A Proposed Spaceport Guide

Presented to the FAA’s COMSTAC
Operations Working Group
16 September 2014

By Robert Consolo, ERAU
Introduction

• Problem: Current guides and listings are incomplete or attribute-specific (regulations, operations, etc.)

• Need: A one-stop Master Spaceport Guide for industry that:
  − Comprehensively lists and addresses spaceport characteristics, attributes, and capabilities
  − Provides a user friendly rating mechanism to compare/define relevance to make effective safety, operational, and business decisions
  − Is relevant to AST work, works with 14 CFR 420 Spaceport Licensing and Certification Modularity
Spaceport Evaluation Tool

- **Spaceport Evaluation Mechanism (SEM)**
  - Proposed by ISU Space Studies Program, 2008
  - Establishes a structured approach to spaceport evaluation for commercial space transportation
  - Framework has potential to assist in establishing spaceport standards, highlights key attributes, and can influence spaceport design or selection
Who?

- 41 International Space University Student Professionals

- SEM was developed through literature review and then by ISU research groups

- Based on Spaceports at Mojave and Kourou and then applied to a proposed spaceport in Catalonia

- Criteria were posed in the form of questions

- Certain criteria were Red-Flagged to signify utmost importance
• Consists of 7 different categories:
  - Business and Commercial
  - Regulatory Issues
  - Operations
  - Infrastructure
  - Location, Community, and Environment
  - Human Spaceflight
  - Cargo and Satellite Operations
Business and Commercial

• An important category for a COMMERCIAL Spaceport

  - Focuses on Revenue, Clients, Market Value, as well as if their location can provide the service wanted by their prospective clients

  - Red-Flagged Criteria:
    • Have basic business plan areas been addressed?
    • Have financiers and multiple revenue streams been identified?
Regulatory Issues

• Provides a run-through of items required by laws and regulations before a launch can occur

• This is a DEAL BREAKER

• Because of the necessity of this, all but one of the five criteria are red flagged.
Operations

- These criteria consist of the day-to-day operations at the spaceport as well as emergency operations

- These criteria help identify how much the spaceport can handle while staying within the safety threshold

- Red-Flagged Criteria:
  - Is there a comprehensive emergency medical response plan?

- Not Included: Orbital and/or Sub-Orbital Operational Capacity
Infrastructure and Location

- Infrastructure concentrates on where the space transportation vehicles are stored, assembled, and maintained; failure contingencies and expansion

- Location focuses on passenger comfort, accommodations, public access, and environment

- Red-Flagged Criteria:
  - Does the spaceport launch site support the appropriate space transportation vehicles?
  - Has an environmental impact study been completed in accordance with federal and local law?
Human Spaceflight and Cargo/Satellite Ops

- These two categories are very mission specific so none of the questions are red-flagged

- These criteria range from training and medical management of Spaceflight Participants and Flight Crew to the handling of luggage, mission payloads, and the ability to provide a clean room
Truly not the end

- The SEM is the beginning
- Application to the Llieda, Catalonia, Spain case study provided constructive recommendations and showed the potential for that location
- There is so much that can be expanded as well as existing criteria that can be further developed
- Everything this entails can spur...
Innovation
Our Next Steps

• COMSTAC OWG Sep 2014: Kick off and SEM Model as baseline spaceport list of attributes and characteristics

• COMSTAC OWG Spring 2015: Present results of master characteristics and attributes list prepared by surveying OWG and U.S. industry stakeholders

• COMSTAC OWG Sep 2015: Draft rating mechanism and interface (print and digital) reviewed