



June 15 - 16, 2011
Walter E. Washington Convention Center
Washington D.C.

Accelerating NextGen Through Public-Private Partnership



Ed Lohr
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SOLUTIONS FOR GLOBAL AIRSPACE ELECTRONICS
AVIONICS
MAGAZINE

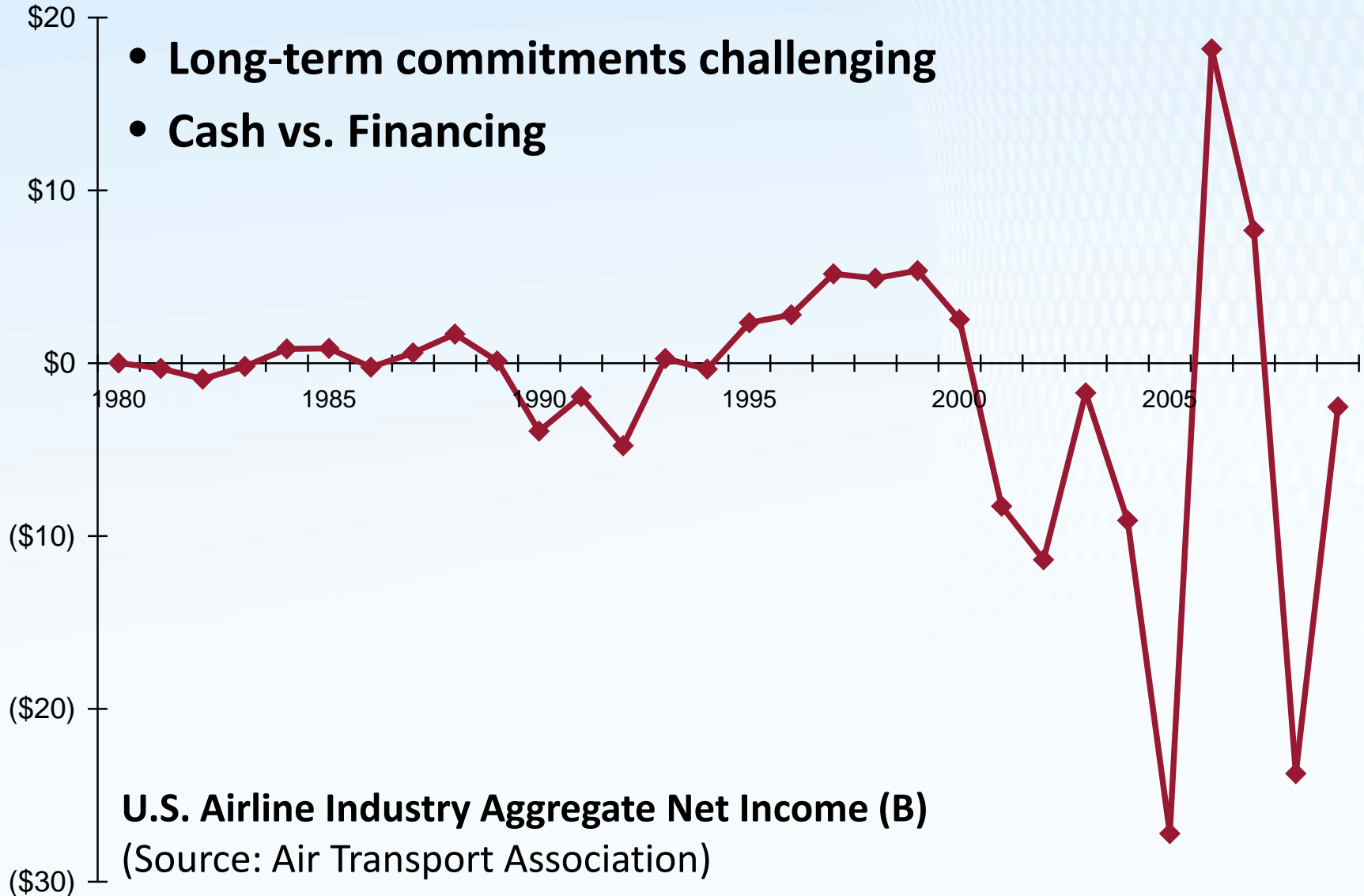
Airline Business Case

- 1. Capital available**
- 2. Creates competitive advantage or remedies disadvantage**
- 3. Confidence in execution**
- 4. Payback less than 3 years**

