

# SPACEPORT TO SPACEPORT

## AIRSPACE CORRIDORS WHITE PAPER

BRIEFING TO FAA COE-CST ATM 11

MARCH 14<sup>TH</sup>, 2021

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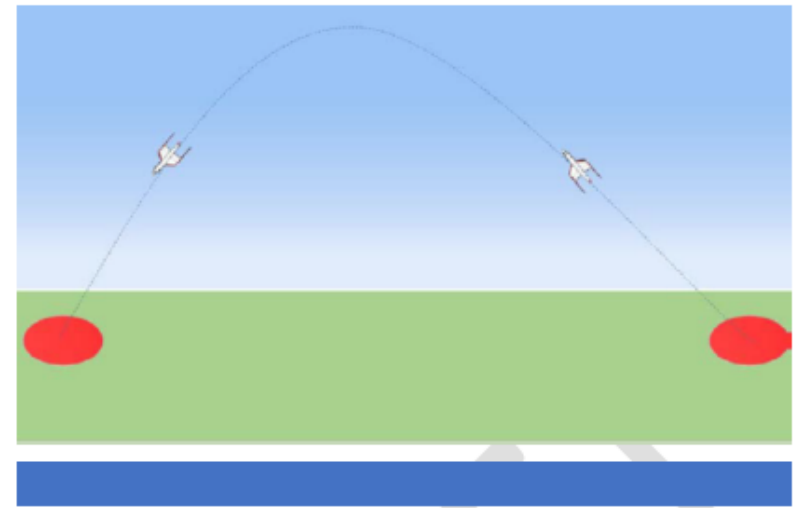
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WHITE PAPER

# S2S AIRSPACE CORRIDORS



## S2S WHITE PAPER

SPACEPORT TO SPACEPORT AIRSPACE  
CORRIDORS FOR THE COMMERCIAL  
SPACE TRANSPORTATION INDUSTRY



Point-to-Point (PTP) is a category of sub-orbital and orbital flight in which a space vehicle provides rapid transport between two locations (i.e., two cities)

FAA CSINAS, May 2020

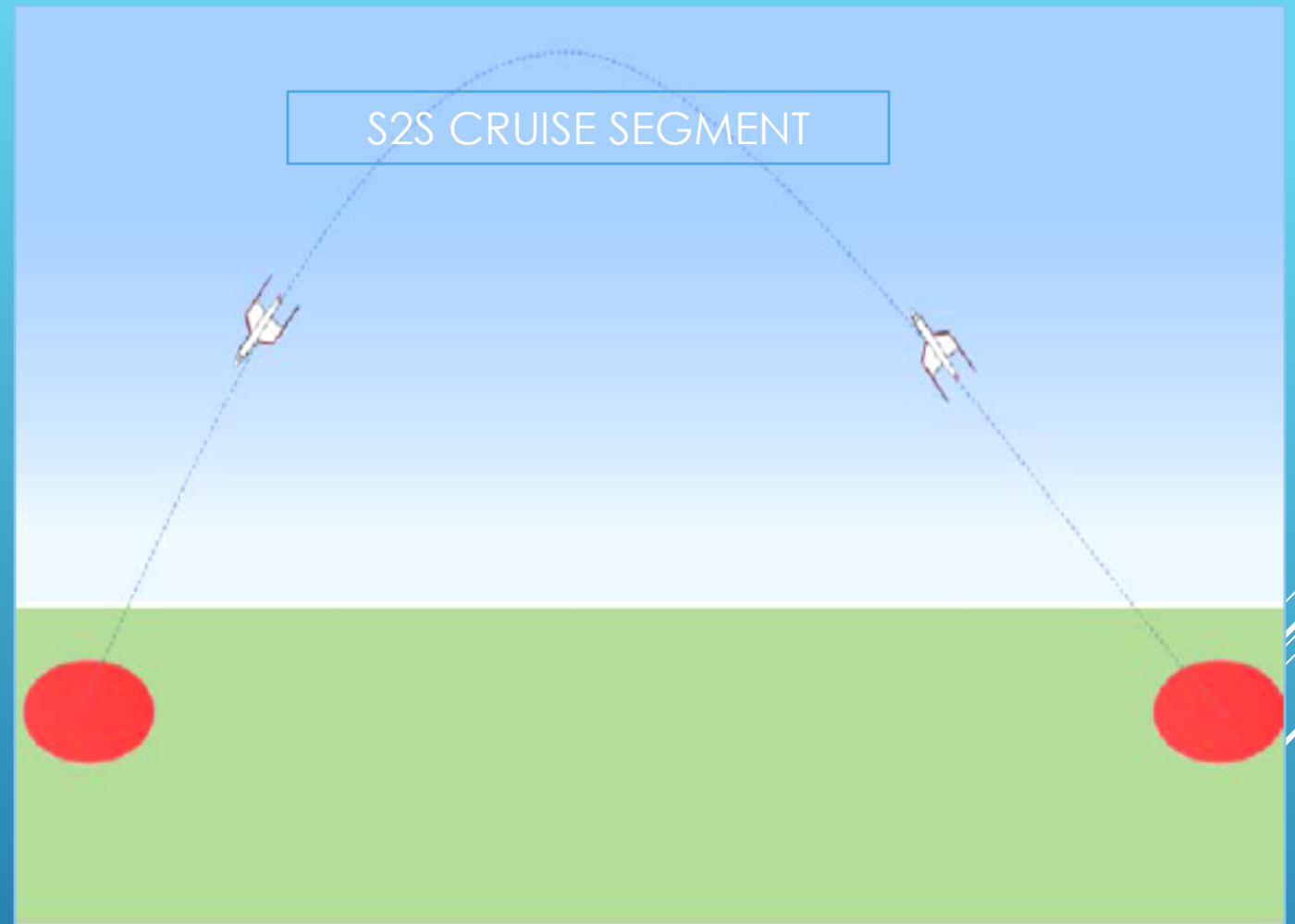
Spaceport-To-Spaceport is (S2S) is the equivalent to P2P flight operations between two Licensed Spaceports

