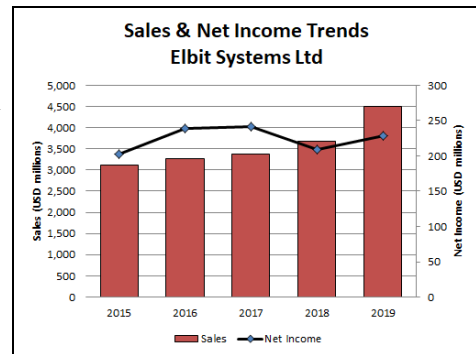


# Elbit Systems Ltd

## Outlook

- Elbit Systems' 2019 sales were \$4.51 billion, up 22 percent from 2018 sales of \$3.68 billion
- The company posted net income of \$229 million for the year, compared with \$209 million in 2018
- Despite the challenges posed by the COVID-19 pandemic, the demand for Elbit Systems products remains strong
- At midyear 2019, Elbit Systems backlog grew to \$10.8 billion, with over 60 percent related to orders outside of Israel



## Headquarters

Elbit Systems Ltd  
Advanced Technology Center  
PO Box 539  
Haifa 31053 Israel  
Telephone: + 972 77 294 0000  
Website: <https://elbitsystems.com/>

Few nations live under the constant threat of war as Israel does. Even fewer have been as actively involved in war – no small benchmark, considering the modern state of Israel was founded only in 1948.

As Arab oil wealth grew, military equipment poured into Arab military formations from all over the world, especially from the former Soviet Union. Seeing this, Israel turned to Western Europe and the U.S. for comparable hardware to defend itself.

However, Israel also realized it needed to develop its own strong, indigenous defense industry that could provide advanced military hardware to offset the shifting political alliances among its suppliers. France had been Israel's primary supplier of military hardware until the French government decided sales to

neighboring Arab states would net more profit. In response, Elbit Ltd was established to provide defense-related equipment.

Founded in 1966, Elbit Ltd is part of Elron Electronics Industries. In November 1996, Elbit initiated a demerger and split into three publicly listed companies: Elbit Systems Ltd, which owns Elbit's defense-related business; Elbit Medical Imaging, which took over the company's healthcare operations; and Elbit Ltd, which retains the original company's remaining activities and focuses on communications.

In July 2000, Elbit completed its merger with El-Op Electro-Optics Industries Ltd. El-Op (or Elop) now operates as a subsidiary of Elbit Systems.

Elbit Systems develops and supplies a range of airborne, land, and naval systems, as well as products for defense, homeland security, and commercial aviation applications. While Elbit Systems is a major supplier to the Israel Defense Forces (IDF), its products are used on a wide range of platforms around the world.

## Structure and Personnel

Bezhael Machlis  
President and Chief Executive Officer  
Elad Aharonson  
Executive Vice President and General Manager,  
ISTAR Division  
Jonathan Ariel  
Executive Vice President and Chief Legal Officer

David Block Temin  
Executive Vice President, Chief Compliance  
Officer, and Senior Counsel  
Haim Delmar  
Executive Vice President and General Manager,  
C4I and Cyber Division

## Elbit Systems Ltd

Joseph Gasper

Executive Vice President and  
Chief Financial Officer

Zeev Gofer

Executive Vice President, Strategic and  
Business Development – North America

Shelly Gordon

Executive Vice President, Human Resources

Ran Kril

Executive Vice President, International Marketing  
and Business Development

Edgar Maimon

Executive Vice President and General Manager,  
EW and SIGINT Elisra Division

Ilan Pacholder

Executive Vice President, Mergers and  
Acquisitions and Financing

Yuval Ramon

Executive Vice President, Chief Operating Officer

Yoram Shmueli

Executive Vice President and General Manager,  
Aerospace Division

Yehuda Vered

Executive Vice President and General Manager,  
Land Division

Yehoshua (Shuki) Yehuda

Executive Vice President, Strategy and  
Chief Technology Officer

Raanan Horowitz

President and Chief Executive Officer,  
Elbit Systems of America

## Product Area

Elbit Systems is a Tier I and Tier II provider of a variety of electronic equipment to the IDF and international customers; the U.S. is a prime client. The company produces military aircraft and helicopter systems; helmet-mounted systems; commercial aviation systems and aerostructures; unmanned aircraft systems and unmanned surface vessels; land vehicle systems; command, control, communication, computer, and intelligence (C4I) systems; electro-optic and

countermeasures systems; homeland security systems; and electronic warfare and signal intelligence systems.

The company organizes its operations as follows:

1. Airborne Systems
2. Land Systems
3. C4ISR Systems
4. Electro-Optic Systems

## Facilities

The following cites the main subsidiaries, affiliated companies, and partnerships of Elbit.

Elbit Systems Ltd, Advanced Technology Center, PO Box 539, Haifa 31053 Israel. Telephone: + 972 4 831 5315.

Elbit Systems EW and SIGINT, Elisra Ltd, 29 Hamerkava St, Holon 5885118, Israel. Elisra provides a wide range of EW, SIGINT, and C4ISR products for naval, airborne, and ground platforms and applications.

Kinetics Ltd, Ha'golan St, Airport City, Israel. Elbit holds a 51 percent stake in this company, which develops and produces systems for armored vehicles, including suspensions, turret drives, NBC protection systems, air conditioning, engine/transmission components, and braking and hydraulic systems.

Electro-Optics Elop Ltd, Advanced Technology Park, PO Box 1165, Rehovot 76111 Israel. Telephone: + 972 8 938 6211. Elop, which was acquired in 2000, develops and produces thermal-imaging products, laser products, optical systems for space applications, airborne reconnaissance systems, optical

communications systems, fire control systems, and security systems and products.

Semi-Conductor Devices (SCD), PO Box 2250, Haifa 31021 Israel. Telephone: + 972 4 990 2535. This is an Israeli partnership, equally owned by Elbit and Rafael Armaments Development Authority, that develops and produces semiconductor devices and lasers.

Website: <http://www.scd.co.il>

Opgal Optronics Industries Ltd, PO Box 462, Industrial Area 5, Karmiel 20101 Israel. This operation is owned 50.1 percent by Elbit and 49.9 percent by Rafael. Opgal designs and manufactures infrared, cooled, and uncooled thermal imaging engines, modules, and systems.

Website: <http://www.opgal.com>

Elbit Systems, Cyclone Ltd, PO Box 114, Bar Lev Industrial Park, Karmiel 20100 Israel. This wholly owned subsidiary provides logistics support and maintenance services for aircraft and helicopters and manufactures structural components and subassemblies for aircraft.

## Elbit Systems Ltd

Elbit Systems, 2 Ha'Machshev St, Netanya 42507 Israel. Telephone: + 972 9 889 8080. This operation produces military communications equipment, including HF and VHF radios, telecommunications systems, and military computers that also serve as communication and navigation terminals.

Elbit Systems Land, P.O.B 1044 Ramat Hasharon 4711001, Israel. Telephone: + 972 3 5485222. Also known as IMI Systems, this unit produces various precision munitions; combat mobility, survivability and protection systems; and armor solutions.

Website: <http://www.imisystems.com>

Elbit Systems of America, LLC, 4700 Marine Creek Pkwy, Fort Worth, TX 76179 USA. Telephone: + 1 (817) 234-6600. Elbit Systems of America, LLC (ESA) and its subsidiaries provide products and systems solutions focusing on U.S. military, homeland security, medical instrumentation, and commercial aviation customers ESA serves as the base for the group's interests in the U.S., which include EFW, Kollsman, and IEI.

Website: <http://www.elbitsystems-us.com>

Elbit Systems of America, Merrimack Operations, Kollsman, 220 Daniel Webster Hwy, Merrimack, NH 03054 USA. Telephone: + 1 (603) 889-2500. Kollsman produces cockpit instruments and enhanced vision systems for observation and targeting systems and aircraft.

Website:  
<http://www.elbitsystems-us.com/commerical-aviation>

Elbit Systems of America, International Enterprises Inc (IEI), 108 Allen St, Talladega, AL 35160 USA. Telephone: + 1 (256) 362-8562. IEI provides repair,

maintenance, and logistics support for military electronic systems and components installed on aircraft, helicopters, and ground support equipment.

Website: <http://www.ieionline.com>

Elbit Systems of America, Night Vision, 7635 Plantation Rd, Roanoke, VA 24019. Telephone: +1 (540) 563-0371.

Website: <http://www.elbitsystems-us.com/night-vision>

AEL Sistemas SA (formerly Aeroeletronica Ltda), Av Sertório, Bairro Jardim Floresta, 4400, Porto Alegre, 91040-620 Brazil. Telephone: + 55 51 21011200. AEL manufactures and supports military and civil aerospace electronic products.

Website: <http://www.ael.com.br>

Cyberbit, 22 Zarchin St, Ra'anana 4310602, Israel. Telephone: + 972 09 779 9831 This subsidiary is focused on Elbit's activities in cyber intelligence and cybersecurity.

