

# Salem Partners – Aerospace & Defense

## Quarterly Review

### Introduction

Quarter in Review Q2 2016

Dear Friends,

We hope that your summer is off to a good start and that all of you have managed to squeeze in a few days to unplug.

As usual, our summer has been highlighted by the Airshow, this year at Farnborough. Without a doubt, the appearance and performance of the F-35 was the highlight as nearly all participants stopped what they were doing to watch the jet hover above the runway. Though the weather refused to cooperate, true to form the show served as an indicator and rumor mill of the current state of the industry from both a macro-level as well as the latest M&A whispers. Predictably, each of the major OEMs declared the show a smashing success; though looking at the number of firm orders versus commitments shows that Airbus, with the success of the A320, was the clear winner. Boeing struggled to match its rival in order count despite the debut of the B737MAX and failed to announce the additional orders required for the B777 to bridge current production rates to the B777X. Less well-publicized was the lack of orders for the Bombardier C-Series, which was unable to capitalize on the momentum established over the previous few months.

On the M&A front, deal activity remains consistent, particularly for our client-base of Tier II and III suppliers. Concerns about the longevity of the current aerospace up-cycle remain muted as the more pressing issue throughout the supply-chain remains supporting the customers as production rates ramp. The subject of Brexit is a consistent theme from two main perspectives. Initially, the negative reaction in the public markets created concerns around global growth and credit availability/spreads. These concerns dissipated as quickly as they emerged as global stocks rallied and the sponsor community saw their lenders remain supportive. The more complex and long-term questions remain around the outlook for the European supply-chain where Airbus relies on a fairly integrated web of suppliers. Additionally, the implications on global growth, specifically in aviation remain to be determined.

We always welcome your thoughts or questions, and would be happy to reach out to discuss these topics or any others that may interest you.

Sincerely,



Trevor Bohn

Managing Director



Ryan Murphy

Vice President

## HIGHLIGHTS

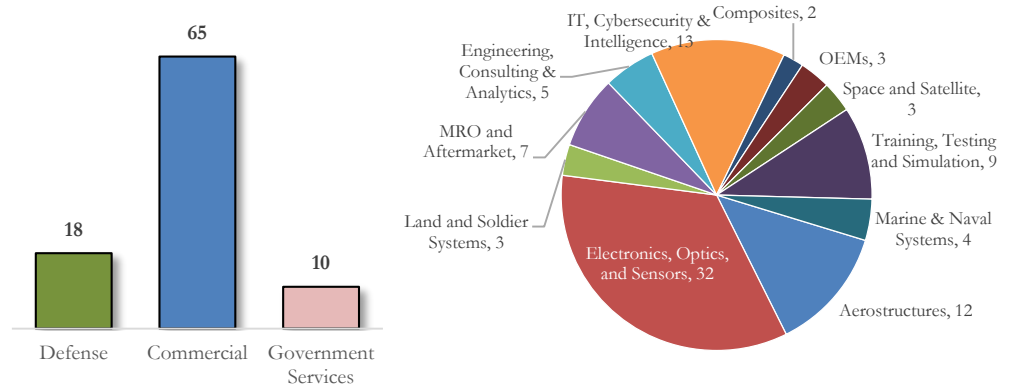
❖ *A&D M&A activity remains strong in the second quarter of 2016*

❖ *Notable A&D acquisitions demonstrate heightened interest in MRO & Aftermarket and IT sectors*

## Market Snapshot

### Select Aerospace & Defense M&A Activity

#### Q2 Deal Volume by End-Market and Product Category



#### Q2 Notable Transactions

Target	Buyer	Price (\$mm)	EV / EBITDA
ILC Holdings (Data Device Corp.)	Transdigm Group	\$1,000	NP
Morpho Detection	Smiths Group	\$710	10.1x
PCB Group	MTS Systems Corp.	\$580	NP
Wyle Laboratories	KBR	\$570	NP
Herndon Aerospace	KLX	\$220	10.3x

#### Transdigm acquires ILC Holdings (Data Device Corp.)

TransDigm announced a definitive agreement to purchase ILC Holdings (Data Device Corp.) for a total purchase price of \$1.0 billion. DDC will join TransDigm's subsidiaries of proprietary aircraft component suppliers. DDC specializes in high-reliability databus, motion control, and solid-state power controller products for aerospace and defense aircrafts, land vehicles, other and industrial applications.

