

KAL
Capital

SPACE TECHNOLOGY

SECTOR UPDATE



NOVEMBER 2023

MARKET MOTIONS & TRENDS

RECENT HEADLINES IN SPACE TECHNOLOGY SYSTEMS



Consolidation in the Solid Rocket Motor Market

Defense
Contractors

Defense One

SCIENCE & TECH

Lockheed wants a rocket motor maker of its own, for GMLRS and more

An in-house source of solid-fuel engines might help boost Ukraine's supply of the punishing artillery system.



X-Bow Wins Hypersonic Rocket Supplier Role

Hypersonics

AVIATION WEEK
NETWORK

X-Bow Wins Rocket Supplier Role For Hypersonic Weapons

Start-up company X-Bow Systems will be a second-source supplier for the solid rocket motor (SRM) on Lockheed Martin's hypersonic glide vehicle programs with the U.S. Army and Navy and become a third U.S. supplier overall of tactical-sized rocket propulsion systems.



Increasing Visibility & Reducing Space Debris

NRO

BREAKING
DEFENSE

NRO plans 10-fold increase in imagery, signals intel output

The National Reconnaissance Office's plan to "quadruple" the size of its satellite fleet over the next decade will allow it to deliver "10 times as many signals and images" as it is today, according to the spy agency's deputy director



Increasing Visibility & Reducing Space Debris

Space Force

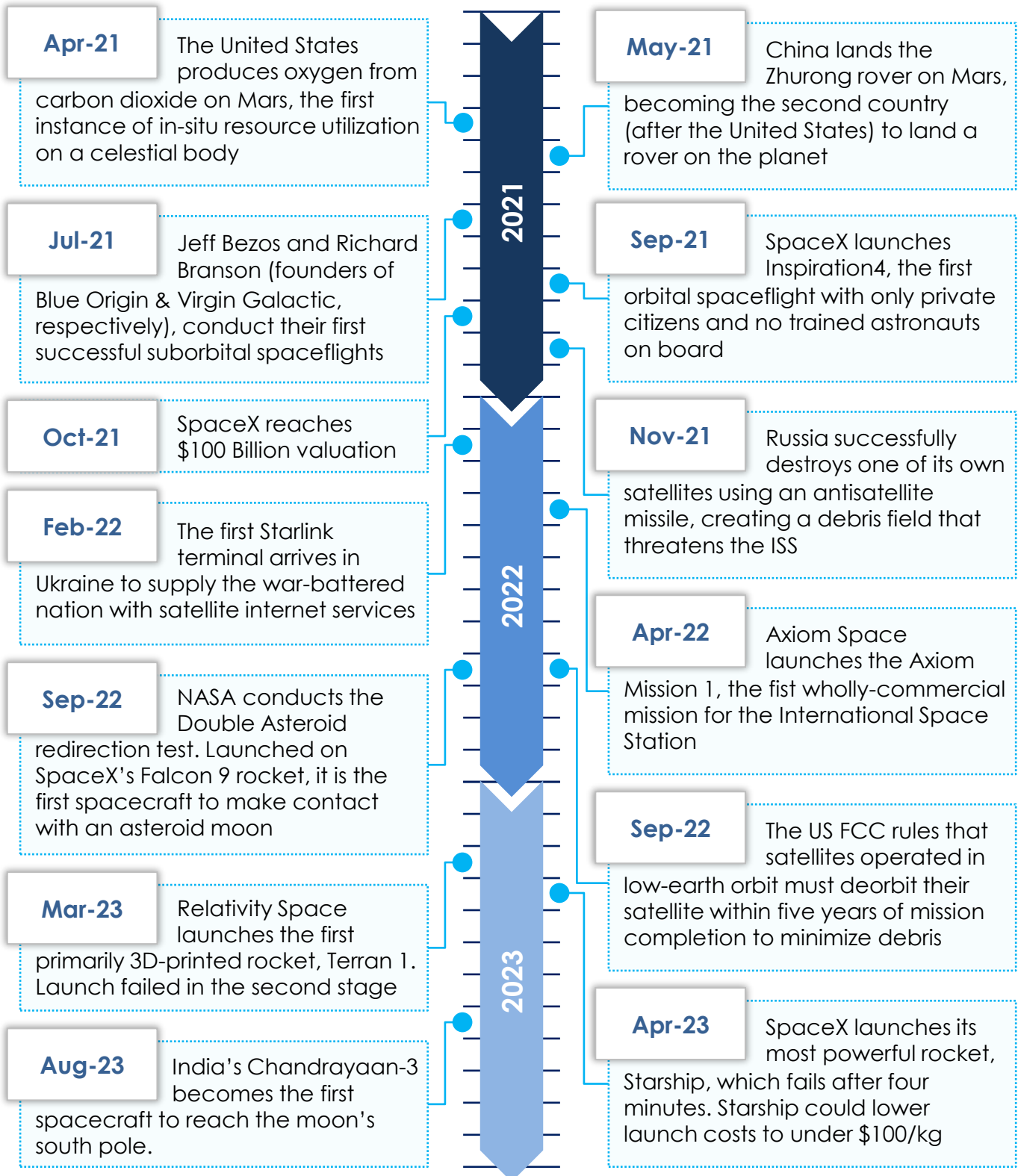
Defense One

SCIENCE & TECH

Space Force hunts for mature technology in 'Hyperspace Challenge' program

Expanding its reach from startups to established players, this year's event seeks satellites that are more autonomous, maneuverable, and safer from debris.