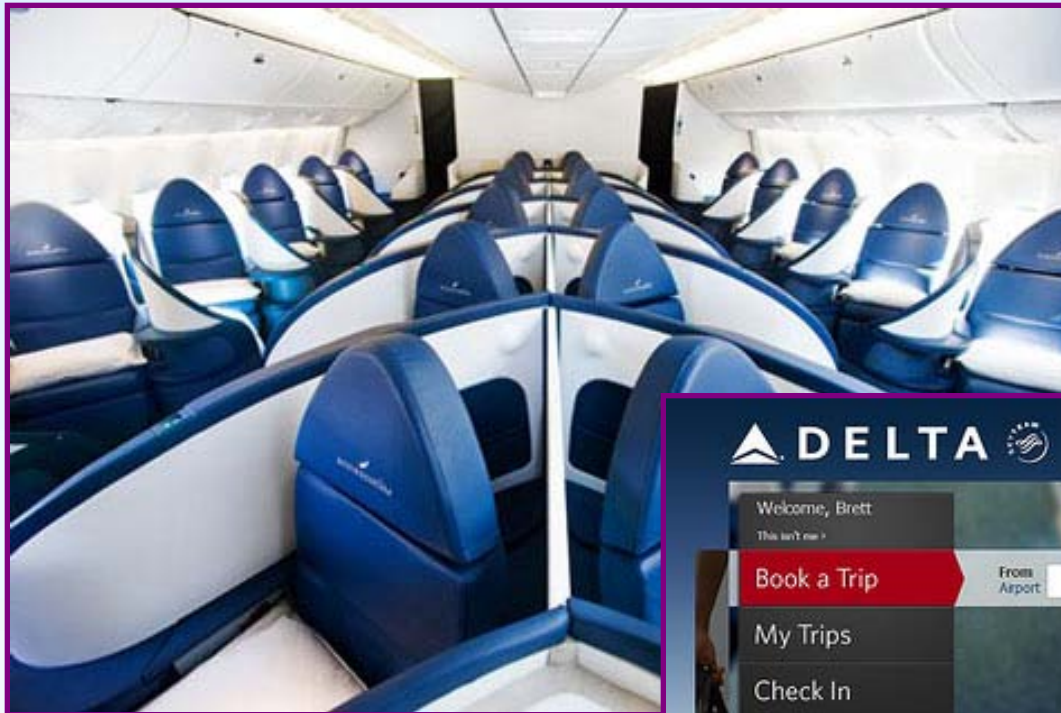


Business Case Gap: Capital Available

- Long-term commitments challenging
- Cash vs. Financing



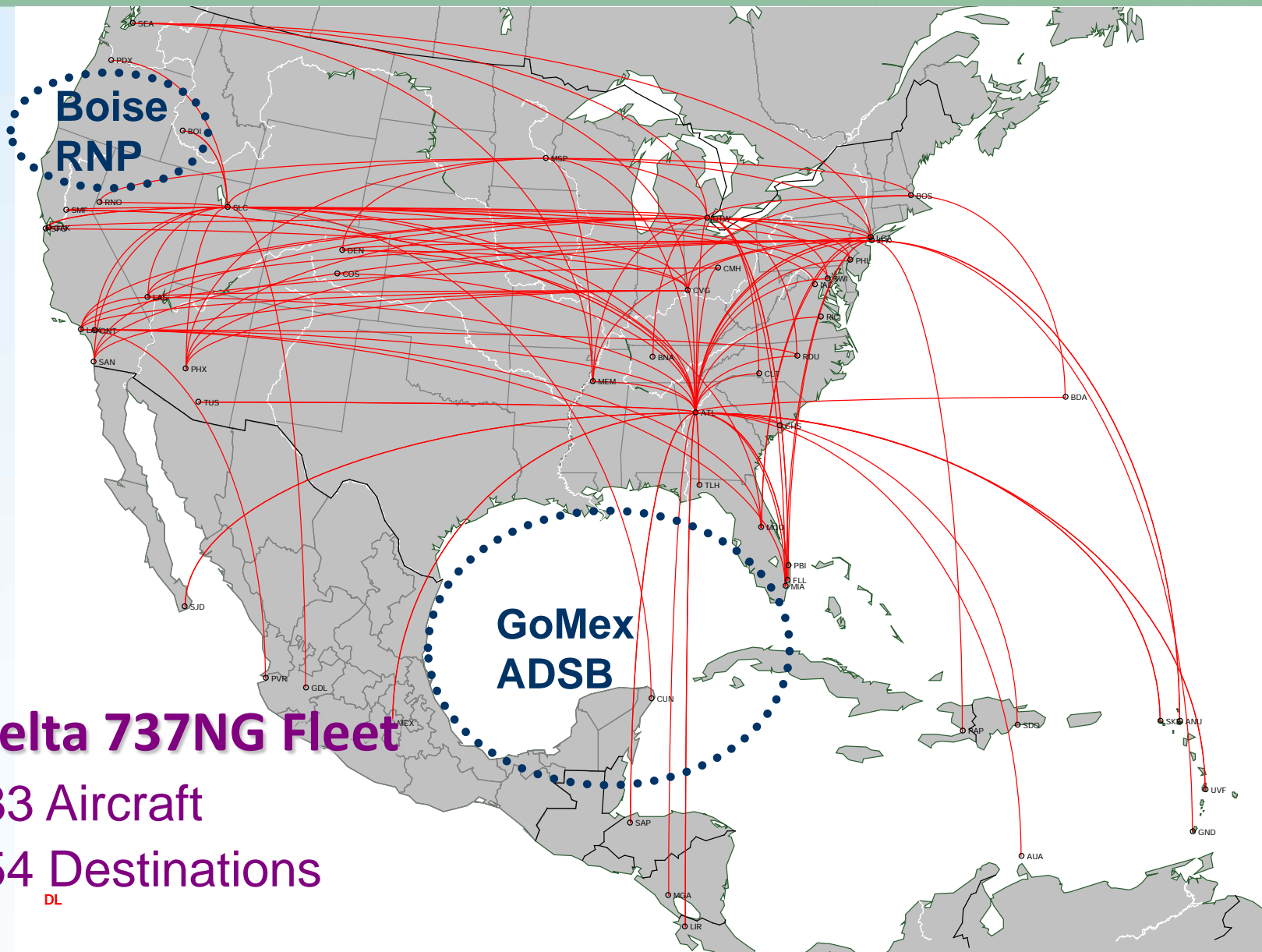
Business Case Gap: Creates Competitive Advantage



Competing Priorities

A screenshot of the Delta Airlines website homepage. The page features the Delta logo at the top left, a navigation menu with links for 'Planning Tools', 'Travel Information', and 'SkyMiles', and a search bar. A prominent banner advertises 'WI-FI FROM 35,000 FEET' with the text 'Stay connected while you fly. In-flight Wi-Fi service available.' Below the banner, there are sections for 'NEW LOOK - NEW FEATURES', 'FIRST BAG FLIES FREE', and 'MORE DESTINATIONS'. The page also includes a 'Book a Trip' button and a 'My Trips' section.