GSA-HSF-FF Working Group Definition

**HIGH SPEED SPACEPORT TO SPACEPORT SPACEFLIGHT**

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- Launch and Reentry corridors are well regulated, understood and standardization is progressing well (i.e., New SLRL FAR 450)
- Problem-> licensing for S2S suborbital flight is new to the FAA and Industry
  - Suborbital flight is flight without orbital insertion, or the intentional flight path of a launch vehicle, reentry vehicle or any portion thereof, whose vacuum instantaneous impact point does not leave the surface of the earth 49 U.S.C. 70102(20)
  - Licensing for a S2S mission with a “cruise” or “coast” segment requires attention by industry and the FAA



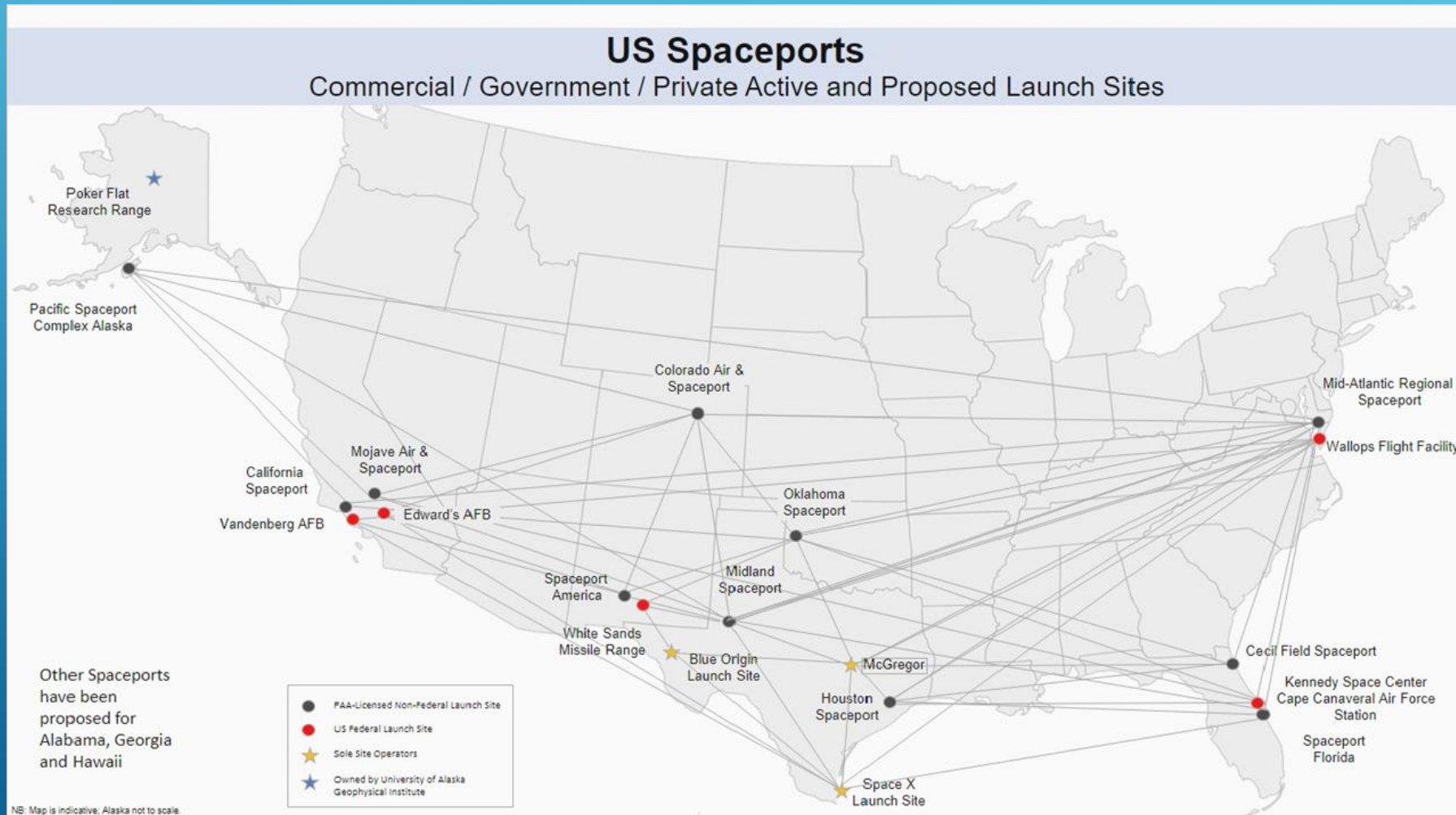
FAA CSINAS May 2020

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**HIGH SPEED SPACEPORT TO SPACEPORT SPACEFLIGHT**

# A PROMISING AND DENSE NETWORK OF S2S CORRIDORS

- DOMESTIC US
- INTERNATIONAL



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# SPACEPORT-TO-SPACEPORT

## Transportation Airspace Corridors

### White Paper

- Background:
  - Global Spaceport Alliance-National Spaceport Network Development Plan (June 2020)
    - S2S Programmatic Initiatives

*The U.S. Government should establish a goal of leading the world in Point-to-Point transportation through space. Accomplishing this challenging goal will require a partnership between government, industry, and academia, and will involve not only advances in engineering and technology, but also work in policy, law, regulations, customs and security, flight and ground operations, market analysis, and economics.*

*The government should promote the establishment of a multi-million-dollar aerospace prize to advance the state of the art and generate interest and excitement in the media and the general public.*



## **National Spaceport Network Development Plan**

Prepared by the Global Spaceport Alliance

for the Office of Spaceports  
Office of Commercial Space Transportation  
Federal Aviation Administration

June 1, 2020

# ➤ WG SURVEYS 2020-2021:

TO IDENTIFY, LIST AND CHARACTERIZE RELEVANT AREAS OF INTEREST FOR THE BENEFICIAL USE OF STAKEHOLDERS PARTICIPATING IN THE HIGH-SPEED S2S AEROSPACE TRANSPORTATION INDUSTRY IN THE NEAR AND MID-TERM FUTURE