SPACE TECHNOLOGY TIMELINE – RECENT DEVELOPMENTS



SPACE TECHNOLOGY ECOSYSTEM

MARKET MAP OF VENTURE-BACKED SPACE TECH COMPANIES

Terrestrial Space Technology

Geospatial Intelligence



Satellite Communications



Commercial Space Launch



Positioning, Navigation & Timing



Orbital Space Technology

Satellites



In-Space Manufacturing



Space Tourism



Space Debris & Tracking



Space Infrastructure



Exploratory Space Technology

Celestial Resources



Space Habitation



Interplanetary Propulsion



SPOTLIGHT – SOLID ROCKET MOTORS

OEM RACE FOR CONSOLIDATION ACCELERATES

After Blocking Lockheed Martin Acquisition, FTC Allows L3 Harris to Close the Deal with Aerojet Rocketdyne – Creating an Effective Domestic Duopoly with Northrop Grumman

**NORTHROP
GRUMMAN**

Orbital
Innovation You Can Count On®

- » The acquisition bolstered Northrop's space capabilities and gave it one of the two remaining domestic SRM providers

 **L3HARRIS™**

**AERJET
ROCKETDYNE**
An L3Harris Technologies Company

- » Acquired in 2023, after the previously proposed acquisition by Lockheed Martin was denied by the FTC on anticompetition

LOCKHEED MARTIN

Lockheed Martin has publicly stated its desire for in-house SRM capabilities to supplement its existing suppliers and promote “antifragility”

Independent Solid Rocket Motor Suppliers

KARMAN
SPACE & DEFENSE

ANDURIL
ADRANOS

X-BOW

nammo

TOMER

DOD SEEKS TO DIVERSIFY SRM SUPPLY BASE



**Third DOD-Approved
Domestic SRM Provider**

DOD Policy



DoD Launches Effort to Enhance Solid Rocket Motor Production Capacity

The DoD's Office of the Assistant Secretary of Defense for Industrial Base Policy, through its Manufacturing Capability Expansion and Investment Prioritization (MCEIP) office, awarded a \$64 million contract to X-Bow Systems Inc (X-Bow) that will expand manufacturing capacity and reduce the production cost of Solid Rocket Motors (SRMs) used in hypersonic weapons.

























SPACE TECHNOLOGY– RECENT M&A ACTIVITY

RECENT TRANSACTIONS

Target	Buyer	Announced	Transaction Description
 bliley technologies	 KYOCERA	Oct-23	» Bliley manufactures low-noise crystal & oscillator products for use in avionics, LEO, and GEO applications
 OneWeb	 EUTELSAT GROUP	Sep-23	» OneWeb is a satellite communications provider utilizing a constellation of Low Earth Orbit satellites
 EO Vista	 GENERAL ATOMICS	Sep-23	» EO Vista provides advanced EO/IR weather sensors to the U.S. Space Force to support next-gen, small weather sats
 SCIURU	 INTEGRASYS	Sep-23	» Sciurus develops software for satellite constellation prototypes
 Aerospace & Technologies Corp.	 BAE SYSTEMS	Aug-23	» Prime contractor that develops full satellite systems and space missions for the DOD, NASA and other agencies
 KKR	 OHB	Aug-23	» Develops, builds, launches and operates low-orbiting and geostationary small satellites
 FREE SPACE	 SCOUT	Aug-23	» Developer of space domain awareness and space security solutions
 EXO-SPACE	 SIDUS SPACE	Aug-23	» Exo-Space provides software for custom image classification and object detection algorithm solutions in space
 HYPER GIANT INDUSTRIES	 ESI FORWARD SLOPE INC.	Aug-23	» Geospatial data visualization platform which applies real-time threat analysis, makes AI-generated recommendations
 AEROJET ROCKETDYNE	 L3HARRIS™	Jul-23	» Develops and produces specialized power and propulsion systems, as well as armament systems
 SPACEFLIGHT	 FIREFLY AEROSPACE	Jun-23	» Developer of OTVs and provides launch services, cislunar space rideshare, and mission management solutions
 EMERGENT Space Technologies	 YORK SPACE SYSTEMS	Jun-23	» Developer of advanced systems and flight software for multi-spacecraft missions
 ADRANOS	 ANDURIL	Jun-23	» Developer of high-performance, solid propellant for long-range missile and space launch systems
 MAXAR	 Advent International GLOBAL PRIVATE EQUITY	May-23	» Provider of advanced space technology solutions including satellites, earth imagery, geospatial data and analytics
 inmarsat	 Viasat™	May-23	» Provider of satellite communications services and owner of diverse portfolio of mobile telecom satellite networks
 CAES	 VERITAS CAPITAL	Jan-23	» Provider of high-reliability, radiation-hardened solutions for space applications