Website: <https://www.cyberbit.com/>

GeoSpectrum Technologies Inc, 10 Akerley Blvd., Unit 19, Dartmouth, Nova Scotia, Canada B3B 1J4. Telephone +1 902 406 4111. This wholly owned subsidiary is a supplier of marine acoustic hardware and systems.

Website: <https://geospectrum.ca/>

Universal Avionics, 3260 E Universal Way, Tucson AZ 85756 USA. Telephone: +1 (520) 295-2300. Offers avionics for civil and military aircraft and helicopters. Also provides avionic retrofit services.

Website: <https://www.uasc.com/>

## Corporate Overview

Elbit Systems operates in the areas of aerospace, land and naval systems, C4ISR, UAVs, electro-optics, EW suites, signal intelligence systems, datalinks, and communications systems. The company also focuses on upgrading existing platforms; developing new technologies for defense, homeland security, and commercial applications; and providing a range of support services, including training and simulation systems.

### New Products and Services

**THOR.** In August 2020, Elbit Systems' THOR, a multirotor Vertical Take-off and Landing (VTOL) mini Unmanned Aircraft System (UAS), successfully

completed a series of environmental qualification tests ahead of the delivery of more than a thousand units to an army in Southeast Asia. As announced on October 6, 2019, the company was awarded a \$153 million contract to provide a networked multilayered UAS array to an army in Southeast Asia, including more than 1,000 THOR VTOL mini-UAS.

**Hermes 900 Maritime Rescue.** In May 2020, Elbit Systems introduced a unique lifesaving capability to its Hermes 900 Maritime Patrol Unmanned Aircraft System (UAS). Integrating detection and identification capabilities, onboard inflated life rafts, and precision dispatch capability enables the UAS to perform long-range maritime Search and Rescue (SaR) missions.



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Such a configured Hermes 900 Maritime Patrol UAS was recently delivered to an undisclosed customer in Southeast Asia.

**Swiss Tactical Reconnaissance System.** In April 2020, Elbit Systems was awarded a contract valued at approximately \$15 million from the Swiss Federal Office for Defense Procurement to provide Command and Control (C2) systems for the Tactical Reconnaissance System (TASYS) of the Swiss Armed Forces. The contract will run over three years.

**Artillery Systems Contract.** In March 2020, Elbit Systems of America was awarded a \$200 million contract as part of the Israeli Ministry of Defense (IMOD) automatic self-propelled howitzer gun systems program. The contract will be performed over a 12-year period.

**USAF Missile Warning Systems.** In March 2020, Elbit Systems of America was awarded a U.S. Air Force firm-fixed-price contract with a ceiling of approximately \$471 million over a 10-year period, to equip F-16 aircraft of the U.S. Air National Guard and Air Force Reserve Command, with pylon-based infrared missile warning systems. The contract includes an initial order valued at approximately \$17 million. The work will be performed in Fort Worth, Texas.

**Next Generation Korean Fighter Components.** In February 2020, Elbit Systems was awarded a \$43 million contract from Hanwha Systems to equip the Next Generation Korean fighter jets in development, with embedded Terrain Following-Terrain Avoidance (TF/TA) systems. The contract will be performed over a six-year period.

**Iron Fist.** In January 2020, Elbit Systems was awarded an initial contract from the Production and Procurement Directorate of the Israeli Ministry of Defense (IMOD) valued at approximately \$31 million, to provide Iron Fist Active Protection Systems (APS) for the Eitan Armored Fighting Vehicles (AFV) of the Israeli Defense Forces (IDF). The Iron Fist system uses optical sensors, tracking radar, launchers, and countermeasure munitions to defeat threats at a safe distance. The contract will be performed over a five-year period.

**MAGNI.** In November 2019, Elbit Systems launched MAGNI, a Multirotor Vertical Take-Off and Landing (VTOL) Unmanned Aerial System (UAS) that is designed to enhance the situational awareness capabilities of mobile forces. Compact and lightweight (2.5kg), the MAGNI micro-drone enables rapid deployment and launch (in less than 1 minute) from any combat vehicle, transforming it to an effective intelligence gathering platform.

**Marine Night Vision Contract.** In October 2019, Elbit Systems of America was awarded delivery order valued at approximately \$23 million for the supply of systems and various spare components to the U.S. Marine Corps. This order is part of the \$249 million, five-year Squad Binocular Night Vision Goggles indefinite delivery/indefinite quantity (IDIQ) contract from September 6, 2019, that was awarded to the Night Vision business of L3Harris Technologies several days before the finalization of the acquisition of that business activity by Elbit Systems of America. The order will be executed in Roanoke, Virginia, and will be supplied over the next 10 months.

**F/A-18 DDI Repair.** In September 2019, the U.S. Navy awarded Elbit Systems of America an \$85 million firm-fixed-price contract for the repair of Digital Display Indicator (DDI) systems aboard F/A-18 aircraft. The contract will be performed in Talladega, Alabama, over a five-year period.

**T-7A Red Hawk Components.** In September 2019, Elbit Systems of America was selected to supply a number of products – including cockpit displays, datalinks, and embedded training capabilities – to Boeing's T-7A Red Hawk (formerly T-X) advanced pilot training aircraft for the United States Air Force. Elbit Systems of America will provide a number of key components, including large area displays, engine fuel indicators, upfront control panels, and Head Up Displays and their associated line replaceable units. In addition, the company will supply air and ground datalinks enabling the T-7A's onboard virtual avionics and the Integrated Live/Virtual/Constructive capability.

**Dominator Infantry Wearable Technologies.** In September 2019, Elbit Systems announced several new wearable devices for the dismounted soldier to enhance their interface with Command and Control (C2) applications. Expanding the company's Dominator warrior combat suite, the newly launched set includes four devices that integrate seamlessly with radio systems and with Battle Management Systems: SmartEye – a head-mounted C2 display; SmartWristView – a wrist-strapped C2 display; SmartSight – a C2 add-on to weapon sights; and SmartNVG – a C2 add-on to Night Vision Goggles (NVG).

**CONDOR MS.** In June 2019, Elbit Systems launched CONDOR MS, a new Long Range Oblique Photography (LOROP) system that introduces Multi-Spectral (MS) sensing capability and Artificial Intelligence (AI) analytics to stand-off strategic intelligence gathering missions. CONDOR MS integrates three high resolution Electro Optic (EO) sensors into the company's CONDOR2 system:

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Visible & Near Infra-Red (VNIR), Medium-Wave Infrared (MWIR), and Short-Wave Infrared (SWIR). The unique combination of multispectral sensing, high level of stabilization, and auto image enhancement enables the new system to dramatically extend coverage area in day, night, and adverse weather conditions. Deep learning algorithms and precise geolocation enable the CONDOR MS to identify a large number of targets at extremely high rates, hence significantly shortening the period needed to close sensor-to-shooter loops, the company said. The CONDOR family of systems is integrated onboard a variety of platforms, including the F-16, F-4, SU-30, and B-737.

**J-MUSIC DIRCM.** In June 2019, Diehl Defence awarded Elbit Systems a \$73 million contract to provide the J-MUSIC Directed Infrared Counter Measure (DIRCM) for the Germany's Airbus A400M aircraft. The contract will run through 2023.

**MASTT.** In May 2019, Elbit subsidiary GeoSpectrum Technologies (GTI) launched a Multipurpose Autonomous Sub-Surface Training Target (MASTT) system that simulates detecting and tracking submarines. MASTT imitates submarines from conventional to nuclear with a variety of running modes of operation.

**New Artillery System.** In March 2019, Elbit Systems received a \$125 million contract from the Israeli Ministry of Defense to supply fully automatic self-propelled howitzer gun systems to the Israel Defense Forces (IDF). The contract, which also includes the supply of training simulators, will be performed over a 12-year period. The new system will be capable of automatic charging and laying, Elbit said in a statement. According to the applicable mission, the new gun system automatically selects the required projectile, propellant, and fuze, loads them, and lays the gun to optimally engage targets, thus reducing the number of soldiers in each platform.

**RC-26B Avionics Update.** In February 2019, Support Systems Associates, Inc (SSAI) awarded Elbit Systems of America an initial \$5 million to provide an avionics refresh for the U.S. Air National Guard's RC-26B aircraft used for Intelligence, Surveillance, and Reconnaissance operations. If all options are exercised, the total contract would be valued at \$22 million. The program will be performed by 2021 from San Antonio, Texas.

**HattoriX.** In November 2018, Elbit Systems launched HattoriX, a new man-packed Fire Support system that enables Forward Observers (FO) and similarly tasked tactical teams to passively, rapidly, and independently acquire Category 1 (CAT-1) targets (Target Location error of a few meters).

