



Assistance for Action

Aviation and Climate Change Seminar

23 - 24 October 2012

ICAO Headquarters, Montréal, Canada



Public Private Partnerships

Financing Environmentally Friendly Investments



Public Private Partnership Are Especially Attractive Ideal When Spending Cuts Are Anticipated

- A Public Private Partnership (“PPP”) is typically an agreement where the private sector utilizes its capital and expertise to provide a service or facility to a public agency. In return, the public agency will share in the risk (and sometimes the benefits) of the project.
- In current global recession, many government’s revenues are not sufficient to meet spending demands, necessitating painful spending cuts or tax increases. PPPs can provide:
 - The capital needed for the construction of major programs or facilities and
 - The funds needed to maintain current operations



FAA Is Increasingly Using PPP To Meet Both Its Infrastructure and Operational Needs

- 2002 – FAA Federal Telecommunications Network (upgrade from analog to digital network)
- 2005 – FAA contracted with Lockheed Martin to service, maintain and build new flight service stations
- 2007 - ADS-B was awarded to Harris Corporation to build out the terrestrial ADS-B network of approximately 800 ground stations.
- 2012 – Data Communications Integration services contract was awarded to Harris to build and operate an air traffic control data communications service



PPP Case Studies

- Aireon Space-Based ADS-B Air Traffic Surveillance System
- NextGen Equipage Fund



Aireon – A Global Space-Based ADS-B Surveillance Environmental Impact

- 50% of aviation passenger miles occur over the oceans
- Fuel savings for oceanic flights can have a disproportionate impact on global green house gas emissions
- Estimated annual green house gas savings - 1.1 billion tons of CO₂. This is equivalent to:
 - The annual carbon emissions of 195,000 cars or
 - The same amount of CO₂ it would take a forest, the size of Paris, to sequester over two years



Aireon – A Global Space-Based ADS-B Surveillance

- Iridium and NAV CANADA have joined forces to create a revolutionary platform for providing surveillance services to air navigation service providers and airlines around the world
- Aireon LLC will be a joint venture to finance, develop, deploy and operate the world's only global solution for tracking and monitoring the world's aircraft using space-based ADS-B



With support from:



