q16 n=36, 1Q16 n=42, 4Q15 n=47, 3Q15 n=46

Service Bureau
Outlook Unchanged

Following back-to-back quarters of declining 2016 growth expectations, we were encouraged to see growth forecasts stabilize in our Q3 survey. **On a weighted average basis, total growth expectations increased 10 basis points to 11.3% in the September quarter.** From a geographic perspective, North American service bureaus are expected to grow 10.2%, which is down 180 basis points quarter/quarter, while Europe-based service bureaus increased their 2016 forecast from 14.0% to 5.0% sequentially. Given the positive outlook, we remain believers demand for 3D printed parts is robust and the service market can grow 10.0 -15.0%+ on annual basis for the next several years.

Exhibit 17

1-Year Service Growth Projections - Aggregate

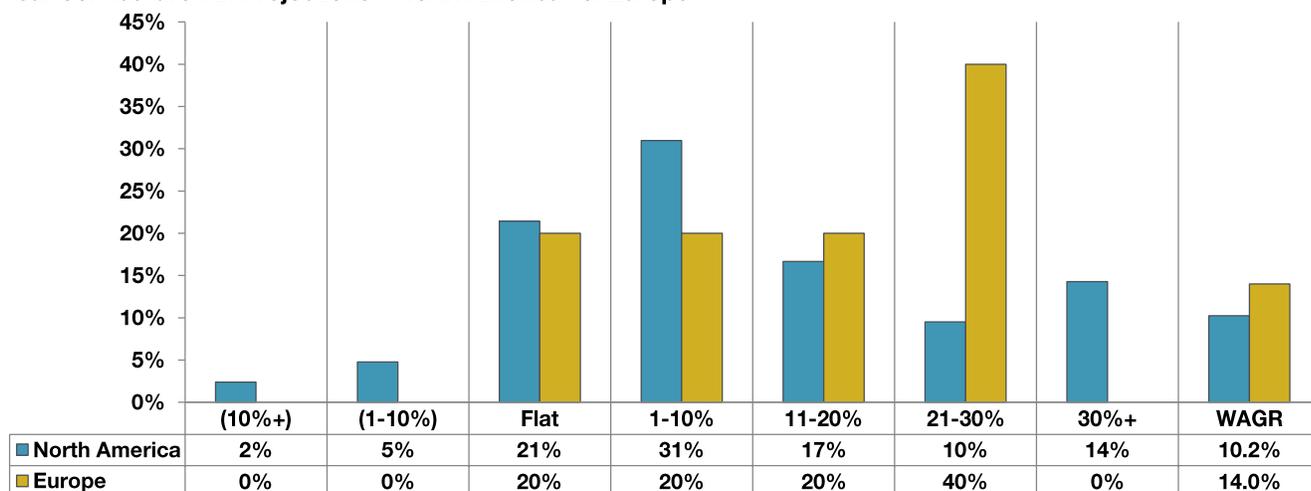


*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q83; 3Q16 n=48, 2Q16 n=39, 1Q16 n=47, 4Q15 n=54

Exhibit 18

1-Year Service Growth Projections - North America vs. Europe



*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q83; North America n=42, Europe n=5

Stratasys (SSYS) – System Sales Reach New Lows, Reseller 2016 Outlook Worsens

While Stratasys' system demand has been weak for the past 6+ quarters, our 3Q16 survey results set a new record for the lowest percentage of resellers above plan, and are the poorest results we have ever seen. **In 3Q16, 10.0% (2) of Stratasys resellers indicated an above plan quarter; while 48.0% (10) saw results come in below expectations. The remaining 43.0% (9) of VARs indicated they had an in-line September quarter. These results equate to a net negative of -38%, which is 8 percentage points lower than our June survey results (25.0% above plan – 55.0% below plan = -30% in 2Q16).** We believe the weakness was spread across the company's entire portfolio, and system growth in most product categories (Mojo, Dimension, Eden, Connex, and Fortus) slowed for the fourth consecutive quarter. We believe the slowdown in system spending was due to the entrance of HP, a movement toward the lower priced, sub \$1,000 market that is continuing to impact Stratasys' \$10,000-\$25,000 system demand and additional macro headwinds. We also picked up data points that Stratasys was strongly discounting their low-end PolyJet machines to better compete against 3D Systems' recently launched 2500. While last quarter a few of Stratasys' largest resellers had better than expected quarters, we believe most of Stratasys' larger resellers fell below expectations in Q3. Given these poor survey results, we would be cautious heading into the Q3 print, but due to the company's low valuation (1.2x CY17E EV/S vs comp group 3.2x) we see limited downside in shares and reiterate our Neutral rating. The exhibit below highlights the results from our 3Q16 industry survey.

Exhibit 19

Stratasys' 3Q16 System Sales vs. Plan

	3Q15	4Q15	1Q16	2Q16	3Q16
Above Plan	6	7	6	5	2
In-line	12	8	8	4	9
Below Plan	7	8	9	11	10
Total	25	23	23	20	21
Above Plan	24%	30%	26%	25%	10%
In-line	48%	35%	35%	20%	43%
Below Plan	28%	35%	39%	55%	48%
Net Score	-4%	-4%	-13%	-30%	-38%

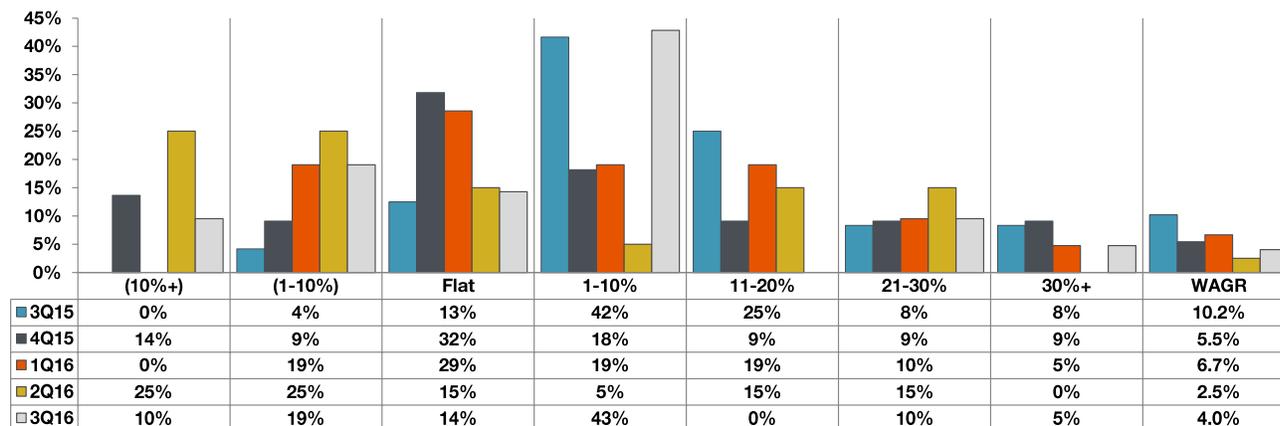
Source: Piper Jaffray 3Q16 3D Printing Survey Q55

SSYS Y/Y System
Sales Accelerates

We asked Stratasys resellers what their system sales growth was in Q3, and 21 Stratasys VARs responded to this question. **The weighted average year/year system growth rate was 4.0% in the September quarter, which is up from 2.5% in 2Q16.** For comparative purposes, 3D Systems resellers' printer sales were down 0.7% year/year in the September quarter. Although this data looks conflicting to our above/below responses, we wouldn't be surprised to see growth modestly accelerate over Q2 given the seasonally higher second half of the year, but we do believe system sales fell below expectations in Q3. Note the Street is expecting Stratasys to grow 4.2% on a year/year basis in the September quarter. Stratasys did not guide Q3 revenues, but did guide sales to \$700 – 730M for the full year, which implies 2.7% at the midpoint. **Given the sustained weakness Stratasys likely experienced in Q3, we believe full year revenue assumptions are at risk of coming down.** The exhibit on the following page shows how much SSYS resellers' systems business grew on a year/year basis over the past 5 quarters.

