



# CFA Institute

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# MOTOROLA SOLUTIONS INC

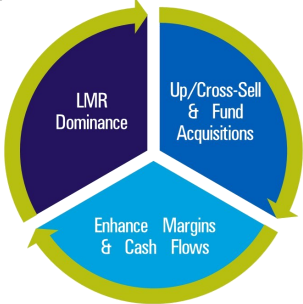
**DATE:** Dec. 31, 2021  
**TICKER:** MSI  
**EXCHANGE:** NYSE  
**GICS SECTOR:** Information Technology  
**INDUSTRY:** Communications Equipment  
**CURRENT PRICE:** \$272  
**TARGET PRICE:** \$287  
**UPSIDE:** 6.5%  
**RECOMMENDATION:** BUY

Figure 1: Valuation Summary

Snapshot	
Market Value (m)	\$39,622
Shares Outstanding (m)	174.1
Current Share Price	\$272
52-Week High	\$274
52-Week Low	\$167
Beta	0.9
12-Month Target Price	<b>\$287</b>
Annual Dividend	\$3
Upside Potential	<b>6.8%</b>
PEG Ratio	1.40

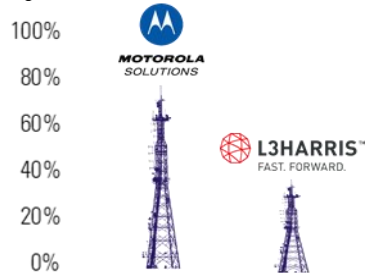
Source: Team Consensus

Figure 2: Investment Thesis



Source: Team Consensus

Figure 3: Domestic LMR Market



Source: William Blair

## BRIEF

Motorola Solutions is the industry giant in public safety communications equipment, specializing in Land Mobile Radio (LMR), Video Security & Analytics, and Command Center Software. MSI's dominance in the sticky LMR market provides a financial anchor supporting the company's expansion into faster-growing, more profitable public safety technologies.

## INVESTMENT SUMMARY

We issue a BUY recommendation for MSI with a one-year target price of \$287, offering a 6.5% upside to its December 31, 2021 \$272 closing price. Our analysis utilizes a Discounted Cash Flow model (and is confirmed by Monte Carlo, Dividend Discount, and Relative Valuation models) and is based upon MSI's economic moat, adjacency acquisitions, and favorable margins (Figure 1).

### Economic Moat

MSI's LMR market dominance and entrenched customer relationships establish a protective economic moat that enables upselling and cross-selling, boosts topline performance, and diversifies revenue streams (Figure 2). MSI effectively controls the LMR market (i.e., 84% Illinois first responder market share, 70% domestic market share, and 54% global market share, Figure 3, Appendix 11) and captures LMR customers via sunk infrastructure costs and high switching costs. Most LMR contracts are multi-year — 5 year average — and involve both network installation and ensuing service support, which can only be provided by MSI as each LMR network is custom built to meet customer requirements. MSI leverages entrenched customers to upsell newer, higher-priced LMR devices (e.g., APX NEXT radio) and cross sell more profitable Video Security & Analytics (25% forecasted market CAGR through 2026) and Command Center Software (11% forecasted market CAGR through 2025) products and services, boosting both revenue growth and margin expansion. Its ability to upsell and cross-sell is additionally strengthened by a favorable funding environment (American Rescue Plan Act, ARPA, provides \$0.5 trillion in funding for target customers through 2024).




### Adjacency Acquisitions

Funded by cash flows generated by its LMR market dominance (which still offers growth opportunities with a 9% forecasted market CAGR through 2027), MSI utilizes strategic public safety adjacency acquisitions to penetrate less protected technologies, doubling its total addressable market (TAM) between 2015 and 2021. In Video Security & Analytics (\$12 billion TAM with an expected 25% market CAGR through 2026), MSI has acquired Avigilon, VaaS, and IndigoVision, with the former's fixed and

*"As I look ahead, I'm encouraged by how we're positioned. Our strong backlog in both segments provides us with significant demand visibility. We're expanding our relationships within our existing installed base to provide more software and services. The customer funding is as good as I've seen it."*

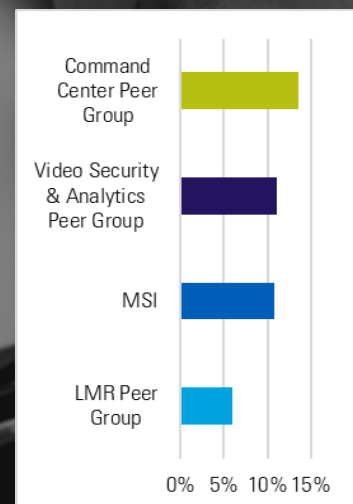
*Greg Brown, Chairman and CEO of Motorola Solutions.*

Figure 4: Disclosed Acquisitions

Target	Price (m)	EV/ EBITDA
 AVIGILON	\$1,041	14.96
 VaaS	\$445	15.32
 IndigoVision	\$36	12.47

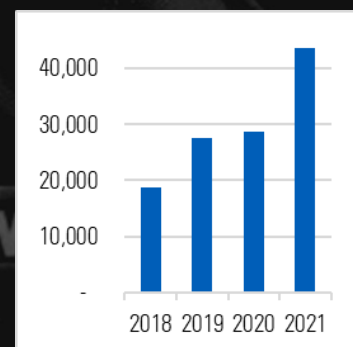
Source: Bloomberg

Figure 5: Ten-Year Average Net Profit Margin Comparison



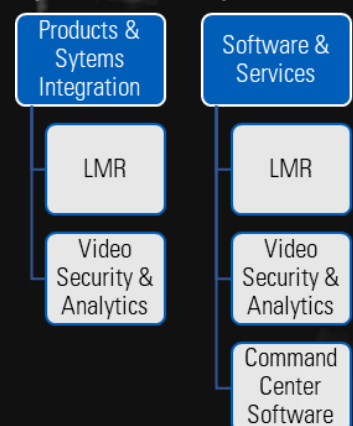
Source: Bloomberg

Figure 6: MSI Market Capitalization (m USD)



Source: Bloomberg

Figure 7: Revenue Segments



Source: MSI 2020 10-K

mobile video solutions providing real-time surveillance and analytics for governmental and commercial customers (Figure 4). In Command Center Software (\$6 billion TAM with an expected 11% market CAGR through 2025), MSI has created its CommandCentral Suite (Figure 27) — the market’s most comprehensive 911 call center software — via acquisitions of Callyo, Spillman Technologies, and Airbus DS Communications. We expect MSI to spend 37.5% of operating cash flow on acquisitions of Video Security & Analytics and Command Center targets, supporting a 6.3% revenue CAGR through 2030 (compared to a 2.1% eight-year historic CAGR).

### Favorable Margins

MSI’s service-heavy adjacency acquisitions (e.g., Avigilon, VaaS, and Callyo) have not only increased its Software & Services proportional revenue from 29.3% (2017) to 37.5% (2020), the healthier margins of its Video Security & Analytics and Command Center Software acquisitions (Figure 5) have simultaneously improved its operating margins by 350 bps between 2014 and 2020. Comparing MSI’s revenue segments, its Software & Services segment provides an operating margin of 26.2% compared to the 14.2% operating margin offered by its Products & Systems Integration segment. We expect MSI to continue its cutting-edge public safety service solutions focus, and by 2030 Software & Services (due to a 9.24% projected revenue CAGR through 2030 compared to Products & Systems Integration’s 2.8% projected revenue CAGR, Appendix 8) will comprise 50% of total revenue and support a 58% overall gross margin (compared to Appendix 15’s 50% in FY 2020 and Axon Enterprise’s 61.1% gross margin).

## BUSINESS DESCRIPTION

Headquartered in Chicago, MSI provides LMR radio networks and devices, Video Security & Analytics solutions (fixed and mobile), and Command Center Software (custom built for 911 call centers). MSI has 18,000 employees (6,000 specializing in R&D) spread across key manufacturing facilities in Illinois, Texas, and Canada as well as R&D centers in Illinois, Poland, and Israel. Though MSI utilizes in-house manufacturing facilities, it also outsources manufacturing of key components to Sanmina Corporation (12.5% of COGS), Hon Hai Precision Industry (8.6% of COGS), and other contract manufacturers.

### History and Management Team

Founded in Chicago in 1928 (Appendix 28), MSI has been a perennial leader in communications equipment with its introduction of car radios in the 1930s and cellular phones in the 1980s. In 2011, Motorola split into Motorola Mobility (cellphone segment, later sold to Google then Lenovo) and Motorola Solutions (public safety segment). Following declining revenues, Chairman and CEO Greg Brown led an acquisition-driven company turnaround resulting in 197% EPS growth (Figure 31) between 2015 and 2020 and 131% market capitalization growth between 2018 and 2021 (Figure 6). Other key members of MSI’s management team (Appendix 7) include Jason Winkler (CFO) who handles financial strategy and supply chain, Jack Malloy (COO) who oversees the company’s sales and systems integration teams, and Mahesh Saptharishi (CTO) who heads Video Security & Analytics, Command Center Software, and cybersecurity solutions.

### Business Segments and Technologies

MSI is divided into two segments—Products & Systems Integration (non-recurring revenue associated with LMR network and video security camera installation; 62.5% of 2020 revenue) and Software & Services (recurring revenue associated with LMR network maintenance and services, video security and analytics services, and 911 call center software; 37.5% of 2020 revenue). MSI offers three technologies across its segments (Figure 7). LMR Mission Critical Communications networks (82% of 2020 revenue) enable two-way communication between radio transceivers and are favored by public safety customers over long-term evolution (LTE) because customers directly own and operate these stronger, more resilient LMR networks that remain operational during natural disasters and emergencies. Video Security & Analytics (15% of 2020 revenue) includes AI-enabled fixed video surveillance systems and access control solutions, the M500 Police In-Car Video System, police body cameras, and license plate recognition software. Command Center Software (3% of 2020 revenue) provides cloud-based applications allowing public safety personnel to collect and access pertinent information from an initial 911 call to case closure.

### Customer Base

With sticky, high-margin government contracts accounting for 75% of 2020 revenue, MSI’s largest customers (i.e., the US and UK governments with 9% and 8% of revenue, respectively) primarily purchase LMR network installation and ensuing services. Commercial customers (25% of 2020 revenue) primarily purchase Video Security & Analytics solutions. Its target Command Center Software market encompasses domestic 911 call centers, and management estimates that 60% of US 911 call centers use at least one

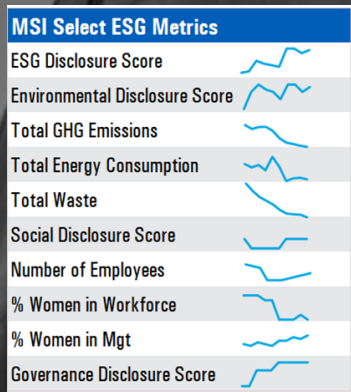


Figure 8: ESG Focus Topics



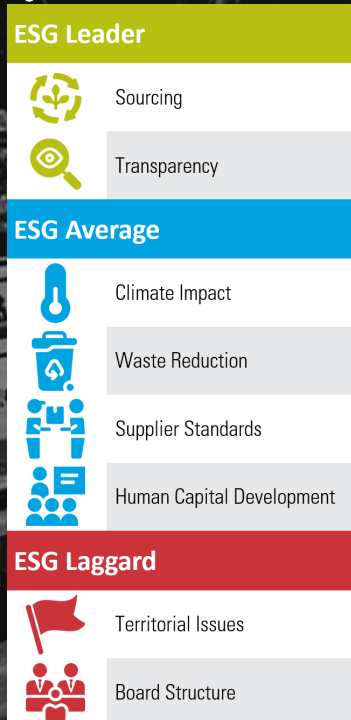
Source: 2020 MSI CR Report

Figure 9: ESG Performance



Source: Bloomberg

Figure 10: Relative ESG



Source: ISS ESG Report

MSI software module. Its largest geographic markets (Figure 28) are the United States (64% of revenue), the United Kingdom (10% of revenue), Canada (3% of revenue), and other developed nations (23% of revenue).

## ENVIRONMENTAL, SOCIAL, GOVERNANCE

Figure 11 summarizes MSI’s Environmental, Social, and Governance (ESG) performance and rankings while Figure 8 outlines its internal areas of focus.

### Environmental

Factors positively impacting MSI’s environmental ratings include waste reduction, climate impact, mineral sourcing, and supplier standards. Its total waste (1,113 tons) fell 34.4% in 2020 (Figure 9) and its take-back option for used products covered more than 80% of product sales. For 2021, MSI aims at a recycling rate of at least 50%. It lowered greenhouse gas (GHG) emissions by 166% over the past 10 years and in 2020 beat its 2027 38% reduction target by lowering Scope 1 & 2 GHG emissions by 39.7%. To mitigate mineral mining impacts (i.e., its products contain tantalum, tin, tungsten, and gold originating largely from the Democratic Republic of the Congo), MSI is a member of the Responsible Minerals Initiative (RMI) and supports US and EU policies such as “Solutions for Hope” aimed at creating a closed-pipe system of mining conflict-free tantalum from the DRC (Figure 10). In accordance with EU RoHS legislation, MSI has banned 82 substances from its products. It also demands compliance with its environmental supplier standards and code of conduct based on guidance from the 2020 Responsible Business Alliance (RBA), United Nations Guiding Principles on Business and Human Rights, and International Labor Organization.

Factors negatively impacting its environmental rating include limited information regarding whether employees are certified in ISO energy management, the degree to which sustainable energy sources are utilized, unclear goals regarding freshwater and total waste reduction and product energy efficiency, and environmental management at its outsourced production sites.

### Social

Factors positively impacting MSI’s social ratings include its commitment to diversity, equity and inclusion (DEI), a healthy and safe workforce, and information security. MSI was recognized in Forbes’ 2020 and 2021 “Best Employers for Diversity” (Figure 12) due to its 2020 Chief Diversity Officer hire, its 2021 DEI strategic framework launch incorporating global DEI training, its six DEI business councils, and STEM gender diversity support via the Society of Women Engineers. To support its employees’ health and safety during the Covid-19 pandemic, MSI rolled out a “work from home if you can” approach to 80% of its 18,000 employees (vs. L3Harris Technologies, LHX, only offered remote options to 50% of its employees) and provided paid time off, virtual hangout spots, and wellness workshops. To promote cybersecurity, data privacy, and responsible technology (Appendix 4), MSI appointed a Data Protection Officer in 2018 (in compliance with Europe’s General Data Protection Regulation, GDPR) and founded the Motorola Solutions Technology Advisory Board in 2020. Its information security systems conform to ISO 27001 certification standards, with hard- and software-based security considerations integrated into 100% of its products and regularly tested by ethical hackers. Over the past ten years, its nonprofit Foundation donated over \$100 million (including 200 grants in over 24 countries in 2020 to provide over \$2 million to worldwide Covid-19 relief efforts) and served 14,000 volunteer hours during the 2020 Global Month of Service.