Federal Aviation
Administration





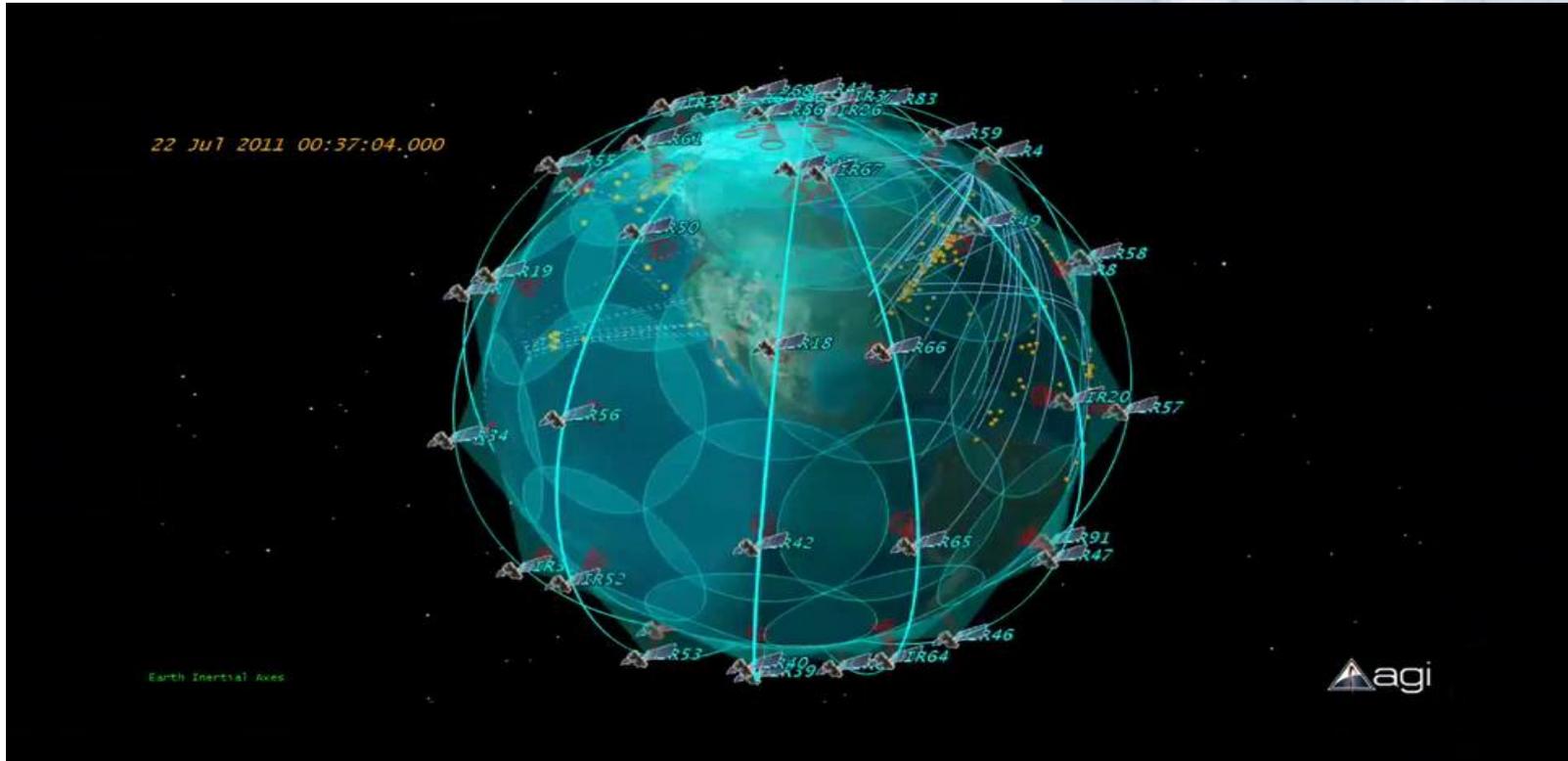
Aireon Space-Based ADS-B

- **Coverage** – Global, real-time visibility to ADS-B equipped aircraft - everywhere
- **Extends and Augments Coverage** – Significantly enhances currently planned ADS-B terrestrial infrastructure and investments
 - Extends terrestrial based ADS-B to oceanic and remote regions
 - Complements terrestrial build-out, including redundancy and lower altitude operations
 - Provides a cost-effective global infrastructure to developing nations to adopt a uniform standard
- **Global LEO Constellation** – This can only be achieved on a global basis through an interlinked LEO satellite system
 - Delivers true pole-to-pole global coverage, with near real-time access to aircraft “ADS-B Out” data from space
 - No additional aircraft equipage by using 1090 ES