Exhibit 20

3Q16 System Year/Year Growth - Stratasys



*Weighted Average Growth Rate (WAGR)

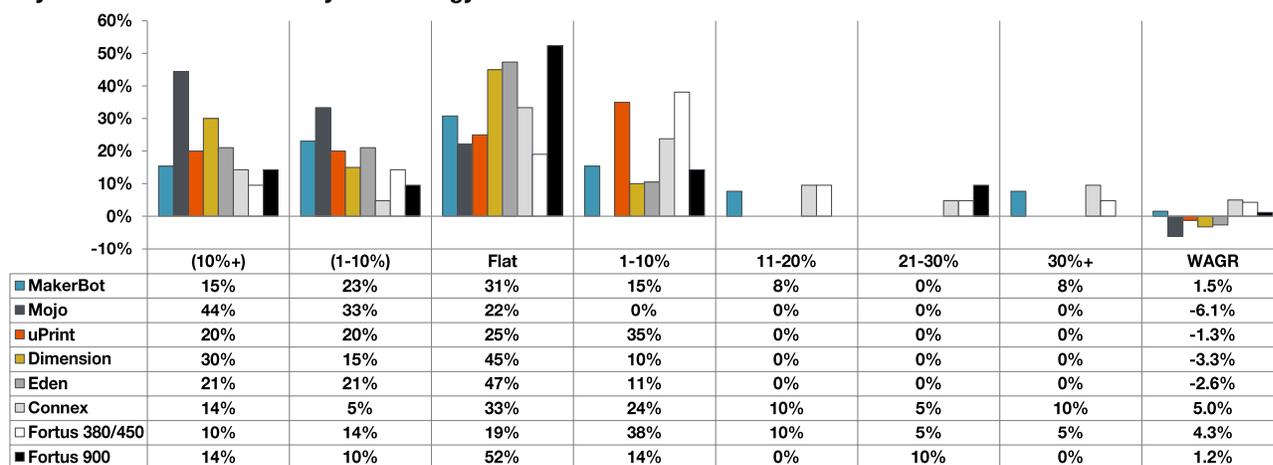
Source: Piper Jaffray 3Q16 3D Printing Survey Q57; 3Q16 n=21, 2Q16 n=20, 1Q16 n=21, 4Q15 n=22, 3Q15 n=24

SSYS System
Demand Weakness
Spread Across The
Entire Portfolio

In 3Q16, our survey data suggests Stratasys' system sales were once again led by the company's high-end printers (Fortus and Connex), but would like to highlight year/year growth rates continue to decelerate in both these categories. **The best performing product was the Connex3, and on a weighted average basis, sales were up 5.0% in the quarter; however, this is down from 6.5% year/year growth during our June quarter survey. Meanwhile, Fortus sales were up 2.7% year/year in September, but this is a 20 basis point deceleration from our 2Q16 results.** Specifically, the lower-end Fortus machines (380/450) seemed to drive demand with sales being up 4.3% in the quarter, while growth for the company's industrial Fortus 900 machine was flat in 2Q16. Meanwhile, feedback for Mojo, uPrint and Dimension sales were once again less optimistic, with the weighted average growth rates indicating year/year growth in 3Q16 was flat to negative in these 3 product segments. We believe increased competition within the consumer/prosumer space with lower priced printers continues to eat away at demand for Stratasys' low-end printer portfolio. The exhibit below highlights the specific reseller feedback we received for individual Stratasys' product lines.

Exhibit 21

Stratasys 3Q16 Printer Growth By Technology



*Weighted Average Growth Rate (WAGR)

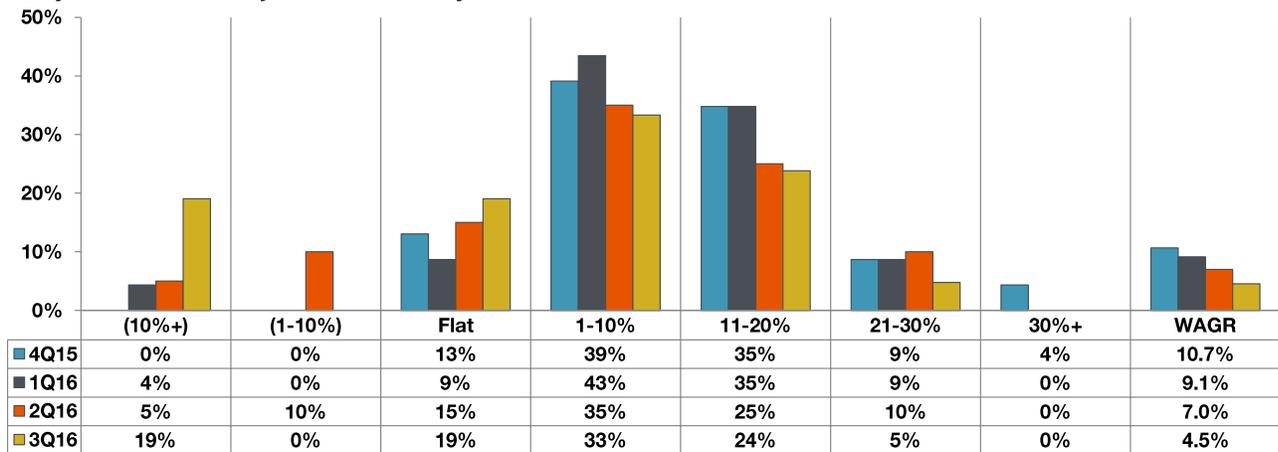
Source: Piper Jaffray 3Q16 3D Printing Survey Q47; MakerBot n=13, Mojo n=18, uPrint n=20, Dimension n=20, Eden n=19, Connex n=21, Fortus 380/450 n=21, Fortus 900 n=21

SSYS Reseller 2016
System Growth
Forecasts Slows

As a result of the current headwinds affecting system demand, we are not surprised to see Stratasys VARs' 2016 growth forecasts decelerate once again. **On a weighted average basis, Stratasys resellers expect system sales to grow 4.5% in 2016, which is 250 basis points below our 2Q16 results and 620 basis points at the start of the year.** The percentage of VARs expecting to not see any growth increased from 30.0% to 38.0%, sequentially. **From a specific product standpoint, resellers remain most bullish on Connex3 and low-end Fortus 380/450 machines. However, resellers are now expecting Connex sales to be up 5.7% compared to 11.3% in the prior quarter, and VARs only expect their Fortus portfolio to grow 2.1% in 2016 versus 6.0% in the prior quarter.** The exhibits below highlight one year aggregate, as well as specific system growth projections for Stratasys resellers through 3Q16.