Factors negatively impacting MSI’s social ratings include undefined bargaining rights, lack of clarity as to

Figure 11: ESG Ratings

Provider	Measure	Best	MSI	Relative	LHX	AXON	TYL
S&P Global	ESG	100	45	Better	39	29	46
Sustainalytics	ESG	1	15 (low)	Better	30 (medium)	41 (severe)	19 (low)
Bloomberg (disclosure)	ESG	100	54	Better	44	23	34
MSCI	ESG	A	AA (leader)	Better	A (average)	Leader	A (average)
MSCI Climate	E	0	1.86° (aligned)		1.99° (aligned)		1.47° (aligned)
CDP Climate Score (Climate, Water)	E	A	C, C	Worse	B, A-		
ISS QualityScore	G	1	8 (significant)	Worse	4 (low)	5 (moderate)	9 (high)
ISS ESG	ESG	A	C+	Better			

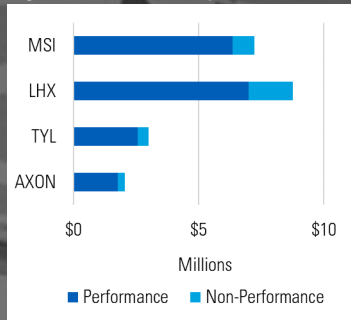
Source: Bloomberg

Figure 12: Company Awards & Recognitions



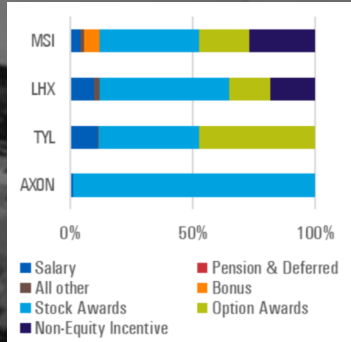
Source: MSI CR Report 2020

Figure 13: Exec. Compensation



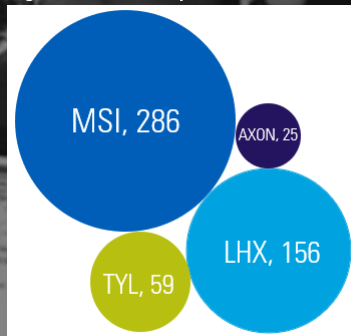
Source: Bloomberg

Figure 14: CEO Compensation



Source: Bloomberg

Figure 15: CEO Pay Ratio



Source: Proxy Statements

Figure 16: Top Institutional Owners

Vanguard Group Inc/The	10.99%
BlackRock Inc	7.99%
Capital Group Cos Inc/The	5.90%
State Street Corp	4.26%
Wellington Management Group LLP	2.64%
Macquarie Group Ltd	2.50%
Geode Capital Management LLC	1.77%
Invesco Ltd	1.74%
Raymond James Financial Inc	1.62%
AllianceBernstein LP	1.61%

Source: Bloomberg

Figure 17: Top Insider Owners

Brown, Gregory Q.	0.27%
Lewent, Judy Carol	0.02%
Molloy, John P.	0.02%
Mark, Kelly S.	0.02%
Pramaggiore, Anne R.	0.01%
Mondre, Gregory K.	0.01%
Durban, Egon Pierre.	0.01%
Hacker, Mark S.	0.01%
Saptharishi, Mahesh	0.01%
Jones, Clayton M.	0.01%

Source: Bloomberg

whether leave requirements exceed legal minimums, no information regarding on-site childcare access or direct financial support, failure to disclose governmental financial assistance, and failure to respect territorial self-determination rights. Specifically, MSI was identified by the UN in 2020 for providing ground surveillance (e.g., its MotoEagle Wide Area Surveillance System) to Israeli police, military, and prison service in West Bank settlements considered illegal by international law.

### Governance

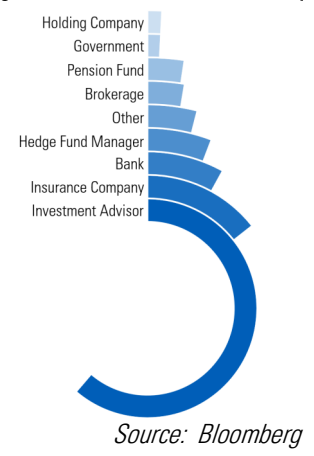
MSI's B+ ISS ESG corporate governance and business ethics score is positively driven by shareholder democracy, CEO and executive management team compensation scheme disclosure, and its code of business ethics and compliance procedures. Areas for improvement are highlighted in MSI's 2020 ISS QualityScore of 8/10 signaling key risks in the board structure assessment (Figure 10).

**Executive Compensation.** Positive factors affecting MSI's 6/10 ISS Compensation Risk QualityScore include its cash exchange for underwater options restriction, shareholder approval requirement for option compensation repricing, prohibition of share recycling for options/SARs, and award clawback. However, the most negative factor is excessive CEO compensation. CEO Greg Brown's salary is 416x the next-highest-paid MSI officer, 1.3x the peer group median, exceeds its peers in terms of the ratio of CEO-to-typical-worker compensation (Figure 14), and received less than 90% support in the most recent Say for Pay proposal (despite containing the second largest performance-based compensation weight in its peer group, Figures 13 and 14).

**Board of Directors.** Its 10/10 ISS Board Structure QualityScore indicates severe governance risks associated with MSI's 7 directors (Appendix 8). Primary areas of concern are the lack of separation between Board Chair and CEO (i.e., Greg Brown occupies both positions, introducing agency problems), a busy board member, low director support ratings (28.57% received less than 80%), and a lack of diversity (e.g., only 14.29% of board members are women with 0% named as executives, Appendix 9). Mitigating factors include 86% independent directors (equal to its peer average) that also serve on subcommittees (Appendix 10), unentrenched directors, disclosed board policies and succession plan, and director compensation less than its peers' median (0.94).

**Shareholder Structure.** Its 2/10 ISS Shareholder Rights QualityScore suggests low shareholder risk, mainly attributed to its 1-share-1-vote, annual director election, charter and bylaws amendments by simple majority vote, and proxy access rights. This low risk determination is further supported by the relatively high oversight suggested by its 93.0% institutional ownership (Figure 18) (compared to LHX's 89.7% and Axon Enterprise's 89.8%), the largest owners being Vanguard Group Inc and BlackRock Inc (Figure 16). No individual or asset management firm has filed a 13-F with the SEC since 2020, suggesting limited potential hostile takeover. MSI's CEO is the top insider with 0.27% (Figure 17), trailing the stakes of AXON's founder/CEO (3.23%) but exceeding those of LHX (0.04%) and Tyler Technologies (TYL, 0.18%), indicating better shareholder interest alignment. However, existing risks include blank check preferred stock issuance, an exclusive litigation venue, and a 20% share capital minimum to convene a special meeting.

Figure 18: Shareholder Ownership



Source: Bloomberg

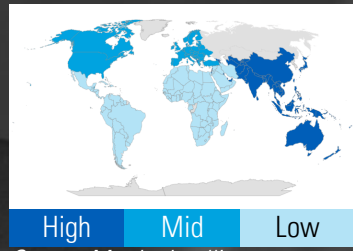
## INDUSTRY OVERVIEW

The safety communications industry is comprised of companies that specialize in the production, distribution, and post sales services of safety and communications networks. Technologies from this industry are used in telephone, broadband coverage, TV broadcast, cloud computing, land mobile radio, and cable networks. Main players include Motorola Solutions, Ericsson, Huawei, Hikvision, L3 Harris, Boeing, and Tyler Technologies. Revenue—expected to rise 6.7% in 2021—is largely garnered from local, state, and federal government agencies. The remaining portion of sales is generated from safety contracts with private entities for services such as data tracing and analytics as well as safety software.

### Key Drivers & Success Factors

Main industry drivers include technological innovation aimed at creating a more secure, reliable, and integrated public order and security infrastructure (Figure 20 and Appendix 1). Global IT spending reached \$4 trillion in 2021 and is expected to grow at 5.5% in 2022 after posting a 3.1% CAGR between 2005 and 2021. US annual government expenditures on public order and safety have grown at a 4.36% CAGR from

Figure 19: Public Safety Market Growth Rate by Region



Source: Mordor Intelligence

1997 to 2020. Though the industry’s highest growth rate is in Asia-Pacific (Figure 19), domestic industry growth will hasten in the near future due to the approval of ARPA with \$0.5 trillion being earmarked for public safety. This portion of ARPA focuses on funding safety and order services for communities, in addition to rescue and vaccine distribution services. We believe local public safety agencies will increase communications equipment spending in response to this favorable funding environment, complementing the revenue growth assumptions factored into our DCF model (Appendix 13).

**Headwinds and Tailwinds**

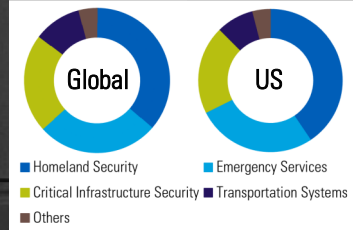
In addition to the items below, factors impacting the industry include customer concentration, limited talent availability, and manufacturing economies of scale.

**Innovative Technology.** Market share critically depends upon product and service technology (e.g., a one-minute increase in first responder speed can save 10,000 lives annually). Consequently, players routinely spend 10-20% of revenue on R&D, safeguard intellectual property via patents, and generate income via licensing patents. The speed at which technology evolves creates both struggles and opportunities such as the Internet of Things (IoT), cloud computing, enterprise digitization, and the integration of LTE networks. MSI’s investment in R&D (e.g., 6,000 fully-dedicated R&D employees and 9.3% of 2020 revenue spent on R&D) has led to major technological innovations such as their new Mobile LXN 6000 LTE hardware. MSI’s consistent technological advancement shows its superior ability to properly allocate swaths of resources towards R&D.

LMR radio systems, dating back to the 1930s and featuring push-to-talk (PTT) two-way radio communication that works both on and off networks, are increasingly integrating with cellular-based LTE networks, which support increased broadband applications, mobile device updates, and video streaming but fail to operate in “dead zones.” Technical infrastructures are also vulnerable to production design failures (generating unnecessary service costs and lost customer loyalty), natural disasters, software malfunctions, and cybersecurity attacks (which have increased 600% during the pandemic and cost organizations on average \$8.64 million in 2020). In response to heightened threats, MSI provides comprehensive cybersecurity services for its LMR, Video Security & Analytics, and Command Center Software customers (Appendix 4).

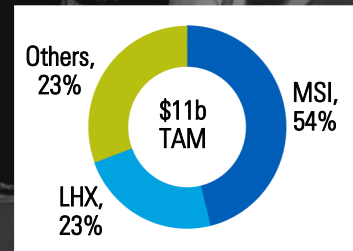
**Regulatory Environment.** The domestic industry is highly regulated by state public utility commissions, the Federal Communications Commission (FCC), and environmental protection agencies (due to the equipment and materials used for production). Companies operating in Europe must also comply with the EU’s General Data Protection Regulation (GDPR), which requires enhanced data protection measures and expanded personal information use disclosures. Regulatory constraints increase compliance costs; noncomplying firms run the risk of penalties (e.g., MSI incurred a \$57 million charge under the Comprehensive Environmental Response, Compensation, and Liability Act in 2018), restricted access to spectrum auctions, or suspension / cessation of contracts with the US government.

Figure 20: Public Safety & Security Market Share, 2020



Source: Fortune Business Insights

Figure 21: LMR Market Comparison



Source: William Blair

**COMPETITIVE POSITIONING**

**Comparables Selection**

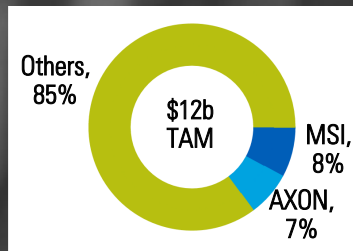
To capture customer and revenue stream variation, we construct distinct peer groups for MSI’s three technologies using management and analyst-selected peers as well as overlapping operating sub-industries, target markets, and parallel product portfolios. The closest LMR, Video Security & Analytics, and Command Center Software competitors are L3Harris Technologies (LHX, primarily an aerospace and defense contractor, the only major domestic LMR competitor), Axon Enterprise (AXON, state and local police body camera and taser provider), and Tyler Technologies (TYL, state and local government software and services provider specializing in public safety solutions and financial management), respectively (Appendix 6).

**Market Dynamics**

MSI entered the \$11 billion TAM LMR market (excluding China) in 1930, and the market grew at a 7% CAGR between 2018 and 2020 primarily due to international expansion. With MSI’s 70% domestic (54% global) market share and LHX’s 30% domestic (23% global) stake, the two firms have achieved effective domestic market saturation (Figure 21). Coupled with multi-year service contracts and significant sunk costs (Appendix 3), the resulting captured customer base means that growth occurs via upselling higher-priced radios and cross-selling network services (e.g., cybersecurity) rather than through new customer acquisition.

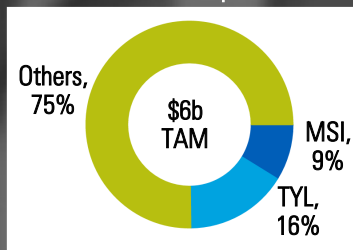
The larger Video Security & Analytics market is growing more quickly (i.e., 15% historic CAGR 2018-2020

Figure 22: Video Security & Analytics Market Comparison



Source: William Blair

Figure 23: Command Center Software Market Comparison



Source: William Blair



Figure 24: Geographic Comparison

Company	Countries	Overseas Revenue
MSI	36	36.20%
LHX	11	5.10%
AXON	6	21.40%
TYL	2	0%

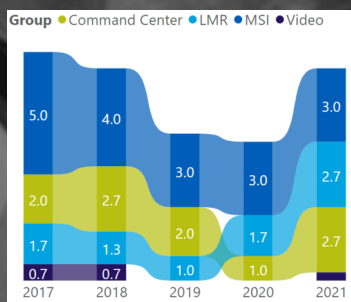
Source: Bloomberg

Figure 25: LMR Comparison

	MOTOROLA SOLUTIONS	L3HARRIS
REMOTE UPDATES VIA CLOUD TECHNOLOGY	✓	✓
TOUCH SCREEN INTERFACE	✓	✗
AI-ENABLED VOICE COMMANDS	✓	✗

Source: MSI Product Catalog

Figure 26: Comparative



Source: Bloomberg

Figure 27: CommandCentral Capabilities



Source: MSI Product Catalog

and 25% forecasted CAGR through 2026) but is more fragmented (i.e., six major competitors, none with stakes larger than 15%). MSI entered the technology in 2018 via its Avigilon acquisition and holds an 8% global market share (Figure 22). Although its closest competitor (AXON) is slightly smaller at 7% global market share, 35% of our survey respondents report using Axon body cameras compared to 10% using MSI (Appendix 11). Domestic players are likely to benefit from recent regulation, such as the National Defense Authorization Act (NDAA), which restricts domestic government purchases from Chinese competitors (e.g., Hytera, Hikvision, and Dahua) and the 2021 Secure Equipment Act, which gives the FCC the authority to ban commercial purchases from these same vendors (Appendix 2).

The smaller Command Center Software market (11% forecasted CAGR through 2025) is also fragmented (i.e., seven major competitors, none with stakes larger than 20%, MSI’s closest competitor TYL accounting for 16% global market share). Despite a smaller 9% global market share (Figure 23), MSI’s 2015 acquisition of Emergency CallWorks solidified its market presence, leading to 60% of US 911 call centers adopting at least one MSI software solution. This market penetration allowed Command Center Software revenue to outpace 2020 market growth by 1.5x, helping fund MSI’s December 2021 911 Datamaster acquisition. Although software workflow complexity and interoperability increase switching costs, which help MSI retain existing customers, they also limit customer acquisition and the speed at which existing customers are willing to adopt new software modules (Appendix 3).

**Geographic Footprint**

MSI’s greater geographic reach within its technologies is a competitive advantage that decreases its US economic and government reliance (Figures 24 and 28). Only 9% of MSI sales stem from the US government compared to 78% of LHX’s domestic revenue. MSI also beats AXON and TYL in terms of percentage of revenue generated overseas. MSI’s established international sales channels give it a key advantage in driving overseas revenue growth compared to its top competitors.

Figure 28: Peer Office Locations



Source: Craft

**Acquisitions**

Since 2018, MSI has acquired thirteen companies at a disclosed total price of \$2.35 billion (Figures 26, 29 and Appendix 5). The LMR market is already saturated, rendering attractive acquisitions less common (LHX’s transactions include the Harris—L3 Technologies merger). In fact, consolidation can draw unwanted regulator attention. The UK Competition and Markets Authority (CMA) is investigating MSI’s Airwave network, predicated upon pricing concerns and MSI’s involvement in the Emergency Services Network (UK first responder LTE network). In Video Security & Analytics, MSI’s acquisitions quickly established a presence in both fixed and mobile video while AXON focuses solely on police body cameras. Although MSI’s Command Center Software expenditures do not include its December 2021 purchase of 911 Datamaster, it must keep pace with TYL by acquiring technology rather than the slower process of in-housing R&D.

