



LET'S SHOOT OFF INTO SPACE

Gru SpaceTech (“**Gru**”) is a space exploration company incorporated in the State of Minion. It is internationally renowned for its cutting-edge research and discoveries in the field of “Exploration and Scientific Experimentation” in space technology. The State of Minion, a Democratic Republic, has always encouraged innovation and research in space by private players.

Vector Inc. (“**Vector**”) is an emerging space exploration venture, registered in the State of Eduardo. The State of Eduardo is a Socialist State that has been controlling and funding various innovative initiatives in the country. The latest being, the ones in the field of space exploration. As of now, Vector operates almost as a monopoly in Eduardo and also has good relations with other space exploration companies in the world.

As the world moves into the 22nd century, Countries have begun to prioritize space exploration in a big way. The world over, space exploration companies have been the beneficiary of massive investments. People now recognize that the Celestial bodies like asteroids possess a vast expanse of natural resources that can be exploited. This has ushered in a new era of the Space Race.

Both Vector and Gru have emerged as major players in this race. The two companies have worked together in the past on a few contracts but, given the stiff competition between the two, they have never really collaborated on larger efforts so far.

As a matter of policy Gru, has stringent confidentiality measures in place while dealing with contracting parties and prioritizes its stance to steer clear of any transnational legal liability in respect of any of its core or allied activities. Of late, it has been contemplating exploring the surface of the “Asteroid A1” to gauge the viability of mining operations on the asteroid.

Vector too, along with the State of Eduardo has been considering asteroid mining. In doing so it has entered into various secondment contracts with other space agencies in the world, and one of them is Gru. As a result, one Vector employee is now working with Gru’s team that is currently busy testing brand new technology for improving ‘In-Space Propulsion’ of space-crafts.

The issue, however, that has been frustrating space engineers all over the world is the distance between Earth and the Asteroid Belt. The asteroids are simply too far from the Earth to make any mining operation financially feasible. The costs of transporting the vessels back and forth run into 100s of millions of dollars per expedition. At least this was the case until a new technology based on Nuclear Thermal Energy came into being.



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The technology allows for “In-Space Propulsion”, i.e. it allows engines to harness the heat thrown off by fission reactions, thereby assisting in accelerating propellants such as Hydrogen, and reducing the time taken by space-crafts to move in a vacuum, change orbits, maintain altitudes, etc. The technology is far more efficient and up to 70% cheaper than the existing ‘thermal only’ or ‘electric only’ propulsion technologies. Both these techniques have a low specific impulse, i.e. the ability of the spacecraft to use the propellant. This is because often, a large amount of these energies are lost to space. Nuclear Thermal Energy, on the other hand, results in very little wastage of energy.

As things stand, only Gru SpaceTech has been able to develop this technology with some degree of success. In a bid to match its rival, Vector has also been working on developing similar technology. In case things don’t work out, Vector has also been negotiating with Gru in a bid to sign a deal for transfer of this Nuclear Thermal Energy Propulsion technology. So far, neither of them has been able to reach an agreement as to the price and the terms of use of the technology to be transferred.

In the meantime, Gru has been making preparations to launch an Asteroid Probe mission to Asteroid A1 in the next few years. This mission is primarily for testing its new propulsion technology in space. This is a pivotal mission of many firsts. It will be the first time that any space agency would be testing an ‘In-Space Propulsion’ technology and also the first time that a soft landing on an Asteroid would be attempted. Funded by its government, Vector wants to offer stiff competition to Gru and consolidate its position as a key player in this new era of the Space Race.

Considering its options, Vector secretly started an investigation to gather information about the new technology. This was done with the permission of the State of Eduardo. Surprisingly, at one of the stages of the investigation, Vector found traces of radioactive material in the Nuclear Thermal Energy technology used by Gru. However, its presence in the new technology has yet not been confirmed by Vector’s scientists. Nevertheless, Vector knew that if the State of Eduardo got wind of any kind of radioactivity, it would not permit Vector to use that technology or to sign any technology transfer deal. This is because radioactivity has since long been condemned all over the world, and is considered to be a huge threat to international peace and security. The international community frowns upon the use of technology that involves or results in any kind of radioactivity. Companies that do indulge in these practices are liable to face massive penalties and may risk closure of their operations.

That said, Vector would suffer a major setback if it is neither able to develop this technology on its own, nor get this technology from Gru. It is clear that such technology is pivotal to pave the



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way for sustainable and profitable Asteroid mining and thus capitalize on this new era of space exploration. Negotiations for the technology transfer have been ongoing, but now the State of Eduardo has started pressurizing Vector to reveal the results of its investigation and the course of action it plans to take with regard to the recent initiative taken by Gru.

If Eduardo finds about the radioactive presence, they may prohibit Vector from taking actions towards securing Nuclear Thermal Energy. This could spell trouble for Gru as well since Eduardo would most likely raise this issue at an international level. Vector is now left with no time to drag on the negotiations any further, especially because the State of Eduardo may call upon them to discuss the plan of action at a moment's notice. Before it completely loses out on the option of acquiring the technology, Vector called for a final round of negotiation with Gru. It is only a matter of time before Eduardo cracks down on Vector. Therefore, the parties only have a month to conclude their deal.