Exhibit 22

1-Year System Growth Projections - Stratasys

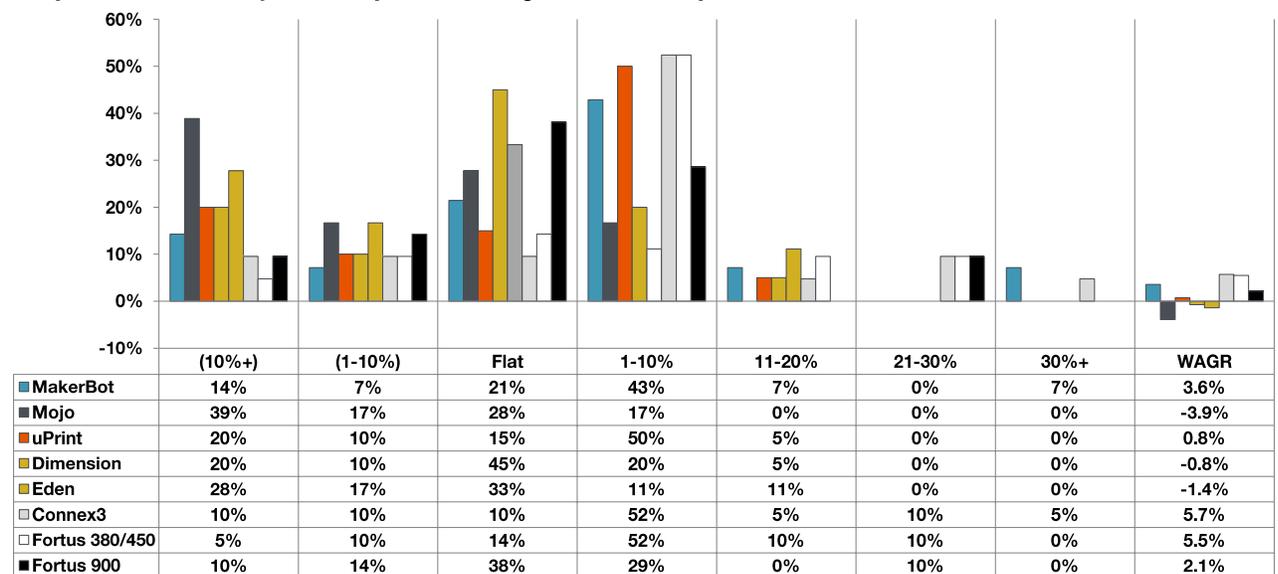


*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q83; 3Q16 n=21, 2Q16 n=20, 1Q16 n=23, 4Q15 n=23

Exhibit 23

1-Year System Growth Projections By Product Segment - Stratasys



*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q58; MakerBot n=14, Mojo n=18, uPrint n=20, Dimension n=20, Eden n=18, Connex3 n=21, Fortus 380/450 n=21, Fortus 900 n=21

SSYS Material Sales
Upbeat

Despite system demand being characterized as the weakest in our survey history, material sales saw a meaningful sequential uptick. **In 3Q16, 26.0% (5) of Stratasys resellers indicated an above plan quarter, while 5.0% (1) saw results come in below expectations. The remaining 68.0% (13) of VARs indicated results were in-line with expectations in the September quarter.** We believe the sequential uptick was driven by strong utilization rates across Stratasys' large installed base. The exhibit below highlights the results from our 3Q16 industry survey.

Exhibit 24

Stratasys' 3Q16 Material Sales vs. Plan

	3Q15	4Q15	1Q16	2Q16	3Q16
Above Plan	8	5	5	4	5
In-line	12	15	12	13	13
Below Plan	3	1	4	3	1
Total	23	21	21	20	19
Above Plan	35%	24%	24%	20%	26%
In-line	52%	71%	57%	65%	68%
Below Plan	13%	5%	19%	15%	5%
Net Score	22%	19%	5%	5%	21%

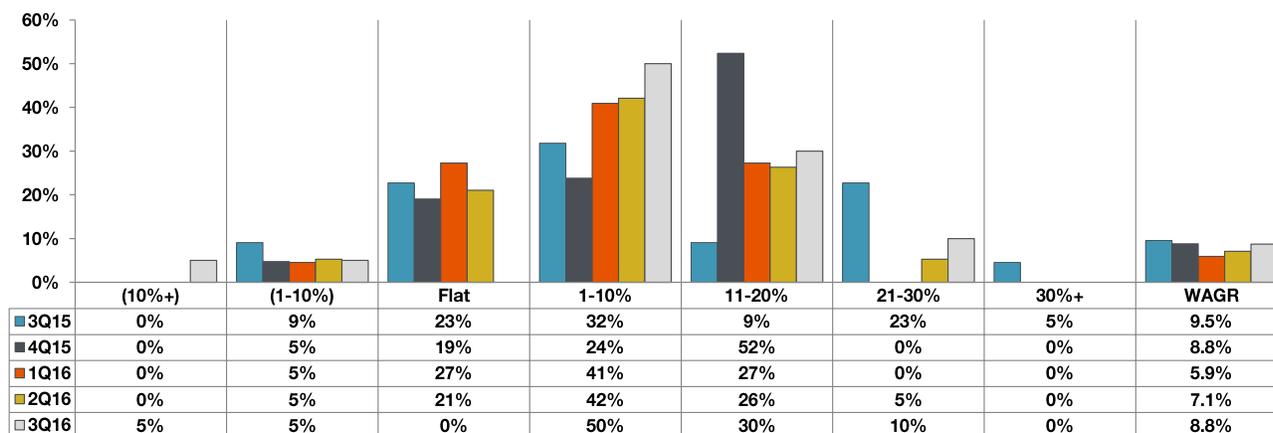
Source: Piper Jaffray 3Q16 3D Printing Survey Q55; 3Q16 n=19, 2Q16 n=20, 1Q16 n=21, 4Q15 n=21, 3Q15 n=23

Y/Y Material Growth
Accelerates, And
Pricing Remains
Stable

In addition to the upbeat above plan material responses, material year/year sales growth in Q3 accelerated for the second consecutive quarter. **The weighted average year/year material growth rate was 8.8% in the September quarter, which is up 170 basis points sequentially.** Lastly as a check, we asked resellers in Q3 whether they had seen any abnormally large discounts on materials from Stratasys during the quarter. **Only 2 resellers out of the 21 we surveyed saw large discounts offered on materials to induce system sales, which compares to 1 in our prior quarter survey.** The exhibit below highlights the results from our 3Q16 industry survey.