Figure 29: M&A Comparison

Technology	Firm	Acquisitions since 2018	Disclosed Value Sum
LMR	MSI	3	Insignificant
	LHX	2	\$1.96b
Video	MSI	6	\$1.92b
	AXON	3	\$13m
Command Center	MSI	4	\$300m
	TYL	13	\$2.47b

Source: Bloomberg

**Technology**

The competitive advantage in LMR radio technology goes to MSI as its APX NEXT offers a touch screen interface, which enables first responders to quickly access key functions, and ViQi personal assistant (AI-enabled technology that allows first responders to retrieve vital information via voice commands) whereas LHX’s XL-200P Multiband Portable does not (Figure 25). Moreover, MSI’s technological advantage over LHX via its APX NEXT radio is a key driver supporting its successful upselling of existing LMR customers via its economic moat. However, MSI lags incumbent Video Security & Analytics provider AXON, whose Body 3 beats MSI’s V300 in both battery life and technological capabilities, which are the two most important body camera features selected by first responders in our survey (Appendix 11). In Command Center Software, the seamless integration of MSI’s CommandCentral Suite (Figure 27) facilitates the complete workflow from initial 911 call to case closure and surpasses TYL’s more difficult to integrate, less comprehensive public safety software modules.

# FINANCIAL ANALYSIS

## Revenue and Profitability

Given MSI's business structure, we separately forecast revenue for its Products & Systems Integration and Software & Services segments. MSI sales are significantly related to many demand drivers that were stated earlier and shown to be increasing (e.g., public safety spending, IT expenditures, public safety construction spending, shipments of LTE network nodes and body

cameras, terrorism, etc.; for a full list of drivers considered, see [Appendix 13](#)). Initial segment-specific revenue is forecasted by regressing past segment net revenue on segment-specific economic and market drivers and then pairing significant coefficients with driver estimates to project annual segment revenue. Under the assumption that acquisitions will focus mainly upon service-oriented targets, initial service revenue is then boosted at a two-year implementation lag based upon the relative percentage increase in annual acquisition spending. The resulting 2022-2030 total revenue CAGR is 6.3% (split between Products & Systems Integration and Software & Services as 2.1% and 9.24%, respectively, and compared to its historic 2012-2020 2.1% total revenue CAGR). As revenues tilt away from Products & Systems Integration and towards Software & Services due to higher margin Software & Services acquisitions (reaching 50% of revenue by 2030), we decrease COGS by 2% annually resulting in a 58% gross margin in 2030 ([Figure 30](#)). MSI enjoys 50% gross margins, compared to TYL, LHX, and AXON's 49%, 30%, and 61%, respectively. This shows MSI's capability to obtain leading profitability among different segments and technologies.

MSI stands out as an industry leader compared to its competitors as shown in [Figures 32](#) and [33](#). MSI's Beneish M-score of -2.75 compared to our peer average of -2.61 shows that, although the industry is not prone to fraud, MSI has the most valid earnings. Our Piotroski F-score of 7 compared to our peer average of 6 validates the profitability that MSI shareholders have over its competitors.

## Capital Investments

Managerial priorities for operating cash flow allocation are divided between capital expenditures, acquisitions, dividends, and share repurchases. Within this industry, capital expenditures on pre-existing infrastructure tend to focus on technology that enhances the lives of safety workers (e.g., MSI's investment in APX Next and mobile LTE communications systems). From 2012-2020, MSI averaged 21.5% CapEx/OCF; looking forward, our model adopts management's disclosed 20% CapEx/OCF target ([Figure 36](#)). Continuing its acquisition trend of focusing on advancing its Software & Services segment, our model predicts that MSI will slightly increase future acquisition spending to 37.5% of OCF, above its 35.4% 2012-2020 average.

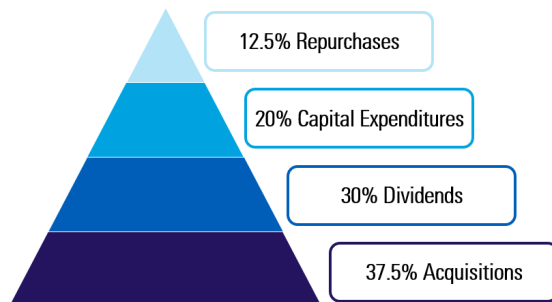
## Shareholder Compensation

MSI has paid a dividend almost continuously (despite temporary suspension in advance of its 2011 split) and is committed to increasing it ([Figure 37](#)). From 2012-2021, MSI averaged 33.5% of its OCF on dividend payments, raising DPS at a 13.4% CAGR. Consistent with management disclosed targets, we project that MSI will spend 30% of OCF on dividends. MSI has also returned wealth to shareholders via share repurchases and tempered its post-split aggressive repurchase program to average 18.3% of OCF 2017-2021 ([Figure 35](#)). In line with management disclosed targets (i.e., allocating the remaining half of OCF not earmarked for acquisitions towards repurchases), we direct 12.5% of OCF towards share repurchases in our model.

## Leverage & Liquidity

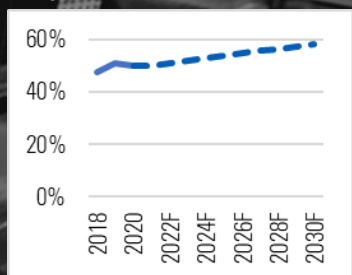
MSI's debt, rated BBB- by S&P, is 1.5x greater than its 2020 net sales. With a 2020 Debt/EBITDA of 2.75, its leverage exceeds the average debt load in all three peer groups; however, according to financial analysts within Bloomberg, its five-year default probability is less than its peer group averages and its closest comparables ([Figure 42](#)). Looking at its long-term debt, it has outstanding issues maturing 2024-2031 excluding 3 issues maturing after 2037 ([Figure 38](#)), which are supplemented by a \$2.25bn revolving line of credit through 2024. We are not concerned regarding MSI's ability to realize sufficient cash flows from revenues in order to cover debt maturities. According to our projections ([Appendix 19](#) and [21](#)), MSI

Figure 36: Assumed Managerial Cash Flow Priorities



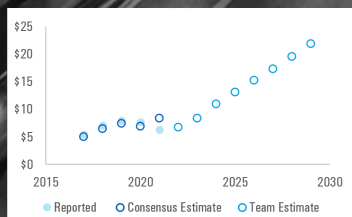
Source: Team Consensus

Figure 30: Forecasted Gross Margins



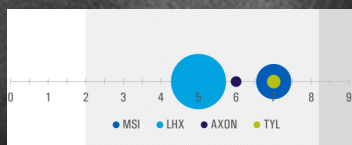
Source: Team Consensus

Figure 31: Forecasted EPS



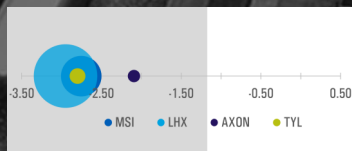
Source: Team Consensus

Figure 32: Piotroski F-Score (bubble size is 2020 net sales)



Source: Team Consensus

Figure 33: Beneish M-Score (bubble size is 2020 net sales)



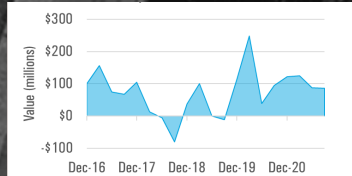
Source: Team Consensus

Figure 34: Altman Z-Score (bubble size is 2020 net sales)



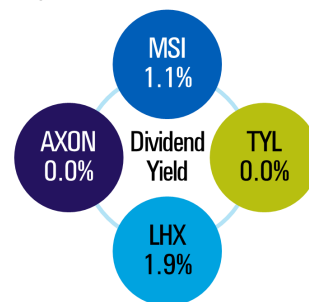
Source: Team Consensus

Figure 35: Share Repurchase (Issuance)



Source: Bloomberg

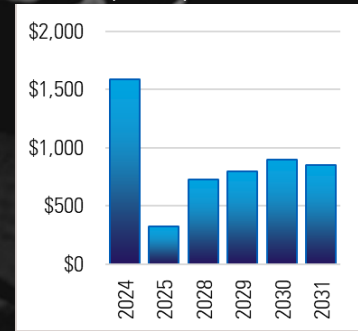
Figure 37: Dividend Yields



Source: Yahoo! Finance

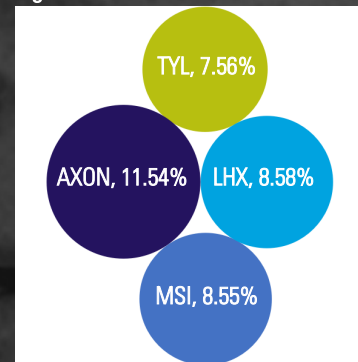


Figure 38: Debt Distribution Schedule (m USD)



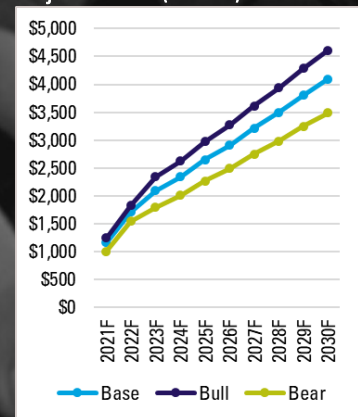
Source: Bloomberg

Figure 39: Peer WACCs



Source: Bloomberg

Figure 40: Scenario Analysis Projected FCFF (m USD)



Source: Team Consensus

Figure 41: MC Simulation Statistics

Monte Carlo DCF	
75th percentile	\$340
50th percentile	\$285
25th percentile	\$241
% Buys	51%
% Holds	12%
% Sells	36%
Iterations	1,000,000

Source: Team Consensus

will utilize profits to lower its LTD/TA ratio from 0.5 (2020) to 0.1 (2030). Comparatively, MSI's Altman Z-score of 2.79 is lower than competitors as seen in [Figure 34](#), showing an increased but still unlikely risk of bankruptcy. However, implementation of the above strategic priorities will erode MSI's liquidity metrics (e.g., its forecasted current and cash ratios from 1.3 and 0.4 in 2020 to 1.1 and 0.1 by 2030, respectively, [Appendix 21](#)). Management may need to increase short-term liquidity through alternative strategies if its reduced current and cash ratios introduce excessive risk exposure.

## VALUATION

We issue a BUY recommendation on MSI with a 12-month target price of \$287, representing a 6.5% upside from its 12/31/2021 \$272 closing price ([Figure 1](#), [Appendix 24](#) and [27](#)). Our recommendation is based on a Free Cash Flow to the Firm (FCFF) Discounted Cash Flow (DCF) model incorporating MSI's LMR economic moat, continued acquisitions, and expanding margins. We then (i) run our FCFF DCF model through scenario and sensitivity analyses to assess the input variability impact on the implied price and (ii) confirm our valuation via relative valuation and dividend discount models (DDM) ([Appendix 12](#), [23](#), and [26](#)). The resulting upside beats S&P 500 analysts' consensus 3.9% 2022 expected return and is supported by a Piotroski F-score of 7, indicating a high investment value ([Figure 32](#)).

## Discounted Cash Flow

**WACC.** The assumptions used to arrive at our 8.5% WACC are provided in [Figure 43](#). In addition, [Appendix 22](#) compares WACC components with MSI's peer group averages. MSI's WACC of 8.5% is lower than main competitors LHX and AXON but higher than TYL's ([Figure 39](#)).

Figure 43: WACC Components

Component	Rate	Methodology
Risk-free rate	2.2%	Revenue weighted average of 10-year yields in MSI's 3 main markets (US, UK, Canada)
Equity risk premium	8.3%	Excess return of the S&P 500 above the US Treasury yield
Beta	0.88	Adjusted beta (raw is average of 2- & 3-year monthly regressions)
Cost of equity	9.6%	Calculated via CAPM
Pre-tax cost of debt	2.2%	ST & LT Treasury yields, weighted by MSI's current STD & LTD weights, adjusted to corporate levels
Tax rate	19.5%	MSI's Q3 2021 Trailing 12-month effective tax rate
After-tax cost of debt	1.8%	
WACC	8.5%	Calculated using a market value D/E ratio of 0.15x

Source: Team Consensus

**Terminal Growth.** The 2.5% terminal growth rate effective after 2030 is based upon a weighted average of the expected GDP growth in MSI's three main geographic operating markets (i.e., US, UK, and Canada).

## Sensitivity Analysis

We incrementally increase/decrease key line item assumptions in our FCFF DCF by 10% to evaluate the robustness of our target price ([Appendix 25](#)). Understandably, our estimate is most sensitive to the assumed discount rate (e.g., a 10% or 85 bp increase in WACC lowers the implied value by 15%). Given economic consensus estimates that ten-year Treasuries will increase 46 bps December over December, this possibility is not insignificant. However, our WACC calculation has built-in conservatism (e.g., our 8.3% ERP exceeds competing alternatives such as Professor Aswath Damodaran's December 2021 4.77% figure, which would have produced a 5.8% WACC), acting as a cushion for adverse rate changes. The second largest risk factor is our COGS margin assumption, in which a 10% increase would reduce the share price by 11.3%. However, MSI's 2.4% gross margin expansion since 2016 and increasing proportional Software & Services revenue make COGS inflation unlikely.

## Scenario Analysis

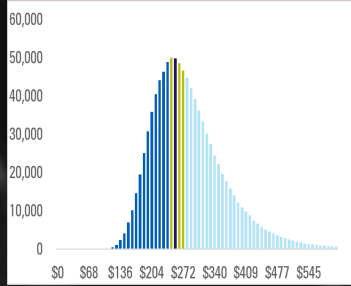
**Bull/Bear FCFF DCF.** We next conduct bull and bear FCFF DCF scenario analyses varying multiple assumptions in our investment thesis ([Appendix 13](#)). Including MSI's expected dividend yield, the bull scenario's \$325 12-month target provides a 20.8% upside relative to MSI's year-end close; whereas the

Figure 42: Peer Group Credit Ratings

	S&P Credit Rating & Outlook	Total Debt-to-EBITDA	5Yr Default Prob
<b>LMR</b>			
L3Harris	BBB, STABLE	2.83	0.38%
Hytera	AA-, Negative (China)		3.63%
JVC	None	2.50	4.81%
		<b>2.67</b>	<b>2.94%</b>
<b>Video Security &amp; Analytics</b>			
Axon	None		0.45%
Hikvision	AAA, Stable		0.72%
Genetec	None	1.72	12.15%
		<b>1.72</b>	<b>4.44%</b>
<b>Command Center Software</b>			
Tyler	None	4.73	0.66%
Mercury	None	2.06	0.71%
Arista	None	0.07	0.06%
		<b>2.29</b>	<b>0.48%</b>
Motorola	BBB-, STABLE	2.75	0.35%

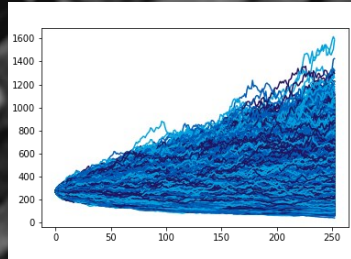
Source: Bloomberg

Figure 44: MC Simulation Distribution



Source: Team Consensus

Figure 45: Brownian Price Path



Source: Team Consensus

Figure 46: Brownian Distribution



Source: Team Consensus

Figure 47: Brownian Price Path

Monte Carlo Price Paths	
75th percentile	\$363
50th percentile	\$290
25th percentile	\$231
% Buys	53%
% Holds	9%
% Sells	38%
Iterations	1,000,000

Source: Team Consensus

Figure 48: Peer Groups

LMR Peers	
L3Harris Technologies Inc*	
Hytera Communications	
JVCKenwood Corp	
Command Center Peers	
Tyler Technologies Inc*	
Mercury Systems Inc	
Arista Networks Inc	
Video Security Peers	
Axon Enterprise Inc*	
Hangzhou Hikvision Digital	
Genetec Technology	
Relative Valuation	
EBITDA/EV method	\$291
Upside (Downside)	7.2%
P/E method	\$297
Upside (Downside)	9.3%

Source: Team Consensus

bear scenario's \$221 12-month target represents a 17.5% downside (Figures 40 and 49).