**TRANSDIGM**  
GROUP INC.

**DDC**  
Data Device Corporation

#### Smiths Group acquires Morpho Detection

Safran has agreed to sell its U.S.-based Morpho Detection business to UK engineering firm Smiths Group for \$710mm. Morpho Detection will become part of Smith Group's detection division, which designs and manufactures sensors that detect and identify explosives, weapons, chemical agents, and other contraband.

**smiths**

**Morpho Detection**  
SAFRAN Group

#### KLX Acquires Herndon Aerospace

KLX has acquired Herndon Aerospace & Defense for \$210 million. Herndon is a leading supply chain management and consumables hardware distributor serving aftermarket military and commercial aerospace customers. This acquisition expands KLX's capability to provide more comprehensive aftermarket supply chain management solutions to a broader portfolio of customers.

**KLX**

**HERNDON**  
PRODUCTS

## HIGHLIGHTS

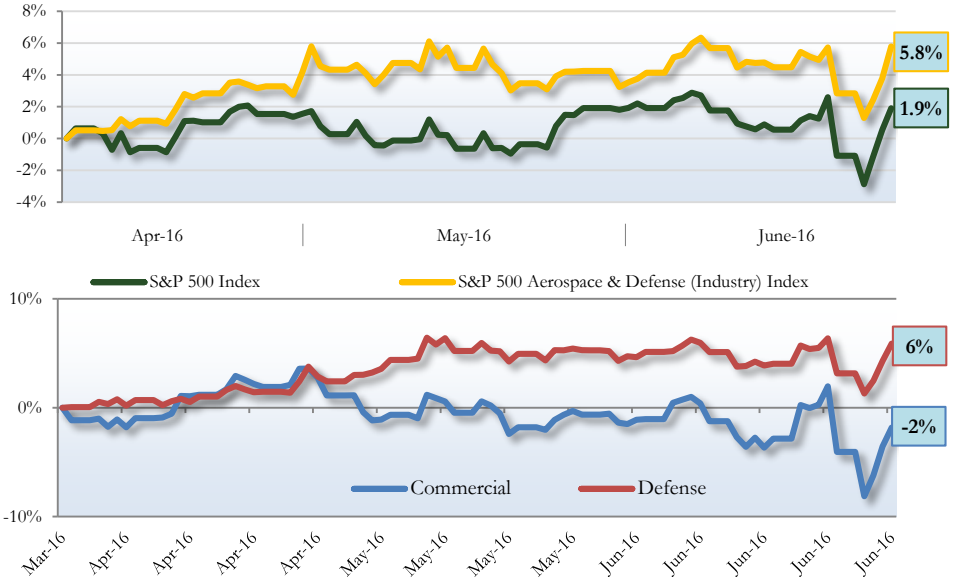
❖ *Aerospace and defense equity outperformed the market in Q2 of 2016*

❖ *Commercial and defense performance based on select industry constituents*

## Market Snapshot

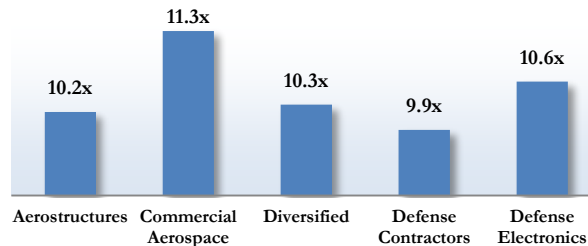
### Select Aerospace & Defense Public Markets Activity

#### Q2 Relative Performance



Source: Capital IQ, analyst estimates, and other publicly available information

#### Enterprise Value/EBITDA by Subsector



The UK's decision to leave the EU caused a significant, but ultimately brief, dip in the markets, as investors reacted with a "sell-first, ask-questions-later" approach to the announcement.

Bombardier's stock soared 47% as it came to an agreement to sell 75 C-Series aircrafts to Delta, the largest deal to date for the program. A \$1 billion investment from the government of Quebec also helped solidify Bombardier's previously ailing balance sheet position.

Defense stalwarts Raytheon, Lockheed Martin, Northrop Grumman, and L-3 Communications all experienced strong gains in the quarter partly due to increased domestic and overseas demand for ISR and high-tech defense systems.

Triumph Group rebounded after a dismal Q1 as it struck an agreement with Lockheed to supply key engine and structural components for the F-35.