**Sa'ar 6 Corvette EW Suite.** In August 2018, the Israeli Ministry of Defense (IMOD) awarded Elbit Systems a contract worth approximately \$85 million to supply electronic warfare (EW) suites for the Israeli Navy Sa'ar 6 class corvettes. The EW systems include digital receivers, signal processing technologies, and analysis tools.

**ADF BMS C2 Support.** In January 2018, the Australian Department of Defence's Capability Acquisition and Sustainment Group awarded Elbit Systems of Australia a \$150 million contract to provide through-life support services to the Australian Defence Force (ADF) for the Battle Management System Command and Control (BMS C2).

### Plant Expansion/Organization Update

**Elbit Systems Switzerland Formed.** In September 2019, Elbit Systems announced the formation of Elbit Systems Switzerland AG. Over the past decade, Elbit Systems has been leading successful engagements in the Swiss market, most notably in programs such as INTAFF, ADS15, and others. The company said the new operation will seek to expand the transfer of advanced technologies and know-how to the market, set-up local development capabilities, further grow collaborations with Swiss high technology companies, and facilitate ties with scientific and technology research institutions.

**Divisions Reorganized Following IMI Acquisition.** In January 2019, Elbit Systems reorganized a number of its activities in connection with the IMI acquisition (detailed below). This reorganization included the establishment of two business divisions: a Land Systems Division focused on land-based systems, to include military vehicle systems, artillery systems and the IMI activities; and the C4I and Cyber Division focused on command & control, radio, communication, homeland security, and cyber intelligence activities.

**Romania Production Facility Opened.** In November 2018, Elbit Systems inaugurated a new Land Systems engineering and manufacturing facility near Bucharest, Romania. The facility will operate as a production and integration center for turrets and weapon stations that are contracted in local programs and serve as a regional hub catering to demand from other countries.

**Cyberbit Reorganized.** In September 2017, Elbit Systems initiated a reorganization of its Cyberbit Solutions Ltd subsidiary. Under the move, the defense-related Cyber Intelligence and Cyber Security business will be integrated with Elbit Systems Land and C4I Division, while the commercial cyber business will

## Elbit Systems Ltd

continue under the Cyberbit Ltd brand. According to the company, there is a growing demand for cyber-related systems in the defense sector as the modern battlefield requirements are shifting from C4I to C5I, with the addition of the cyber dimension. The reorganization became effective on January 1, 2018.

**Civil Company Forming.** In July 2016, Elbit Systems announced it was forming a new company to develop energy solutions for civilian transportation applications. The as-yet-to-be-named company headquarters will be based in Israel, and the employees of Elbit Systems Land and C4I's energy business unit will be employed in the operation.

**Cyberbit Formed.** In 2015, Elbit Systems formed a new, wholly owned subsidiary called Cyberbit. This operation comprises Elbit's cyber activities and includes the recently acquired Cyber and Intelligence division of NICE Systems. Cyberbit focuses on providing law enforcement agencies, intelligence organizations, and signal intelligence agencies with end-to-end tools for creating communication intelligence on all known media and devices. According to Elbit, Cyberbit's solutions address the entire intelligence cycle, including collection, processing, analysis, and visualization. Cyberbit has offices in three locations in Israel: Netanya, Ra'anana, and Tel Aviv, with global support centers in Asia, South America, and Africa that serve customers in more than 20 countries.

## Mergers/Acquisitions/Divestitures

**Harris Night Vision Unit Acquired.** In September 2019, Elbit Systems of America completed its acquisition of Harris Corporation's Night Vision business for \$350 million. Headquartered in Roanoke, Virginia, Harris Night Vision is a premier developer, producer, and supplier of night vision technology for the U.S. and allied military and security forces and for the federal homeland security market. The sale was initiated as part of the Harris and L3 Technologies merger in order to avoid anti-trust concerns in the night vision market. The deal was first announced in April 2019.

**IMI Systems Acquisition.** In June 2018, Elbit Systems reached an agreement with the Israeli government for the acquisition of IMI Systems Ltd in a deal valued at \$495 million. Best known as the maker of the Uzi submachine gun, IMI Systems (formerly known as Israel Military Industries) is composed of three divisions: Small Caliber Ammunition, Firepower, and Land Systems. These divisions specialize in precision munitions, combat mobility, survivability and protection systems, armor solutions, and homeland security. The deal closed in November 2018, making Elbit Systems Israel's largest defense contractor.

**Universal Avionics Systems Acquired.** In April 2018, Elbit acquired the privately owned U.S. company Universal Avionics Systems Corp for approximately \$120 million. Headquartered in Tucson, Arizona, Universal Avionics is a developer and manufacturer of commercial avionics systems for the retrofit and forward-fit market, for a wide range of fixed and rotary aircraft types. Universal Avionics' products include Flight Management Systems (FMS), displays, communication systems, complete cockpit solutions, and additional advanced commercial avionics systems.

Website: <https://www.uasc.com>

**Cyber and Intelligence Ops Acquired.** In July 2015, Elbit Systems completed its \$157.9 million acquisition of the Cyber and Intelligence division of NICE Systems. NICE's Cyber and Intelligence division offers solutions that provide law enforcement agencies and intelligence organizations with tools for creating communication intelligence. This division was acquired by Elbit Systems subsidiary CYBERBIT, which was established in order to consolidate Elbit Systems' existing activities relating to the cyber intelligence and cybersecurity markets.

**UAS Dynamics Acquired.** In December 2011, Elbit Systems of America purchased the holdings of General Dynamics Armament and Technical Products (GDATP) in UAS Dynamics, making it the sole owner. The venture was first created in May 2009, when GDATP and Elbit Systems of America formed UAS Dynamics LLC to market Elbit's Skylark I/II, Hermes 90, and Hermes 450 unmanned air vehicles (UAVs) in the United States. UAS Dynamics has been absorbed into Elbit Systems of America's Unmanned Systems business unit.

**Brazilian Companies Acquired.** In December 2010, Elbit Systems acquired Brazilian companies Ares Aeroespacial e Defesa and Periscopio Equipamentos Optronicos SA. According to Elbit, the acquisition was accomplished in a series of transactions totaling "tens of millions" of Brazilian reais. Ares and Periscopio are involved in the area of defense electronic systems and supply a range of products to the Brazilian military as well as to additional markets in South America. Located near Rio de Janeiro, the companies have approximately 70 employees.

**M7 Aerospace Acquired.** In December 2010, Elbit Systems of America acquired M7 Aerospace LP in an \$85 million all-cash transaction. Located in San Antonio, Texas, M7 Aerospace is an integrated service company, offering a full suite of aviation services in the areas of aerostructures manufacturing; government logistics support; maintenance, repair, and overhaul

## Elbit Systems Ltd

(MRO); engineering; aircraft parts and support; supply chain management; and purchasing.

**Soltam, Saymar, and ITL Acquired.** In October 2010, Elbit Systems acquired all the shares of Soltam Systems Ltd, Saymar Ltd, and ITL Optronics Ltd held by Mikal Ltd and its subsidiaries. The agreement provided for the acquisition of Mikal's interests in the aforementioned Mikal subsidiaries, which are synergetic to Elbit Systems, rather than the acquisition of Mikal itself, as was contemplated in Elbit Systems' prior announcements. Elbit holds a 100 percent interest in Soltam and Saymar and an 87.85 percent interest in ITL. The balance of ITL's shares, which are traded on the Tel Aviv Stock Exchange, are held by the public. Simultaneously, Elbit sold its existing holdings in Mikal (approximately 19 percent acquired in September 2009) to the other Mikal shareholders.

**Azimuth Acquired.** In May 2010, Elbit completed the \$41.5 million acquisition of the balance of shares in Azimuth Technologies Ltd pursuant to the merger agreement signed by Azimuth and Elbit Systems' wholly owned subsidiary Elbit Security Systems Ltd in January 2010. In November 2008, Elbit Systems purchased 19 percent of Azimuth's shares. Azimuth is an Israeli company engaged mainly in the areas of navigation and target acquisition, fire coordination, and north-finding systems, as well as electro-optics for defense and government solutions. Azimuth also has a subsidiary in the U.K. engaged in similar activities.

**BVR Assets Acquired.** In November 2009, Elbit Systems completed its acquisition of BVR Systems' assets for \$34 million. BVR develops and produces training, simulation, and debriefing systems for air, sea, and ground forces. The deal was first announced in July 2009.

**Stake in Mikal Acquired.** In September 2009, Elbit Systems acquired a 19 percent stake in Mikal for an \$18 million investment. The Mikal Group was founded in 1993 by Abraham (Miko) Gilat. Mikal has three main branches: artillery developer Soltam Systems, armored fighting vehicles firm Saymar, and defense electronics manufacturer ITL Optronics. As part of the agreement, Elbit Systems was granted the option to purchase the remaining shares of Mikal from the other shareholders during 2011 for a purchase price to be determined in accordance with an independent external valuation.