**Monte Carlo FCFF DCF.** We then perform a one-million-iteration Monte Carlo simulation, adjusting all key investment thesis assumptions simultaneously (Appendix 13) to determine how key investment risks impact MSI's share price trajectory. Figures 41 and 44 show the summary statistics and distribution for the resulting 12-month target prices, which suggest a 51% probability of reaching prices with minimum upsides exceeding analysts' 2022 expected S&P 500 return of 3.9%.

**Monte Carlo Price Path.** Momentarily considering only past performance (daily returns since 2012), we use Brownian motion to simulate one million 252-trading day price paths starting at MSI's year-end closing price (Figure 45). The resulting 12-month target price distribution (Figure 46) suggests a 53% probability of reaching prices exceeding analysts' expectations (Figure 47).

**Dividend Discount Model**

To confirm our FCFF DCF, we next consider a dividend discount model. MSI has consistently paid ordinary quarterly cash dividends for decades (with the exception of its reorganization period). The assumptions used in our base, bull, and bear DDM scenarios are outlined in Figure 50 with key assumptions presented in Appendix 13. The resulting \$303 target price represents a 12.7% upside and supports our buy recommendation.

**Relative Valuation**

As a final validity check, we turn to relative valuation and construct technology (LMR, Video Security & Analytics, and Command Center Software) peer groups, which include MSI's top competitor and analyst-selected peers (Figure 48). Averages of key trading multiples across the three groups matched with MSI multiples are used to forecast firm value, and our 28.14x MSI EV/EBITDA multiple suggests a \$291 valuation (Appendix 12).

Figure 49: Scenario Analysis

FCFF DCF	Bull	Base	Bear
Revenue CAGR	7.7%	6.3%	4.9%
FCFF CAGR	10.9%	10.4%	8.7%
Terminal Growth	2.75%	2.50%	2.25%
WACC	8.3%	8.5%	8.8%
<b>Stock Price</b>	<b>\$325</b>	<b>\$287</b>	<b>\$221</b>
Upside (Downside)	20.8%	6.5%	-17.5%

Source: Team Consensus

Figure 50: DDM

DDM DCF	Bull	Base	Bear
Initial Phase (years)	10	10	10
Initial Payout	47.1%	47.1%	47.1%
Initial EPS Growth	15.3%	15.0%	14.4%
Initial Cost of Equity	9.3%	9.6%	9.8%
Transition Phase (years)	10	10	10
Perpetual Payout	45.0%	45.0%	45.0%
Perpetual EPS Growth	5.6%	5.4%	5.1%
Perpetual Cost of Equity	8.2%	8.5%	8.7%
<b>Stock Price</b>	<b>\$356</b>	<b>\$303</b>	<b>\$249</b>
Upside (Downside)	32.1%	12.7%	-7.2%

Source: Team Consensus

**INVESTMENT RISKS**

While the distribution of major disruptive concerns that plague global insurance firms as well as other stakeholders according to the World Economic Forum's (WEF) 2021 Global Risk Report are displayed in Figure 53 (ten-year forecast) and Figure 54 (annual forecast), our valuation could be impacted by the following factors (Figures 51 and 52).

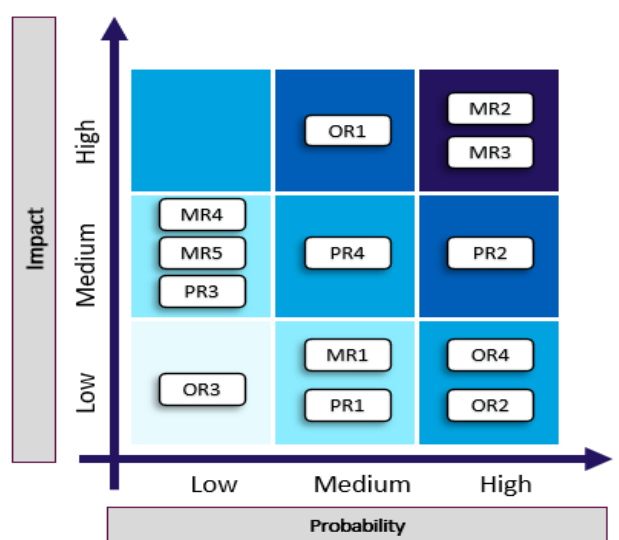
**Operational Risks**

**OR1: Integration Risk** (MODERATE probability, HIGH impact). With 35.4% of OCF historically allocated towards inorganic growth, MSI may experience headwinds integrating acquisitions.

**Valuation Impact:** Our model assumes that acquisitions contribute additional revenue growth on a two-year delay. Decreasing realized revenues by 10% lowers our valuation by 11.34%. **Mitigation:** MSI lessens the impact of synergetic mishaps by monitoring acquisition success; it has completed three divestments since 2018.

**OR2: High Dividends** (HIGH probability, LOW impact). MSI may constrain cash by excessively increasing dividends. **Valuation Impact:** A 20% dividend increase (and offsetting decrease in percentage of OCF allocated towards acquisitions leading to lessened revenue boost) decreased OCF but lowered the target price by <1%. **Mitigation:** Our model assumes a 13% DPS CAGR, rendering the potential impact minimal.

Figure 51: Risk Matrix



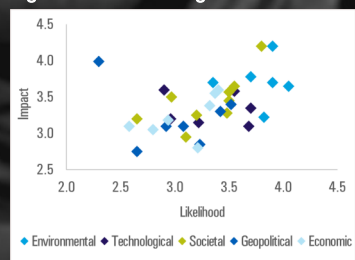
Source: Team Consensus

Figure 52: MSI Risks and Mitigation Strategies

Key Risk	Mitigation
MR2 Inflation	Conservative Calculations, Minimal Change
MR3 Supply Chain	Supplier Diversity, Increased Service Focus
OR1 Acquisition Integration	Monitoring & Divestment
PR2 Taxes	Foreign Tax Credits
PR4 Regulation	PAC Contributions

Source: Team Consensus

Figure 53: WEF Long-Term Risks



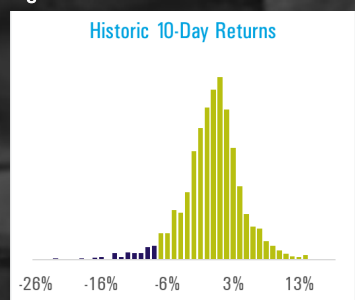
Source: WEF Global Risk Report

Figure 54: WEF Near-Term Risks



Source: WEF Global Risk Report

Figure 55: VaR Return Distribution



Source: Bloomberg

Figure 56: VaR Volatility and Calculated Loss

Peers	VaR	ES
LHX	7.1%	11.0%
AXON	15.3%	20.8%
TYL	7.3%	11.3%
MSI	6.1%	9.7%

Source: Bloomberg

**OR3: Aggressive Research and Development** (LOW probability, LOW impact). R&D (accounting for 1/3 of employees and 9.25% of net sales) could overly tax profits. **Valuation Impact:** A 10% R&D spend increase generates a downside <1%. **Mitigation:** MSI adequately monitors their return on investments for R&D, focusing on sustainable advances in target technologies.

**OR4: Labor Environment** (HIGH probability, LOW impact). The global workforce shortage is negatively affecting manufacturing-heavy firms and producing talent acquisition issues. **Valuation Impact:** A 10% increase in SG&A expense results in a 2.22% valuation decrease. **Mitigation:** MSI invests heavily in retention and work-life programs resulting in low turnover (seven-year average employee tenure).

### Market Risks

**MR1: Threat of New Entrants** (MODERATE probability, LOW impact). While protected by LMR dominance and financial barriers to entry, the low capital intensity and market fragmentation in MSI's other two technologies encourages new competitors. **Valuation Impact:** A 10% decrease in MSI's non-LMR technologies revenue lowers our target price by 2.51%. **Mitigation:** MSI can allocate its earmarked acquisition funds towards any threatening new competitors with attractive technologies.

**MR2: Inflation** (HIGH probability, HIGH impact). Increasing costs (the IMF expects 4.9% 2022 global inflation) may shrink MSI's bottom line. **Valuation Impact:** A 100 bp increase in WACC creates a 17.37% downside. **Mitigation:** The 2022 global inflation of 4.9% (IMF) is reflected in our already conservative 8.5% WACC. Consequently, despite its high level, a 4.9% rate may actually result in WACC decreases. Further, the Federal Reserve and banking analysts expect inflation to stabilize at 2.6% in the near-term future.

**MR3: Supply Chain and Backlog** (HIGH probability, HIGH impact). The pandemic-related global supply chain disruptions have increased MSI's Products & Systems (Software & Services) backlogs by \$6 million (\$704 million) and created a global shortage in semiconductors. **Valuation Impact:** A 10% increase in DSO and revenue lag lowers our target by 11.58%. **Mitigation:** MSI's DEI-motivated supplier diversity has also resulted in geographic supplier diversity allowing for more flexible sourcing. Acquisition-based shift towards services further insulates revenue variability.

**MR4: Technological Advancement towards LTE** (LOW probability, MODERATE impact). Competitors' LTE advancements could suppress LMR sales. **Valuation Impact:** A 10% decrease in LMR revenue produces an 8.84% valuation downside. **Mitigation:** LMR customers hold long-term contracts, and MSI offers a portable and reliable LTE infrastructure (i.e., its LXN 6000 Network).

**MR5: Volatility** (LOW probability, MODERATE impact). 2020-2021 experienced the highest VIX levels in this decade. **Valuation Impact:** Our Value-at-Risk analysis (Figures 55 and 56) finds that MSI shareholders experience the least downside risk of its peer group; 95% of ten-day returns over the past decade exceed -6.1%. **Mitigation:** MSI investors experience smaller expected shortfalls (-9.7%) compared to its peers.

### Political Risks

**PR1: UK CMA Investigation** (MODERATE probability, LOW impact). The UK has threatened to discontinue services based on its investigation into MSI's supplier involvement in the nationwide first responder LTE network set to replace MSI's Airwave Network. **Valuation Impact:** A 20% decrease in the 3.9% UK LMR revenue share lowers our valuation by <1%. **Mitigation:** MSI can diversify into other European areas, softening the blow of possible loss of revenue from cancellation of Airwave.

**PR2: Tax Environment** (HIGH probability, MODERATE impact). The Biden administration has proposed a 26.5% corporate tax rate. **Valuation Impact:** Increasing our model's 21% rate to 26.5% decreases our estimate by 7.67%. **Mitigation:** MSI leverages foreign tax credits to offset domestic liabilities.

**PR3: Government Funding** (LOW probability, MODERATE impact). Shrinking government budgets could hurt MSI sales. **Valuation Impact:** A 10% decrease in government contracts lowers our price point by 8.52%. **Mitigation:** MSI leverages its decades-long relationships with local governments and multi-year LMR contracts to counteract any future decrease in government funding. Additionally, 2022 federal cybersecurity spending is projected to increase 14%.

**PR4: Regulation** (MODERATE probability, MODERATE impact). Additional regulatory hurdles introduce compliance costs and decrease competitiveness. **Valuation Impact:** A 10% increase in SG&A expense and decrease in revenues most likely to be affected by regulatory interference (i.e., LMR) decreases our estimate by 9.76%. **Mitigation:** MSI's Political Action Committee raised \$1,055,614, contributing \$260,500 to federal political candidates 2019-2020 (64% Republican, 36% Democrat).

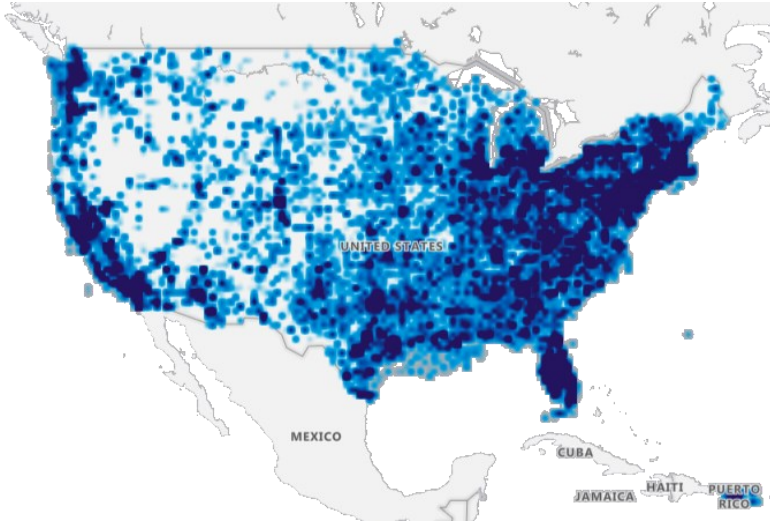


# APPENDIX MAP

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- 2. [SWOT](#)
- 3. [Porter's 5 Forces](#)
- 4. [ESG Goals](#)
- 5. [Acquisitions](#)
- 6. [Peer Comparison](#)
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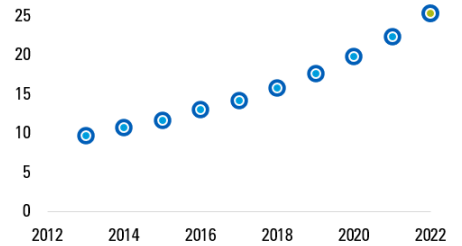
## 1. INDUSTRY DRIVERS

US Commercial LMR Towers



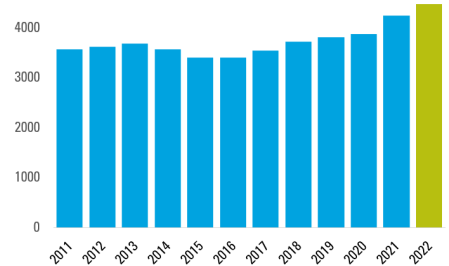
Source: US Department of Homeland Security

LMR Global Market (in billions of USD)



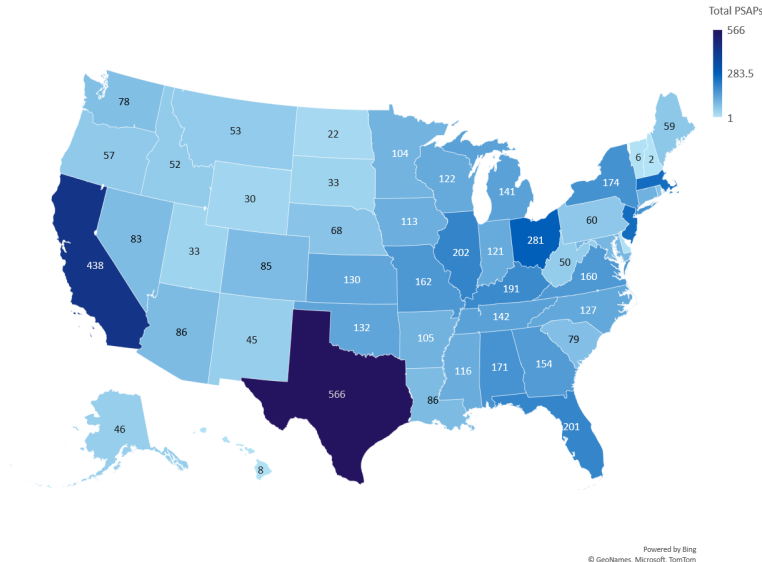
Source: Statista

Global IT Expenditure (in billions of USD)



