

Satellite Constellations Update 2023 **Reflections on Law, Public Policy, and Evolutionary Values**

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In 2020 and 2021 BBILAN lawyers filed two petitions with the FCC urging the agency to immediately initiate a program of comprehensive programmatic risk assessment on its licensing program of low orbiting non-geostationary satellites, and millions of associated base/earth stations.¹ These actions raised concerns cited in a Report by the Congressional Government Accounting Office (November 2022), [FCC Should Reexamine its Environmental Review Process for Large Satellite Constellations](#).

As of this writing, it is unclear that these actions have deterred the FCC in any way from carrying out its perceived mandate to promote the commercial interests of the wireless telecom industry undeterred by U.S. federal and international law. At the same time, the FCC has not responded to BBILAN petitions, so that the fundamental risks identified in the petitions continue unresolved, indeed they are increasing.

Notes and Comments

- [Response from FCC Chair Jessica Rosenworcel](#) to GAO Report (May 11, 2023).
- [Collisions](#). Among the most serious risks is the sharp increase in near collisions. According to one report, SpaceX Starlink satellites had to make [25,000 collision-avoidance maneuvers in just 6 months](#).
- **Debris**. A Space junk disaster is now [conceded to be virtually inevitable](#).
- [Environmental impacts](#) of Starlink Constellations, including [air pollution](#), RF radiation pollution interfering with astronomical research, and adverse effects on the ionosphere.
- **Decoupling from national infrastructure**. Commercialization and industrialization of Outer Space is increasingly dependent upon, and closely being closely integrated technically with, U.S. terrestrial infrastructure. However, at the same time, the FCC is proceeding on a separate track. Its satellite licensing is uncoordinated with, and hence in conflict with, other important public policy concerns, such as climate change, local autonomy, infrastructural resilience, and cybersecurity. This point was emphasized in a 2021 [Newsweek](#) op ed article written by Lisa Donnan and Julian Gresser.
- **Weaponization of satellite mega-constellations**. As the number of satellites and mega-constellations proliferate, the probability of an attack by a satellite weapon is [increasing dramatically](#).
- **Cybersecurity Risks**. This critically important class of risks to national infrastructure are increasing by the FCC's separate track policy separating Space from national

¹ [Application for Review 2020-04-24](#); [HHTI - FCC Petition for Rulemaking filed 2021-03-11](#).

infrastructure. The unique problems associated with cybersecurity in Space need to be immediately and carefully assessed before further piecemeal satellite licenses are approved.

- **Negative Resilience Multiplier from Tightly Coupled Systems.** Each of the above domains presents a discrete serious risk. These risks are compounding in a Negative Resilience Multiplier Effect, where each greatly increases the probabilities and extent of damage of all the others (For a general discussion of tightly coupled systems see, Julian Gresser, [Inventing for Humanity—A Collaborative Strategy for Global Survival.](#))

Legal Discussion

FCC Space Bureau (SB). In April 2023, the FCC underwent a reorganization, removing the satellite licensing program from its International Bureau and transferring its responsibilities to a new Space Bureau. The agency released this statement as the SB's mission.

The Space Bureau (SB) will promote a competitive and innovative global communications marketplace by leading policy and licensing matters related to satellite and space-based communications and activities. Among its responsibilities, the Bureau will lead complex policy analysis and rulemakings; authorize satellite and earth station systems used for space-based services; streamline regulatory processes to provide maximum flexibility for operators to meet customer needs; and foster the efficient use of scarce spectrum and orbital resources. The Bureau will also serve as the FCC's focal point for coordination with other U.S. government agencies on matters of space policy and governance, and collaborate with the Office of International Affairs for consultations with other countries, international and multilateral organizations, and foreign government officials that involve satellite and space policy matters.

Critical Legal Questions: In order to carry out its mission to accelerate the commercialization and industrialization of Outer Space, the FCC, by ignoring the earlier BBILAN petitions and legal actions initiated by other parties, as described below, is essentially embracing the following legal propositions:

- The FCC and the U.S. needn't comply with the U.S. international treaty obligations (signed and ratified by the U.S.) because the FCC doesn't have statutory authority for what it is doing. (See [FCC stated position](#) on compliance with the International Space Liability Convention.)
- The FCC's programmatic actions taken and approved by its International and Space Bureau pertaining to satellite licensing are considered **categorically exempt** from compliance with NEPA, irrespective of the seriousness of these environmental impacts and significantly changed circumstances from when the FCC first began asserting this categorical exemption in 1986. (See March 13 Rulemaking Petition pg. 55.)