**Remaining Kinetics Shares Acquired.** In April 2009, Elbit Systems completed the purchase of its subsidiary Kinetics Ltd's shares. Elbit Systems already owned 51 percent of the shares, and under the transaction, the company purchased the remaining 49 percent of the shares from Kinetics' minority

shareholders. The total consideration for the 49 percent stake was \$110 million, paid in cash. Kinetics manufactures systems and products in the field of advanced life support and environmental controls, such as climate control systems and biological and chemical protection systems for combat vehicles.

**Shiron Satellite Acquired.** In February 2009, Elbit Systems Land and C4I-Tadiran Ltd (ESLC-T) acquired all of the shares of Shiron Satellite Communications Ltd, a privately owned Israeli company, for \$16 million. Shiron is engaged in the broadband communications market. According to Elbit Systems Land, a synergy was anticipated between Shiron's technology and the communication technology developed for and incorporated in ESLC-T's military systems and products.

**Innovative Concepts Acquired.** In November 2008, Elbit Systems of America acquired all of Innovative Concepts Inc's shares from Herley Industries for \$15 million. Innovative Concepts, located in McLean, Virginia, is a wireless communications technology firm specializing in the design, production, and support of real-time embedded systems and high-speed processing solutions for defense and homeland security applications. Innovative Concepts became part of Elbit Systems of America's C4I Solutions unit.

**Tadiran Acquired.** In July 2008, Elbit Systems acquired Tadiran Communications, which has expertise in the fields of RF design and spread spectrum techniques (e.g., frequency hopping and direct sequence), crypto algorithms, advanced synchronization techniques, communication control and networking protocols, and Radio over IP (RoIP) and Voice over IP (VoIP) technologies. It also produces modems for high-speed wireless data transfer applications. Tadiran's wholly owned U.S. subsidiary, Tallahassee Communications Industries Inc (Talla-Com), and Talla-Com's wholly owned U.S. subsidiary, Tallahassee Technologies Inc (Talla-Tech), both based in Florida, serve as Tadiran's U.S. development, production, and marketing arms. The deal was first announced in mid-2007.

**FTL Acquired.** In July 2007, Elbit Systems acquired U.K.-based Ferranti Technologies (Group) Ltd for GBP15 million (\$31 million). FTL designs and manufactures electronic, power, and control solutions for aerospace and defense markets. The acquisition of FTL enables Elbit Systems to provide enhanced access and support to its customers in the U.K. and Europe. Together with U-TacS (a UAV subsystems company) and UEL (which produces UAVs), the acquisition strengthens Elbit's presence in these markets. FTL employs 180 people in the United Kingdom.

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Website: [www.ferranti-technologies.co.uk/](http://www.ferranti-technologies.co.uk/)

### Teaming/Competition/Joint Ventures

**AE Electronics.** In February 1998, Elbit Systems signed an agreement with Romania's Aerostar to produce electronic systems for that country's aircraft. Aerostar would have a 45 percent stake in the new joint venture, named AE Electronics Ltd. The companies worked together to upgrade 110 of Romania's MiG-21 aircraft to NATO standards under a \$330 million contract. The operation is currently wholly owned by Elbit.

Website: [www.aee.ro/](http://www.aee.ro/)

**ASDOT.** In December 2017, Elbit Systems and the U.K.'s Babcock International Group teamed to pursue the U.K. Ministry of Defence's next generation of aggressor air capability under the Air Support to Defence Operational Training (ASDOT) program. Competitors of incumbent Cobham and Draken announced thus far include a team comprising Leonardo, Discovery Air Defence Services, and Inzpire, as well as a team made up of QinetiQ, Thales, and Textron AirLand. Companies that have expressed interest include Airbus, Saab, and BAE Systems. A decision on the ASDOT contract, worth up to GBP1.2 billion (\$1.6 billion) over 15 years, is expected in 2018, with services due to start in 2020. However, MoD canceled the program in March 2019. Officials will now reassess the overall training requirement.

**Boeing.** In July 2012, Boeing and Elbit Systems signed a Memorandum of Understanding (MoU) to collaborate on the marketing and sales of Elbit's Hermes 450 and 900 UAS product lines in the U.S. and select international countries.

**Collins Elbit Vision Systems.** In April 1996, Elbit Systems of America and Collins Aerospace announced the formation of a jointly owned company to pursue the market for HMDs for fixed-wing aircraft. The venture is producing the Joint Helmet-Mounted Cueing System II (JHMCS II). The JHMCS II is an upgraded and improved version of the classic JHMCS and features a high-definition, color, smart-visor system that operates in both day and night mode. Both Boeing and Lockheed Martin have selected the venture as the supplier for JHMCSs for a wide range of fixed-wing fighter aircraft, including the F/A-18, F-15, F-16, and F-35 Joint Strike Fighter. The operation was renamed from Rockwell Collins ESA Vision Systems to Collins Elbit Vision Systems in 2019.

Website: <http://jhmcsei.com>

**Gilat.** In April 2004, Elbit Systems and Gilat Satellite Networks signed a teaming agreement for cooperation

in the area of satellite communications for the defense and homeland security markets. The agreement leveraged Gilat's latest commercial satellite-based very small-aperture terminal (VSAT) technology by integrating it with Elbit's defense technologies for military and homeland defense applications.

**Indian Ventures.** In April 2016, Elbit Systems formed a joint venture with two Indian firms – Adani Aero Defence and Alpha Design Technologies – to offer the Hermes 450 and Hermes 900 UAVs to India's defense forces. The joint venture was established to meet the government's "Make in India" requirements. As such, local production of airframes and payloads will take place in country if the UASs are acquired.

**Leonardo.** In December 2018, Elbit and Leonardo teamed to develop and demonstrate Leonardo's lightweight and mini torpedoes' launching capabilities from the Seagull Unmanned Surface Vessels (USV).

**Lockheed Martin.** In September 2017, Lockheed Martin UK and Elbit Systems UK signed a strategic teaming agreement to partner on the Maritime Electronic Warfare Program (MEWP) for the Royal Navy. The MEWP is a program to upgrade the Royal Navy's electronic warfare capabilities. Delivered in increments, the upgraded system will be fielded on the Royal Navy's frigates, destroyers, and amphibious assault ships, with the program expanding to the wider fleet, including submarines, in due course. The team will face a rival partnership of Thales UK and BAE Systems.

**Nicarnica Aviation.** In July 2014, Elbit Systems and Nicarnica Aviation signed an MoU to cooperate on incorporating Nicarnica's Airborne Volcanic Object Imaging Detector (AVOID) with Elbit's ClearVision Enhanced Vision System (EVS). The AVOID detector senses volcanic ash in the atmosphere up to 100 kilometers ahead of an aircraft, providing pilots with sufficient time to take evasive action. In June 2015, the two companies won approval under the Eurostar program to fund their collaborative volcanic-ash-detection technology.

**Polish UAV Programs.** Poland is currently looking to acquire two UAV systems under the auspices of the Zefir and Gryf programs. For the Zefir program, Elbit is offering its Hermes 900 versus General Atomics' MQ-9 Reaper. For the Gryf program, Elbit and Polish Armaments Group (PGZ) signed a cooperation agreement in September 2015 to offer the Hermes 450 for the requirement. PGZ will act as the prime contractor for the Hermes 450, and Elbit a secondary supplier. The UAV will be manufactured in Poland with help from Elbit. This agreement is also being extended to the Zefir program. The team is expected to



## Elbit Systems Ltd

face a rival offering from Thales and Poland's WB Electronics.

**RUAG.** In November 2018, RUAG and Elbit Systems signed a Memorandum of Understanding (MoU) to form a joint venture company in Switzerland. The venture will serve as a national Communication and System Competence Center of Excellence, catering to the needs of the Swiss Federal Department of Defence, Civil Protection and Sport (DDPS).

**Sharp Elbit Systems Aerospace.** In April 2013, Elbit Systems and South Korea's Sharp Aviation K announced the establishment of Sharp Elbit Systems Aerospace Inc (SESA). Located in Seoul, South Korea, Elbit currently owns 19 percent of the venture, with a growth option to 50 percent. SESA offers maintenance, repair, and manufacture of advanced military aircraft avionics, as well as research and development of systems and avionics for both existing and future projects, such as the Korean Light Attack Helicopter and Korean Future Fighter development projects. Contracts for Sharp Aviation K were transferred to SESA as part of the transaction. As a Korean company, SESA also offers offset solutions to foreign suppliers and OEMs that sell defense goods and services in South Korea.

**Sikorsky.** In February 1999, Elbit Systems signed a teaming agreement with Sikorsky Aircraft Corp for the upgrade and conversion of Black Hawk helicopters to armed reconnaissance and attack configurations. Under the agreement, Elbit provided the HMD, targeting sensor, stores management computers, and other components of the upgraded configuration, and was responsible for weapons integration.