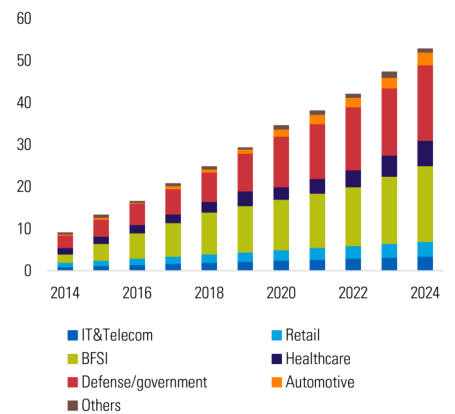
Source: Statista

Public Safety Answering Points (PSAP) by State



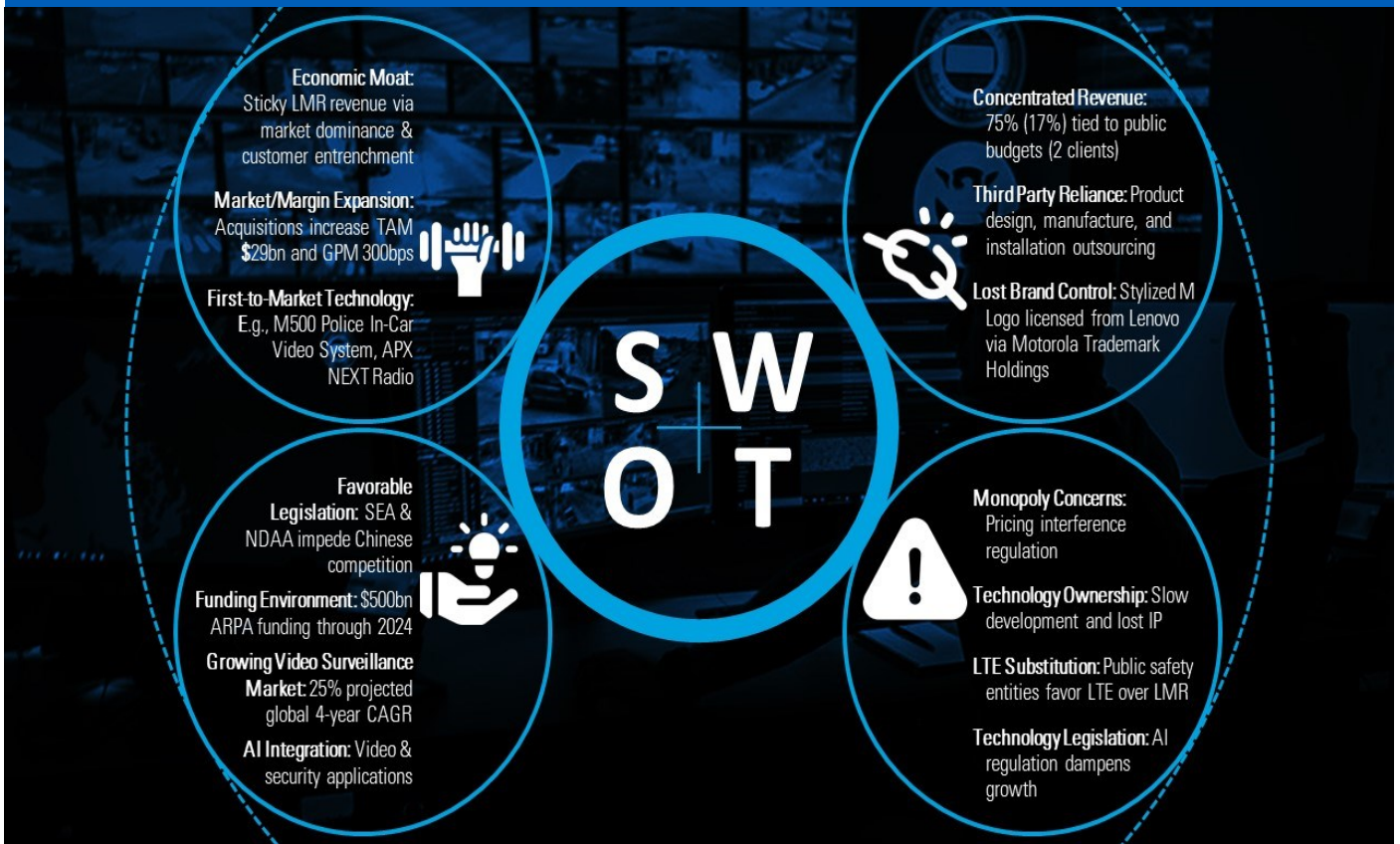
Source: 911.gov and US Department of Homeland Security

Cybersecurity Market Size (in billions of USD)



Source: Technologies Market

## 2. SWOT



Source: Team Consensus

## 3. PORTER'S 5 FORCES

### THREAT OF NEW ENTRANTS: 3.0

- 🔊 **LMR: 1** Market saturation & significant switching costs
- 🔊 **Video Security & Analytics: 4** Growing surveillance market, AI integration demand, & low barriers to entry
- 🔊 **Command Center Software: 4** Low capital intensity & favorable revenue model

### THREAT OF SUBSTITUTES: 1.7

- 🔊 **LMR: 3** Mission-critical nature short-term protection, but looming first-responder LTE network introduction
- 🔊 **Video Security & Analytics: 1** Widespread adoption of public & enterprise safety video surveillance & police in-car & body-worn cameras

- 🔊 **Command Center Software: 1** Critically integrated into most domestic call centers' emergency response & incident documentation

### CUSTOMER BARGAINING POWER: 2.7

- 🔊 **LMR: 2** Public customer concentration partially offsets lack of alternatives
- 🔊 **Video Security & Analytics: 4** Private demand for enhanced technology at affordable prices
- 🔊 **Command Center Software: 2** Complex integration between software modules dissuades alternatives

### SUPPLIER BARGAINING POWER: 3.3

- 🔊 **LMR: 5** Sustained supply chain constraints for key inputs
- 🔊 **Video Security & Analytics: 3** Regulation deters foreign competition, internal manufacturing adoption (e.g., Richardson, TX facility)
- 🔊 **Command Center Software: 2** Software IP generated internally or via acquisitions



### COMPETITIVE RIVALRY: 3.0

- 🔊 **LMR: 1** Market dominance & entrenched customers
- 🔊 **Video Security & Analytics: 5** Fixed & mobile video customer price sensitivity
- 🔊 **Command Center Software: 3** Technological advances & low capital intensity, partially offset by switching costs

Source: Team Consensus

## 4. ESG GOALS

Environment	Status	Social	Status	Governance	Status
Evaluate suppliers for risk at least every 2 years		Expand online courses (data privacy, intellectual property) & cyber security training across units and customers		Internal audit of privacy program maturity & GDPR compliance	
100% audits of "high risk" suppliers		Enhance Business Conduct Champion & increase support of the Supplier Diversity Network		Update privacy policy, corporate rules & data collection notices	
Add CR KPIs to supplier scorecard		Increase program funding in support of people of color, first responders & education		Additional internal stakeholder partnerships	

Source: MSI 2020 CR Report

## 5. ACQUISITIONS

LMR

Video Security & Analytics

Command Center Software

A Motorola Solutions Company

Source: Bloomberg








## 6. PEER COMPARISON

Company	Market Cap (M, USD)	Net Sales (LTM) (M, USD)	Net Sales by Region	Technology Segments	Customer Base	# Employees
<b>Motorola Solutions Inc</b>	<b>\$44,939</b>	<b>\$8,124</b>				18,000
<b>Land Mobile Radio</b>						
L3Harris Technologies Inc	\$41,843	\$18,124		Integrated Mission Systems, Space and Airborne Systems, Communication Systems, Aviation Systems		48,000
Hytera Communications Corp Ltd	\$1,572	\$816		Radio Terminals, Cluster systems, Professional Wireless Communication Devices		6,863
JVCKenwood Corp	\$244	\$2,609		Mobility & Telematics Services, Public Service, Media Service		18,848
<b>Command Center Software</b>						
Tyler Technologies Inc	\$22,043	\$1,442		Enterprise Software, Appraisal, Tax		5,536
Mercury Systems Inc	\$3,119	\$943		Homeland Security, Military and Aerospace, Telecommunications Market		2,384
Arista Networks Inc	\$44,172	\$2,772		Ethernet Switches, Pass-through Cards, Transceivers, Enhanced Operating Systems, Adapter Solutions		2,613
<b>Video Security &amp; Analytics</b>						
Axon Enterprise Inc	\$10,749	\$872		TASER, Software, Sensor		1,710
Hangzhou Hikvision Digital Technology Co Ltd	\$76,613	\$11,857		Video and Audio Compression Cards, Network Hard Disk Video Recorders, Network Storage		42,685
Genetec Technology Bhd	\$490	\$35		Integrated Engineering Solutions		-

Source: Bloomberg, Company Websites










## 7. EXECUTIVE COMMITTEE

Name	Position	Age	Tenure (Years)	Year Joined	Education	Pay Value (M USD)	Shares Held	% TRA	% Peer TRA
 Gregory O. Brown "Greg"	Chairman/CEO	61	10.7	2003	Economics (B) Humane letters (D)	\$24.9	461,776	19.26	4.31
 Jason J. Winkler	Exec VP/CFO	48	1.5	2001	Business Admin. (B) Business Admin. (M)	\$3.4	7,097	48.07	40.58
 John P. Molloy "Jack"	Exec VP/COO	50	0.2	1994	Marketing (B) Business Admin. (M)	\$6.3	29,336	-23.92	-4.66
 Dr. Mahesh Saptharishi	Exec VP/CTO	44	3.0	2018	Artificial intelligence (D)	-	13,697	30.01	13.33
 Mark S. Hacker	Exec VP/CAO/General Counsel	50	7.0	2001	Accountancy (B) Law Degree	\$5.7	15,815	23.33	7.95
 Cynthia M. Yazdi	Senior VP/Chief of Staff	57	3.4	2000	Civil Engineering (B)	-	4,518	23.03	5.69
 Dr. Rajan S. Naik	Senior VP/Strategy & Ventures	50	1.8	2015	Engineering (B) Engineering (D)	-	5,893	39.53	60.49

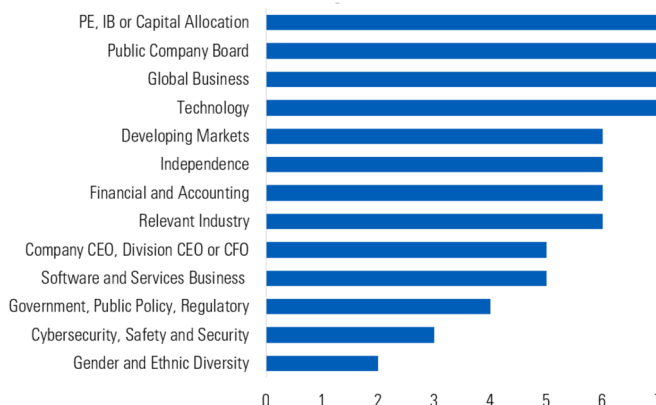
Source: Bloomberg, LinkedIn

## 8. BOARD OF DIRECTORS

Name	Position	Age	Tenure (Years)	Director Since	Independent	Shares Held	% TRA	% Peer TRA	Other Positions
 Gregory O. Brown "Greg"	Chairman/CEO	61	10.7	2011		461,776	19.24	4.30	
 Kenneth D. Denman "Ken"	Lead Director	63	2.7	2019	✓	8,570	22.20	13.71	Venture Partner, Sway Ventures
 Judy Carol Lewent	Board Member	73	11.0	2011	✓	37,337	20.00	3.88	Former Exec VP and CFO, Merck & Co.
 Clayton M. Jones "Clay"	Board Member	72	6.7	2015	✓	12,882	25.70	7.55	Former Chairman, CEO and President, Rockwell Collins, Inc.
 Gregory K. Mondre "Greg"	Board Member	47	6.4	2015	✓	18,363	26.70	9.31	Co-CEO, Silver Lake
 Egon Pierre Durban	Board Member	48	6.4	2015	✓	17,970	26.70	9.31	Co-CEO, Silver Lake
 Joseph M. Tucci "Joe"	Board Member	74	4.7	2017	✓	9,540	27.61	7.31	Chairman of Bridge Growth Partners

Source: Bloomberg, LinkedIn



## 9. BOARD OF DIRECTORS EXPERTISE



Source: SEC Proxy Statement

## 10. SUBCOMMITTEE

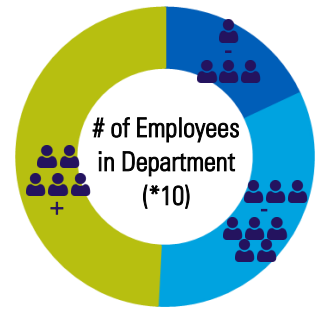
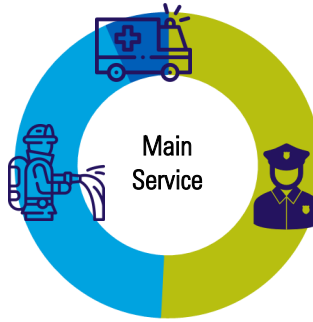
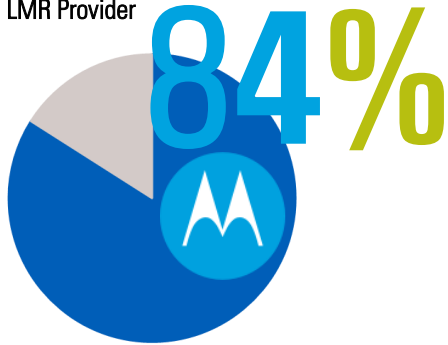
	Audit	Comp.	Gov. & Nom.	Exec.
Brown				✓
Denman		✓	✓	✓
Lewent	✓			✓
Jones	✓			
Mondre	✓		✓	
Durban		✓		
Tucci		✓	✓	✓

 Chairman
  Member

Source: SEC Proxy Statement

# 11. CUSTOMER SURVEY

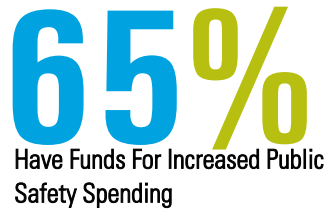
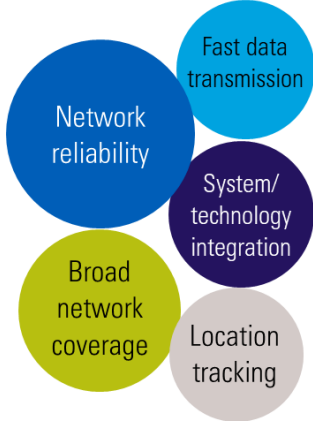
LMR Provider



