SPACEPORT COLORADO
Technical Issues

1. **SPACEPORT COLORADO**: A "Spaceport" designation by the FAA would allow the existing Front Range Airport to add FAA-Licensed sub-orbital spaceflight capabilities to its current General Aviation operations.
    a. Spaceport Colorado is envisioned as a horizontal launch facility, utilizing FAA-licensed Reusable Launch Vehicles or "Spaceplanes" that would take-off and land from the existing airport runways. They would provide access to space for scientific research, education, and space tourism in the short-term; and point-to-point, high speed, sub-orbital transportation to other international spaceports in the future.
    b. Spaceport Colorado would not operate vertical-launch rockets or "Experimental" space vehicles.

2. **SPACEPLANE TYPES:** Currently, there are three primary spaceplane concepts: Concept X (a dual propulsion system); Concept Y (a single-stage-to-space system); and Concept Z (a two-stage-to-space, carrier plus spaceplane system). All three concepts were evaluated, and it was determined that the "Concept Y", single-stage system, was the most viable option to operate on a regular basis from Front Range Airport in the nearest term, with the least amount of infrastructure improvements, and was the best case to illustrate that *"a reusable launch vehicle can be flown from the launch point safely"*, which is a primary requirement of the license application.

3. **FLIGHT OPERATIONS:** Flight operations for spaceplanes work in a similar manner to commercial aviation, executing a fixed flight plan, with specific, approved departure and approach times, subject to full Air Traffic Control (ATC) direction.
    a. 25 to 30 minute total flight mission time. During that period, the spaceplane is in Class B airspace for a total time of less than 5 minutes.
    b. The spaceplane is a controllable vehicle, capable of following FAA - ATC direction with see-and-avoid capability.
    c. Spaceplanes operating at the spaceport would not require "sterilization" of the Class B Airspace shared by DIA and Front Range Airport. Initial operations envision an Air Traffic Control Assigned Airspace (ATCAA) for flight operations that would control the flight plan trajectory and time-frame which could be operated without disruption to either DIA operations or the National Airspace System.

4. **OTHER SPACEPORTS:** There are currently ten FAA-licensed commercial spaceports in the U.S., with another six in planning or licensing stage. Licenses at four competing locations use the same spaceplane, and are also adjacent to, or part of Class B airspace. All will have to operate under the same FAA and ATC operational management as Spaceport Colorado.

5. **FLIGHT FREQUENCY:** No more than 1 flight per week is envisioned for the first five years of flight operations.

6. **COST:** It is estimated that approximately $5 million in non-aircraft upgrades to existing facilities and infrastructure may be required to allow operations of spaceplanes at Front Range Airport. Improvement costs would only need to be incurred once a licensed launch vehicle operator commits to operations.

7. **NOISE:** An extensive noise analysis being developed as part of the Environmental Assessment demonstrates that the spaceplanes under consideration do not negatively impact the existing designation of the airport influence zone around Front Range Airport, or DIA.

8. **LAUNCH SITE OPERATOR LICENSE:** A Launch Site Operator License is issued to the Operator of a Spaceport. It deals with site operations and the safety of the public on the ground.
    a. Once the Launch Site Operator License is obtained, any spaceplane type (Concept X, Y, or Z) having a Launch Vehicle Operator License can be flown from the spaceport. If the proposed launch vehicle differs significantly from the one described in the Launch Site License, a 45-day license update would be submitted to the FAA.

9. **LAUNCH VEHICLE OPERATOR LICENSE:** There is a separate FAA License which is issued to the Operator of a Launch Vehicle. It is specific to the airspace, the flight track, the licensed spaceplane, and the particular spaceport facility. Only FAA-licensed vehicles would operate from Spaceport Colorado.

SPACEPORT COLORADO
Policy Overview

1. **SPACEPORT COLORADO VISION:** Spaceport Colorado is both a broad-based, state economic development initiative, and a physical project to:
    a. Increase the value and revenue-generating potential of the existing general aviation airport facility.
    b. Engage the newly created sub-orbital commercial space market for scientific research, education, and space tourism.
    c. Establish Colorado as the major national North American commercial space node, growing into an international system of spaceports.
    d. Sustain and accelerate Colorado's existing aerospace industry by attracting high-value aerospace technology clusters that support advanced manufacturing, technology, educational, and R&D aerospace industries. Front Range Airport will serve as an economic driver by establishing a key aerospace industrial center development in the Colorado.

2. **DIA & FRONT RANGE AIRPORT OPERATING RELATIONSHIP:** There is strategic economic potential for a DIA-Front Range Airport operating relationship, and there is enormous synergy to develop jointly as a global spaceport hub. DIA and Front Range Airport must continue to work together in a concerted effort, collectively and collaboratively, in order to realize the full economic potential that exists.

3. **GLOBAL SPACEPORTS & PARTNERSHIPS:** Like the U.S., many other countries are currently developing commercial spaceports. Some international spaceports have begun to form initial "partnerships" with spaceports in the U.S., and it is anticipated that a global network of spaceports and partnerships will soon emerge. In order to stay competitive, Colorado must become an integral part of the global network, and should consider forming partnerships with other spaceports, both nationally & internationally.

4. **TECHNOLOGY ADVANCEMENTS:** Like the early airplane, technology for space vehicles and airspace control will advance to permit safe and coordinated operations from strategic transit locations. Colorado needs to remain a leader in the commercial aerospace industry to help promote the research and development of space vehicles in order to be positioned for future operations for an international Spaceport operation.

5. **ECONOMIC VALUE TO COLORADO:** This is not just a Front Range Airport or Adams County initiative. The Spaceport will be an economic driver for the entire state, and can become the catalyst for systematic growth, economic development, and job creation in and around the DIA-Front Range Airport hub.

6. **SPACEPORT LICENSE:** The Spaceport License (or Launch Site Operator License) is for site operations only and ensures safety of the public on the ground. The actual spaceplane flight tracks will be developed and coordinated with FAA ATC once a launch vehicle operator provides a certified space vehicle. The coordination of spaceplane flights with air traffic control can be addressed with normal operating agreements in place.

7. **LAUNCH VEHICLE OPERATOR LICENSE:** The spaceplane operator must obtain their own Launch Vehicle Operator License through FAA, independent of the Spaceport License. Obtaining a license to operate from one particular spaceport does not give the operator the authority to fly out of any other spaceport. An individual Launch Vehicle Operator License must be obtained for each location, and is based on the airspace, the flight track, and the specific space plane.

8. **TIMELINE:** Pending completion of final review by the Spaceport Colorado Team, the Environmental Assessment (EA) will be submitted in October 2015. The Spaceport Team is also working with the Regional Air Traffic Control Office to complete the required Letter of Agreement committing to ongoing dialogue concerning integration of the Spaceport and future Space Vehicles in the National Airspace System. Final license application submission also in October 2015 with the 40 day EA public comment period via the Federal Register running concurrently with the 180 day Spaceport Launch Site License Application review period. Expected license approval by second quarter of 2016.