

AEROSPACE

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2022 YEAR IN REVIEW

The Pillars of Creation
from the Webb telescope



NASA'S DART MOVES
AN ASTEROID



NASA'S SLS ROCKET
NAILS ITS DEBUT



◀ Viasat's first ViaSat-3 satellite was completed in September, which included installing the two solar arrays whose combined 44-meter wingspan is about as long as a Boeing 767. The satellite is scheduled to be launched to geostationary orbit in 2023 to provide broadband coverage to the Americas.

Alex Aristei/Scientific Imaging

Operators make progress on constellation deployment for secure, low-cost global connectivity

BY GLYN THOMAS

The **Communications Systems Technical Committee** is working to advance communications systems research and applications.

In August, **SpaceX** launched the 3,000th **Starlink** satellite for its low-Earth orbit broadband internet constellation. The company recorded “nearly” 500,000 Starlink users in 32 countries as of June and throughout the year announced the availability of specialized terminals and services for aircraft, ships, large trucks and RVs.

In April, **Amazon** announced agreements with **Arianespace**, **Blue Origin** and **United Launch Alliance** for a combined 83 launches of its planned constellation, **Project Kuiper**. The launches would be conducted over a five-year period to send the majority of the 3,236 Kuiper satellites to LEO.

As of October, **OneWeb** had launched 70% of its first-generation constellation of 648 satellites. **Ariane-space** rockets launched those satellites from the **Baikonur Cosmodrome**, but Russia’s invasion of Ukraine prompted OneWeb in March to suspend the remaining six scheduled launches. OneWeb later signed agreements with **NewSpace India Limited**, the commercial arm of the **Indian Space Research Organization**, and resumed launches in October.

In May, **Telesat** of Canada announced a reduction in the quantity of satellites proposed for its **Lightspeed** LEO constellation to 198. It now plans to order 198 buses from supplier **Thales Alenia Space** instead of 298 and to optimize the constellation design to result in higher overall efficiency.

In September, a **SpaceX Falcon 9** rocket launched Texas-based **AST SpaceMobile’s BlueWalker 3 experimental satellite** to demonstrate direct satellite communications to off-the-shelf mobile devices via a

693-square-foot phased array active antenna. The company is not alone in this goal: Also in September, **Lynk** announced approval from the **U.S. Federal Communications Commission** to launch and operate a satellite-to-cellular mobile service. In August, **SpaceX** announced it would create a similar service using the **Generation 2 Starlink satellites** in partnership with **T-Mobile**.

The **U.S. Space Development Agency** continued to develop its constellation of satellites offering data transport, tracking and battlefield management. The agency awarded numerous contracts throughout the year, including in February to Colorado-based **York Space Systems**, **Lockheed Martin** and **Northrop Grumman** for the **Tranche 1 spacecraft** and in May to **General Dynamics Mission Systems** for the ground and control segment.

All the activity in LEO does not mean the geostationary market has been forgotten. As of October, **Airbus Defence and Space** and **Thales Alenia** have secured a combined 10 orders for their **OneSat** and **Space Inspire satellites**. In July, **SES** completed on-orbit testing of its high throughput satellite **SES-17**. In September, **Viasat’s** first **ViaSat-3** satellite completed integration, utilizing an in-house payload and a Boeing Satellite Systems bus. This new class of GEO satellites would offer aggregate capacities of over 1 terabit per second.

The GEO market is also seeing strong investment in next-generation military communications satellites. The **U.S. Space Force’s** fiscal 2023 request released in March requests \$5 billion through 2027 for the **Evolved Strategic Satcom** satellites that would replace the existing **Advanced Extremely High Frequency** constellation. The **United Kingdom’s inaugural Defense Space Strategy** published in February listed a 5 billion pound (\$5.85 billion) investment in the Skynet satellites and other communications satellites over the next decade.

This year was also a year of consolidation. In June, **Viasat** shareholders approved a plan to purchase U.K. operator **Inmarsat**. In July, **Eutelsat** and **OneWeb** announced plans to merge. **Intelsat** and **SES** are reportedly discussing a merger but as of October had not confirmed reports. ★

Contributor: Tom Butash