

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Services, Missions, Operations, and Facilities (2)

Author: Mr. Derik Bhardwaj
University of Petroleum and Energy Studies, India

Mr. Chesler Thomas
Space Generation Advisory Council (SGAC), India

Dr. Ugur Guven
UN CSSTEAP, United States

Dr. Gurunadh Velidi
University of Petroleum and Energy Studies, India

LOCUS: SPACEPORT ESTABLISHMENT LOCATION DETERMINATION ASSISTANT

Abstract

With the rise of launch vehicles companies such as SpaceX and BlueOrigin in bigger scales and smaller companies like RocketLab, Vector and Firefly for developing small launch vehicles on the playing field, and hundreds of smaller players still underground, the possibility for a market saturation is high, but negated due to the forecasted demand of more than 20,000 satellites to be launched in the next decade. With the currently operational and open spaceports in consideration too limited in number to address this incoming demand boom, a market shock is imminent along with high traffic and delays in launch timelines, along with the already cumbersome launch operations. With the private space sector opening up worldwide, investors and budding entrepreneurs require insights and guidance in selecting the right location to establish a space port. This project addresses a comprehensive case study of the important parameters to consider when selecting location for a space port. The lack of a universal guide or typology for spaceports and the fact that most spaceports built so far are based on experience and conventions yet to be documented as a guideline accessible to public. Factors such as geography, altitude, weather, power, access and construction logistics, political considerations, population densities and disaster risks were considered in this study, along with geographic mapping of the procured data to provide visual clarity to the user. The data compiled was classified and organized into a database, operated by a simple program to provide data about a location and colour coded qualitative and quantitative gradation of the data with respect to worldwide averages for the same parameters, allowing the user to make informed decisions from nearly all perspectives possible to conceive. With future potential of developing into a coordinate level accurate guidance system and online paid access for qualitative and quantitative location determination for spaceports, this assistant named LOCUS due to its ability to clear the user's mental trajectory from confusion to decision to cater to needs of existing and future entrants in the space sector, much similar to a Zomato for establishing spaceports convenient to the user.