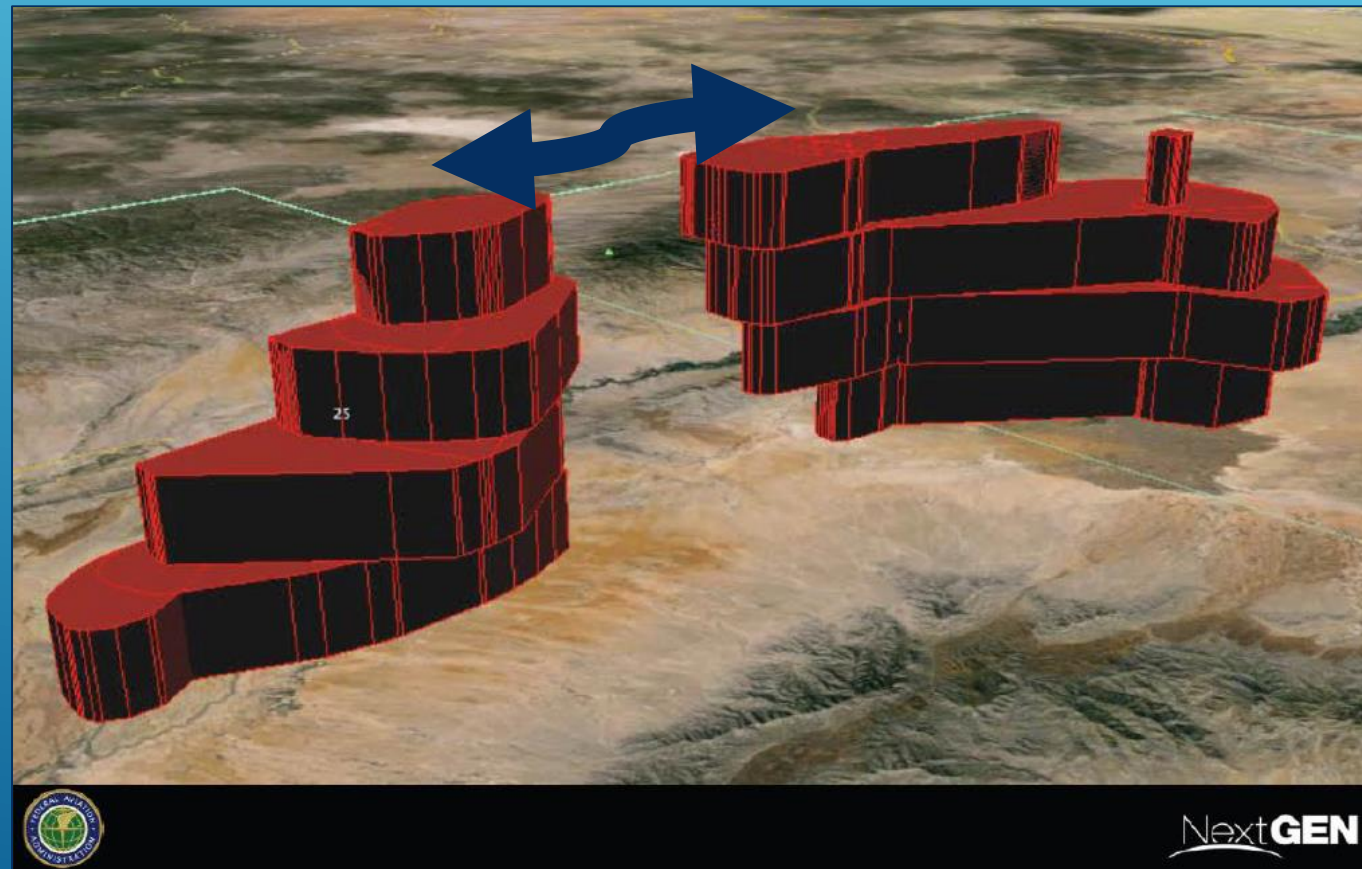
P2P WORKING GROUP

GLOBAL  
**SPACEPORT**  
ALLIANCE

Survey Title

Point to Point (P2P) Flight Corridors & Networks

Taxonomies, Feasibility and Initial Design Considerations



## SURVEY FINDINGS-REGULATORY:

- **CONSENSUS:** Regulatory frameworks for the cruise, “coast” or “orbit” segments needs to be addressed early on to blend with launch and reentry frameworks. Noise issues might be a factor when frequent S2S operations take place. Economic and financial benefits of S2S transportation could be an incentive for legislation, regulation and investment



# S2S Airspace Corridors White Paper-First Draft-Highlights

This white paper is a foundational document to inform and guide the commercial suborbital spaceflight industry about the characteristics of the airspace required to accommodate commercial space vehicles' flight and ground operations conducted between spaceports. These missions are characterized on this document as Spaceport to Spaceport ("S2S") spaceflights. The airspace volumes required to perform these missions are referred to as "S2S corridors" or "S2S space ways". An S2S spaceflight profile consists of three distinct phases; launch, cruise, and reentry.

This White Paper intends to bring clarity and standardize the definitions, designs and characteristics of the airspace required by space vehicles to perform S2S missions safely, reliably and in compliance with best industry practices and Federal Aviation Administration (FAA) regulations. The paper includes analysis of the technical, legal, operational, commercial, and regulatory feasibility of the corridors for S2S flight and ground operations applicable to a variety of vehicles. The paper