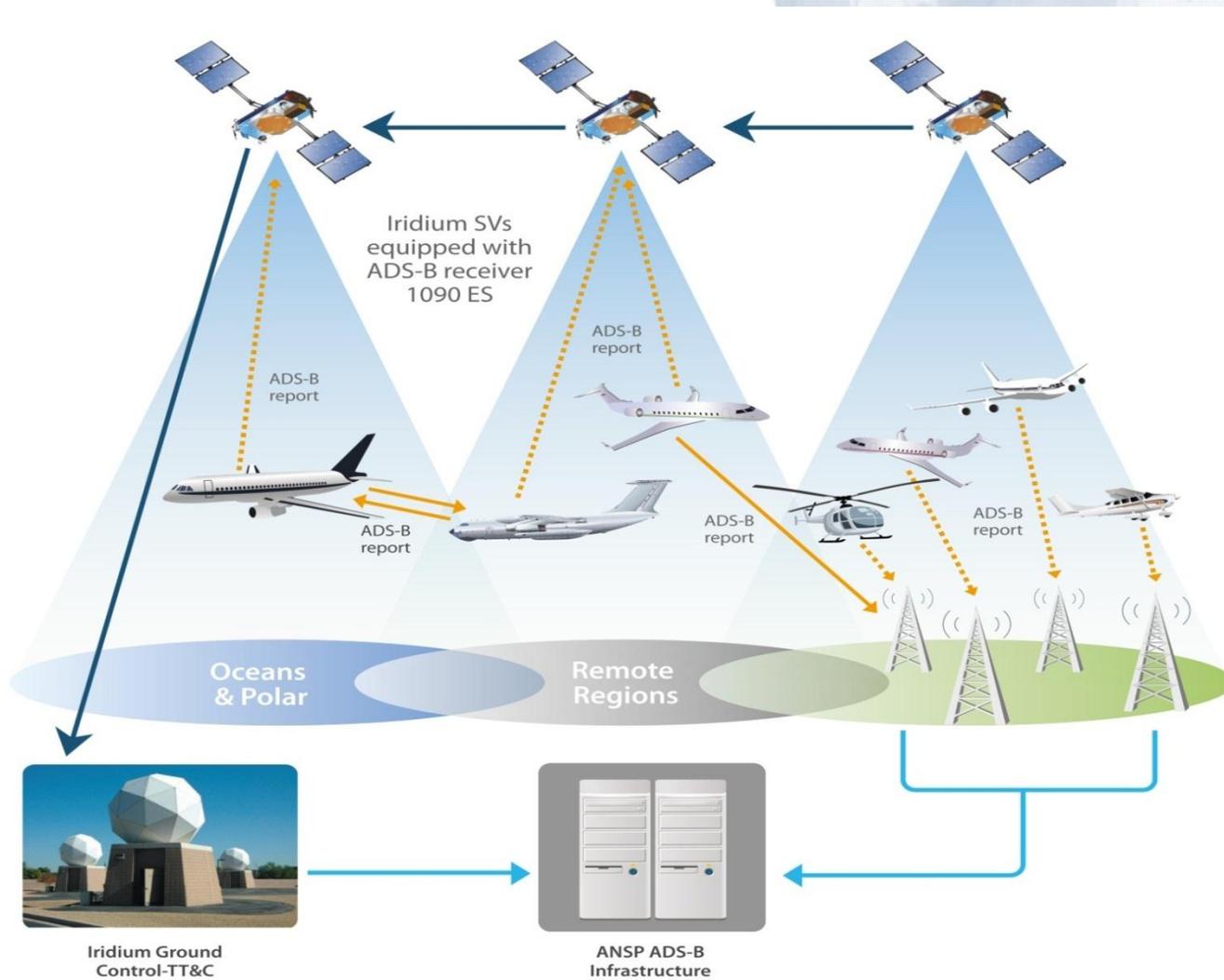
Coverage Everywhere on the Planet

To enable Aireon services, special ADS-B receiver payloads will be hosted on Iridium NEXT, Iridium's next-generation constellation of 66 cross-linked Low Earth Orbit (LEO) satellites





Space Based ADS-B – Concept of Operation





Characteristics of a Successful PPP - Aireon

- **Public Sector Champion**
 - NAV CANADA, the FAA and other international ANSPs
- **Public Sector Organized Structure**
 - NAV CANADA has created a program to implement space based ADS-B in their FIRs
 - The FAA is evaluating the use of space-based ADS-B in U.S. controlled FIRs
- **Business Plan**
 - NAV CANADA and Iridium have joined forces to support the Aireon business plan both financially and operationally
 - Additionally, other early adopter ANSPs could have the opportunity to financially benefit from the global adoption of the service
- **Clearly Defined Revenue Stream**
 - Targeted ANSP's will purchase real time surveillance data for oceanic and remote areas
- **Stakeholder Support**
 - Aircraft operators will save billions of dollars via reduced fuel costs while the ANSPs will facilitate minimizing their impact on green house gases (see Appendix)