Increased Need For Public Safety Equipment Spending



Important LMR Features



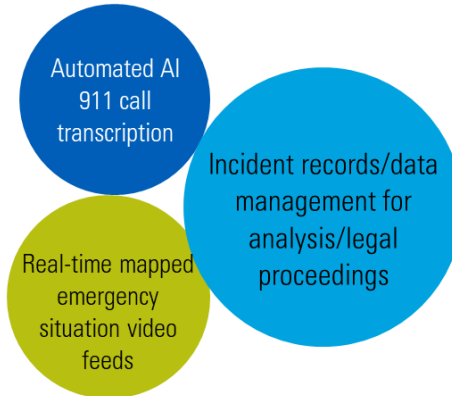
Frequency of LMR Upgrades



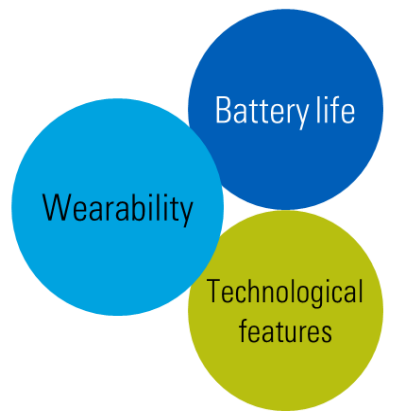
Quality of LMR



Important Command/Dispatch Center Features



Important Body Camera Features



Switching LMR



Body Camera Providers



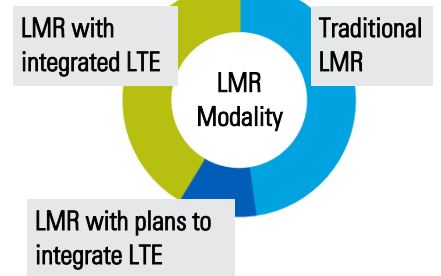
Plans To Integrate Voice, Data, and Video Streams In 911 Call Center



Reliability of LMR



Open To Relying On One Provider For All 911 Call Center Software



Satisfaction of LMR



## 12. RELATIVE VALUATION

Category	Company	Market Cap (mn)	Enterprise Value (mn)	EV/EBITDA			EV/EBIT			EV/Sales			P/E		
				2020	2021	2022F	2020	2021	2022F	2020	2021	2022F	2020	2021	2022F
LMR	L3Harris Technologies Inc*	\$41,843	\$48,685	25.9x	20.8x	21.7x	37.7x	39.1x	40.8x	4.1x	2.5x	2.6x	23.5x	21.7x	21.5x
LMR	Hytera Communications	\$1,572	\$2,117	27.5x	17.4x	NA	79.1x	46.1x	NA	2.6x	2.4x	2.4x	210.3x	122.8x	NA
LMR	JVCKenwood Corp	\$244	\$487	2.8x	2.3x	1.9x	15.6x	10.6x	5.0x	.2x	.2x	.2x	33.5x	16.7x	NA
Average				18.7x	13.5x	11.8x	44.1x	31.9x	22.9x	2.3x	1.7x	1.8x	89.1x	53.7x	21.5x
Median				25.9x	17.4x	11.8x	37.7x	39.1x	22.9x	2.6x	2.4x	2.4x	33.5x	21.7x	21.5x
Comm. Center	Tyler Technologies Inc*	\$22,043	\$23,235	48.2x	65.3x	70.0x	73.8x	98.6x	120.7x	10.6x	15.3x	15.1x	80.5x	93.0x	69.6x
Comm. Center	Mercury Systems Inc	\$3,119	\$3,295	28.2x	23.9x	23.2x	46.5x	47.1x	54.2x	5.3x	4.1x	3.3x	52.7x	51.3x	47.1x
Comm. Center	Arista Networks Inc	\$44,172	\$40,847	15.0x	25.2x	53.1x	16.0x	27.7x	58.3x	5.4x	8.3x	17.6x	21.1x	35.9x	44.0x
Average				30.5x	38.1x	48.8x	45.5x	57.8x	77.7x	7.1x	9.2x	12.0x	51.4x	60.1x	53.6x
Median				28.2x	25.2x	53.1x	46.5x	47.1x	58.3x	5.4x	8.3x	15.1x	52.7x	51.3x	47.1x
Video	Axon Enterprise Inc*	\$10,749	\$10,094	432.6x	1,447.3x	NA	NA	NA	NA	7.6x	10.7x	10.9x	1,601.5x	571.7x	104.9x
Video	Hangzhou Hikvision Digital	\$76,613	\$73,922	20.8x	26.4x	28.2x	21.9x	27.7x	29.7x	4.9x	6.7x	7.2x	24.4x	33.6x	25.6x
Video	Genetec Technology	\$490	\$498	26.6x	132.8x	32.4x	NA	NA	34.1x	.6x	1.8x	8.9x	NA	NA	40.7x
Average				160.0x	535.5x	30.3x	21.9x	27.7x	31.9x	4.4x	6.4x	9.0x	812.9x	302.6x	57.1x
Median				26.6x	132.8x	30.3x	21.9x	27.7x	31.9x	4.9x	6.7x	8.9x	812.9x	302.6x	40.7x

Relative Valuation	EV/EBITDA	P/E
2021 Multiple	28.14x	44.04x
2021 Metric	\$2,043	\$1,174
Enterprise Value	\$57,504	
Market Cap	\$50,692	\$51,693
Implied Share Price	<b>\$291</b>	<b>\$297</b>
Upside	<b>7.2%</b>	<b>9.3%</b>

Source: Team Consensus

## 13. PRO FORMA ASSUMPTIONS

### Base Case DCF Scenario

Revenues are forecasted by segments (Products & Systems Integration, Software & Services). Initial segment-specific revenue is forecasted by regressing past segment revenue on segment-specific economic and market drivers and then pairing significant coefficients with driver estimates to project annual segment revenue. Drivers include: • Worldwide IT spending, • Terrorism in the US, • US public safety spending, • Canada public safety spending, • Products and Systems Integration backlog, • Federal government IT expenditures, • Size of the information security technology market, • Annual government expenditures on public order and safety in the US, • State and local construction for public safety, • Worldwide size of the LMR systems market, • Worldwide shipments of private LTE network nodes, • Total number of 911 calls in the US, • Size of the global surveillance market, • Worldwide spending on cybersecurity, • Worldwide information security spending, • Public sector expenditures on public order and safety in the United Kingdom, • Unit shipments of body-worn cameras worldwide, • Revenue from advanced persistent threat (APT) protection market worldwide, and • Revenue from corporate web security market. Initial service revenue is then boosted at a 2-year lag based upon relative percentage increase in annual acquisition spending.

Cost of revenue decreases 2% annually as Software & Services proportional revenue increases.

SG&A decreases at historic geometric average rate as MSI develops a more established customer base and distribution channels relating to its newer technologies.

R&D decreases at historic geometric average rate due to preference for technology acquisitions over in-housing.

Other operating expenses, income taxes, minority interest revenue, D&A, other current assets, long-term investments, other assets, goodwill, intangibles, accrued expenses, and other liabilities remain at eight year historical average percent of sales.

Days receivable, days inventory, and days payable remain at historical averages.

Share repurchase percent of operating cash flow is 12.5% with remaining 37.5% of the 50% management guidance allocated towards acquisitions.

Based on management guidance, capital expenditures (dividends) equal 20% (30%) of operating cash flow.

Diluted shares outstanding and implied share price are simultaneously determined based on stock price and the strike price of all outstanding stock options, restricted stock units, and performance stock units.

Terminal growth rate (2.5%) equals weighted average of five-year projected annual GDP growth rate in firm's three major geographical markets.

### Bull DCF Scenario

All assumptions remain the same except:

Segment revenue drivers associated with a positive funding environment are increased by 10%.

Increased (10%) reliance on acquisitions over share repurchases.

Increased (10%) reliance on dividends over capital expenditures.

Terminal growth rate (WACC) increased (decreased) by 25 bps.

### Bear DCF Scenario

All assumptions remain the same except:

Segment revenue drivers are decreased by 10%.

Decreased (10%) reliance on acquisitions over repurchases.

Terminal growth rate (WACC) decreased (increased) by 25 bps.

### Monte Carlo DCF Assumptions

All assumptions remain the same except:

The annual values of the following line items are randomly selected from normal distributions based on those line items' 9-year historical arithmetic averages and standard deviations: Cost of goods sold margin and SG&A margin, effective tax rate, days receivables, days payables, acquisitions as a percent of operating cash flow, and dividends as a percent of operating cash flow.

Segment revenue drivers relative to base case are randomly adjusted based on a normal distribution.

Terminal growth rate is randomly selected from a normal distribution based on the arithmetic average and standard deviation of 2021-2024 GDP forecasts in the firm's three major geographical markets.

WACC is randomly drawn from a normal distribution based on the arithmetic average and standard deviation of the firm's realized quarterly WACC.

### DDM Assumptions

10-year initial phase including MSI's 47.1% current payout ratio, 15% EPS growth (outside estimates), and 9.6% cost of equity (outside estimates).

10-year transition phase.

Perpetual payout of 45% (outside estimates), EPS growth of 5.4% (outside estimates), and 8.5% cost of equity (CAPM).

Source: Team Consensus



## 14. BASE CASE INCOME STATEMENT

\$ (in millions)	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Products & Systems Integration	5,100	5,329	4,634	5,307	5,499	5,639	5,784	5,983	6,129	6,327	6,473	6,671	6,817
LMR (Land Mobile Radio)	0	4,830	3,992	0	0	0	0	0	0	0	0	0	0
Video Security & Analytics	0	499	642	0	0	0	0	0	0	0	0	0	0
Software & Services	2,243	2,558	2,780	3,068	3,369	4,420	4,836	5,220	5,509	5,835	6,169	6,499	6,833
LMR (Land Mobile Radio)	0	1,891	2,008	0	0	0	0	0	0	0	0	0	0
Video Security & Analytics	0	457	487	0	0	0	0	0	0	0	0	0	0
Command Center Software	0	210	285	0	0	0	0	0	0	0	0	0	0
<b>Total Revenues</b>	<b>7,343</b>	<b>7,887</b>	<b>7,414</b>	<b>8,375</b>	<b>8,868</b>	<b>10,059</b>	<b>10,620</b>	<b>11,202</b>	<b>11,638</b>	<b>12,161</b>	<b>12,641</b>	<b>13,169</b>	<b>13,650</b>
Cost of sales	3,844	3,860	3,713	4,194	4,352	4,838	5,006	5,175	5,268	5,395	5,496	5,611	5,699
<b>Gross Profit</b>	<b>3,499</b>	<b>4,027</b>	<b>3,701</b>	<b>4,181</b>	<b>4,515</b>	<b>5,221</b>	<b>5,614</b>	<b>6,028</b>	<b>6,369</b>	<b>6,766</b>	<b>7,145</b>	<b>7,558</b>	<b>7,950</b>
Selling & administrative expenses	1,254	1,403	1,251	1,299	1,264	1,318	1,279	1,240	1,184	1,137	1,086	1,040	990
Research & development expenses	637	687	686	712	693	723	701	680	649	623	595	570	543
Other operating expenses	128	(272)	273	126	134	152	160	169	176	183	191	199	206
<b>EBITDA</b>	<b>1,828</b>	<b>2,732</b>	<b>2,025</b>	<b>2,043</b>	<b>2,425</b>	<b>3,029</b>	<b>3,474</b>	<b>3,939</b>	<b>4,361</b>	<b>4,823</b>	<b>5,273</b>	<b>5,750</b>	<b>6,211</b>
<b>EBIT</b>	<b>1,480</b>	<b>2,209</b>	<b>1,491</b>	<b>1,707</b>	<b>2,068</b>	<b>2,624</b>	<b>3,047</b>	<b>3,489</b>	<b>3,893</b>	<b>4,334</b>	<b>4,765</b>	<b>5,220</b>	<b>5,662</b>
Interest expense, net	(222)	(220)	(220)	(201)	(201)	(198)	(182)	(164)	(160)	(157)	(154)	(144)	(126)
Other income (expense), net	69	(360)	11	(11)	(12)	(13)	(14)	(15)	(16)	(16)	(17)	(18)	(18)
Other unusual items	(15)	59	56	0	0	0	0	0	0	0	0	0	0
Income before taxes (EBT)	1,312	1,688	1,338	1,494	1,856	2,412	2,851	3,310	3,718	4,160	4,594	5,059	5,518
Tax expense	284	379	261	317	393	511	604	702	788	882	974	1,072	1,170
Effective tax rate	21.6%	22.4%	19.5%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%
<b>Net Income</b>	<b>966</b>	<b>868</b>	<b>949</b>	<b>1,174</b>	<b>1,458</b>	<b>1,897</b>	<b>2,242</b>	<b>2,603</b>	<b>2,925</b>	<b>3,273</b>	<b>3,615</b>	<b>3,981</b>	<b>4,342</b>

Source: Team Consensus

## 15. BASE CASE INCOME STATEMENT COMMON-SIZE

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Products & Systems Integration	69.5%	67.6%	62.5%	63.4%	62.0%	56.1%	54.5%	53.4%	52.7%	52.0%	51.2%	50.7%	49.9%
LMR (Land Mobile Radio)	0.0%	61.2%	53.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Video Security & Analytics	0.0%	6.3%	8.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Software & Services	30.5%	32.4%	37.5%	36.6%	38.0%	43.9%	45.5%	46.6%	47.3%	48.0%	48.8%	49.3%	50.1%
LMR (Land Mobile Radio)	0.0%	24.0%	27.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Video Security & Analytics	0.0%	5.8%	6.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Command Center Software	0.0%	2.7%	3.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total Revenues</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Cost of sales	52.3%	48.9%	50.1%	50.1%	49.1%	48.1%	47.1%	46.2%	45.3%	44.4%	43.5%	42.6%	41.8%
<b>Gross Profit</b>	<b>47.7%</b>	<b>51.1%</b>	<b>49.9%</b>	<b>49.9%</b>	<b>50.9%</b>	<b>51.9%</b>	<b>52.9%</b>	<b>53.8%</b>	<b>54.7%</b>	<b>55.6%</b>	<b>56.5%</b>	<b>57.4%</b>	<b>58.2%</b>
Selling & administrative expenses	17.1%	17.8%	16.9%	15.5%	14.3%	13.1%	12.0%	11.1%	10.2%	9.3%	8.6%	7.9%	7.3%
Research & development expenses	8.7%	8.7%	9.3%	8.5%	7.8%	7.2%	6.6%	6.1%	5.6%	5.1%	4.7%	4.3%	4.0%
Other operating expenses	1.7%	-3.5%	3.7%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
<b>EBITDA</b>	<b>24.9%</b>	<b>34.6%</b>	<b>27.3%</b>	<b>24.4%</b>	<b>27.3%</b>	<b>30.1%</b>	<b>32.7%</b>	<b>35.2%</b>	<b>37.5%</b>	<b>39.7%</b>	<b>41.7%</b>	<b>43.7%</b>	<b>45.5%</b>
<b>EBIT</b>	<b>20.2%</b>	<b>28.0%</b>	<b>20.1%</b>	<b>20.4%</b>	<b>23.3%</b>	<b>26.1%</b>	<b>28.7%</b>	<b>31.1%</b>	<b>33.5%</b>	<b>35.6%</b>	<b>37.7%</b>	<b>39.6%</b>	<b>41.5%</b>
Interest expense, net	-3.0%	-2.8%	-3.0%	-2.4%	-2.3%	-2.0%	-1.7%	-1.5%	-1.4%	-1.3%	-1.2%	-1.1%	-0.9%
Other income (expense), net	0.9%	-4.6%	0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
Other unusual items	-0.2%	0.7%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Income before taxes (EBT)	17.9%	21.4%	18.0%	17.8%	20.9%	24.0%	26.8%	29.5%	31.9%	34.2%	36.3%	38.4%	40.4%
Tax expense	3.9%	4.8%	3.5%	3.8%	4.4%	5.1%	5.7%	6.3%	6.8%	7.3%	7.7%	8.1%	8.6%
<b>Net Income</b>	<b>13.2%</b>	<b>11.0%</b>	<b>12.8%</b>	<b>14.0%</b>	<b>16.4%</b>	<b>18.9%</b>	<b>21.1%</b>	<b>23.2%</b>	<b>25.1%</b>	<b>26.9%</b>	<b>28.6%</b>	<b>30.2%</b>	<b>31.8%</b>

