

## **RESPONSIVE SMALL SATELLITE SOLUTIONS**

With a rich heritage in advanced space payloads, sensors and other technologies, L3Harris is now working with customers to plan, develop and execute affordable high-performance space missions using small satellite constellations.

### **ADVANCING SMALL SATELLITE CAPABILITIES WITH END-TO-END SOLUTIONS**

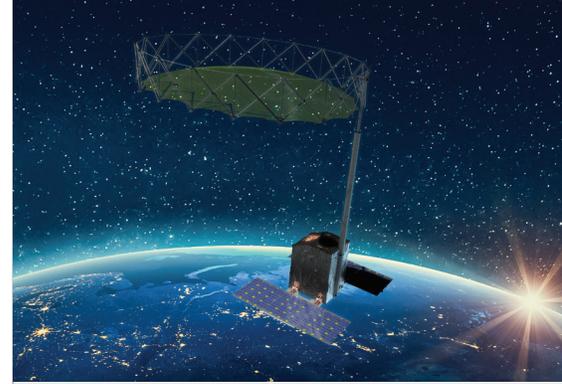
Building on more than 50 years of space and intelligence mission success, L3Harris has adapted technologies used for our sensors and payloads, satellite ground systems and advanced data analytics to high-performing smallsat platforms.

Today we deliver the full spectrum of smallsat services—starting with mission planning and engineering design; continuing through manufacturing, integration and testing; and extending into mission execution with launch services, satellite operations and intelligence deliverables. Throughout, we work in partnership with customers to introduce innovations that reduce costs, shorten schedules and manage risk.

In addition to providing these services for specific customer missions, we designed, built, launched and operated our own smallsat, HSAT, in 2018 for demonstration and testing purposes. L3Harris launched three smallsats into low Earth orbit in 2018. We are scheduled to launch another five in 2019, and dozens more beginning in 2020.

### **PUTTING THE MISSION PAYLOAD FIRST**

Mission success depends on having the right sensor payload. L3Harris maximizes the performance of smallsats by starting with high-compactness, high-performance payloads that best meet mission needs and then integrating commercially available bus components around the payload to fit within form factors that enable affordable launch options.



## **Delivering Key Missions and Greater Resiliency with Responsive Small Satellite Solutions**

- > Smallsat constellations are an affordable way to gain persistent satellite coverage and increased mission resiliency
- > Using sensor-optimized smallsat designs, L3Harris solutions put the requirements of the mission first
- > L3Harris' proven technologies and demonstrated smallsat performance enable us to meet our customers' most important needs
- > L3Harris processing and analysis tools and services transform smallsat data into high-value products



# RESPONSIVE SMALLSAT SOLUTIONS

L3Harris specializes in several key mission technologies that enable us to deliver our comprehensive, high-value smallsat solutions.

## HIGH-PERFORMANCE SPACE ANTENNA REFLECTORS

L3Harris designs and manufactures deployable mesh reflectors that can be compactly stowed for launch and unfurled in space to deliver unparalleled performance in bands ranging from UHF to V band. Nearly 100 of our mesh antenna reflectors have been delivered to commercial and government customers for broadcast; communications; and intelligence, surveillance and reconnaissance applications. Together, they have recorded more than 800 years of reliable on-orbit service. Combined with our high-performing feed solutions, these highly compact reflectors enable smallsats to meet exacting mission demands.

## SPACEVIEW™ IMAGING SYSTEMS

L3Harris' SpaceView™ imaging system products include smaller, lighter-weight offerings. Based on a legacy of spaceborne imaging systems that deliver the highest resolution commercially available, these smaller systems are capable of capturing images with 1-meter resolution. SpaceView™ systems for smallsats start at a 0.24-meter aperture to meet imaging and size, weight and power requirements for smallsats, with payloads that can capitalize on standard ESPA-APL envelope configurations.

With diverse sensor capabilities and a broad spectral range—from visible through infrared and up to 8-band multispectral—L3Harris SpaceView™ systems can be tailored to different missions. The ability for most models to support two on board cameras can double system coverage on a single satellite or better serve customers who have multiple missions with two different camera modalities in the same payload.

## RECONFIGURABLE RADIO FREQUENCY PAYLOADS

Mission adaptability and scalability is critical for responsive space solutions. L3Harris AppSTAR™ is a radio frequency payload platform that enables satellites to host multiple missions on a single vehicle. More importantly, it lets operators reconfigure their payloads to adjust to changing missions, even after deployment in space—much like cell phone users add, update and change applications on their devices. Today, more than 160 L3Harris AppSTAR™ payloads are serving government and commercial missions, and we have adapted the technology to provide a game-changing software-defined architecture for smallsats. We demonstrated its performance and reprogrammability on the 6U HSAT smallsat.

## SCALABLE GROUND SYSTEMS

For as long as L3Harris has designed and manufactured spaceborne sensors, payloads and structures, we have also developed state-of-the-art ground systems. Today we are drawing upon that experience to lead the way in delivering the infrastructure needed to control, operate and manage constellations of smallsats. We reduce cost, risk and schedule by using commercially available products to provide a scalable ground architecture that tasks, commands, controls and transports petabytes of data.

## ACTIONABLE INTELLIGENCE

To bridge the gap between smallsat data collection and decision making, L3Harris provides the processing and analysis tools and services that transform big data into high-value products. Our advanced processing, analytics and data science quickly convert raw sensor data into fit-for-use results ready for analysis. Our image and data analysis solutions include both custom development and integration services and commercially available software that enable analysts to deliver the expert-level results to the most challenging geospatial questions.

### Small Satellite Solutions

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L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



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FAST. FORWARD.

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