Exhibit 25

Year/Year Material Growth - Stratasys



*Weighted Average Growth Rate (WAGR)

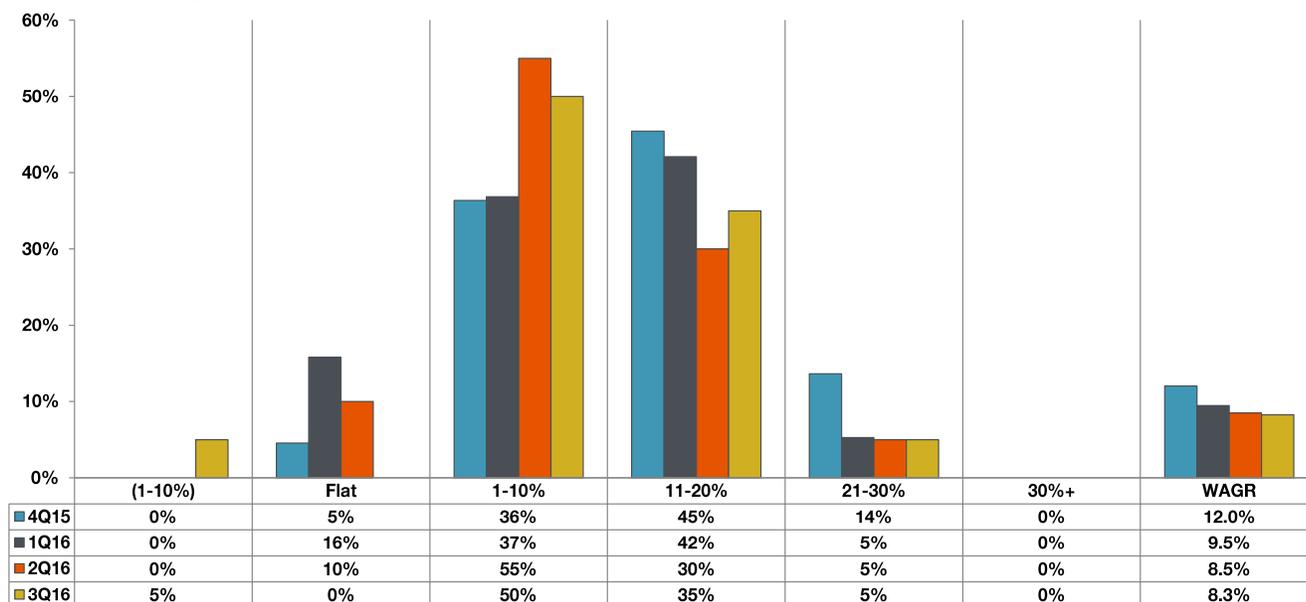
Source: Piper Jaffray 3Q16 3D Printing Survey Q57; 3Q16 n=20, 2Q16 n=19, 1Q16 n=22, 4Q15 n=21, 3Q15 n=22

SSYS Reseller
Material Growth
Forecasts Decelerates

Similar to resellers' expectations towards system sales in 2016, our survey indicated Stratasys VARs have become modestly less optimistic on material sales, which makes sense given material sales and system sales are strongly correlated. **In 2Q16, resellers on average are expecting their material business to grow 8.9% in 2016, which is down 120 basis points from last quarter's survey.** However, we are encouraged to see Stratasys resellers are expecting slightly higher growth in material sales compared to system sales, which we believe is another data point to back our thesis that utilization rates are healthy and will remain strong throughout the year. In the exhibit on the following page, we highlight Stratasys VARs' growth projections in their respective material businesses for the last 4 quarters.

Exhibit 26

1-Year Material Projections - Stratasys



*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q83; 3Q16 n=20, 2Q16 n=20, 1Q16 n=19, 4Q15 n=22

3D Systems (DDD) – System Demand Downticks Off Q2 Lows, System Quality and Channel Dissatisfaction Remains

Although our survey has continued to pick up data points suggesting 3D Systems printer demand has remained challenged for the past several quarters, our most recent checks indicate demand may have reached new lows. **In 3Q16, 7.0% (1) of VARs reported an above plan quarter versus 67.0% (11) indicating they were below plan. The remaining 27.0% (4) resellers indicated Q3 was in-line with expectations. These results equate to a net negative of 60.0%, which is 7 percentage points lower than our June survey results (20.0% above plan – 73.0% below plan = -53%).** Similar to Stratasys, the weakness was spread across the company's entire portfolio, and we believe the slowdown in system demand is due to a saturated 3D printing market, the entrance of HP and Carbon3D, as well as other macro headwinds. We believe 3D Systems' weakness was spread across the US and Europe due to the number of below plan response indicated by the company's biggest channel partners in these two regions. We continue to believe 3D Systems' challenges go much deeper than an overall spending slowdown, and believe system quality issues and unhappy channel partners continue to negatively impact system demand. We heard from a few 3D contacts that they have decided to break ties with the company due to continued dissatisfaction with the company.

That said, we continue to hear from other channel contacts that they are encouraged by the initial changes the new management team has made, but we believe the company has a ways to go until all system quality and channel issues are resolved. We remain upbeat that the company has switched their focus to the industrial market versus prototyping, but we believe vigorous competition lies ahead with the entrance of Carbon3D and HP. Given the headwinds affecting the overall industry and the company internally, we believe the next 9 – 12 months will be a challenge for 3D Systems. Although the shares have outperformed this year, we believe the primary catalyst has been industry consolidation (GE acquired Arcam and SLM) and not underlying fundamentals. We also believe investors have been encouraged by the improved margin profile due to the company's cost cutting initiatives, but eventually the company will need to start reinvesting into the business, otherwise they risk falling behind their peers. Given our quarterly survey pointed to weakening system sales, we expect the company to once again report revenues below Street estimates, but due to the company's ongoing restructuring initiatives we believe EPS will be less at risk. Regardless, we believe meaningful downside remains in shares and we reiterate our UW rating. The exhibit below shows 3D Systems reseller system sales versus original plan in our 3Q16 survey.

Exhibit 27

3D Systems' 3Q16 System Sales vs. Plan

	3Q15	4Q15	1Q16	2Q16	3Q16
Above Plan	2	1	2	3	1
In-line	2	4	4	1	4
Below Plan	8	11	11	11	10
Total	12	16	17	15	15
Above Plan	17%	6%	12%	20%	7%
In-line	17%	25%	24%	7%	27%
Below Plan	67%	69%	65%	73%	67%
Net Score	-50%	-63%	-53%	-53%	-60%