Source: Team Consensus

## 16. BASE CASE BALANCE SHEET

\$ (in millions)	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
<b>Assets</b>													
Cash and cash equivalents	1,257	1,001	1,254	1,188	1,368	1,717	781	890	1,092	1,328	1,507	1,174	754
Accounts receivable	1,293	1,412	1,390	1,619	1,714	1,944	2,053	2,165	2,250	2,351	2,444	2,546	2,638
Inventory	356	447	508	533	553	615	636	658	669	686	698	713	724
Other current assets	1,366	1,318	1,175	1,428	1,512	1,715	1,811	1,910	1,985	2,074	2,156	2,246	2,328
<b>Total Current Assets</b>	<b>4,272</b>	<b>4,178</b>	<b>4,327</b>	<b>4,768</b>	<b>5,148</b>	<b>5,991</b>	<b>5,281</b>	<b>5,623</b>	<b>5,996</b>	<b>6,439</b>	<b>6,804</b>	<b>6,679</b>	<b>6,444</b>
Net PP&E	895	1,546	1,490	1,398	1,309	1,277	1,334	1,429	1,583	1,780	2,034	2,338	2,701
Goodwill	1,514	2,067	2,219	2,534	2,954	3,500	4,114	4,815	5,589	6,448	7,388	8,416	9,528
Other intangibles	1,230	1,327	1,234	1,443	1,722	2,084	2,491	2,956	3,470	4,040	4,664	5,346	6,084
Other assets	1,329	1,365	1,448	1,534	1,624	1,842	1,945	2,051	2,131	2,227	2,315	2,412	2,500
<b>Total Assets</b>	<b>9,409</b>	<b>10,642</b>	<b>10,876</b>	<b>11,857</b>	<b>12,947</b>	<b>14,911</b>	<b>15,393</b>	<b>17,115</b>	<b>19,018</b>	<b>21,195</b>	<b>23,476</b>	<b>25,472</b>	<b>27,550</b>
<b>Liabilities and Stockholders' Equity</b>													
Accounts payable	592	618	612	666	691	768	795	822	837	857	873	891	905
Accrued expenses	1,206	1,229	1,177	1,337	1,415	1,605	1,695	1,788	1,857	1,941	2,018	2,102	2,179
Other current liabilities	1,267	1,454	1,562	1,585	1,678	1,903	2,009	2,119	2,202	2,301	2,392	2,492	2,582
<b>Total Current Liabilities</b>	<b>3,065</b>	<b>3,301</b>	<b>3,351</b>	<b>3,588</b>	<b>3,784</b>	<b>4,277</b>	<b>4,499</b>	<b>4,729</b>	<b>4,896</b>	<b>5,099</b>	<b>5,282</b>	<b>5,485</b>	<b>5,666</b>
Total LT debt (excl. Working capital revolver)	5,320	5,748	5,703	5,637	5,703	5,703	4,577	4,445	4,445	4,445	4,400	3,823	3,168
Working capital revolver	0	0	0	66	0	0	0	0	0	0	0	0	0
Other liabilities	2,300	2,276	2,363	2,570	2,721	3,087	3,259	3,437	3,571	3,732	3,879	4,041	4,188
<b>Total Long-Term Liabilities</b>	<b>7,620</b>	<b>8,024</b>	<b>8,066</b>	<b>8,273</b>	<b>8,424</b>	<b>8,790</b>	<b>7,836</b>	<b>7,882</b>	<b>8,016</b>	<b>8,176</b>	<b>8,279</b>	<b>7,864</b>	<b>7,356</b>
<b>Total Liabilities</b>	<b>10,685</b>	<b>11,325</b>	<b>11,417</b>	<b>11,860</b>	<b>12,208</b>	<b>13,067</b>	<b>12,336</b>	<b>12,611</b>	<b>12,912</b>	<b>13,275</b>	<b>13,562</b>	<b>13,349</b>	<b>13,023</b>
<b>Stockholders' Equity</b>													
Preferred equity	0	0	0	0	0	0	0	0	0	0	0	0	0
Common stock	(1,293)	(700)	(558)	(20)	722	1,827	3,041	4,486	6,089	7,903	9,898	12,107	14,511
Minority interest	17	17	17	17	17	17	17	17	17	17	17	17	17
<b>Total Stockholders' Equity</b>	<b>(1,276)</b>	<b>(683)</b>	<b>(541)</b>	<b>(3)</b>	<b>739</b>	<b>1,844</b>	<b>3,058</b>	<b>4,503</b>	<b>6,106</b>	<b>7,920</b>	<b>9,915</b>	<b>12,124</b>	<b>14,528</b>
<b>Total Liabilities and Stockholders' Equity</b>	<b>9,409</b>	<b>10,642</b>	<b>10,876</b>	<b>11,857</b>	<b>12,947</b>	<b>14,911</b>	<b>15,393</b>	<b>17,115</b>	<b>19,018</b>	<b>21,195</b>	<b>23,476</b>	<b>25,472</b>	<b>27,550</b>

Source: Team Consensus

## 17. BASE CASE BALANCE SHEET COMMON-SIZE

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
<b>Assets</b>													
Cash and cash equivalents	13.4%	9.4%	11.5%	10.0%	10.6%	11.5%	5.1%	5.2%	5.7%	6.3%	6.4%	4.6%	2.7%
Accounts receivable	13.7%	13.3%	12.8%	13.7%	13.2%	13.0%	13.3%	12.7%	11.8%	11.1%	10.4%	10.0%	9.6%
Inventory	3.8%	4.2%	4.7%	4.5%	4.3%	4.1%	4.1%	3.8%	3.5%	3.2%	3.0%	2.8%	2.6%
Other current assets	14.5%	12.4%	10.8%	12.0%	11.7%	11.5%	11.8%	11.2%	10.4%	9.8%	9.2%	8.8%	8.4%
<b>Total Current Assets</b>	<b>45.4%</b>	<b>39.3%</b>	<b>39.8%</b>	<b>40.2%</b>	<b>39.8%</b>	<b>40.2%</b>	<b>34.3%</b>	<b>32.9%</b>	<b>31.5%</b>	<b>30.4%</b>	<b>29.0%</b>	<b>26.2%</b>	<b>23.4%</b>
Net PP&E	9.5%	14.5%	13.7%	11.8%	10.1%	8.6%	8.7%	8.3%	8.3%	8.4%	8.7%	9.2%	9.8%
Goodwill	16.1%	19.4%	20.4%	21.4%	22.8%	23.5%	26.7%	28.1%	29.4%	30.4%	31.5%	33.0%	34.6%
Other intangibles	13.1%	12.5%	11.3%	12.2%	13.3%	14.0%	16.2%	17.3%	18.2%	19.1%	19.9%	21.0%	22.1%
Other assets	14.1%	12.8%	13.3%	12.9%	12.5%	12.4%	12.6%	12.0%	11.2%	10.5%	9.9%	9.5%	9.1%
<b>Total Assets</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Liabilities and Stockholders' Equity</b>													
Accounts payable	6.3%	5.8%	5.6%	5.6%	5.3%	5.2%	5.2%	4.8%	4.4%	4.0%	3.7%	3.5%	3.3%
Accrued expenses	12.8%	11.5%	10.8%	11.3%	10.9%	10.8%	11.0%	10.4%	9.8%	9.2%	8.6%	8.3%	7.9%
Other current liabilities	13.5%	13.7%	14.4%	13.4%	13.0%	12.8%	13.1%	12.4%	11.6%	10.9%	10.2%	9.8%	9.4%
<b>Total Current Liabilities</b>	<b>32.6%</b>	<b>31.0%</b>	<b>30.8%</b>	<b>30.3%</b>	<b>29.2%</b>	<b>28.7%</b>	<b>29.2%</b>	<b>27.6%</b>	<b>25.7%</b>	<b>24.1%</b>	<b>22.5%</b>	<b>21.5%</b>	<b>20.6%</b>
Total LT debt (excl. Working capital revolver)	56.5%	54.0%	52.4%	47.5%	44.0%	38.2%	29.7%	26.0%	23.4%	21.0%	18.7%	15.0%	11.5%
Working capital revolver	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other liabilities	24.4%	21.4%	21.7%	21.7%	21.0%	20.7%	21.2%	20.1%	18.8%	17.6%	16.5%	15.9%	15.2%
<b>Total Long-Term Liabilities</b>	<b>81.0%</b>	<b>75.4%</b>	<b>74.2%</b>	<b>69.8%</b>	<b>65.1%</b>	<b>58.9%</b>	<b>50.9%</b>	<b>46.1%</b>	<b>42.1%</b>	<b>38.6%</b>	<b>35.3%</b>	<b>30.9%</b>	<b>26.7%</b>
<b>Total Liabilities</b>	<b>113.6%</b>	<b>106.4%</b>	<b>105.0%</b>	<b>100.0%</b>	<b>94.3%</b>	<b>87.6%</b>	<b>80.1%</b>	<b>73.7%</b>	<b>67.9%</b>	<b>62.6%</b>	<b>57.8%</b>	<b>52.4%</b>	<b>47.3%</b>
<b>Stockholders' Equity</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Preferred equity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Common stock	-13.7%	-6.6%	-5.1%	-0.2%	5.6%	12.3%	19.8%	26.2%	32.0%	37.3%	42.2%	47.5%	52.7%
Minority interest	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
<b>Total Stockholders' Equity</b>	<b>-13.6%</b>	<b>-6.4%</b>	<b>-5.0%</b>	<b>0.0%</b>	<b>5.7%</b>	<b>12.4%</b>	<b>19.9%</b>	<b>26.3%</b>	<b>32.1%</b>	<b>37.4%</b>	<b>42.2%</b>	<b>47.6%</b>	<b>52.7%</b>
<b>Total Liabilities and Stockholders' Equity</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Team Consensus

## 18. BASE CASE SHARES OUTSTANDING

(in millions)	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Beginning shares outstanding	174.1	173.5	172.8	171.9	170.6	169.2	167.7	165.9	163.9	161.8
Shares issued	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shares repurchased	(0.6)	(0.7)	(1.0)	(1.2)	(1.4)	(1.6)	(1.8)	(2.0)	(2.1)	(2.3)
<b>Ending Shares Outstanding</b>	<b>173.5</b>	<b>172.8</b>	<b>171.9</b>	<b>170.6</b>	<b>169.2</b>	<b>167.7</b>	<b>165.9</b>	<b>163.9</b>	<b>161.8</b>	<b>159.5</b>

Source: Team Consensus

## 19. BASE CASE DEBT SCHEDULE

\$( in millions)	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Beginning revolver balance	0.0	66.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Draw/(Paydown)	66.5	(66.5)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Revolver balance interest expense	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ending revolver balance	66.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Undrawn Revolver</b>	<b>2,183.5</b>	<b>2,250.0</b>	<b>2,250.0</b>	<b>2,250.0</b>	<b>2,250.0</b>	<b>2,250.0</b>	<b>2,250.0</b>	<b>2,250.0</b>	<b>2,250.0</b>	<b>2,250.0</b>
<b>2024 Term loan beginning balance</b>	<b>1,588.4</b>	<b>1,588.4</b>	<b>1,474.1</b>	<b>1,125.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Draw/(Paydown)	0.0	(114.4)	(348.5)	(1,125.6)	0.0	0.0	0.0	0.0	0.0	0.0
Interest expense	41.0	39.6	33.6	14.5	0.0	0.0	0.0	0.0	0.0	0.0
Term loan ending balance	1,588.4	1,474.1	1,125.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>2025 Term loan beginning balance</b>	<b>322.1</b>	<b>322.1</b>	<b>322.1</b>	<b>322.1</b>	<b>132.7</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Draw/(Paydown)	0.0	0.0	0.0	(189.5)	(132.7)	0.0	0.0	0.0	0.0	0.0
Interest expense	23.5	23.5	23.5	16.6	4.8	0.0	0.0	0.0	0.0	0.0
Term loan ending balance	322.1	322.1	322.1	132.7	0.0	0.0	0.0	0.0	0.0	0.0
<b>2028 Term loan beginning balance</b>	<b>724.4</b>	<b>724.4</b>	<b>724.4</b>	<b>724.4</b>	<b>724.4</b>	<b>482.9</b>	<b>280.6</b>	<b>44.3</b>	<b>0.0</b>	<b>0.0</b>
Draw/(Paydown)	0.0	0.0	0.0	0.0	(241.6)	(202.3)	(236.3)	(44.3)	0.0	0.0
Interest expense	33.8	33.8	33.8	33.8	28.2	17.8	7.6	1.0	0.0	0.0
Term loan ending balance	724.4	724.4	724.4	724.4	482.9	280.6	44.3	0.0	0.0	0.0
<b>2029 Term loan beginning balance</b>	<b>800.0</b>	<b>800.0</b>	<b>800.0</b>	<b>800.0</b>	<b>800.0</b>	<b>800.0</b>	<b>800.0</b>	<b>800.0</b>	<b>577.3</b>	<b>0.0</b>
Draw/(Paydown)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(222.7)	(577.3)	0.0
Interest expense	36.8	36.8	36.8	36.8	36.8	36.8	36.8	31.7	13.3	0.0
Term loan ending balance	800.0	800.0	800.0	800.0	800.0	800.0	800.0	577.3	0.0	0.0
<b>2030 Term loan beginning balance</b>	<b>900.0</b>	<b>900.0</b>	<b>900.0</b>	<b>900.0</b>	<b>900.0</b>	<b>900.0</b>	<b>900.0</b>	<b>900.0</b>	<b>900.0</b>	<b>655.0</b>
Draw/(Paydown)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(245.0)	(655.0)
Interest expense	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	17.9	7.5
Term loan ending balance	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	655.0	0.0
<b>Other long term debt</b>	<b>1,301.6</b>	<b>1,368.0</b>	<b>1,482.4</b>	<b>1,830.9</b>	<b>2,020.3</b>	<b>2,261.9</b>	<b>2,464.2</b>	<b>2,700.4</b>	<b>2,923.1</b>	<b>3,168.1</b>
Draw/(Paydown)	(66.5)	114.4	348.5	189.5	241.6	202.3	236.3	222.7	245.0	(0.0)
Interest expense	48.0	49.4	56.6	62.3	71.6	84.4	94.7	105.5	116.6	118.1
Term loan ending balance	1,235.1	1,482.4	1,830.9	2,020.3	2,261.9	2,464.2	2,700.4	2,923.1	3,168.1	3,168.1
<b>Ending Loan Balance</b>	<b>5,636.5</b>	<b>5,703.0</b>	<b>5,703.0</b>	<b>4,577.4</b>	<b>4,444.8</b>	<b>4,444.8</b>	<b>4,444.8</b>	<b>4,400.4</b>	<b>3,823.1</b>	<b>3,168.1</b>