**Team Spartan.** In May 2009, Elbit Systems of America was selected as part of an industry team led by Collins Aerospace (then Rockwell Collins) for the system integration and prototype phase of the Ground Soldier Ensemble program for the U.S. Army. Together, Elbit Systems of America and Collins Aerospace formed Team Spartan, which was selected as one of three teams to develop the next-generation soldier-worn computer system.

**TOR Advanced Flight Training.** In early 2011, Elbit Systems and Israel Aerospace Industries formed a new joint venture to pursue the IAF's Future Trainer program. The team won a \$603 million contract in September 2012. Due to budget constraints, the aircraft

will be bought by TOR and leased to the IAF under a 20-year maintenance and support contract. During the project, Elbit will establish an enhanced logistic support and maintenance infrastructure for the new trainer, as well as an advanced ground training array. During the operational phase of the project, Elbit will provide logistics services for the M-346 "Lavi" trainer and the new aircraft array. TOR will acquire 30 Alenia Aermacchi M-346 trainer aircraft for the program. The flight center was inaugurated in September 2014. Elbit Systems completed the delivery of the Ground Based Training System (GBTS) center for the M-346 in November 2016.

Website: <http://tor-ata.co.il>

**U.K. Military Flying Training System.** The Ascent joint venture of Lockheed Martin and Babcock International is the training design and delivery organization appointed as the U.K. MoD's training service partner in 2008. Ascent has a 25-year contract to provide the Military Flying Training System (MFTS) for the U.K.'s armed forces. Under this aegis, in late 2014, Ascent selected Affinity – a joint venture of Elbit Systems and KBR – to provide fixed-wing training for the program. Affinity will provide an undisclosed number of Grob Aircraft G 120TP, Beechcraft T-6C Texan II, and Embraer Phenom 100 aircraft for elementary, basic, and multiengine training, respectively. The program will provide instruction, infrastructure, and full support over the life of the MFTS contract, which runs through May 2033.

Website: <https://ascentflighttraining.com/>

**U-TacS.** UAV Tactical Systems Ltd is a British subsidiary, of which Elbit Systems holds 51 percent (through a wholly owned holding company, Elbit Systems UK Ltd). Thales UK Ltd holds the balance. U-TacS's focus is the Watchkeeper program, which provides the U.K.'s armed forces with a globally deployable capability to deliver imagery and intelligence to battlefield commanders and is a core element of the MoD's network-enabled capability strategy. Elbit supplied the program's Hermes 180 and Hermes 450 advanced UAVs. In October 2010, U-TacS was awarded a follow-on urgent operational requirement contract worth approximately \$70 million to provide an intelligence, surveillance, target acquisition, and reconnaissance support capability for the U.K. armed forces. The contract ran through mid-2012.

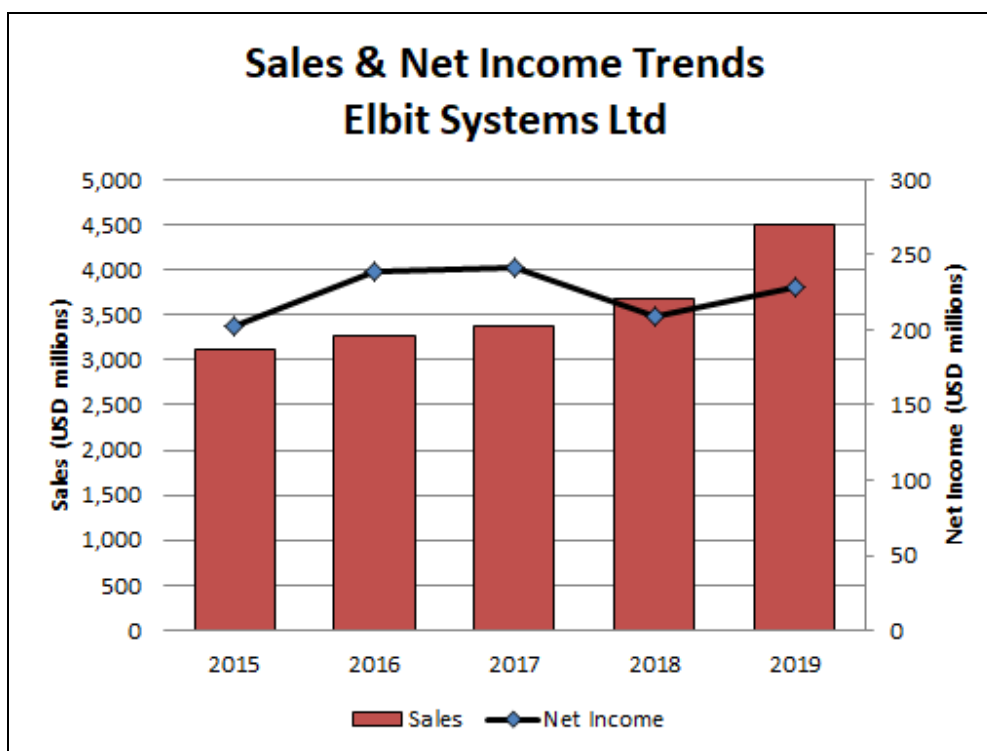
## Elbit Systems Ltd

### Financial Results/Corporate Statistics

Elbit Systems' 2019 sales were \$4.51 billion, up 22 percent from 2018 sales of \$3.68 billion. The company posted net income of \$229 million for the year, compared with \$209 million in 2018.

#### Elbit Systems (NASDAQ: ESLT)

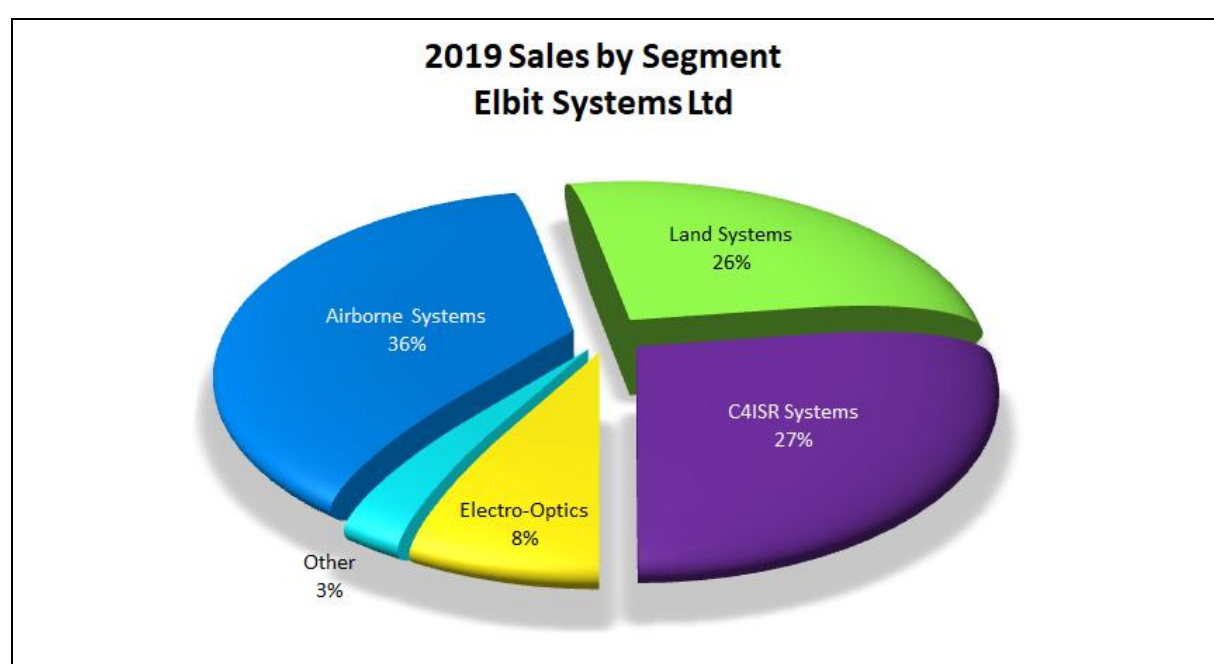
(USD millions)	2015	2016	2017	2018	2019
Net Sales	3,108	3,260	3,378	3,684	4,508
Net Income	202	239	241	209	229
R&D Expenditures	243	256	265	287	332
Backlog	6,564	6,909	7,647	9,399	10,029
Long-Term Debt	166	-	120	468	440
Shareholder Equity	1,391	1,560	1,708	1,832	2,141
Debt-to-Equity Ratio	.12	0	.07	.25	.20
Employees	12,134	12,470	12,781	16,149	16,575



**Elbit Systems Ltd****Industry Segments**

The following is a breakdown of the firm's sales by business segment for the past five years. Note that totals may have been rounded.