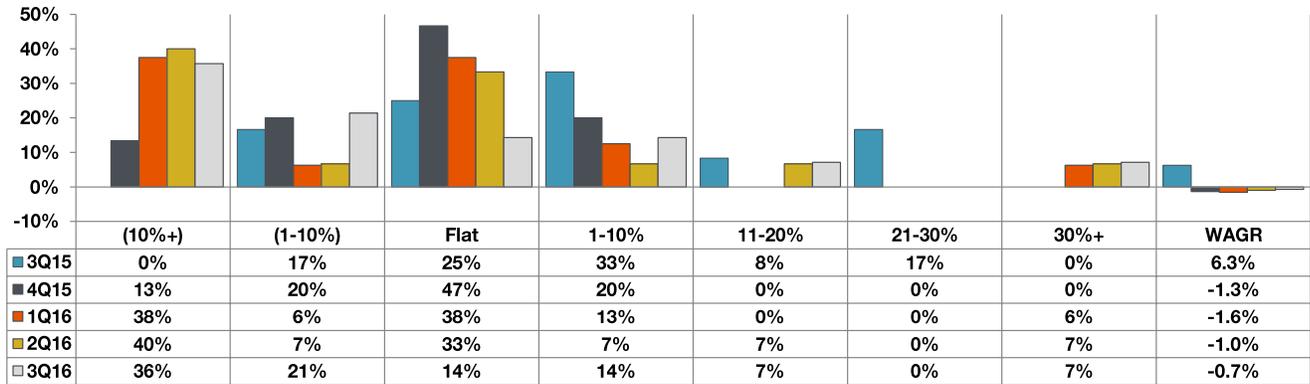
Source: Piper Jaffray 3Q16 3D Printing Survey Q29

Average DDD System
Sales Down 0.7% Y/Y

We asked 3D Systems resellers what their system sales growth was during the September quarter, and to no surprise total system growth remained negative. **On a weighted average basis, aggregate system sales were down 0.7% year/year, which are 30 basis points better than our 2Q16 results.** We believe poor system growth coupled with the number of below plan response gives us further evidence that 3D Systems' bigger VARs experienced extremely tough quarters for system sales. The exhibit below shows how much 3D Systems resellers' systems business grew on a year/year basis over the past 5 quarters.

Exhibit 28

3Q16 System Year/Year Growth – 3D Systems



*Weighted Average Growth Rate (WAGR)

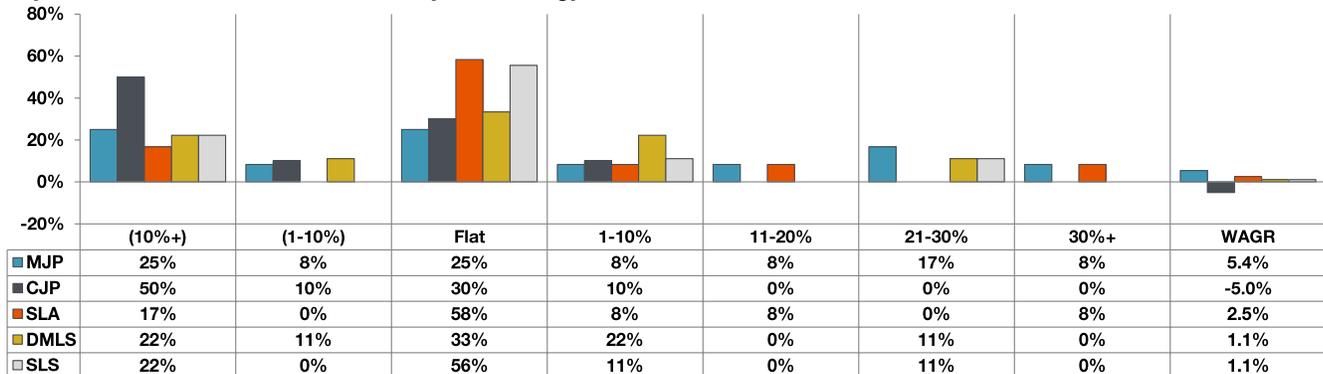
Source: Piper Jaffray 3Q16 3D Printing Survey Q56; 3Q16 n=14, 2Q16 n=15, 1Q16 n=16, 4Q15 n=15, 3Q15 n=12

Extremely Weak
Demand Across All
Technologies

From a specific technology perspective, our survey indicated that a few technologies accelerated quarter/quarter, but we believe this is due to 2H being a seasonally larger period for system sales. **That said, 70.0%+ of resellers indicated negative to flat year/year growth for MJP, CJP, SLA, SLS and DMLS systems in our 3Q16 survey.** The strongest performing technology remained MJP, which was up 5.4% in the September quarter and believe demand in this category continues to be led by strong sales for the ProJet 2500. However, we heard from channel contacts that Stratasys was heavily discounting their low-end PolyJet machines in order to better compete with the 2500. Outside of MJP sales, SLS, DMLS and SLA year/year sales accelerated on a sequential basis, but we believe sales for these technologies underperformed expectations. In the exhibit below, we highlight specific product demand trends from our 3Q16 survey.

Exhibit 29

3D Systems VAR 2Q16 Printer Growth by Technology



*Weighted Average Growth Rate (WAGR)

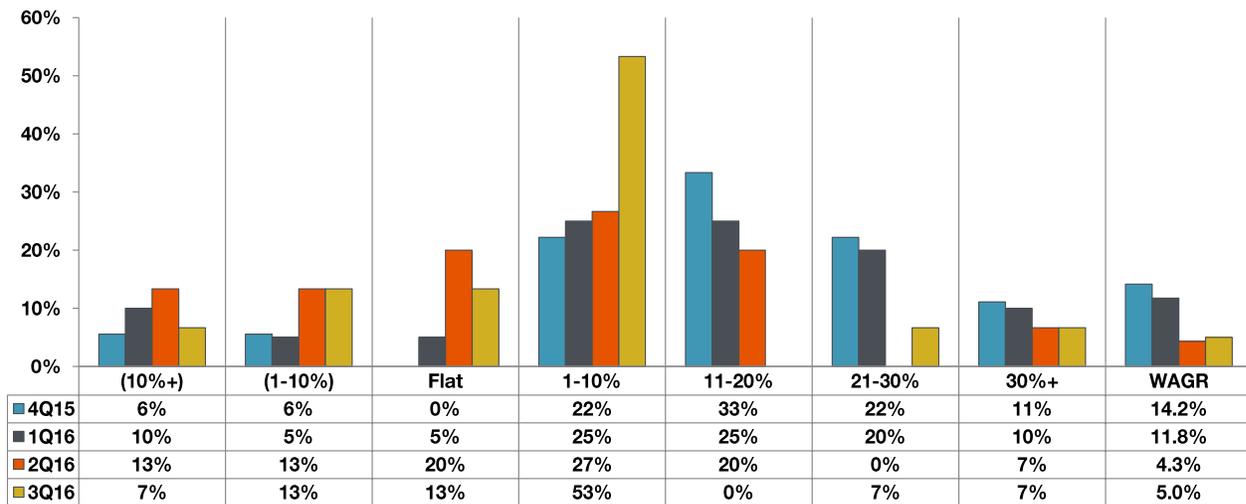
Source: Piper Jaffray 3Q16 3D Printing Survey Q43; MJP n=12, CJP n=10, SLA n=12, DMLS n=9, SLS n=9

DDD Reseller 2016
System Growth
Forecasts Accelerates

Despite the poor demand trends experienced in Q3, we are surprised to see 3D Systems' VARs have increased their 2016 system growth expectations. **3D Systems resellers expect their systems business to grow 5.0% in 2016 on a weighted average basis, which is up from 4.3% in the prior quarter.** The largest percentage of resellers (53.0%) expects to see growth in the range of 1.0 – 10.0%, which is up from 27.0% in the prior quarter. **From a product specific perspective, resellers remain most optimistic about growth within MJP and SLA machines, and least optimistic about CJP system sales.** We believe the uptick in resellers' 2016 expectations is a result of receiving feedback from some of 3D Systems' newer resellers that are working off a smaller revenue base. The exhibits below highlight one year aggregate system and specific growth projections for 3D Systems resellers through 3Q16.