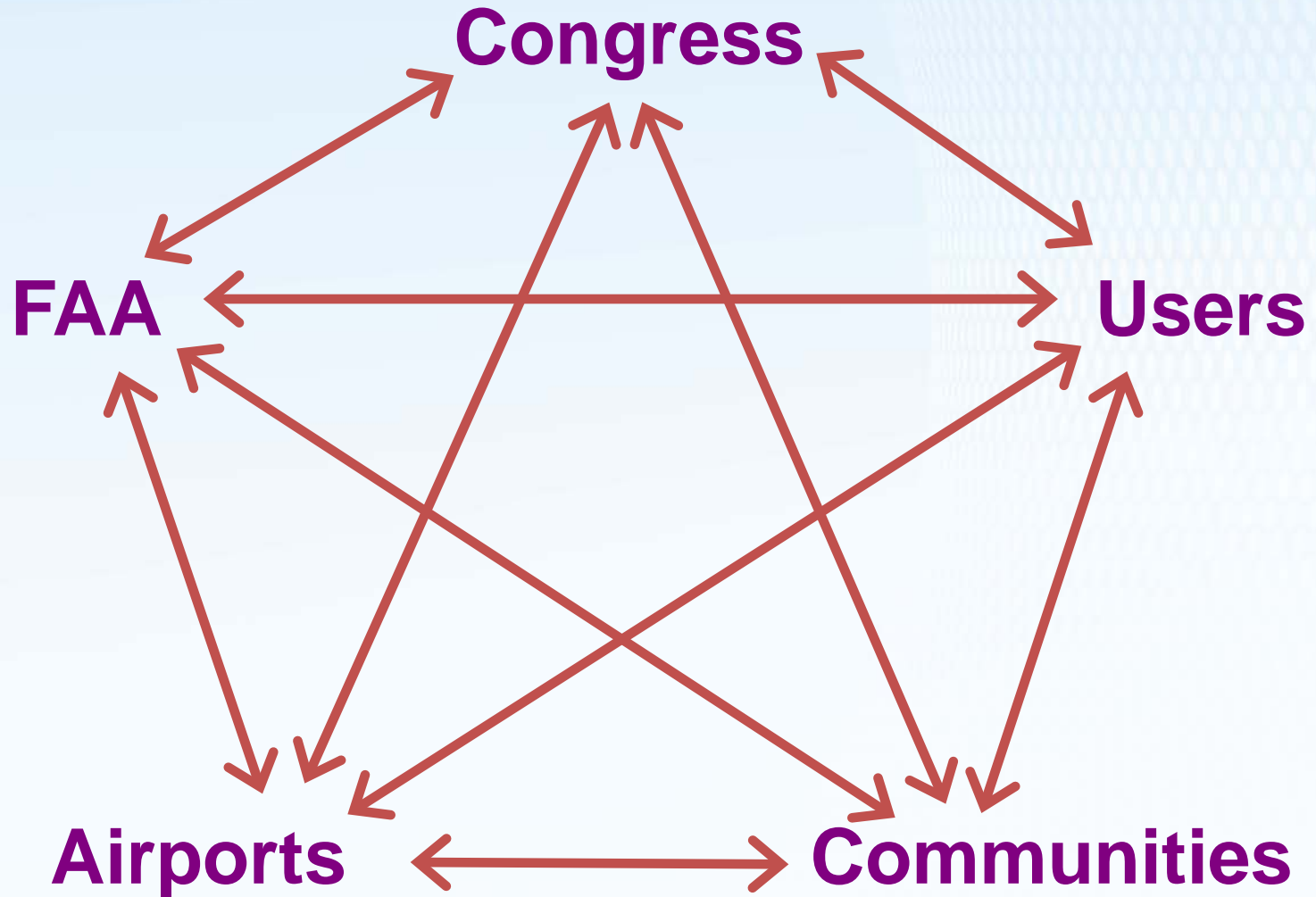
Business Case Gap: Creates Competitive Advantage



Delta 737NG Fleet

- 83 Aircraft
- 54 Destinations

Business Case Gap: Confidence in Execution



1. Capital available

?

2. Competitive advantage

?

3. Confidence in execution

?

< 3-year payback

X



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Gary Kelley
Vice President, Marketing
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SOLUTIONS FOR GLOBAL AIRSPACE ELECTRONICS
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- Over the last 10+ years GA owners have invested strongly in new technologies GPS/WAAS, traffic, Mode S, Wx, ADS-B, displays etc.
- Establishing a business case for the GA aircraft owner will be difficult. The ROI is founded in “what does it do for me today”.
- There is a large number of GA aircraft that are still operating with systems that won't meet today's new standards – TSO - C129a GPS, TSO – C146a receivers Mode C/S XPNDR and ADS-B Systems. Also need STC
- Must have uncomplicated solutions for the masses

TIS-B Traffic

- Provides TFR's
- Traffic up to 15 miles
- Air to Air traffic in no coverage areas

FIS-B Weather

- NEXRAD
- METARS
- Icing Level's
- Winds Aloft etc. etc.