<b>SALES</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
(USD millions)					
Airborne Systems	1,226	1,242	1,272	1,470	1,617
Land Systems	559	1,221	1,145	1,130	1,161
C4ISR Systems	995	408	504	649	1,228
Electro-Optics	232	276	341	334	374
Other	96	113	116	101	127
<b>TOTAL</b>	<b>3,108</b>	<b>3,260</b>	<b>3,378</b>	<b>3,684</b>	<b>4,507</b>



<b>GEOGRAPHIC SALES</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
(USD millions)					
North America	839	815	828	979	1,260
Asia-Pacific	800	815	671	792	1,030
Israel	617	717	742	740	1,065
Europe	498	652	764	737	854
Latin America	325	196	193	192	158
Other Countries	29	65	180	243	142

**Major Competitors**

Elbit Systems' competitors are primarily defense electronics manufacturers. Key competitors include divisions and subsidiaries of Boeing, Lockheed Martin, Northrop Grumman, Raytheon Technologies, General Dynamics, BAE Systems, L3 Harris, Thales, Airbus, Leonardo, Saab, Textron, FLIR Systems, AeroVironment, Rohde & Schwarz, Rheinmetall, Kongsberg, Safran, Aselsan, Bharat Electronics, Cubic, and Verint.

**Elbit Systems Ltd****Strategic Outlook**

Even with the global COVID-19 pandemic, the demand for Elbit Systems products remains strong.

Revenues in the second quarter of 2020 were \$1,079.4 million, as compared to \$1,064.0 million in the second quarter of 2019. The company's backlog of orders as of June 30, 2020, totaled \$10,804 million, as compared to \$9,796 million as of June 30, 2019. Approximately 63% of the current backlog is attributable to orders from outside Israel.

The strong half year results show the resilience of Elbit's business, despite the operational and logistical challenges posed by the COVID-19 pandemic. Ongoing conflicts and terrorism have increased the demand on defense systems for low-intensity conflicts, homeland security, and cyber warfare – areas in which Elbit Systems is firmly established.

For many years now, the company has capitalized on the need for security, growing from an avionics firm to an international aerospace and defense conglomerate. Having begun with electro-optics, Elbit has expanded into unmanned vehicles, electronic sensors, and data synthesis. The company has become a top international defense firm, thanks to intensive management that has capitalized on emerging markets and a solid merger and acquisition strategy.

Most recently, the company has expanded yet again with the acquisition of the former Israel Military Industries, IMI Systems. With this acquisition, the company ventures into the markets for precision munitions, rocket systems, and armored vehicle survivability and protection.

Elbit's acquisition strategy is two-pronged. While ongoing defense industry consolidation has decreased the number of competitors, it has naturally increased their relative size and, more importantly, the resources they can bring to bear. Second, there is a growing trend among many governments to require part of the work to be done by indigenous companies.

In Israel, the firm has successfully assimilated many of its local competitors, such as Elop, Elisra Electronic Systems, and Tadiran. In addition, Elbit has acquired numerous other medium-size aerospace and defense companies, such as Cyclone Aviation, Innovative Concepts, Shiron Satellite, Kinetics, and BVR Systems, to name a few. The company also added artillery developer Soltam Systems, armored fighting vehicles firm Saymar, and defense electronics manufacturer ITL Optonics to the fold. Elbit pushed into

cybersecurity with the acquisition of the Cyber and Intelligence division of NICE Systems. This division was subsequently folded into a new subsidiary, Cyberbit, which will spearhead Elbit's entry into the growing cybersecurity market.

Now, with IMI Systems under its belt, the company has become a broad-based defense conglomerate with a product range that combines Elbit's avionic systems, drones, and cybersecurity with IMI's portfolio of missiles, precision-guided munitions, and armor systems. Essentially, the company has almost become a one-stop shop for Israeli defense needs.

In terms of expanding its geographic footprint, Elbit has been successful in making inroads into the U.S. – its "second home market" – with some \$800 million in sales. Again, following the strategy of growth via mass, the Elbit Systems of America unit acquired M7 Aerospace, a provider of maintenance, repair, and overhaul services and logistics support to both civil and military aircraft fleets. In addition, Elbit Systems of America bought out its partner General Dynamics and assumed control of UAV provider UAS Dynamics – opening a key market for the firm.

In early 2018, the company returned to its avionics roots in the U.S. with the purchase of Universal Avionics Systems. This synergistic purchase not only expands the company's position as an avionics systems integrator but also furthers its penetration into new markets, especially in the U.S. Universal Avionics will become the key sales point for all of Elbit's commercial avionics systems in the hemisphere. Further, the company also gains access to its new subsidiary's existing distribution and support network – an MRO area that is quite lucrative.

Beyond Israel and the U.S., Elbit's modus operandi is to establish footholds via teaming or acquisition in select regions. Once these have taken root, Elbit leverages its position as a local company for both political and economic considerations. For example, the company has opened joint ventures in Poland, Romania, and India for various defense competitions.

In terms of specific products, Elbit is perhaps best known for its UAVs, which have long been a critical part of Elbit's success. Thanks in large part to Elbit, Israel's unmanned aircraft fleet is the second largest in the world and has accumulated hundreds of thousands of flight hours. With no end in sight to the Syrian civil war and with the security situations in neighboring countries tenuous at best, there is a lot for Israel's UAVs

**Elbit Systems Ltd**

to keep an eye on. Elbit Systems plans to capitalize on this growing demand for unmanned aircraft through its

wide range of UAVs, including man-portable; tactical; and medium-altitude, long-endurance (MALE) systems.

## Prime Award Summary

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Elbit did not rank the Federal Procurement Data System - Next Generation ([www.fpbs.gov](http://www.fpbs.gov)) Top 100 Contractors Report. Information on the company's Federal contracting can be sourced from the database of [www.USAspending.gov](http://www.USAspending.gov), the official U.S. government source for data on federal awards. Individual contract awards are listed in the U.S. Contract Awards section of this report (below).

## Program Activity

Some important aerospace and government programs currently underway at Elbit Systems are as follows. The briefs are intended to provide a listing of programs that are of major importance to the company. For detailed information on or analysis of specific aerospace and defense programs or equipment, please refer to the appropriate Forecast International service (for example, *Civil Aircraft*, *Military Aircraft*, *Military Vehicles*, *Warships*, *Missiles*, *Electronic Systems*, and *Aviation Gas Turbines*). The following are Elbit Systems' business interests:

- Defense electronics
- Weapons systems
- Instrument components
- Aerospace equipment
- ATE trainer upgrade kits
- Navigation/guidance/display systems
- Communications systems
- Data information systems

### Aircraft Programs

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**AH-1W Upgrades.** In May 2014, Elbit Systems was awarded two contracts, totaling \$14.1 million, to support the U.S. Marine Corps' upgrade of its Bell AH-1W attack helicopter fleet. The first contract, for \$11.6 million, calls for Elbit Systems of America to provide helmet display tracker system kits on the aircraft. The second contract, for \$2.5 million, will add tactical video datalink technology to the helicopters. Earlier, in September 2013, the company received a \$44.8 million contract for the ongoing depot-level service and support of the AH-1W's Night Targeting System.

**AH-64D Mission Processor.** In October 2012, Elbit Systems of America was awarded a \$17.5 million contract by Boeing to redesign and upgrade the Apache Block III AH-64D mission processor. Elbit Systems of America's Airborne Solutions division received an order for the technology refresh to be performed over five years. The Block III mission processor provides the aircraft with an open-system computing architecture that can easily integrate with current and emerging next-

generation technologies. The new configuration will provide both performance and technology improvements and solutions for component obsolescence.

**KC-135 Components.** In July 2011, Boeing awarded Elbit Systems of America subsidiary M7 Aerospace a three-year contract to supply inboard flap assemblies for the KC-135 Stratotanker. For several years, M7 Aerospace has been supplying sheet metal details, machine parts, spoilers, and other assemblies to Boeing Defense Space & Security (BDS) for KC-135, CH-47, C-130, V-22, and other legacy airframes.

**KC-390 Components.** In October 2011, Elbit Systems' Brazilian subsidiary AEL Sistemas was awarded development contracts to provide three additional systems valued at \$25 million for Embraer's new KC-390 military transport and refuel jet. The systems include a self-protection suite, directional infrared countermeasures, and a pilot-orientation HUD. This selection is in addition to the earlier selection of Elbit subsidiary AEL as the provider of the mission computer for the new jet.

**Korean C-130 Upgrade.** In June 2012, Elbit Systems was awarded a contract valued at \$62 million to upgrade the South Korean Air Force's C-130 transport aircraft. Under the contract, the C-130 aircraft will have various types of advanced electronic systems installed. In addition, Elbit Systems will convert the existing analog cockpit to a "glass cockpit" using its digital flight displays. The project, to be performed over four years, will be executed in cooperation with KAI.