also explores the best practices and methodologies for the design, implementation, and efficient integration of the S2S corridors with the existing airspace used by other aviation and space flight stakeholders. This White Paper places a special emphasis on providing fundamental definitions and characterizations of the S2S cruise flight phase. The cruise phase occurs between launch and reentry and is currently unaddressed by regulations and thus, poses a fundamental problem for the development of the S2S spaceflight industry.

# S2S Airspace Corridors White Paper-First Draft-Highlights

The paper is intended to be useful to airspace designers as initial airspace design guidance. It is ultimately intended to act as a framework for future flight and ground operations best practices, guidance and standards to be used by the stakeholders involved in the commercial S2S transportation space industry.

Keywords: Airport, Spaceport, Take-Off, Launch, Cruise, Coast, Orbit, Re-Entry, Landing, Airspace, Air way, Space way, Atmosphere, Vacuum, Suborbital, Orbital, Certification, Licensing, Permit, Supersonic, Hypersonic, FAR 450

The document is focused on airspace connecting spaceports located in the United States. Future revisions will include airspace connecting spaceports internationally.

Cruise, coast or orbit are synonyms in this document

# S2S Airspace Corridors White Paper-First Draft-Highlights

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# S2S AIRSPACE CORRIDORS WORKING GROUP

## THANK YOU

Oscar S. Garcia, MBA, ATP, Chairman, FastForward Project  
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SPACEPORT-TO-SPACEPORT Working Group

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