SPACE TECHNOLOGY – NOTABLE VC ACTIVITY

RECENT TRANSACTIONS

Target	Lead Investors	Announced	Funding Type	Amount Raised
 HawkEye ³⁶⁰	 LOCKHEED MARTIN VENTURES	Oct-23	Series D	\$ 10.0M
 COGNITIVE SPACE	 DOLBY FAMILY VENTURES	Oct-23	Seed	\$ 4.0M
 STOKESPACE TECHNOLOGIES	 industrious VENTURES	Oct-23	Series B	\$ 100.0M
 kayhan.space	 EVE ATLAS SPACE CAPITAL	Sep-23	Seed	\$ 7.0M
 ANTARIS	 streamlined ventures	Sep-23	Seed	\$ 3.5M
 PROTEUS SPACE	 MOONSHOTS CAPITAL	Jul-23	Seed	\$ 4.2M
 BENCHMARK space systems	 freshTracks CAPITAL	Jul-23	Series B	\$ 33.3M
 AGILE SPACE INDUSTRIES	 caruso VENTURES	Jun-23	Seed	\$ 13.0M
 APEX	 andreesen horowitz SHIELD CAPITAL	Jun-23	Series A	\$ 16.0M
 NUVIEW	 Mac VENTURE CAPITAL	Jun-23	Series A	\$ 12.0M
 pixel	 G/	Jun-23	Series B	\$ 36.0M
 (H) hubble NETWORK	 TRANSPOSE PLATFORM	May-23	Series A	\$ 20.0M
 ORBITAL MAJOR	 Alumni Ventures BLACKROCK	Apr-23	Series D	\$ 100.0M
 Hydrosat	 Statkraft	Apr-23	Series A	\$ 15.0M
 STARFISH SPACE	 Munich Re Ventures TOYOTA VENTURES	Mar-23	Series A	\$ 14.0M
 UTVATE	 Blue Yard	Dec-22	Series A	\$ 8.0M
 SPINLAUNCH	 ATW PARTNERS	Sep-22	Series B	\$ 71.0M



KAL'S RECENT EXPERIENCE IN THE SPACE TECHNOLOGY SECTOR



Systima is the market leader in complex structures and components for space, missile, and hypersonic systems, launch vehicle subsystems, and insensitive munition technologies

- » The acquisition places Karman at the forefront of advanced technologies for missile defense, hypersonic vehicles, and space systems including integrated shroud and separation systems and energetic components



Vanguard Electronics is a leader in the design and manufacture of inductors and transformers with a reputation for reliability in demanding environments

- » The acquisition allowed iNRCORE to consolidate its position as a premier provider of power magnetics, RF, microwave components, while providing Vanguard with additional investment for rapid scaling and growth



Custom Microwave Inc. ("CMI") is a provider of high-performance passive antennas that are engineered, manufactured, and tested for space applications

- » The acquisition provides Vitesse with mission-critical engineering capabilities that enable next generation aerospace and defense communication, radar and electronic warfare



ACPT is a principal manufacturer of composite structures for ULA with a focus on filament wound technologies








































- » Charger's acquisition will further accelerate ACPT's leadership position in the composites space, and capitalize on the company's proprietary composite-to-metal bonding capabilities



AMRO Fabricating Corporation is a leading manufacturer of precision machined and formed Isogrid and Orthogrid metallic structures used for spacecraft and launch vehicles

- » The transaction allowed AMRO to gain access to key customers including Northrop and provided Karman both machined and formed components capabilities with access to every major launch vehicle

RECENT TRANSACTIONS

 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY PENDING</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY PENDING</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY</p>
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 <p>HAS BEEN ACQUIRED BY</p>  <p>A PORTFOLIO COMPANY OF TRIVE CAPITAL SALE OF COMPANY</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>A PORTFOLIO COMPANY OF BLUE SEA CAPITAL SALE OF COMPANY</p>	 <p>A PORTFOLIO COMPANY OF GENCAP AMERICA HAS BEEN ACQUIRED BY Calspan SALE OF COMPANY</p>	 <p>HAS BEEN ACQUIRED BY</p>  <p>SALE OF COMPANY</p>	 <p>HAS RECEIVED EQUITY INVESTMENT FROM GREENBRIAR EQUITY GROUP LLC EQUITY INVESTMENT</p>	 <p>A PORTFOLIO COMPANY OF TRIVE CAPITAL HAS BEEN ACQUIRED BY MDP SALE OF COMPANY</p>

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