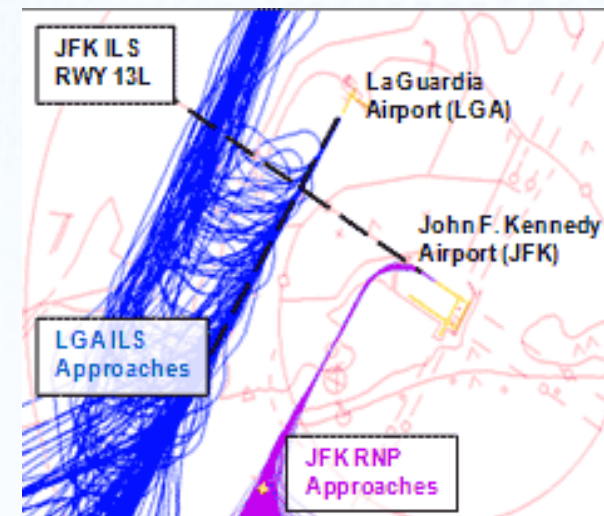
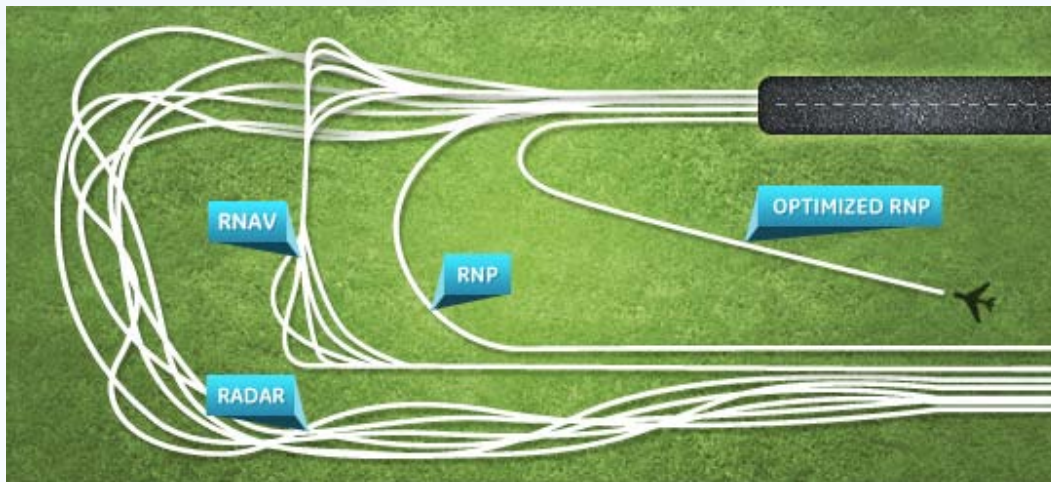
Overcoming the headwinds:

- What does NextGen do for me?
- Does my current equipage meet the requirements?
- Is there a simple path to upgrade?



GA Business Aircraft Benefits

- RNP
 - Improved Access
 - Improved Efficiencies
- Fractional and Business GA
 - Must be quantifiable
 - RNP approaches



If we expect equipage to begin we must educate GA



EAA

Accelerate grassroots effort

- Media coverage
- Seminars
- Website



7 Questions
 every pilot should be asking about
 the FAA's rules on ADS-B

1. Why?

ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...

2. How?

ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...

3. When?

ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...

4. How much?

ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...

5. What's in it for me?

ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...

6. What's in it for the industry?

ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...

7. What's in it for the FAA?

ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...
 ADS-B is the most significant step toward the implementation of the NextGen...

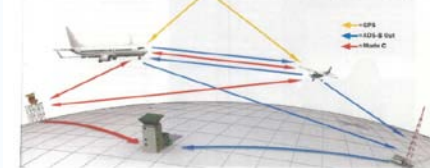
AOPA

Next step toward NextGen

What does the FAA's ADS-B Out final rule mean to you?

BY MIKE COLLINS
 ADS-B Out rule will not significantly affect safety. Instead, the mandate is intended to help...
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Equipment and installation options
 The ADS-B Out equipment currently installed...
 The ADS-B Out equipment currently installed...
 The ADS-B Out equipment currently installed...

We must move from “What” to “How”

- Educate / show tangible benefit
 - Get the word out
 - It is here today
- There must be simple solutions to upgrade
 - And low cost solutions for glider, LSA and amateur built aircraft
 - If it becomes a last minute rush, install capacity will be an issue
- Incentive
 - Given the number of recent GA GPS/WAAS,XPDRS etc. system upgrades there must be some form of incentive to provide sufficient enticement to move GA owners to upgrade