Source: Team Consensus

## 20. BASE CASE CASHFLOW STATEMENT

\$ (in millions)	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
<b>Cash flows from Operating Activities:</b>													
Net income	966	868	949	1,174	1,458	1,897	2,242	2,603	2,925	3,273	3,615	3,981	4,342
Depreciation	360	394	409	337	357	405	427	451	468	489	508	530	549
Other non-cash items	(404)	467	128	99	50	122	57	60	44	54	49	54	49
Change in net operating assets	153	94	127	(271)	(2)	(2)	(3)	(3)	(4)	(4)	(4)	(4)	(4)
<b>Net cash flows from operating activities</b>	<b>1,075</b>	<b>1,823</b>	<b>1,613</b>	<b>1,339</b>	<b>1,863</b>	<b>2,420</b>	<b>2,724</b>	<b>3,110</b>	<b>3,434</b>	<b>3,812</b>	<b>4,168</b>	<b>4,560</b>	<b>4,936</b>
<b>Cash flows from investing activities:</b>													
Capital expenditures	(197)	(248)	(217)	(245)	(268)	(373)	(484)	(545)	(622)	(687)	(762)	(834)	(912)
Sale of PP&E	0	7	56	0	0	0	0	0	0	0	0	0	0
Intangibles acquisitions	0	0	0	0	0	0	0	0	0	0	0	0	0
Intangibles divestitures	0	0	0	0	0	0	0	0	0	0	0	0	0
Investments in marketable securities	0	0	0	0	0	0	0	0	0	0	0	0	0
Acquisitions	(1,069)	(693)	(276)	(524)	(699)	(908)	(1,021)	(1,166)	(1,288)	(1,429)	(1,563)	(1,710)	(1,851)
<b>Net cash used in investing activities</b>	<b>(1,266)</b>	<b>(934)</b>	<b>(437)</b>	<b>(769)</b>	<b>(966)</b>	<b>(1,280)</b>	<b>(1,505)</b>	<b>(1,711)</b>	<b>(1,910)</b>	<b>(2,116)</b>	<b>(2,325)</b>	<b>(2,544)</b>	<b>(2,763)</b>
<b>Cash flows from financing activities:</b>													
Total cash dividends paid	(337)	(379)	(436)	(494)	(548)	(559)	(726)	(817)	(933)	(1,030)	(1,144)	(1,250)	(1,368)
Issue/(Retire) debt	598	(561)	(914)	0	0	0	(1,126)	(133)	0	0	(44)	(577)	(655)
Issue/(Retire) of common equity	36	(201)	(504)	(142)	(167)	(233)	(303)	(340)	(389)	(429)	(476)	(521)	(570)
Other financing activities	(77)	(3)	888	0	0	0	0	0	0	0	0	0	0
<b>Net cash used in financing activities</b>	<b>220</b>	<b>(1,144)</b>	<b>(966)</b>	<b>(636)</b>	<b>(716)</b>	<b>(792)</b>	<b>(2,154)</b>	<b>(1,290)</b>	<b>(1,322)</b>	<b>(1,459)</b>	<b>(1,664)</b>	<b>(2,349)</b>	<b>(2,593)</b>
Net increase (decrease) in cash and cash equivalents	(11)	(256)	253	(66)	181	348	(936)	109	202	236	178	(332)	(420)
Cash and cash equivalents – beginning of period	1,205	1,257	1,001	1,254	1,188	1,368	1,717	781	890	1,092	1,328	1,507	1,174
<b>Cash and cash equivalents – end of period</b>	<b>1,257</b>	<b>1,001</b>	<b>1,254</b>	<b>1,188</b>	<b>1,368</b>	<b>1,717</b>	<b>781</b>	<b>890</b>	<b>1,092</b>	<b>1,328</b>	<b>1,507</b>	<b>1,174</b>	<b>754</b>

Source: Team Consensus

## 21. BASE CASE RATIOS & KEY PERFORMANCE INDICATORS

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
<b>Profitability</b>													
Sales Growth (YoY)	15.1%	7.4%	-6.0%	13.0%	5.9%	13.4%	5.6%	5.5%	3.9%	4.5%	3.9%	4.2%	3.6%
Gross Margin	47.7%	51.1%	49.9%	49.9%	50.9%	51.9%	52.9%	53.8%	54.7%	55.6%	56.5%	57.4%	58.2%
EBITDA Margin	24.9%	34.6%	27.3%	24.4%	27.3%	30.1%	32.7%	35.2%	37.5%	39.7%	41.7%	43.7%	45.5%
Operating Margin	20.2%	28.0%	20.1%	20.4%	23.3%	26.1%	28.7%	31.1%	33.5%	35.6%	37.7%	39.6%	41.5%
Net Profit Margin	13.2%	11.0%	12.8%	14.0%	16.4%	18.9%	21.1%	23.2%	25.1%	26.9%	28.6%	30.2%	31.8%
Net Profit Growth (YoY)	34.3%	27.5%	-17.9%	9.4%	24.2%	30.1%	18.2%	16.1%	12.3%	11.9%	10.4%	10.1%	9.1%
Return on Assets	10.3%	8.2%	8.7%	9.9%	11.3%	12.7%	14.6%	15.2%	15.4%	15.4%	15.4%	15.6%	15.8%
Return on Equity	-	-	-	-	197.3%	102.8%	73.3%	57.8%	47.9%	41.3%	36.5%	32.8%	29.9%
EPS	\$5.96	\$6.96	\$6.18	\$6.76	\$8.44	\$11.03	\$13.14	\$15.38	\$17.45	\$19.73	\$22.05	\$24.60	\$27.23
<b>Activity</b>													
Receivables Days	70.0	62.6	69.0	70.6	70.6	70.6	70.6	70.6	70.6	70.6	70.6	70.6	70.6
Inventory Days	32.4	38.0	46.9	46.4	46.4	46.4	46.4	46.4	46.4	46.4	46.4	46.4	46.4
Payables Days	56.3	57.2	60.5	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0
<b>Liquidity</b>													
Current Ratio	1.4	1.3	1.3	1.3	1.4	1.4	1.2	1.2	1.2	1.3	1.3	1.2	1.1
Quick Ratio	1.3	1.1	1.1	1.2	1.2	1.3	1.0	1.0	1.1	1.1	1.2	1.1	1.0
Cash Ratio	0.4	0.3	0.4	0.3	0.4	0.4	0.2	0.2	0.2	0.3	0.3	0.2	0.1
<b>Financial Leverage</b>													
Long-term Debt/Equity	-4.2	-8.4	-10.5	-1632.6	7.7	3.1	1.5	1.0	0.7	0.6	0.4	0.3	0.2
Long-term Debt/Assets	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1
Total Debt/Equity	-8.4	-16.6	-21.1	-3435.4	16.5	7.1	4.0	2.8	2.1	1.7	1.4	1.1	0.9
CFO/Liabilities	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4
Interest Coverage	6.7	10.0	6.8	8.5	10.3	13.2	16.8	21.3	24.4	27.6	31.0	36.4	45.0
<b>Other</b>													
Dividends per Share	\$2.13	\$2.35	\$2.63	\$2.84	\$3.16	\$3.23	\$4.22	\$4.79	\$5.51	\$6.14	\$6.89	\$7.63	\$8.45
Payout Ratio	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
CapEx/Sales (%)	-2.7%	-3.1%	-2.9%	-2.9%	-3.0%	-3.7%	-4.6%	-4.9%	-5.3%	-5.6%	-6.0%	-6.3%	-6.7%

Source: Team Consensus

## 22. COST OF CAPITAL

Weighted Average Cost of Capital	Peers
<b>Cost of Equity</b>	
Risk-Free Rate (10-Year Treasury Bond)	1.5%
Market Risk Premium	8.3%
Raw Beta	0.82
Adjusted Beta	0.88
CAPM	8.9%
Country Risk Premium	0.7%
Adjusted CAPM	9.6%
<b>Cost of Debt</b>	<b>11.6%</b>
Pre-Tax Debt Cost	2.2%
Weighted Average Pre-Tax Bond Yield	3.6%
Credit Rating Average Pre-Tax Yield	2.6%
Effective Tax Rate	19.5%
<b>WACC</b>	<b>8.5%</b>
Weight of Equity	86.6%
Weight of Long-Term Debt	13.4%
Five-Year Historic WACC Average	10.5%
<b>WACC</b>	<b>8.5%</b>

Source: Team Consensus

## 23. BASE CASE DDM

	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
EPS Growth	62.0%	9.0%	11.2%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Payout Rate	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%
EPS	\$9.04	\$9.86	\$10.96	\$12.61	\$14.50	\$16.68	\$19.18	\$22.06	\$25.36	\$29.17
DPS	\$4.26	\$4.65	\$5.17	\$5.94	\$6.83	\$7.86	\$9.04	\$10.40	\$11.95	\$13.75
Cost of Equity	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%
	2031F	2032F	2033F	2034F	2035F	2036F	2037F	2038F	2039F	2040F
EPS Growth	14.1%	13.3%	12.4%	11.5%	10.6%	9.8%	8.9%	8.0%	7.1%	6.3%
Payout Ratio	46.9%	46.7%	46.6%	46.4%	46.2%	46.0%	45.8%	45.6%	45.4%	45.0%
EPS	\$33.29	\$37.70	\$42.37	\$47.25	\$52.28	\$57.38	\$62.48	\$67.49	\$72.30	\$76.84
DPS	\$15.63	\$17.62	\$19.73	\$21.90	\$24.13	\$26.38	\$28.60	\$30.76	\$32.82	\$34.58
Cost of Equity	9.5%	9.4%	9.3%	9.2%	9.1%	9.0%	8.9%	8.8%	8.7%	8.6%
<b>Implied value of the stock</b>	<b>\$303</b>									
Upside	11.7%									

Source: Team Consensus



## 24. BASE CASE DISCOUNTED CASH FLOW

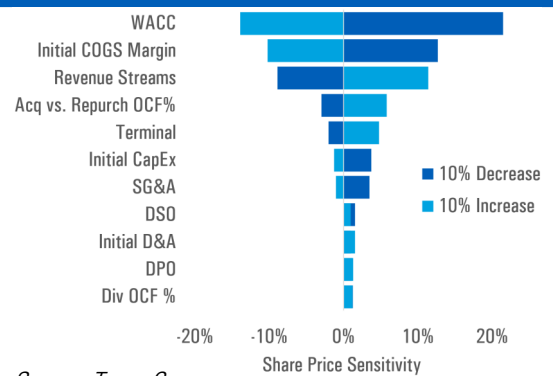
\$( in millions)	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Total Revenues	7,343.0	7,887.0	7,414.0	8,375.2	8,867.5	10,059.0	10,620.1	11,202.3	11,637.6	12,161.4	12,641.3	13,169.2	13,649.6
Cost Of Sales	3,844.0	3,859.7	3,713.0	4,194.4	4,352.1	4,838.2	5,005.9	5,174.7	5,268.3	5,395.3	5,496.0	5,611.0	5,699.4
Gross Profit	3,499.0	4,027.3	3,701.0	4,180.8	4,515.4	5,220.9	5,614.2	6,027.6	6,369.4	6,766.1	7,145.3	7,558.2	7,950.2
Operating Expenses	2,019.0	1,817.9	2,210.0	2,137.4	2,090.7	2,192.0	2,139.9	2,088.3	2,008.0	1,943.4	1,872.1	1,808.5	1,739.5
EBITDA	1,828.0	2,732.5	2,025.0	2,043.5	2,424.7	3,028.9	3,474.3	3,939.4	4,361.3	4,822.7	5,273.2	5,749.7	6,210.8
EBIT	1,480.0	2,209.5	1,491.0	1,706.6	2,068.0	2,624.3	3,047.2	3,488.8	3,893.3	4,333.5	4,764.8	5,220.0	5,661.8
Tax Rate	21.6%	22.4%	19.5%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%	21.2%
EBIAT	1,159.6	1,713.6	1,200.2	1,344.8	1,629.6	2,068.0	2,401.2	2,749.2	3,067.9	3,414.9	3,754.7	4,113.5	4,461.6
D&A	360.0	394.0	409.0	336.9	356.7	404.6	427.1	450.6	468.1	489.1	508.4	529.7	549.0
Capital Expenditures	(197.0)	(248.0)	(217.0)	(245.1)	(267.8)	(372.6)	(484.1)	(544.7)	(622.0)	(686.8)	(762.4)	(833.6)	(912.0)
Change In NWC	153.0	94.0	127.0	(270.7)	(2.4)	(2.5)	(3.1)	(3.4)	(3.6)	(3.8)	(4.0)	(4.3)	(4.4)
FCFF	1,475.6	1,953.6	1,519.2	1,165.8	1,716.1	2,097.5	2,341.1	2,651.7	2,910.4	3,213.4	3,496.8	3,805.2	4,094.1
Enterprise Value	52,473.9												
Net Debt	6,812.0												
Market Value Of Equity	45,661.9												
Diluted Shares Outstanding	174.1												
12 Mo Equity Share Price	\$287												

Source: Team Consensus

## 25. ONE & TWO-WAY SENSITIVITY ANALYSIS

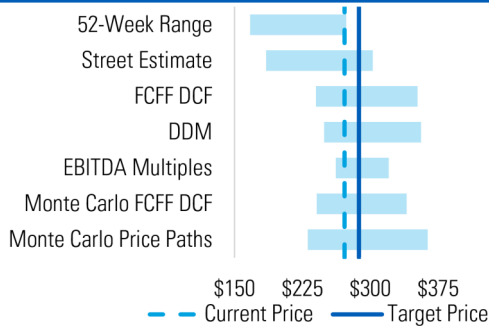
	WACC	Terminal Growth				
		2.00%	2.25%	2.50%	2.75%	3.00%
7.5%	\$334	\$348	\$362	\$378	\$395	
8.0%	\$301	\$312	\$323	\$336	\$350	
8.5%	\$273	\$282	\$291	\$301	\$312	
9.0%	\$249	\$256	\$264	\$272	\$281	
9.5%	\$228	\$234	\$241	\$247	\$255	

Source: Team Consensus



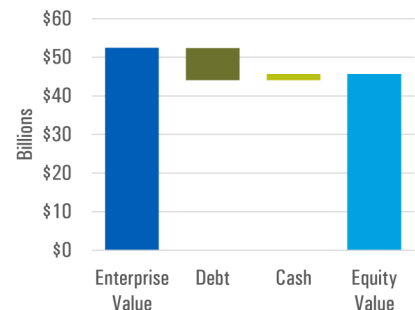
Source: Team Consensus

## 26. VALUATION FOOTBALL FIELD



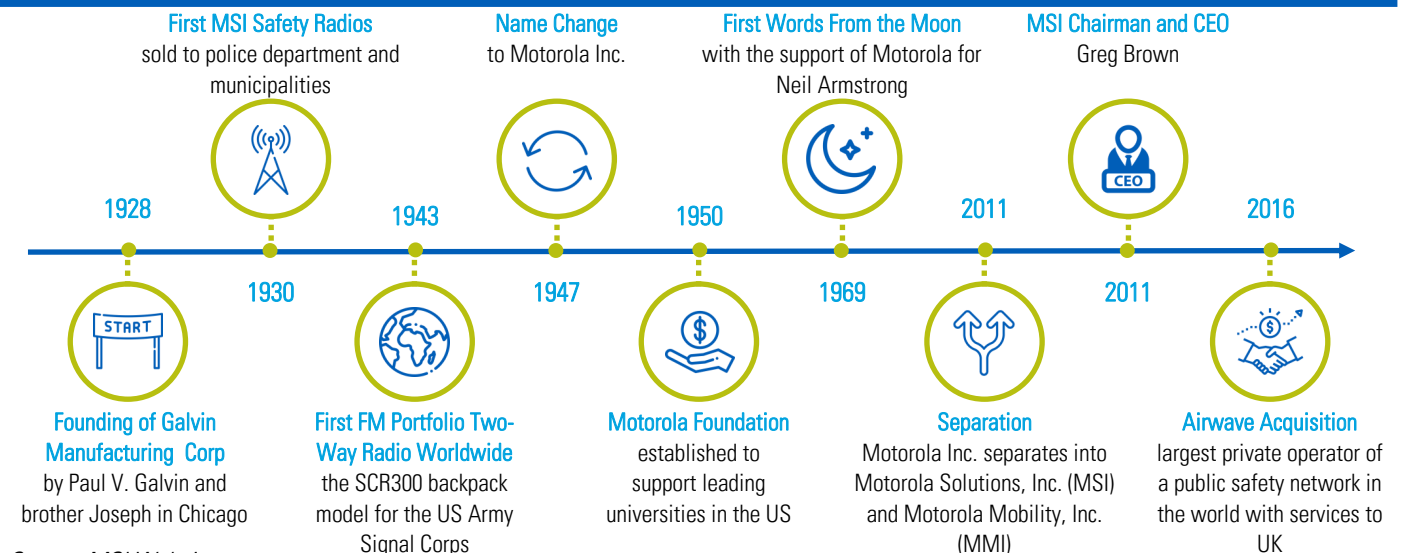
Source: Team Consensus

## 27. BASE CASE WATERFALL



Source: Team Consensus

## 28. COMPANY HISTORY



Source: MSI Website