#### Q2 Share Price Performance

Boeing	2.3%
Bombardier	47.0%
Crane	5.3%
Embraer	-17.6%
General Dynamics	6.0%
L-3 Communications	23.8%
Lockheed Martin	12.0%
Moog	18.0%
Northrop Grumman	12.3%
Raytheon	10.9%
Rockwell Collins	-7.7%
Spirit Aerosystems	-5.2%
Textron	0.3%
Triumph Group	12.8%
United Technologies	2.4%

## HIGHLIGHTS

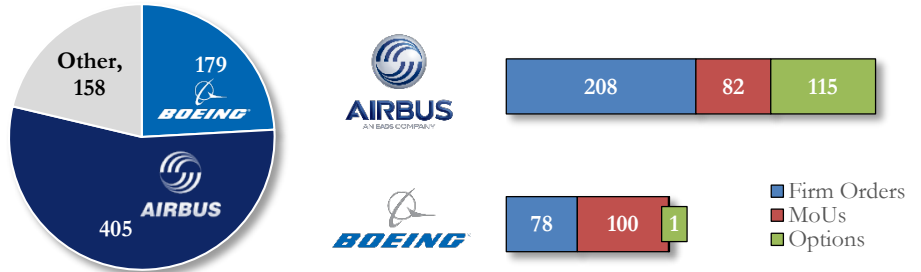
❖ Orders at the Farnborough Airshow this year totaled 742, 607 commitments and 135 options, compared to 1223 in 2015 and 1210 in 2014

❖ AirAsia, the Malaysian low-cost carrier, led all operators with 200 aircraft orders while the Airbus A320neo lead all platforms with 375

❖ Airbus plans to cut A380 production down to 12 per year by 2018

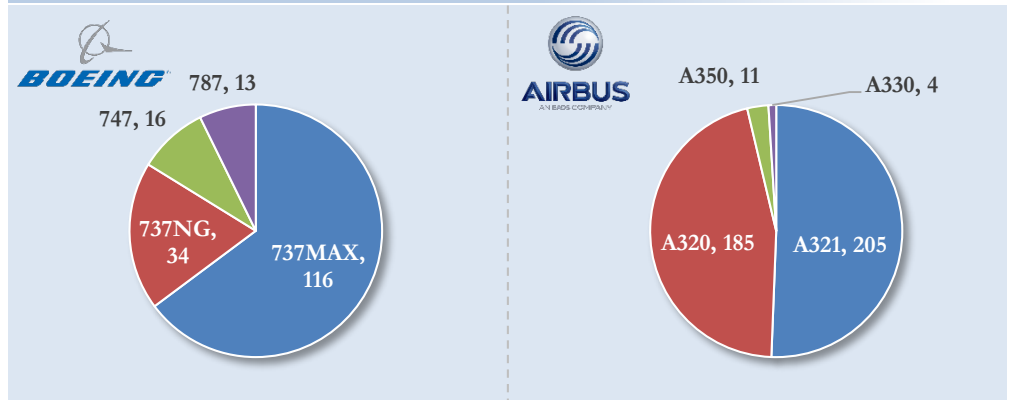
## Farnborough Airshow Recap

### Fewer Orders Compared to Recent Years at the Airshow



Airbus was the clear winner at the Farnborough Airshow with 405 new aircraft orders, beating Boeing, which recorded only 179 orders. Airshow orders (commitments and options) totaled 742 valued at \$38.9 billion, a marked decline when compared to the 1,223 in orders in 2015. The decline in new aircraft orders can be attributed to low fuel prices and the already bulging order book airlines have with manufacturers. The main theme at the Airshow was the continued increased demand for narrowbody aircrafts, with the B737 (MAX and NG) and A320 family orders making up 92% of Boeing and Airbus orders, compared to only 85% in 2015. The Asia-Pacific region unsurprisingly contributed 67% of orders, with largest orders from AirAsia, GoAir, Xiamen, and China Aircraft Leasing Group.

### Boeing and Airbus Farnborough Order Breakdown



### Other Notable Takeaways

- Airbus Cuts A380 Production Rate

Airbus announced that it plans to cut the production rate of the A380 from 27 aircrafts last year to 18 per year for 2016 and 2017 to 12 (1 aircraft/month) in 2018.

