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Innovations in Technology Infrastructure for Space Use Cases

Mark Nossokoff and Tom Sorensen
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RECENT DEVELOPMENT

Two recent announcements highlight a growing trend towards partnership and innovation aimed at space-based technical computing and storage infrastructure. The former seeks a 100X increase in computational power via [a High-Performance Spaceflight Computing \(HPSC\) processor](#), and the latter is [exploring appropriate storage media for low-earth orbit satellite](#) focal planes and RF sensor data.

ANALYST COMMENT

Providing technology solutions for the space markets presents unique challenges for commercial vendors. Requirements such as hardening for solar radiation and meeting weight restrictions can add cost to commercial, off the shelf components or require one-off SKUs that don't justify the business investment. Conversely, offering solutions for space-based applications can provide benefits that may justify early commercial investment, including:

- Accessing joint development funding from government agencies (e.g., NASA, Space Force)
- Accelerating innovations that can waterfall into future commercial solutions, such as:
 - Scalable, simultaneous application of both traditional HPC and modern AI workloads
 - Efficient design for dynamic provision of resources vs. designing for constant peak workload
 - Smaller footprint and faster storage capabilities to harness increasing amounts of data at extreme edge points
- Contributing to the modernization of aging technology for national and global interests such as tracking and disposition of space debris to address growing risk of orbital and re-entry hazards

Taken separately, the announcements could be interpreted as limited use cases based on existing technology. Taken together, however, they present a view towards increasing collaboration among organizations serving the space market by developing underlying technical computing and storage technologies.

It's difficult to predict exactly when emerging space-based markets will become viable, but progressive vendors will likely increase their development efforts as worthwhile markets begins to appear, especially for highly visible markets that can leveraged for broader societal benefits.

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