

## ADVANCED HYPERSONIC PROPULSION

L3Harris manufactures a wide range of products to support hypersonics, including solid rocket motor boosters, air-breathing scramjet engines, warheads and missile defense technologies.

Scramjets burn fuel mixed with air, compressed by the forward speed of the aircraft to produce thrust, which could one day enable aircraft to fly from Los Angeles to London in just over an hour.

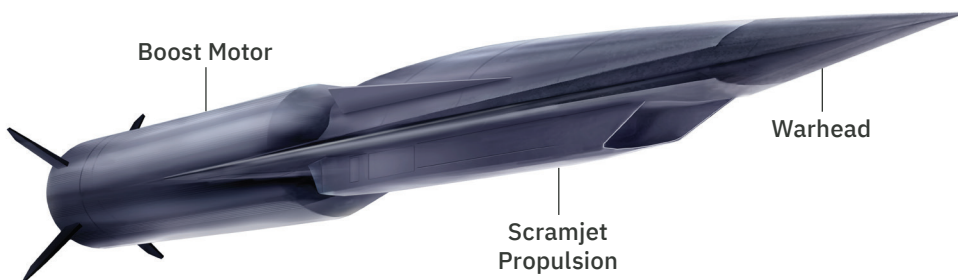
### HYPERSONICS

In 2013, L3Harris successfully collaborated with the United States Air Force Research Laboratory (AFRL), the Defense Advanced Research Projects Agency (DARPA), NASA and Boeing on the X-51A Scramjet Engine Demonstrator program. This collaboration achieved the milestone of the first practical hypersonic flight (cruise Mach >5) with a hydrocarbon-fueled and -cooled scramjet-powered vehicle.

Under numerous government contracts and its own investments, L3Harris has continued to improve the aerothermal performance, affordability, scalability and rapid manufacturability of scramjet engines to meet emerging needs for hypersonic missile and aircraft applications.

L3Harris is also a leader in solid propellant boost motor development for weapon systems. Having been the provider of the solid boost motors that powered the X-51A to hypersonic flight success, L3Harris is developing the next generation of mission-critical propellants, lightweight and robust motor cases, and improved affordability that will enable U.S.-crucial hypersonic boost-cruise and boost-glide missiles for our customers.

L3Harris draws on its extensive historical expertise in the development of energetic materials to create innovative warhead concepts. These designs utilize the high kinetic energy of hypersonic delivery systems, incorporating unique technology to enhance the focused and selective performance of new energetic materials to fulfill diverse mission requirements.



### ADDITIVE MANUFACTURING

Compared to previous L3Harris scramjet engines:

- > 75% reduction in time to produce
- > 75% reduction in cost to manufacture
- > 95% reduction in number of parts enabled by greater design flexibility



### GENERAL 3D PRINTED PARTS

Using additive manufacturing (3D printing) for scramjet engines optimizes performance while dramatically reducing cost and production time.

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