

Private Sector Space Projects Take Off, Leaving Legal Unknowns in Their Contrails

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Key Points

- Private enterprise is now driving the long state-dominated space sector.
- As geopolitical tensions mount, and growth in the wider tech M&A market slows, commercial activity in outer space — including M&A — remains resilient because of the sector's strategic significance.
- Many vital legal questions have yet to be answered, including jurisdictional issues regarding liability, intellectual property, dispute resolution and taxation.
- Competition will not be limited to business; new legal frameworks sponsored by different nations will also vie for dominance.

The recent surge in private space activity persisted throughout 2023, and economic and political conditions make it likely to intensify in 2024. Competing powers in outer space are no longer a handful of nations: Commercial entities, encouraged by states, have entered the arena in search of opportunity.

This pluralization has been enabled by, and has itself driven, rapid technological advances and decreased operational costs, making ventures in space more likely to be profitable. Over its lifetime, the cost of NASA's Space Shuttle program is estimated to have averaged \$60,000 per kilogram, whereas the SpaceX rocket that NASA contracted to launch Psyche in October 2023 is capable of costs under \$3,000 per kilogram, according to a 2022 research paper in the *Oxford Review of Economic Policy* and SpaceX.

Broad Trends

The use of commercial services to fulfill government initiatives is not the only development. Increasingly, businesses are launching space-related operations and services independently of any national space architecture or public partnership agreement. Trends we expect in 2024 include:

Satellite services. For many space companies, satellite services remain a mainstream source of revenue. Demand for the telecommunications and data-related services is expected to accelerate,

with manufacturers, operators and processors all standing to benefit. Euroconsult, a consulting firm focused on the space and satellite industry, expects revenue for satellite services to reach \$1.2 trillion by 2031. Meanwhile, the profitability of satellite businesses made them the top targets for acquisitions in the space sector last year. As launches increase, however, so do concerns relating to situational hazards, strategic competition and political tensions. As a result, the market's legal environment is growing more complex, and innovative and sometimes contentious regulatory initiatives can be expected.

Consolidation. Global M&A activity in the space tech sector accelerated in the past year, even as numbers for comparable deals in the wider market fell sharply, according to Seraphim, an investor in the space sector. The ability to pool research while disposing of redundant infrastructure makes space tech firms particularly suited for consolidation. Eutelsat's merger with OneWeb is a recent example.

Notably, many of the intra-industry acquisitions this year have been undertaken by younger firms, indicating that fresh entrants are capable of running viable businesses. In other words, startup status is not making investors cautious per se, as they can see scale-up and maturity developing quickly, and this may distinguish the private space industry from other disruptive tech sectors where startups have a low survival rate.



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Investment. Seraphim reported that M&A activity in the sector in 2023 significantly outpaced deals in the general venture-backed startup market. There was a sizeable jump in investment from the private equity industry in the third quarter of 2023; global activity rose by nearly 40% from the preceding quarter. KKR, Advent and others invested this year, with Advent completing a \$6.4 billion acquisition of Maxar. Seed investing also picked up toward the end of 2023, particularly for later-stage funding rounds, with the U.K. in particular displaying strong growth.

Resilience. The safest, and possibly most promising, projects in the eyes of investors have become those relating to national security. As nations establish their presence in space and expand their security capabilities, demand for ultra-high quality commercial space services is likely to grow.

Innovation. Innovative applications for space technology are being continuously developed by pioneering firms. In the pharmaceutical industry, for instance, there is keen interest in producing and testing drugs in unique space environments, and Merck & Co. and Eli Lilly have started doing so. Situational awareness, climate and software technology firms also have strong business and investment prospects.

Legal and Jurisdictional Questions

Despite the advancing state of commercial activity and private enterprise, a number of critical legal and jurisdictional issues remain unresolved. Under international law, accountability for private

actors in space lies with the nation hosting the launch. Complications around disputes, liability and property rights are particularly pressing.

Liability. Complications arise as the number of multiparty operations increases. For instance, entities providing the payload, vehicle and launch site may all originate from different states. The growing number of “rideshare” agreements necessitates an equitable resolution to the issue of liability. Current contractual arrangements for such activities tend to approach risks on a no-fault basis. This is unusual for procurement contracts and necessitates a complex cross-waiver and indemnification framework most nations and companies find counterintuitive.

Intellectual property. The international character of space law puts it at odds with territorial legal regimes, such as those concerning intellectual property (IP) rights. As more products and technologies are developed in space, legal issues that need addressing in the absence of settled law include: the need to identify a territorial nexus; how to determine the applicable domestic regime; and how to avoid forum shopping.

Tax. Given uncertain property rights under international space law, there is the possibility of double or triple taxation.

Dispute resolution. The lack of a standardized dispute resolution regime, comparable to the way in which maritime disputes are handled, is another matter to be addressed. The highly technical and sensitive nature of such disputes may benefit from a standard agreement to submit them to international arbitration, which would allow combined hearings for commercial and state parties.

Insurance. Insurance is hard to come by and many missions fly uninsured, relying on some launch nations’ generosity in capping liability and, in effect, providing risk subsidy.

International cooperation and competition. Law firms are starting to form teams for the building wave of cross-border legal innovation, challenges and disputes, and the need to construct a sustainable legal architecture for Earth’s investment in space. That will likely be based on a foundation of venerable international treaties from the 1960s. The U.S. has led the way with the multinational Artemis lunar exploration program, which pioneers a new approach to international cooperation between government and commercial entities through a blend of public and private partnerships.

However, other countries — particularly, China and India — are developing their own legal approaches, on the grounds that a state that builds a robust national space regime for its launch actors (for example, regarding liability, insurance and rights off-Earth) can influence the legal infrastructure of space as a whole.

Both India and China are active policy-makers and legislators, with the latter finalizing a draft bill that promotes a high level of state control over space-related activities. In India, the question of IP law developed in space is answered with complete state ownership. Meanwhile, China’s involvement in the construction of launch facilities in Djibouti, which is not a signatory to the major space treaties, presents a way to advance interpretations and practices it may not otherwise be free to.

While much of existing space law was built through consensus, fractures among nations at international fora are becoming apparent as the industry develops. Issues to watch include legal divergences that may escalate the militarization of space through indirect means (*e.g.*, GPS-blocking) and the risk of uncompensated satellite strikes from deliberately created debris.