NextGen Equipage Fund

- The FAA is accelerating investment in NextGen infrastructure development, and has committed over \$20 billion to achieve initial operating capability with ADS-B In/Out, DataComm, and other systems by 2014-2016.
- The “NextGen Equipage Paradox” exists because as things stand today, those operators who are last to equip with NextGen avionics gain the greatest financial benefit, while those operators first in will pay a much higher price at far greater risk.
- The NextGen Equipage Fund solves this “Paradox” through proven regulatory/policy mechanisms, in combination with private sector capital, commercial leasing structures, and service contract commitments.
 - Private-Sector Capital (Equity and Debt) provided by strategic investors, led by ITT Corporation.
 - A \$1.5 billion fund, capable of equipping up to 75% of the US commercial air transport fleet.
 - Equipage includes ADS-B In/Out, DataComm, SWIM, etc., as well as installation, licensing and maintenance costs.
 - Unique accountability is created using “Best-Equipped, Best-Served” contract commitments.
 - Federal loan guarantees securing non-recourse loans over 15 year period.
- The Fund will be managed by an experienced General Partnership comprising top leasing executives.
- The Fund can begin ordering NextGen avionics as soon as certified avionics are available, with ability to start equipping aircraft fleets as early as 2012-2013.



Multiplier Effect of the NextGen Fund

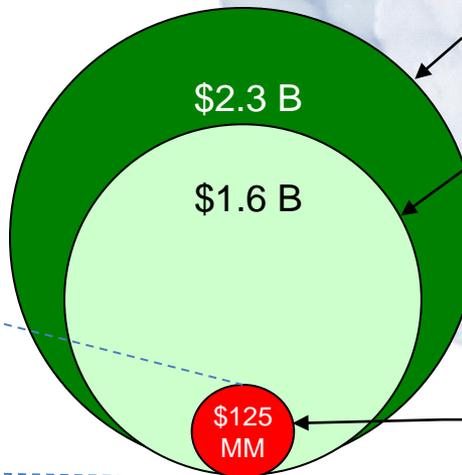
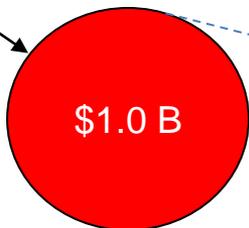
Appropriate Use of a Federal Loan Guarantee

Direct Grant

Federal Loan Guarantee

(Provided via Sec 221 Modernization and Reform Act)

Government Investment:
Direct Grant, Scored by
Budget Rules



Supply Chain Efficiencies
and Buying Power

Private-Sector Capital Plus
Income/Cash Flow

Credit Risk Premium
Scored by Budget Rules

**Airplanes Equipped
(Per Federal Dollar)**





Characteristics of a Successful PPP NEXTGen Fund

- 1. Public Sector Champion
 - Chairman Mica has provided the most support, although we have bipartisan support from the transportation committees in both houses of Congress who have been briefed on the specifics of the NextGen Equipage Fund.
- 2. Public Sector Organized Structure
 - The FAA has created a dedicated group to undertake implementation of a program to fulfill their responsibility to implement the legislation, under the leadership of the Assistant Administrator for Policy, International Affairs, and Environment.
- 3. Business Plan
 - Unlike traditional project financing that use federal loan guarantees to support a single company, NEXA's innovative approach uses an "intermediary" business model, where the NextGen Fund can efficiently support multiple companies. It also better shields the government from the default risk of a single airline or aircraft operator as the "intermediary" would have substantial at-risk capital and cash reserves at its disposal, which would be deployed before any federal loan guarantee would be triggered.
- 4. Clearly Defined Revenue Stream
 - The NextGen Equipage Fund business model has detailed revenue forecasts that are based on long-term airline leasing contracts, secured by the installed equipment *and* ongoing service contracts.
- 5. Stakeholder Support
 - Aircraft operators, will save billions of dollars via reduced fuel costs while minimizing their impact on green house gases (see Appendix)