Exhibit 30

1-Year System Growth Projections – 3D Systems

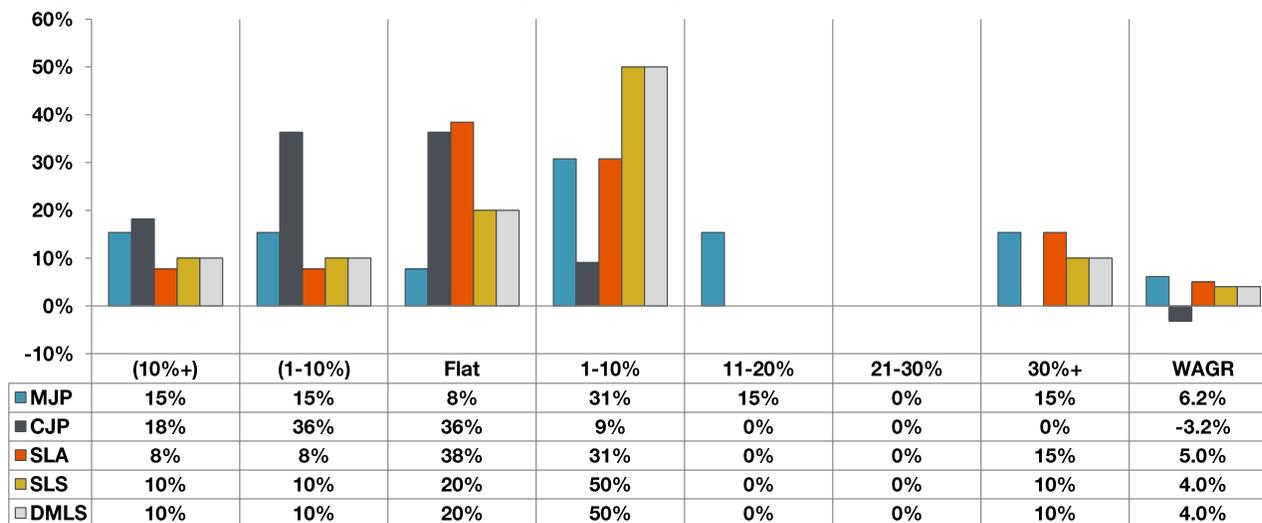


*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q83; 3Q16 n=15, 2Q16 n=15, 1Q16 n=18, 4Q15 n=18

Exhibit 31

1-Year System Growth Projections By Product Segment – 3D Systems



*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q42; MJP n=13, CJP n=11, SLA n=13, SLS n=10, DMLS n=10

DDD Material Sales
Unchanged Q/Q

Our 3Q16 survey once again indicated 3D Systems VARs material business once again fell below expectations, and were in-line with our June quarter survey results. **In 3Q16, 31.0% (4) of resellers indicated an above plan quarter, while 46.0% (6) saw results come in below expectations. The remaining 23.0% (3) of VARs indicated they had an in-line September quarter.** While we expect weak system sales to affect consumable sales, we do want to highlight a healthy portion of 3D Systems' materials are sold direct. Given the strong material sales our Stratasys resellers indicated, we believe utilization rates remain strong and believe material sales could be better than our survey demonstrates. The exhibit below highlights the results from our 3Q16 industry survey.

Exhibit 32

3D Systems' 3Q16 Material Sales vs. Plan

	3Q15	4Q15	1Q16	2Q16	3Q16
Above Plan	0	3	3	3	4
In-line	8	8	6	5	3
Below Plan	4	4	7	5	6
Total	12	15	16	13	13
Above Plan	0%	20%	19%	23%	31%
In-line	67%	53%	38%	38%	23%
Below Plan	33%	27%	44%	38%	46%
Net Score	-33%	-7%	-25%	-15%	-15%

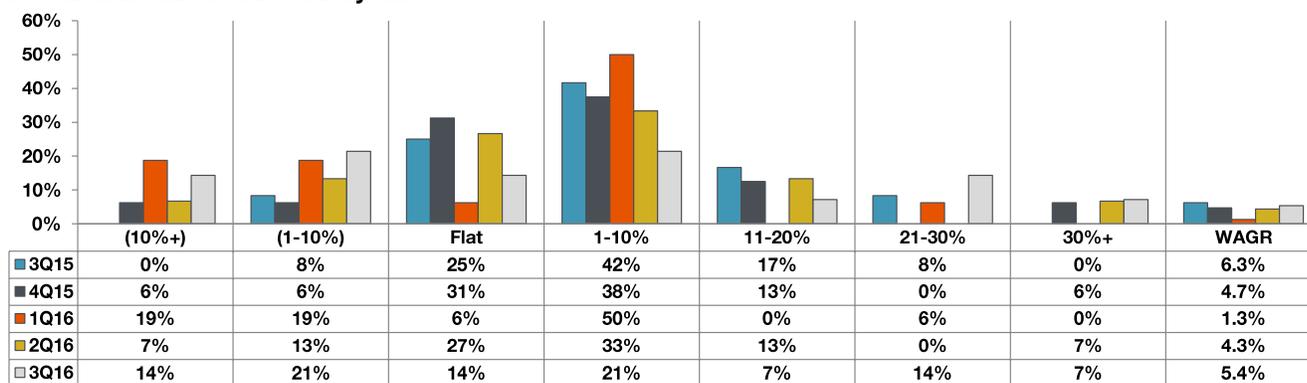
Source: Piper Jaffray 3Q16 3D Printing Survey Q53

DDD Material
Business Up 2.1%
Y/Y, Material Pricing
Stable

Our confidence that material sales could be better than our above/below question indicates is due to the acceleration in year/year material growth. **The weighted average year/year material growth rate was 5.4% in the September quarter, which is an acceleration over 2Q16 where resellers experienced 4.3% growth in their respective material businesses.** We believe the upbeat material sales compared to unit shipments reflects strong utilization rates. Lastly, as a check, we asked resellers in Q3 whether they had seen any abnormally large discounts on materials from 3D Systems during the quarter. Zero indicated seeing large discounts on materials during the quarter and overall the majority stated material pricing was stable.