- A321neo Becomes Best-Selling Middle-of-Market Aircraft in History

MoM aircrafts are aircrafts with a capacity of 180-250 passengers and a range of 3500-6000 nautical miles. With 205 new orders for the A321neo at the Airshow, it became the best-selling MoM aircraft in history. With Boeing relying on the B737 MAX 9 to fulfill its customers' MoM need, this trend is expected to continue as while B737MAX 9 offers superior fuel-efficiency and performance compared to true MoM aircrafts such as the B757 and B767, its cabin capacity pales in comparison.

Source: FlightGlobal, Salem Partners estimates, and other publicly available information

## HIGHLIGHTS

❖ *Unprecedented narrowbody production ramp will be Boeing's and Airbus' biggest supply chain challenge yet*

❖ *Airbus has already experienced delays in A320neo deliveries as a result of PW1000G GTF engine issue*

❖ *The LEAP family of engines powers the A320neo, 737MAX, and the COMAC C919 while the PW1000G series powers the C-Series, MC-21, and the A320neo*

# Commercial: Next-Gen Narrowbody Engines

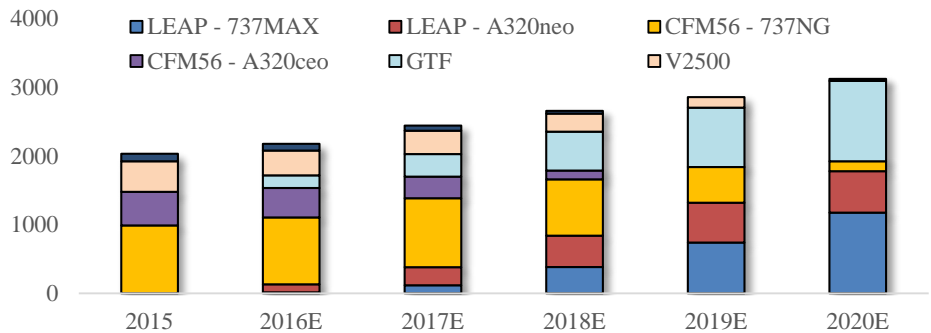
## Next-Gen Narrowbody Production Faces Supply Chain Challenges

As Airbus prepares for the A320neo ramp and Boeing is set to deliver its first 737MAX in 2017, the supply-chain is bracing itself to for the both the challenge and opportunity of meeting the very aggressive schedule. Airbus plans to ramp its A320 production rate to 60/month by mid-2019 up from the current rate of 42/month while Boeing plans to increase its rate from 42 to 57 aircrafts per month by 2019.

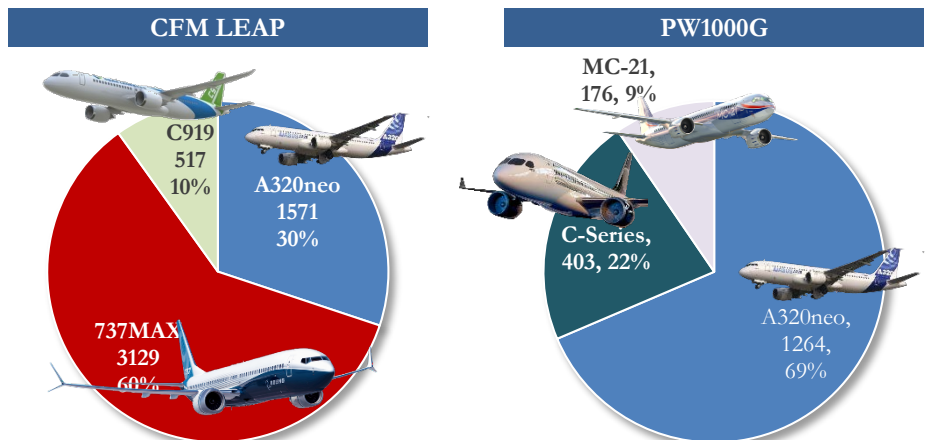
Most industry observers would agree that the greatest risk to the schedule resides in the most dynamic portion of the next-generation aircraft, the engines.

