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# **A Proposed Spaceport Guide**

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Operations Working Group  
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**By Robert Consolo, ERAU**

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# Introduction

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- 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

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- 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?

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- 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

# SEM

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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...

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**Innovation**

## Our Next Steps

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- 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