### Electronics Programs

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#### Aircraft and Helicopter Upgrades

Elbit Systems produces various avionics systems for both fixed- and rotary-wing aircraft. Key product areas include cockpit management systems, airborne computers, weapon delivery and navigation systems, display systems, airborne C4I systems, digital map

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systems and mass memory devices, stores management systems, digital video recording devices, digital video debriefing systems, enhanced vision systems, cockpit instrumentation, simulators, and helmet-mounted systems. Fixed-wing aircraft platforms include the F-4, F-5, F-15, F-16, F-18, T-38, T-45, MiG-21, Su-25, Su-30, C-130, A-4, A-10, Mirage, AL-X, AM-X, IAR-99, AT-63 Pampa, Beechcraft, and Gulfstream V. Helicopter platforms include the CH-47, CH-53, Cobra, Puma, Super Puma, OH-58 Kiowa Warrior, AH-64 Apache, RAH-66 Comanche, H-60 Black Hawk, S-70 Black Hawk, Lynx, EC 225, EC 725, and V-22 Osprey.

### C4I

Elbit provides a suite of systems specifically targeted at ground-based command, control, communications, computers, and intelligence systems and battlefield information systems. These modular systems include tactical computers, digital maps, advanced communication controllers and modems, message-handling systems, border surveillance equipment, and various components developed for client-specific needs.

### DASH

The DASH line-of-sight measurement system allows line-of-sight and flight information to appear on the pilot's helmet visor, eliminating the need for the pilot to glance at the instrument panel or HUD. This enhances a pilot's air-to-air capability, as the weapons systems on board the fighter are locked on to their targets by the pilot's visual cues. The system is produced by Collins Elbit Vision Systems.

### Electro-Optic Systems

Elbit Systems, through its Elop unit, develops and manufactures a full range of electro-optical sensors and systems used in space, air, land, and sea systems. Products include space cameras and specialized sensors; airborne reconnaissance and observation systems; forward-looking infrared (FLIR) systems for ground, naval, and airborne applications; HUDs; and laser designators.

### HMDS

Collins Elbit Vision Systems is under contract to develop the Helmet-Mounted Display System for the F-35 Joint Strike Fighter aircraft.

### JHMCS

The Joint Helmet-Mounted Cueing System enables pilots to accurately direct (cue) onboard weapons against enemy aircraft while performing high-g aircraft maneuvers. Pilots only need to point their head at the target and weapons will be directed to where they are looking. The system can also be employed to accurately cue pilots to ground targets. The system is produced for

the F-15, F-16, and F/A-18 aircraft by Collins Elbit Vision Systems.

### JHMCS II

In June 2013, Collins Elbit Vision Systems debuted its new Joint Helmet-Mounted Cueing System II at the Paris Air Show. The JHMCS II is an upgraded and improved version of the classic JHMCS and features a high-definition, color, smart-visor system that operates in both day and night mode. There are two versions of the JHMCS II product line: the Digital JHMCS and JHMCS II. For existing aircraft equipped with the JHMCS classic, the Digital JHMCS is an economical but significant upgrade. Using many of the existing components and requiring no software changes, the Digital JHMCS has the "all-new" aspects of the JHMCS II and the assets it brings, with the added benefit of very easy retrofit, according to the company. The JHMCS II provides a new optical-inertial tracker and replaces the JHMCS subsystems with a lightweight Aircraft Interface Unit (ACIU). The JHMCS II works with any aircraft and any aircraft architecture. Both the Digital JHMCS and JHMCS II share common design attributes that are new and improved over the classic JHMCS.

### Naval Systems

Elbit Systems has designed, manufactured, integrated, and installed a line of naval systems, including combat management systems, electronic support measures, decoy control systems, fire control systems, EO payloads, and tactical trainers.

### SPS (Elisra)

This is a radar warning and self-protection system for combat aircraft and helicopters. It combines air crew alert functions with jammer set-on and decoy/chaff dispenser triggering. The system also includes digital processing for signal analysis and can interface with other installations, such as radars or jammers. The system incorporates a threat emitter library and a high degree of automation, though the control unit permits parameter alteration to suit mission requirements. The latest variant, the SPS-65(V)5, was designed to address increased global use of unmanned air vehicles.

### Military Vehicles

Elbit Systems' involvement in military vehicles focuses on producing and upgrading electronic systems and components. The company's combat vehicle systems offerings include fire control systems; electric gun and turret drive systems; command-and-control systems; FLIR systems; sights, lasers, laser warning systems; life support systems; and hydraulic systems for tanks, personnel carriers, and other combat vehicles. Elbit also supplies training systems for tanks and fighting

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vehicles. The company has been involved with upgrades on various vehicle systems, including the Merkava, M1 Abrams, Centurion, Patton, Paladin, M-60, T-55, T-72, Bradley A-3, AMX-30, SK-105, and Ulan.

### M47/M48/M60 Upgrade Program

Israel has upgraded its large, American-produced main battle tank inventory. Elbit Systems offers the Lancelot tank fire control system, which is based on the company's Matador fire control system. The Lancelot system consists of a neodymium/yttrium-aluminum garnet (Nd:YAG) laser rangefinder, a second-generation image intensifier, a digital computer with a built-in cant-angle sensor, a moving target velocity sensor, additional external/internal sensors, and control boards for the gunner's and commander's positions. The compactness of the Lancelot system allows it to be installed in tight turret spaces.

### Merkava

This was Israel's first indigenously designed and produced main battle tank. The prime contractor for the Merkava is Israeli Ordnance Corps, with major subcontractors including Ashot-Ashkelon, Elbit Systems, Elop Electrical, General Motors Corp's Allison Transmission Division, Israel Military Industries, Tadiran, Teledyne Continental Motors, and Urdan Industries. A digital fire control system, designated Matador, was designed for the Merkava by Elbit Systems. The ballistic computer is integrated with sensor inputs, sights, and the Nd:YAG laser rangefinder provided by Elop Electrical. In addition, the director-type fire control system of the Merkava Mk 3 was developed by Elbit Systems in conjunction with Elop. The Mk 5 is the only member of the Merkava line currently in serial production.

### Opher

The Opher is a low-cost, terminally guided bomb modification kit. The Opher provides previously unguided general-purpose bombs with guidance capabilities for more accurate targeting. The add-on system uses a passive imaging infrared seeker for day/night operations and is designed to target armored fighting vehicles, artillery, air defense systems, ships, and runways. Elbit Systems has supplied two NATO countries with Opher prototypes.

### T-54/T-55 Upgrade Program

Large numbers of Soviet-produced main battle tanks, such as the T-54 and T-55, were captured by Israel from its Arab neighbors during various wars. Israel is the first non-Eastern Bloc nation to integrate new fire control components with the T-54/T-55. The Matador fire control system, produced by Elop and Elbit Systems, is used. The Matador is a modular system

very similar to the fire control system fitted to the Merkava tank. The IDF maintains a sizable fleet of captured T-54/T-55 tanks, modernized and designated T-54/T-55 Model S.

## Missile Programs

### AIM-9 Sidewinder

Elbit Systems has introduced new guidance control equipment for the AIM-9 Sidewinder for use with USAF F-4 Phantom fighters, under a subcontract to a U.S. firm. The Sidewinder control system, an advanced digital avionics system, controls the AIM-9 family of missiles, providing off-boresight capability. By enlarging the missiles' lock-on envelopes and reducing pilot workload, the new control system allows faster reaction times and provides enhanced air-to-air capabilities.

### Centurion

This is a main battle tank developed by the British Army Department of Tank Design. It was manufactured in the U.K. by Royal Ordnance Factories in Leeds and Woolrich, by Vickers in Elswick, and by Leyland Motors in Leyland. Production has been completed. The Israeli modernization program includes components from Elbit Systems, Electro-Optics Elop Industries (night vision devices), and Elta Electronics (fire control components).

## Unmanned Vehicles

### Hermes

The Hermes 450 air vehicle was developed by Elbit's Silver Arrow unit for reconnaissance, surveillance, and electronic warfare missions and as a communications relay platform. The air vehicle is powered by two rotary engines. The IDF is purchasing the Hermes 450S system as part of a major modernization of its UAV fleet. The Hermes 900, which was first unveiled in June 2007, addresses the growing demand for medium-altitude, long-endurance UAVs. The Hermes 900 is similar in appearance to the Hermes 450, but offers a larger payload, higher flight altitude, and longer endurance. The final member of this family is the Hermes 1500. This large UAV resembles a small twin-engine passenger aircraft and is intended for long-range surveillance and tactical reconnaissance. Hermes vehicles are also being utilized in the U.K.'s Watchkeeper program. Prime contractor Thales is using air vehicles derived from the Elbit Systems Hermes 180 (WK 180) and Hermes 450 (WK 450) for the program.

In June 2019, Elbit Systems' Hermes 45 Small Tactical Unmanned Aircraft System (STUAS) debuted at the Paris Airshow. This latest variant features long endurance and point launch/recovery, which enhances

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Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) capabilities at the brigade and division levels.