There are two engines options for the A320neo, CFM's LEAP-1A and the Pratt & Whitney PW1000G GTF, while CFM's LEAP 1-B will be the sole source engine supplier for the 737MAX. The LEAP (1A and 1B) currently holds 75% market share over the PW1000G, meaning CFM will have to manufacture nearly 1800 engines by 2018, a level of production it took 30 years to achieve for the CFM-56. From an M&A perspective, growth is the key driver of both activity levels and valuations. The upcoming narrowbody ramp is poised to deliver unprecedented organic growth to those suppliers that are properly capitalized and ready to meet production demands. Already today, we have seen considerable consolidation driven by buyers looking to acquire well-positioned Tier II and III suppliers. We have consistently seen buyers rewarding sellers for upcoming growth via strong valuations and favorable terms and conditions.

### LEAP and GTF Delivery Schedule



### LEAP & PW1000G Market Share



Source: RBC Capital Markets, and other publicly available information

## HIGHLIGHTS

❖ *The F-35A is set to be declared operational by the USAF between August 1 and December 31 of 2016*

❖ *Lockheed will increase production from 4 jets a month in its facility in Fort Worth to up to 17 a month by 2019*

❖ *The Joint Strike Fighter program remains the number 1 priority for Department of Defense*

# Defense: JSF Production Ramp

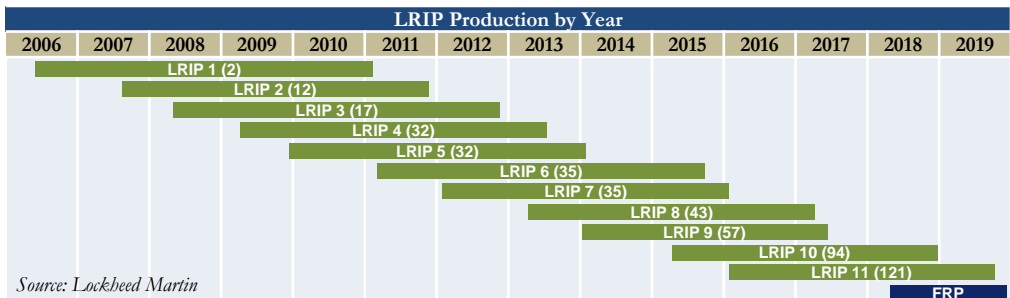
## JSF Finally Poised to Enter Ramp-Up Stage of Production Cycle

Since its introduction, the JSF has been inundated with heavy criticism, both warranted and unwarranted, partly because of what some deem its inadequate combat capabilities but mostly due its gargantuan costs and countless production delays. However, the F-35/Joint Strike Fighter program finally looks set to have turn the corner and deliver on its promise as the future of modern warfare.

F-35 Demonstration at Farnborough Airshow



After nearly an 11-year delay, the F-35 is set to be declared initially operational by the US Airforce before the end of the year and is on track to reach full-rate production in 2019. Both BAE Systems and Lockheed Martin have recently upgraded their facilities in preparation for the ramp up in production. Lockheed is set to deliver 43 aircrafts in 2016 and plans to increase production from four jets a month in its facility in Fort Worth to up to 17 a month by 2019, while BAE newly-expanded facility in the UK will be capable of manufacturing 160 aircrafts per year. The F-35 is made up of 300,000 parts from more than 1,100 suppliers in nearly every state in the US. The JSF production ramp will surely send ripples throughout the entire supply chain.



The Joint Strike Fighter is expected to remain the top DoD program in terms of procurement funding for the foreseeable future.

Top 5 DoD Programs and Procurement Funding (\$mm)									
Program	Contractor	Type	FY'16	FY'17	FY'18	FY'19	FY'20	FY'21	
<b>Joint Strike Fighter</b>	Lockheed Martin	Fighter Jet	9,877	8,703	10,593	10,402	11,279	13,107	
USS Virginia (SSN-774)	General Dynamics	Submarine	5,459	5,331	5,180	6,814	6,942	775	
AEGIS Combat System	Lockheed Martin	Destroyer	4,267	3,349	3,637	3,633	3,712	3,784	
P-8A Poseidon	Boeing	ISR/ Patrol	3,229	2,108	1,533	2,638	97	-	
KC-46	Boeing	Tanker	2,404	3,057	3,151	3,216	3,233	3,293	