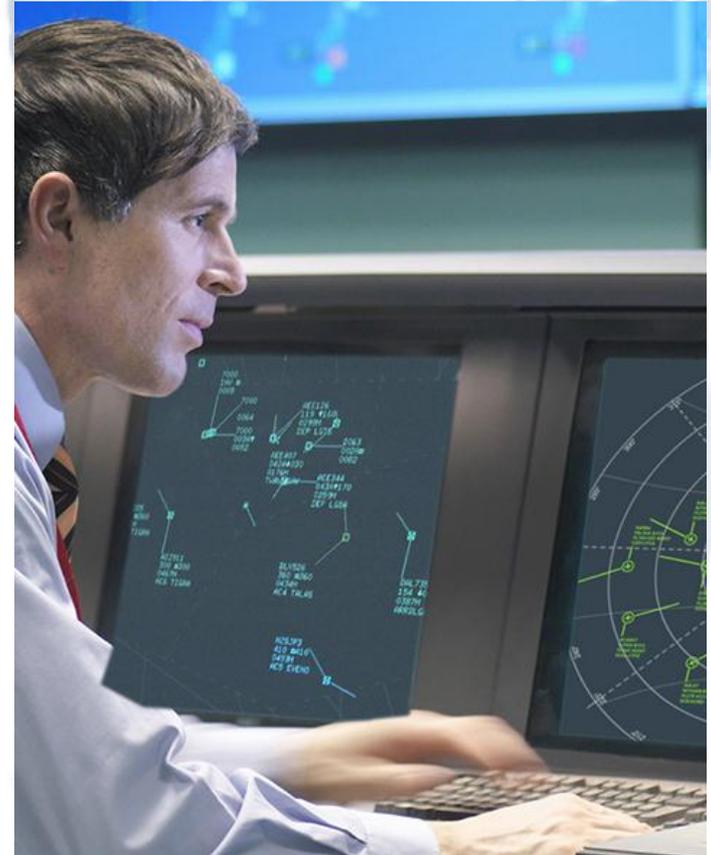


PPP APPENDIX



Aireon - Stakeholder Support - ANSP

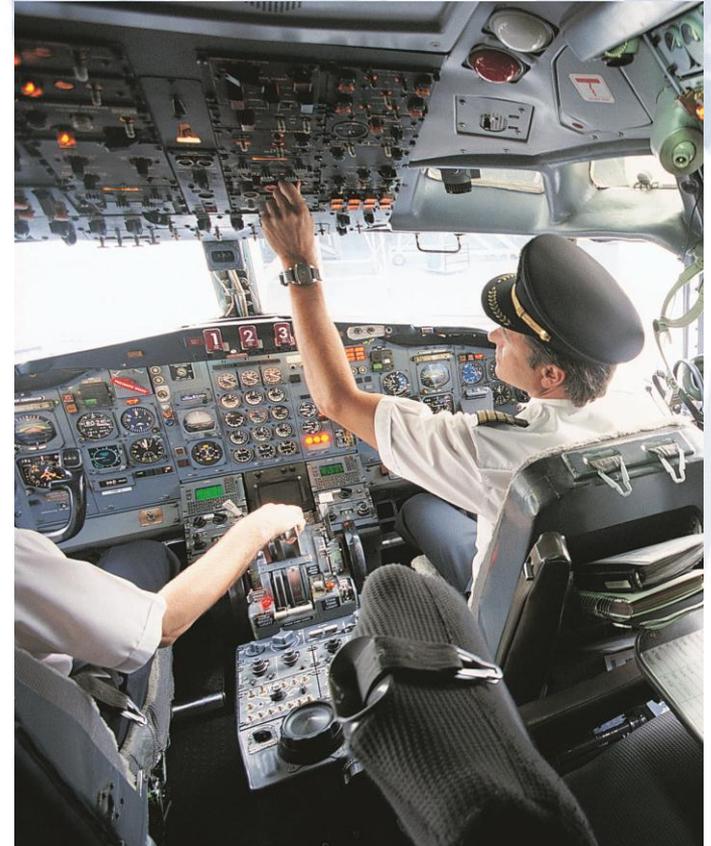
- **Return on ADS-B Investment**
by extending the benefits of terrestrial systems around the globe
- **Significant Infrastructure Savings**
from no installation and maintenances costs in remote or mountainous regions
- **Service Enhancements**
for air carrier customers over ocean, remote or polar regions
- **Enhanced Safety**
from near real-time surveillance and enhanced visibility everywhere on the planet
- **Reduced Emissions**
for air carrier customers based on lowered fuel consumption
- **Business Opportunity**
for future optimization and value-added services leveraging Aireon global data