DoD NextGen Lead Service Office



Closing the NextGen Business Case – DoD Perspective



Col Rafael Quezada
AF/A3O-BA
Chief, Airspace Integration Division
15 Jun 2011



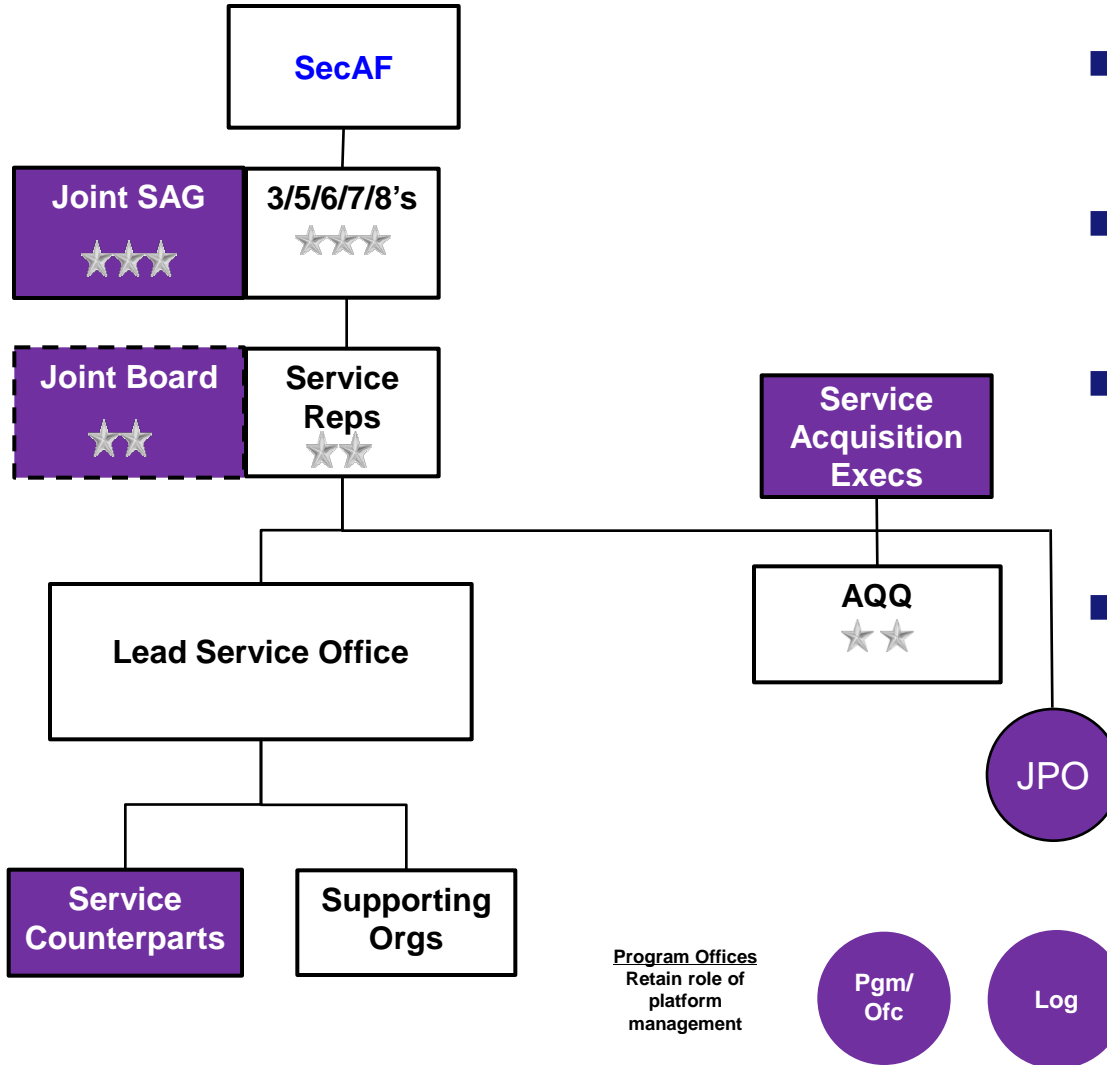


Deputy Secretary of Defense's NextGen Guidance

- **DoD within NextGen is unique in that it operates as a user, service provider, and regulatory authority (airmen, aircraft & airfields),...to operate seamlessly with civil aviation**
- **DoD must participate in NextGen...in a cohesive, authoritative manner**
- **Ensure the [civil] NextGen vision for the future National Airspace System meets DoD's requirements and does not infringe on our mission**
- **DoD's resources are appropriately focused and managed**
- **SECAF is DoD Lead for Senior Policy Committee**



