

Top Hat Consulting

<u>Team Member Name</u>	<u>Year</u>	<u>Major</u>
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Advisor(s): Dr. John Tichenor

Topic Title: To Infinity and Beyond: Solving the SpaceX Sustainability Conundrum

Audience: SpaceX Board of Directors

Sustainable Development Goals

SDG #9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

SDG #12: Ensure sustainable consumption and production patterns

Executive Summary

The space sector is undergoing profound transformations. What started as a space race pursuing political security and scientific knowledge has slowly transformed into a growing private industry. One of the breakthrough industry leaders is SpaceX, which was founded with the intent to revolutionize space technology by manufacturing and launching advanced spacecrafts. Their most notable project is Starlink, aiming to provide global broadband internet coverage anywhere on Earth. After starting the program in 2019, SpaceX has performed over 281 launches to have a constellation of 5,504 Starlink satellites orbiting the Earth, making SpaceX the largest owner of satellites in the world.

However, a plethora of ethical issues are inherent within the satellite space industry. The proliferation of space debris from materials like satellites is leading to high levels of orbital congestion. Meanwhile, launches of satellite installments are heightening environmental contamination and emissions here on Earth. These examples demonstrate the consequences that have recently emerged as the satellite industry intensifies. One can only imagine the potential future implications as SpaceX strives to reach its goal of 42,000 satellites.

This puts companies like SpaceX in a precarious situation. SpaceX has an opportunity to gain a first-mover advantage and set the innovative standard for this emerging industry; however, SpaceX must also consider the effects that satellite development may have on various stakeholders. We aim to advise SpaceX with a sound strategy that ensures space development goals are responsibly and purposefully met as the space industry takes giant leaps forward. With the current lack of space regulations, it is up to companies like SpaceX to set the industry standards for future endeavors. By doing so, SpaceX can help ensure they are shaping a future where the benefits of space are continuously protected for future generations, preserving both the Earth and the outer space environment for all stakeholders.