Aireon - Stakeholder Support - Airlines

- **Billions in Fuel Savings**
by being allowed to climb to more optimal altitudes and use more efficient routes
- **Return on ADS-B Investment**
with no additional aircraft equipage costs required
- **Operational Efficiencies**
including optimized flight paths, altitudes, airspeeds and jet stream use
- **Reduced Emissions**
through fuel consumption optimization, a key benefit in cap and trade world
- **Enhanced Safety**
by eliminating service gaps over regions with limited infrastructure or coverage
- **Global Harmonization**
of different next-generation ATM operating procedures and systems





NEXTGen Fund - Legal Structure

➤ NextGen Equipage Fund:

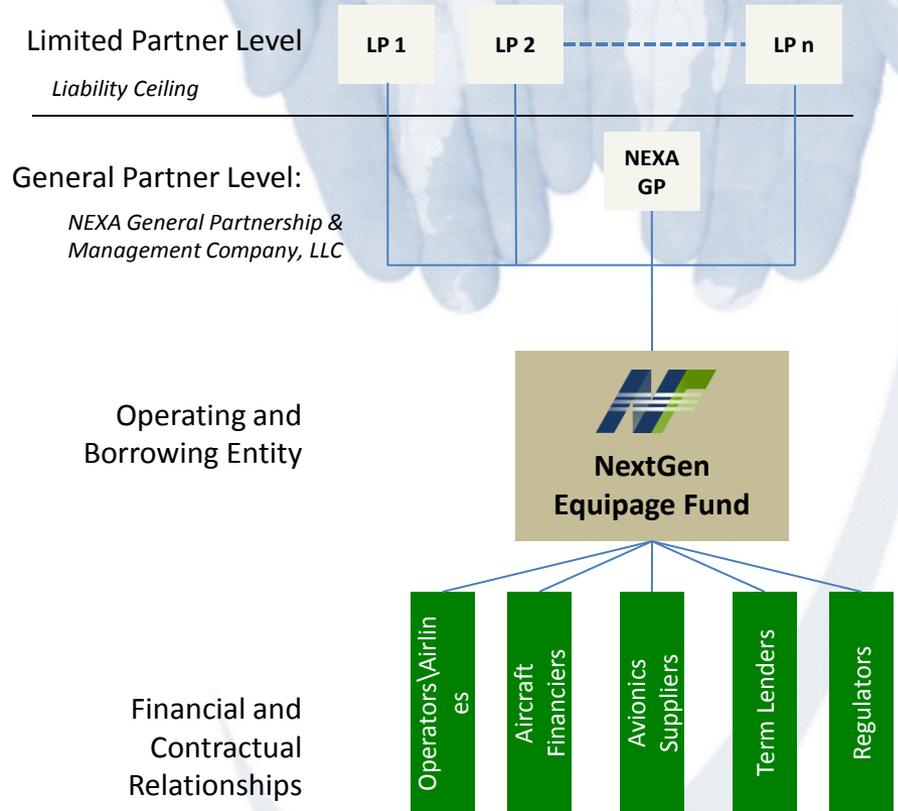
- Limited Liability Company and share issuer
- Operating and borrowing entity
- Maintains all financial and contractual relationships
- Full liability protection to investors/owners
- Established board, and appoints GP

➤ Limited Partners:

- Aggregate equity investment
- Oversight through LP board of directors
- Share issuance comprising common and preferred shares

