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DRAWING A PARALLEL: A COMPARATIVE ANALYSIS OF SPACEPORTS USING THE SPACEPORT READINESS LEVEL SCALE

Abstract

As a "system of systems," the spaceport is a key element of the space ecosystem in terms of launch and landing infrastructure, processing and storage, ground stations and equipment, and other supporting technologies and processes. A rapidly growing number of spaceports is moving through the various stages of licensure and operation worldwide. Yet, there is scant research establishing a usable scale to compare the operational readiness of spaceports across diverse national settings and spaceport configurations. As such, the Spaceport Readiness Level (SpRL) scale was developed with the intent of providing an easy-to-use generalizable measure of spaceport readiness across the global spaceport industry.

To assess its usability and relevance across contexts, the SpRL scale is employed to analyze select spaceports across the globe, allowing for a 'compare and contrast' investigation based on scale level attained. Distinct examples, ranging from legacy and nascent spaceports to commercial air and space ports, are drawn from the United States and the United Kingdom as case studies. Successful application of the scale across these contexts and through the spectrum of spaceport operational readiness can be seen as proof of concept of its effectiveness.

The utility of the SpRL scale and its potential are wide and varied. While the scale on its own provides a guideline for current spaceport capabilities, it can also be implemented as a planning guideline for spaceports seeking to advance their capabilities in a measured way and as a spaceport competitive assessment tool for spaceports expanding or creating new markets. Vehicle and launch operators can also use it to evaluate spaceport readiness for their unique requirements and operational needs. Government officials can incorporate a SpRL analysis into a first level examination of potential impacts to air and space traffic based on scale level achieved. Its ease of use across stakeholder groups is exemplified by the case study examples presented using readily available site license documentation, spaceport master plans, news articles, and press releases.