- **Continuing Administrative Actions by the FCC.** The FCC is continuing to initiate important administrative actions such as its proposed [Revisions for Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed Satellite Service Systems](#) seeking [public comments](#) by August 7, 2023. The FCC’s proposal focuses on actions to expedite coordination among providers with the goal of accelerating deployment, and contains a special section, “Steps Taken to Minimize Significant Economic Impact on Small Entities with an Examination of Alternatives.” There is no mention at all of consideration of environment impacts.
- **Other Agencies.** FCC Chair Jessica Rosenworcel’s response to the GAO Report mentions the FCC’s intention to coordinate closely with the President’s Council on Environmental Quality (CEQ). As required by NEPA, the CEQ is responsible for providing independent expertise and advice to the President on domestic and international environmental issues. As of this writing, CEQ has not publicly clarified its policies and rules pertaining to the satellite licensing program.
- **Recent Cases.** There have been two important cases relevant to the FCC’s satellite licensing program. See:
 - [Viasat, Inc. v. FCC](#) (2022). The [FCC rejected Viasat’s and The Balance Group’s appeal](#) on grounds of lack of standing.
 - The [International Dark-Sky Association, Inc. v. FCC Notice of Appeal](#) to the DC Circuit.
- **Technical Legal Questions.** Before any legal action can be taken based on BBILAN’s 2020 and 2021 actions to challenge the FCC’s assertion of a sweeping Categorical Exemption from NEPA, several basic questions require further research:
 - Does a failure to act by the FCC on a critical matter allow an appeal to the DC Circuit, or must other administrative actions be taken, as a precondition, even though the same issues were already presented in BBILAN’s prior filings? Effectively, can the FCC or any other federal agency delay and frustrate a judicial action seeking to challenge an allegedly illegal course of action by simply ignoring that action, which has been otherwise properly filed?
 - Which parties, including astronomical research associations, will effectively satisfy the DC Circuit’s standing requirements as delineated by the Court’s decision in *Viasat v. FCC*?

Evolutionary Values in the Context of Complex Policy Considerations

The initial Statement of Principles in the Outer Space Treaty affirms the values the signatories from 113 nations, including the U.S., have expressed on behalf of billions of people in the countries they represent. These principles include:

- *Recognizing* the common interest of all mankind in the progress of the exploration and use of outer space **for peaceful purposes,**

- *Believing* that the exploration and use of outer space should be carried on for the **benefit of all peoples** irrespective of the degree of their economic or scientific development,
- *Desiring* to contribute to **broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes...** (emphasis added).

Although not stated explicitly, these principles express deeply recognized values—what I call “evolutionary values”—that the signatories believe will guide humankind toward higher levels of peacefulness and conscience in the development of the next frontier of Outer Space proceeds. An “evolutionary value” is one that will contribute to humankind’s survival in the 21st Century. The question here is whether the FCC’s present policies truly reflect evolutionary values, or the more narrow commercial interests of a few satellite companies and their shareholders?

This is not to say that the accelerating commercialization and industrialization of Outer Space does not present unprecedented challenges involving a broad array of national and international security concerns (also discussed in the March 13 FCC Petition) as great as, and perhaps even more complex than those presented by ocean exploration. Some of these concerns include:

- As with the oceans, Outer Space is perceived to be closely connected with the U.S. and other countries’ military security, which is generally given broad deference by policy makers (and which arguably is antithetical to global peace).
- The Space industry is actively engaging with the military. Their interests, goals and objectives are entangled. The situation is further complicated by the fact that many Space technologies have both dual military and commercial uses.
- From the perspective of international trade, satellite companies are forcefully arguing that burdening them with environmental safeguards and other restrictions will place them at a competitive disadvantage with satellite companies operating in “flag of convenience” jurisdictions that do not impose these regulatory constraints. They maintain the U.S. still has first mover advantage, which the U.S. cannot afford to surrender.
- For all the above reasons the satellite industry, in a manner very similar to the telecommunications and wireless industries with which they are also closely allied, assert that speed of rollout in and of itself is an essential value, which demands, in effect, bypassing other values, such as pausing, reflection, patience, discernment, forbearance, and an openness to listening to and carefully weighing alternative perspectives. If we dispense with any of these precautions, and place highest priority on speed to advance a narrow band of interests—basically military interests and the interests of the owners and shareholders of satellite companies--we can easily conclude that the matter is one of a **tragic choice**: the immediate exploitation and dominance of

Outer Space must take precedence over any prudent assessment of its risks. The victims of this policy are necessary collateral damage. But this is false and misleading logic that in itself can lead to tragic consequences, as all the signs and signals discussed above portend.

An Appeal for Balance and Sanity

One needn't be [Cassandra](#) to foresee that we are, collectively, catapulting toward a disaster in Outer Space. As BBILAN's March 13, 2021 FCC Petition documents, there is a substantial body of international treaties and domestic law that constrain reckless disregard for environmental, economic, food, and cybersecurity risks, which are being dismissed by the FCC and its new Space Bureau in their narrow focus on advancing the commercial interests of a few satellite companies. The evolutionary step would be for the FCC on its own accord, or by the initiative of some visionary and responsible satellite company like Viasat, or by President Biden himself, to call for a 180 day Pause on the FCC's approval of all new satellite mega-constellation licenses in order to conduct a comprehensive programmatic assessment of all the major risks, which BBILAN and others have well documented; and for the FCC to coordinate this project with the White House, DOD, CEQ, NSC, and all the other concerned federal agencies. Equally important is to coordinate this pause with the governments of all the other major satellite countries. The world will not come to an end if we take this short term action. Now is the moment. We needn't repeat the fate of Cassandra, who was given the gift of prophesy by the gods, but then punished by the god Apollo that nobody would pay attention.

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Julian Gresser is an international, environmental, public interest lawyer, professional negotiator, inventor, and recognized expert on Japan. He was twice Visiting Mitsubishi Professor of Japanese law at the Harvard Law School (1976-77, 1981) and has served as an Senior Advisor to the State Department where he co-chaired the Japan Industrial Policy Group (1979-80)during the Carter Administration. His autobiography, [How the Leopard Changed Its Spots—Evolutionary Values for an Age in Crisis](#) was published in May 2023 and devotes a section to exploring Evolutionary Values in the Space Experiment.