Exhibit 33

Year/Year Material Growth – 3D Systems



*Weighted Average Growth Rate (WAGR)

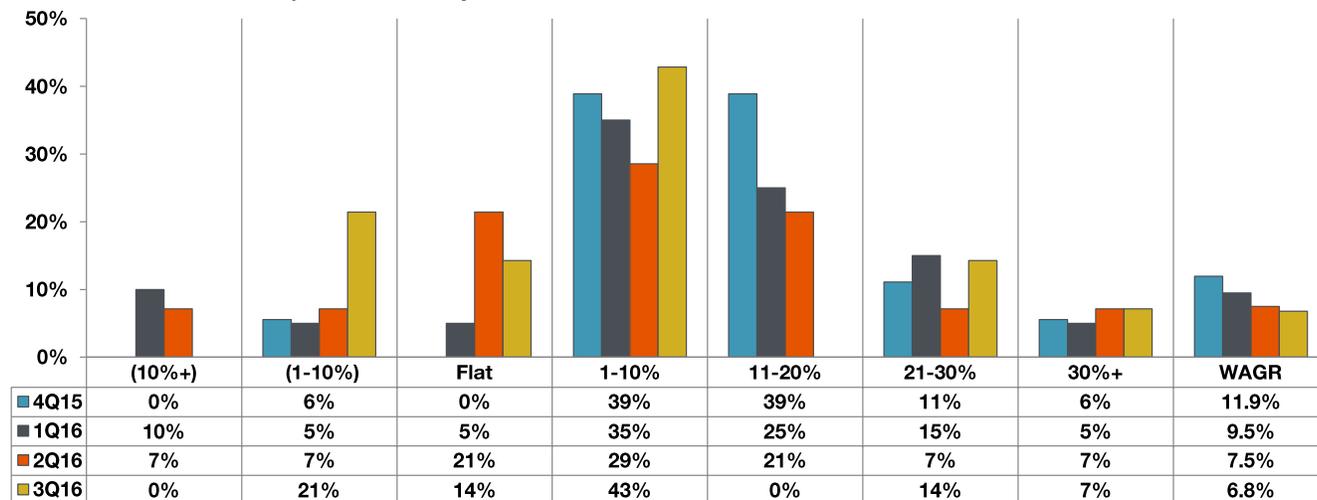
Source: Piper Jaffray 3Q16 3D Printing Survey Q56; 3Q16 n=14, 2Q16 n=15, 1Q16 n=16, 4Q15 n=16, 3Q15 n=12

DDD Reseller Material
Growth Forecasts
Slow Again

Similar to resellers' lower optimism towards system sales in 2016, our survey indicated 3D Systems resellers have become less bullish on material sales for the 3rd consecutive quarter. **In 3Q16, resellers on average are expecting their material business to grow 6.8% in 2016, which is down from 7.5% in last quarter's survey and 9.5% in the beginning of the year.** We believe the downtick in resellers 2016 forecast is largely driven by the expectation for lower system sales, but with material sales expecting to be slightly higher than system sales we believe utilization rates will remain healthy. The exhibit below highlights our 3D Systems 1-year material forecast results.

Exhibit 34

1-Year Material Growth Projections – 3D Systems



*Weighted Average Growth Rate (WAGR)

Source: Piper Jaffray 3Q16 3D Printing Survey Q83; 3Q16 n=14, 2Q16 n=14, 1Q16 n=20, 4Q15 n=18, 3Q15 n=12

Final Thoughts on 3Q16, Expectations for Q4

In summary, our 3Q16 3D printing survey makes us believe system demand remained challenged in the September quarter with the number of below plan responses significantly outnumbering resellers indicating above plan quarters. Although we did see a modest net uptick sequentially, our September quarter survey had the lowest percentage of above plan responses in the history of us conducting this survey. We believe the system shortfall during Q3 continued to be driven by the same factors affecting demand in prior quarters, such as sustained weakness in the industry, the entrance of HP, Carbon and others, sub \$1,000 machines eating into the \$5,000-20,000 segment of the system market, as well as CapEx has been constrained given uncertain macroeconomic conditions and the upcoming U.S. election.

From a specific vendor perspective, the results were extremely discouraging for both Stratasys and 3D Systems, and both companies' survey results down ticked off Q2 historical lows. We believe the weakness was spread across almost all technologies (FDM, Polyjet, SLA, SLS, MJP, and DMLS). Given the discouraging results and commentary from Stratasys' and 3D Systems' biggest channel partners in North America and Europe, we believe both companies' system sales fell below expectations. We believe both Stratasys and 3D Systems are likely to miss top-line estimates, but due to both companies' cost cutting initiatives we believe EPS will be less at risk.

Looking ahead, Q4 has historically been the largest quarter for system sales, but we believe the headwinds currently affecting demand will prevail for the remaining of the year. We believe this is displayed by resellers once again lowering their 2016 expectations for system sales. We believe sustained weakness will likely cause another estimate cut in the upcoming quarter. On a positive note, we are encouraged by the growth materials are seeing, which we believe indicates utilization rates remain strong. In addition, growth for 3D printed parts was relatively upbeat, which gives us confidence demand for 3D technology still exists. We remain believers in this industry and believe the market is still growing, but DDD and SSYS appear to be losing share and do not have enough exposure to higher growth industrial markets. We do believe the next big catalyst for this industry is the rise of DDM applications, which we believe is soon being approached within Aerospace and Healthcare verticals.

Ratings, Price Targets and Risks

Stratasys

Ticker: SSYS**Rating:** Neutral**Price Target:** \$23 (1.3x EV/Sales multiple based on our 2017 sales forecast)**Risks:** Margin pressure, competition from low cost printers, macro-economic slowdown

3D Systems

Ticker: DDD**Rating:** Underweight**Price Target:** \$10.50 (1.5x EV/Sales multiple based on our 2017 sales estimates)**Risks:** System spending improves, new product introductions, competition; share loss/gain

Voxeljet

Ticker: VJET**Rating:** Overweight**Price Target:** \$5.70 (2.5x EV/S multiple based on our 2017 estimate)**Risks:** Increased competition, ASP erosion, overseas exposure, share liquidity

Materialise

Ticker: MTL5**Rating:** Overweight**Price Target:** \$8.50 (2.5x EV/Sales multiple based on our 2017 estimate)**Risks:** Customer concentration within the Medical segment, increased competition, economic slowdown

Arcam

Ticker: ARCM SS**Rating:** Neutral**Price Target:** 285 SEK (based on proposed acquisition price)**Risks:** Lumpy Revenues, Increased Competition, Macro-econ Slowdown, ASP Erosion, FX

Proto Labs

Ticker: PRLB**Rating:** Neutral**Price Target:** \$52 (21x fully taxed CY17E Op Inc + Cash)**Risks:** Macro economic slowdown, disruptive new technologies, and software duplication.

Comp Table Valuation

To help get a better understanding of our 3D universe from a relative valuation perspective, we have provided a comp table in the following exhibit.