### Seagull

In February 2016, Elbit unveiled its Seagull unmanned surface vessel. The new USV is designed for anti-submarine warfare, mine countermeasures, electronic warfare, maritime security, and other related missions. The Seagull is a 12-meter-long multimission USV system equipped with one or two vessels that can be operated and controlled in concert from manned ships or from the shore. Elbit says that in its full configuration, the advanced USV system delivers unmanned end-to-end minehunting operation capability, taking the man out of the minefield. It features inherent command, control, communications, computers, and intelligence (C4I) capabilities for enhanced situational awareness and has a large fuel capacity that allows it to remain at sea for several days.

### Skylark

This is a man-portable unmanned air vehicle designed for performing reconnaissance and surveillance missions for small-unit commanders. In December 2008, the Elbit Systems Skylark I LE was selected by the Israeli Ministry of Defense to answer the battalion-level IDF tender calling for a wide procurement of mini-UAVs and training and logistics support for all IDF Ground Forces battalions. The Skylark, an advanced mini-UAV, is a manpack configuration designed for day and night observation and data collection "over the hill" up to distances of

10 kilometers. The system is equipped with a quiet electric motor and offers totally autonomous flight and observation capabilities. A single field soldier can launch the UAV after a brief training session.

### Sniper

The Sniper is a new, advanced tactical close-range UAV system produced by Silver Arrow and Elbit Systems. The Sniper UAV is designed to support operational activities of forward ground and special forces. In this role, it is used for real-time day/night reconnaissance, surveillance, target acquisition, and damage assessment. The Sniper unit is installed and operated from two mobile ground vehicles.

### Watchkeeper

Watchkeeper provides the U.K. armed forces with an essential intelligence, surveillance, target acquisition, and reconnaissance capability based on a tactical UAV system and is a key component of the U.K.'s drive for network-enabled capability. Thales established a joint venture company – U-TacS – with Elbit Systems in Leicester, U.K., to manufacture tactical UAV subsystems to supply both the Watchkeeper program and the rapidly growing worldwide UAV systems market. The Watchkeeper is built in the U.K. by Thales and Elbit Systems (which absorbed Silver Arrow) at a facility in Leicester. Deliveries to the British Army are complete, but the system did not achieve Full Operational Capability until late 2018 due to a series of crashes. It will remain in British Army service through 2042.

## U.S. Contract Awards

The following is a listing of major contracts recently awarded to Elbit Systems of America and its subsidiaries EFW and Kollsman from the U.S. government (contracts as of press date). Note that the Description column is excerpted directly from U.S. DoD listings. For full details on contracts and their associated modifications, visit <https://www.defense.gov/Newsroom/Contracts/>

Date	Award (USD millions)	Contract #	Description
1/22/19	24.4	W58RGZ-19-D-0035	COMMON HELMET MOUNTED DISPLAY.
2/28/19	7.3	M67854-15-D-6001	CONTRACTOR LOGISTICS SUPPORT, 10 COMMON LASER RANGE FINDER – INTEGRATED CAPABILITY (CLRF-IC) SYSTEMS, 10 OBJECTIVE LENS COVERS, AND RETROFIT OF 396 CLRF-IC SYSTEMS. Awarded to Kollsman
4/17/19	17.8	N00019-17-G-0014	PROCUREMENT OF 132 V-22 INTEGRATED AVIONICS PROCESSORS FOR THE NAVY (106) & AIR FORCE (26). Awarded to EFW.



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Date	Award (USD millions)	Contract #	Description
8/1/19	7.2	N00019-17-G-0014	THIS DELIVERY ORDER PROCURES 15 FAST CHARACTERIZATION TO 15 HELMET KIT MODIFICATION FIXTURES, 15 READY ROOM TESTERS & 20 NIGHT VISION GOGGLE MODIFICATION KITS FOR THE V-22 COLOR HELMET MOUNTED DISPLAY SYSTEM. Awarded to EFW.
2/28/20	471.6	FA8232-20-D-0003	F-16 SUSTAINMENT. THIS CONTRACT PROVIDES FOR A PYLON-BASED INFRARED MISSILE WARNING SYSTEM FOR THE F-16 PLATFORM. WORK WILL BE PERFORMED IN FORT WORTH, TX, AND IS EXPECTED TO BE COMPLETED BY FEBRUARY 2030.
3/31/20	46.0	SPRBL1-20-D-0020	PRODUCTION OF SPARE PARTS IN SUPPORT OF THE AVIATORS' NIGHT VISION IMAGING SYSTEM/HEADS-UP DISPLAY SYSTEM. Awarded to EFW.
4/15/20	?	N00421-20-D-0079	INDEFINITE-DELIVERY/INDEFINITE-QUANTITY CONTRACTS IN SUPPORT OF THE NAVAL AIR WARFARE CENTER, AIRCRAFT DIV. THESE CONTRACTS ARE FOR THREE DISTINCT LOTS, EACH WITH ESTABLISHED VENDOR POOLS SUPPORTING DIFFERENT REQ. WORK WILL BE PERFORMED AT THE CONTRACTOR'S LOCATIONS & AT GOVERNMENT FACILITIES. LOT I PROVIDES FULL RATE PRODUCTION OF MISSION SYSTEM AVIONICS. LOT II PROVIDES FULL RATE PRODUCTION OF OTHER AIRCRAFT COMPONENTS, PRODUCTION & INSTALLATION OF MODIFICATION KITS. LOT III PROVIDES FULL RATE PRODUCTION OF OTHER AIRCRAFT COMPONENTS, PRODUCTION & INSTALLATION OF MODIFICATION KITS. THE ESTIMATED AGGREGATE CEILING FOR ALL CONTRACTS IS \$7,143,500,000, WITH THE COMPANIES HAVING AN OPPORTUNITY TO COMPETE FOR INDIVIDUAL ORDERS WITHIN THEIR LOTS. Awarded to EFW.
4/24/20	79.1	SPRDL1-20-D-0019	CONTRACT FOR HAND STATIONS, GUNNER HAND STATIONS & CIRCUIT CARDS FOR THE BRADLEY FIGHTING VEHICLE. Awarded to EFW.
5/29/20	9.0	W56JSR-17-D-0017	CONTRACT TO ENSURE CONTINUED SUPPORT FOR THE ARMY COMMUNICATIONS ELECTRONICS COMMAND INTEGRATED LOGISTICS SUPPORT CENTER.
6/24/20	32.0	N00164-17-D-JQ63	INCREASE THE CEILING AMOUNT ON FIVE-YEAR, INDEFINITE-DELIVERY/INDEFINITE-QUANTITY CONTRACT FOR THE PROCUREMENT OF AN ADDITIONAL 76 HELMET DISPLAY TRACKER SYSTEMS, MAJOR ASSEMBLIES, PROVISION ORDERING ITEM LINE ITEMS, ENGINEERING SERVICES & SUPPORT EQUIPMENT. THIS PROCUREMENT WILL SUPPORT THE NAVY PMA-299 MULTI-MISSION HELICOPTER (MH-60S).

**Elbit Systems Ltd**

<b>Date</b>	<b>Award (USD millions)</b>	<b>Contract #</b>	<b>Description</b>
7/24/20	12.0	SPRDL1-20-D-0020	BRADLEY FIGHTING VEHICLE CONTROLLER GRIP ASSEMBLIES. Awarded to EFW.
8/14/20	12.9	N00421-20-C-0013	PRODUCTION, DELIVERY & SUPPORT OF THE JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS) NIGHT VISION CUEING & DISPLAY (NVCD) SYSTEM. THIS CONTRACT PROCURES 60 JHMCS NIGHT VISION DEVICES, 60 JHMCS NIGHT DISPLAY ADAPTERS & 30 JHMCS HELMET MOUNTED DISPLAY TEST SETS (HMDTS) FOR THE NAVY; 16 JHMCS HMDTS FOR THE GOVERNMENT OF CANADA; FIVE JHMCS HMDTS FOR THE GOVERNMENT OF KUWAIT; & TWO JHMCS HMDTS FOR THE GOVERNMENT OF MALAYSIA, AS WELL AS TWO HOFFMAN ADAPTER KITS FOR THE GOVERNMENT OF AUSTRALIA & ONE HOFFMAN ADAPTER KIT FOR THE GOVERNMENT OF SWITZERLAND. ADDITIONALLY, THIS CONTRACT PROVIDES NEW & MODIFIED ASSOCIATED SUPPORT EQUIPMENT, INTERIM REPAIRS, NON-RECURRING ENGINEERING, TESTING, TECHNICAL DATA & ALL OTHER SUPPLIES & SERVICES NECESSARY TO PERFORM INSTALLATION & TESTING OF NVCD SYSTEMS THAT ARE FULLY COMPATIBLE WITH THE F/A-18 SERIES & EA-18G JHMCS. Awarded to Collins-Elbit Vision Systems.

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