➤ General Partner:

- Primarily responsible for operation and administration of the entity
- Employs and compensates executive management





NEXTGen Fund - Stakeholder Support

Airlines

Investment Barriers and Resolutions

- ✓ High Airline Capital Costs: Reduced cost-of-capital.
- ✓ At-Risk Capital Requirement: Nominal airline security deposit is reduced by augmenting with at-risk private-sector equity.
- ✓ ATC requires predominant equipage to deliver benefits: Equipage leases structured to achieve predominant equipage levels by region or local facilities.
- ✓ Upgrade protection from future requirements: Equipage leases include installation and software updates.

Implementation Risks and Mitigations

- ✓ Delays in FAA programs: Airline lease payments are deferred until the new system is installed and being used.
- ✓ Airline Unique Aircraft Configurations: Preserves choice, leverage, & related efficiencies in the supply chain.
- ✓ High Out-of-Service Costs: Long installation schedules eliminate special aircraft out-of-service time by using aircraft heavy-check maintenance lines.

Accountability and Performance Penalties

- ✓ Provides a security deposit as at-risk capital.
- ✓ Pays high out-of-service costs if unable to meet its coordinated heavy maintenance installation commitments.

Government

Investment Barriers and Resolutions

- ✓ Constrained FAA Facilities & Equipment Budgets: Stretches FAA equipment dollars with leveraged finance.
- ✓ Constrained FAA Operating Budgets: Reduces escalating costs of operating existing & NextGen ATC systems.
- ✓ Administrative and Legal Costs: Can be reimbursed.
- ✓ Growing Budget Deficit: Leveraged funds are directly invested into U.S. jobs and economic activity, producing immediate federal tax revenue.
- ✓ Growing Trade Deficit: Enhances global competitive leadership of U.S. manufactured NextGen aircraft and ground systems.

Implementation Risks and Mitigations

- ✓ High Cost of Applicant Default: Equipage Bank” structure shields the government from default risks using proven credit risk management programs and practices.
 - ✓ Provides substantial private-sector equity/debt at-risk
 - ✓ Requires ongoing operational and technical services
- ✓ Unfunded Government NextGen Mandates: Properly structured, can incentivize NextGen equipage without mandates.

Accountability and Performance Penalties

- ✓ Defer lease payments if NextGen system deployment late or not used.



Supply Chain

Investment Barriers and Resolutions

- ✓ Market Demand Uncertainty: Predominant equipage requirement levels improve market size certainty with significant near-term demand and revenue.
- ✓ Market Timing Uncertainty: Reduces costs with more predictable heavy-check maintenance installation schedules improve medium and long term demand forecasts and required production volumes.
- ✓ High Cost of Early Development: Faster and more efficient recovery of research and development investments.

Implementation Risks and Mitigations

- ✓ High Inventory Costs: Long installation schedules improve just-in-time production opportunities to keep raw and finished inventories low.
- ✓ New or Changing FAA Requirements: Large installed base of equipment stabilizes introduction of new requirements.

Accountability and Performance Penalties

- ✓ Competitive environment maintains market pressure on supply chain costs.
- ✓ Accelerated demand will ensure availability certified equipment and software.

Investors

Investment Barriers and Resolutions

- ✓ High Capital Costs: Reduces cost of capital with a Federal Loan Guarantee.
- ✓ Long-term Returns: Reduce early cash outlays with accelerated depreciation.
- ✓ Limited Cash Returns: Upside returns from market valuation of the leasing entity.

Implementation Risks and Mitigations

- ✓ Customer Default Risk: Use successful leasing professionals managing a well-diversified portfolio with proven credit-risk management practices.
- ✓ Maintaining Liquidity: Significant cash reserves created early
- ✓ Startup Investment Risks: Equity & debt committed over longer time.

Accountability and Performance Penalties

- ✓ All of investor’s capital is completely at-risk if leasing business entity fails.
- ✓ Government’s guaranteed debt is senior to all private sector’s at-risk capital.