Exhibit 35

3D Universe Comp Table

Company	Ticker	Price			EPS		PE		Mrkt Cap & EV (Mil)				Sales		EV/S	
		Price	52 Low	52 High	CY2016	CY2017	CY2016	CY2017	Shares	Mrkt Cap	Net Cash	Ent Value	CY2016	CY2017	CY2016	CY2017
Arcam	AMAVF	\$32.16	\$15.93	\$35.50	\$0.18	\$0.44	181.3 x	73.5 x	21.4	\$688	\$51	\$637	\$79	\$109	8.1 x	5.9 x
Materialise	MTLS	\$7.68	\$5.22	\$8.89	(\$0.05)	\$0.12	NM	65.3 x	47.3	\$363	\$33	\$330	\$130	\$154	2.5 x	2.1 x
SLM Solutions	SLGRF	\$44.80	\$20.90	\$46.85	\$0.43	\$0.80	105.0 x	56.0 x	18.0	\$806	\$26	\$779	\$104	\$148	7.5 x	5.3 x
3D Systems	DDD	\$15.65	\$6.00	\$19.76	\$0.37	\$0.49	42.2 x	32.2 x	113.4	\$1,775	\$168	\$1,607	\$650	\$697	2.5 x	2.3 x
Stratasys	SSYS	\$22.00	\$14.48	\$31.74	\$0.33	\$0.69	66.8 x	31.7 x	52.5	\$1,155	\$268	\$887	\$701	\$752	1.3 x	1.2 x
Proto Labs	PRLB	\$56.45	\$50.50	\$82.06	\$1.83	\$2.22	30.8 x	25.4 x	27.5	\$1,552	\$164	\$1,388	\$302	\$345	4.6 x	4.0 x
voxeljet	VJET	\$4.49	\$3.50	\$6.99	(\$1.71)	(\$0.71)	NM	NM	18.6	\$84	\$28	\$56	\$27	\$32	2.1 x	1.7 x
					Average		85.2 x	47.3 x					Average		4.1 x	3.2 x

Source: Piper Jaffray & Co., FactSet, Prices as of the close October 12, 2016. 2016 & 2017 metrics reflect estimated values.

IMPORTANT RESEARCH DISCLOSURES

Distribution of Ratings/IB Services Piper Jaffray				
Rating	Count	Percent	IB Serv./Past 12 Mos.	
			Count	Percent
BUY [OW]	416	55.91	98	23.56
HOLD [N]	293	39.38	20	6.83
SELL [UW]	35	4.70	1	2.86

Note: Distribution of Ratings/IB Services shows the number of companies currently covered by fundamental equity research in each rating category from which Piper Jaffray and its affiliates received compensation for investment banking services within the past 12 months. FINRA rules require disclosure of which ratings most closely correspond with "buy," "hold," and "sell" recommendations. Piper Jaffray ratings are not the equivalent of buy, hold or sell, but instead represent recommended relative weightings. Nevertheless, Overweight corresponds most closely with buy, Neutral with hold and Underweight with sell. See Stock Rating definitions below.

Analyst Certification – Troy D. Jensen, CFA, Sr Research Analyst

The views expressed in this report accurately reflect my personal views about the subject company and the subject security. In addition, no part of my compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report.

Piper Jaffray research analysts receive compensation that is based, in part, on overall firm revenues, which include investment banking revenues.

Time of dissemination: 13 October 2016 05:31EDT.

Affiliate disclosures: Piper Jaffray is the trade name and registered trademark under which the corporate and investment banking products and services of Piper Jaffray Companies and its subsidiaries Piper Jaffray & Co. and Piper Jaffray Ltd. are marketed. Simmons & Company International is a division of Piper Jaffray & Co. This report has been prepared by Piper Jaffray & Co. and/or its affiliate Piper Jaffray Ltd. Piper Jaffray & Co. is regulated by FINRA, NYSE and the United States Securities and Exchange Commission, and its headquarters are located at 800 Nicollet Mall, Minneapolis, MN 55402. Piper Jaffray Ltd. is authorized and regulated by the Financial Conduct Authority, and is located at 88 Wood Street, 13th Floor, London EC2V 7RS. Disclosures in this section and in the Other Important Information section referencing Piper Jaffray include all affiliated entities unless otherwise specified.

Rating Definitions

Stock Ratings: Piper Jaffray ratings are indicators of expected total return (price appreciation plus dividend) within the next 12 months. At times analysts may specify a different investment horizon or may include additional investment time horizons for specific stocks. Stock performance is measured relative to the group of stocks covered by each analyst. Lists of the stocks covered by each are available at www.piperjaffray.com/researchdisclosures. Stock ratings and/or stock coverage may be suspended from time to time in the event that there is no active analyst opinion or analyst coverage, but the opinion or coverage is expected to resume. Research reports and ratings should not be relied upon as individual investment advice. As always, an investor's decision to buy or sell a security must depend on individual circumstances, including existing holdings, time horizons and risk tolerance. Piper Jaffray sales and trading personnel may provide written or oral commentary, trade ideas, or other information about a particular stock to clients or internal trading desks reflecting different opinions than those expressed by the research analyst. In addition, Piper Jaffray offers technical and event-driven research products that are based on different methodologies, may contradict the opinions contained in fundamental research reports, and could impact the price of the subject security. Recommendations based on technical or event-driven analysis are intended for the professional trader, while fundamental opinions are typically suited for the longer-term institutional investor.

- **Overweight (OW):** Anticipated to outperform relative to the median of the group of stocks covered by the analyst.
- **Neutral (N):** Anticipated to perform in line relative to the median of the group of stocks covered by the analyst.
- **Underweight (UW):** Anticipated to underperform relative to the median of the group of stocks covered by the analyst.

Other Important Information

The material regarding the subject company is based on data obtained from sources we deem to be reliable; it is not guaranteed as to accuracy and does not purport to be complete. This report is solely for informational purposes and is not intended to be used as the primary basis of investment decisions. Piper Jaffray has not assessed the suitability of the subject company for any person. Because of individual client requirements, it is not, and it should not be construed as, advice designed to meet the particular investment needs of any investor. This report is not an offer or the solicitation of an offer to sell or buy any security. Unless otherwise noted, the price of a security mentioned in this report is the market closing price as of the end of the prior business day. Piper Jaffray does not maintain a predetermined schedule for publication of research and will not necessarily update this report. Piper Jaffray policy generally prohibits research analysts from sending draft research reports to subject companies; however, it should be presumed that the fundamental equity analyst(s) who authored this report has had discussions with the subject company to ensure factual accuracy prior to publication, and has had assistance from the company in conducting diligence, including visits to company sites and meetings with company management and other representatives.

Notice to customers: This material is not directed to, or intended for distribution to or use by, any person or entity if Piper Jaffray is prohibited or restricted by any legislation or regulation in any jurisdiction from making it available to such person or entity. Customers in any of the jurisdictions where Piper Jaffray and its affiliates do business who wish to effect a transaction in the securities discussed in this report should contact their local Piper Jaffray representative. **Europe:** This material is for the use of intended recipients only and only for distribution to professional and institutional investors, i.e. persons who are authorised persons or exempted persons within the meaning of the Financial Services and Markets Act 2000 of the United Kingdom, or persons who have been categorised by Piper Jaffray Ltd. as professional clients under the rules of the Financial Conduct Authority. **United States:** This report is distributed in the United States by Piper Jaffray & Co., member SIPC, FINRA and NYSE, Inc., which accepts responsibility for its contents. The securities described in this report may not have been registered under the U.S. Securities Act of 1933 and, in such case, may not be offered or sold in the United States or to U.S. persons unless they have been so registered, or an exemption from the registration requirements is available.

This report is produced for the use of Piper Jaffray customers and may not be reproduced, re-distributed or passed to any other person or published in whole or in part for any purpose without the prior consent of Piper Jaffray & Co. Additional information is available upon request.

Copyright 2016 Piper Jaffray. All rights reserved.