Source: Department of Defense

## Public Market A&D Valuations

### Select Company Trading Levels as of June 30, 2016

Company	Market Cap.	Enterprise Value	Revenue	EBITDA	EV/Revenue	EV/EBITDA	Debt/EBITDA
B/E Aerospace Inc.	\$4,719	\$6,674	\$2,756	\$592	2.42x	11.3x	3.5x
BAE Systems plc	22,101	24,011	24,756	2,306	0.97x	10.4x	2.6x
Boeing Co.	82,729	84,442	96,597	8,778	0.87x	9.6x	1.1x
Bombardier Inc.	3,386	10,261	17,689	485	0.58x	21.2x	14.7x
CAE Inc.	3,238	3,885	1,938	372	2.01x	10.4x	2.6x
Chemring Group plc	471	624	579	77	1.08x	8.1x	3.2x
Cobham plc	3,543	5,152	3,056	613	1.69x	8.4x	3.6x
Dassault Systemes SA	19,264	17,516	3,279	894	5.34x	19.6x	1.3x
Embraer SA	4,028	5,646	6,278	629	0.90x	9.0x	7.1x
Esterline Technologies Corp.	1,821	2,493	1,895	245	1.32x	10.2x	3.2x
Finmeccanica SpA	5,815	10,817	14,665	1,664	0.74x	6.5x	3.8x
General Dynamics Corp.	42,558	44,051	31,409	4,679	1.40x	9.4x	0.7x
GKN plc	6,137	7,190	10,664	1,175	0.67x	6.1x	1.3x
Hexcel Corp.	3,869	4,533	1,887	414	2.40x	10.9x	1.4x
Honeywell International Inc.	88,649	96,415	38,890	7,822	2.48x	12.3x	1.6x
ITT Corporation	2,881	2,659	2,506	396	1.06x	6.7x	0.6x
L-3 Communications	11,288	14,463	10,331	1,159	1.40x	12.5x	3.3x
Lockheed Martin Corporation	75,555	89,379	47,723	6,409	1.87x	13.9x	2.4x
Meggitt PLC	4,173	5,573	2,429	510	2.29x	10.9x	3.5x
MTU Aero Engines AG	4,757	5,786	5,049	632	1.15x	9.2x	2.3x
Northrop Grumman	40,111	45,221	23,525	3,506	1.92x	12.9x	1.8x
Orbital ATK	4,986	6,519	4,628	623	1.41x	10.5x	2.8x
Raytheon Co.	40,374	43,577	23,722	3,253	1.84x	13.4x	1.6x
Rheinmetall AG	2,519	2,959	5,911	505	0.50x	5.9x	1.9x
Rockwell Collins Inc.	11,085	13,294	5,157	1,174	2.58x	11.3x	1.8x
Rolls Royce Holdings plc	17,392	17,687	20,240	2,902	0.87x	6.1x	1.7x
SAAB AB	3,279	3,171	3,528	285	0.90x	11.1x	2.6x
Safran SA	28,167	29,844	19,658	4,072	1.52x	7.3x	0.9x
Smiths Group plc	6,057	7,381	4,043	711	1.83x	10.4x	2.7x
Spirit AeroSystems Holdings, Inc.	5,118	5,422	6,583	1,017	0.82x	5.3x	1.1x
Textron Inc.	9,828	13,102	13,470	1,604	0.97x	8.2x	2.3x
Thales SA	17,548	15,748	15,274	1,574	1.03x	10.0x	1.1x
TransDigm Group Incorporated	13,970	21,778	3,000	1,327	7.26x	16.4x	7.1x
Triumph Group, Inc.	1,758	3,154	3,886	(99)	0.81x	n/a	n/a
Ultra Electronics Holdings plc	1,621	2,014	1,071	173	1.88x	11.6x	2.9x
United Technologies Corp.	85,821	103,334	56,135	10,105	1.84x	10.2x	2.0x
Zodiac Aerospace	6,494	8,296	5,537	310	1.50x	n/a	3.6x
<b>Average</b>					<b>1.7x</b>	<b>10.5x</b>	<b>2.9x</b>
<b>Median</b>					<b>1.4x</b>	<b>10.x</b>	<b>2.4x</b>

Market data as of June 30th, 2016; financial data per most recent filing available as of June 30th, 2016  
 \$US in mm; conversion rate, if applicable, based on historical exchange rate as of most recent filing date  
 Source: Capital IQ, analyst estimates, and other publicly available information

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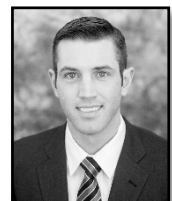
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