Joint Program Office



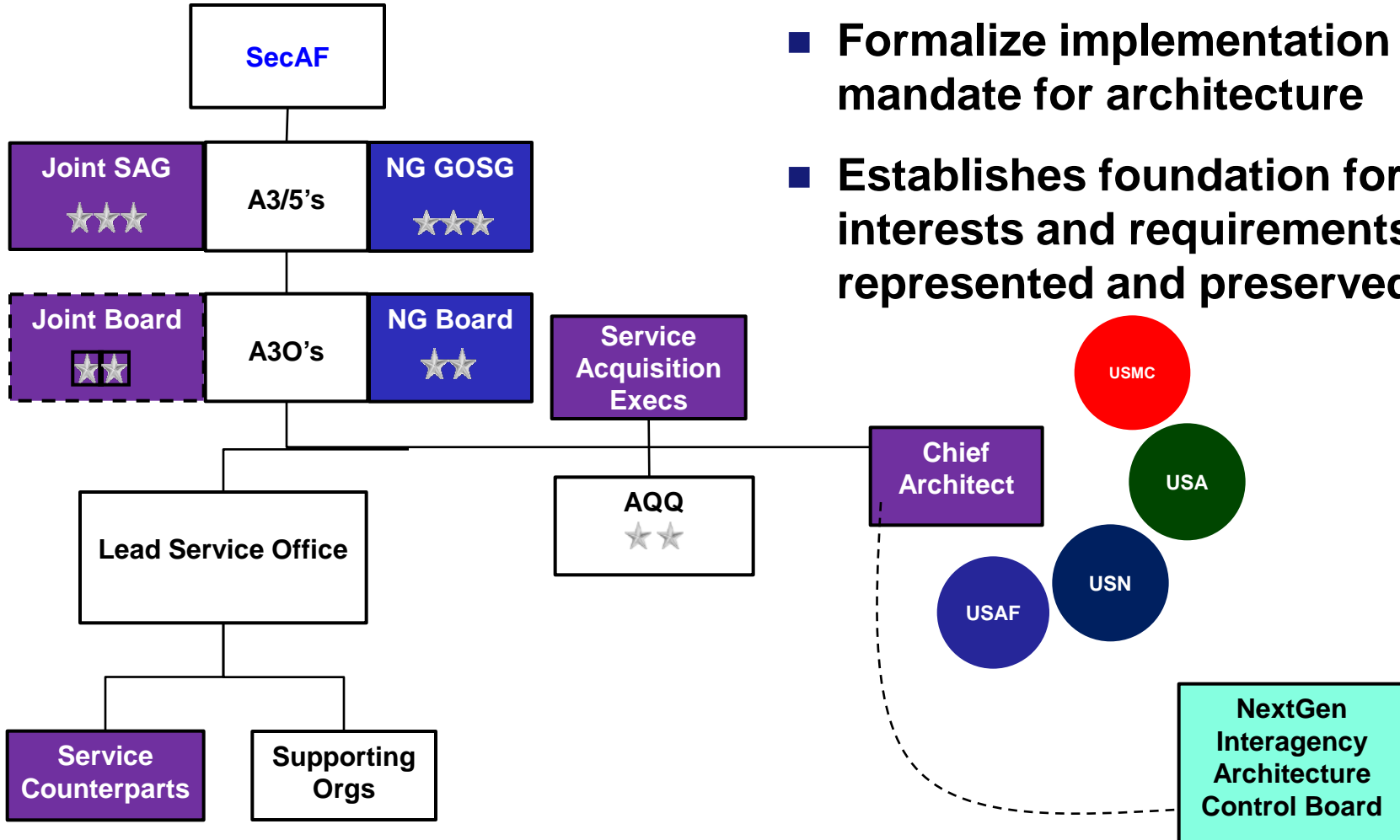
- Formalize implementation of Joint Program Office
- Coordinate and facilitate tech transfer for R&D
- Advocate for DoD interests, requirements, and capabilities
- Provides advice and assistance to Service's SME's on NextGen avionics/systems

Program Offices
Retain role of platform management

Services/Commands
Responsible for determining requirements and POMing for upgrades to meet mandates



Chief Architect



- Formalize implementation of DoD mandate for architecture
- Establishes foundation for DoD interests and requirements to be represented and preserved



2011 Strategic Goals

- **Identify NextGen initiatives affecting the DoD mission**
 - **Working with Services, DoD components, and FAA to determine NextGen equities**
 - **PBFA NextGen Subgroup**
 - **Leverage Service expertise to establish DoD consensus and develop DoD position on critical NextGen issues**
 - **Stand-up JPO and Architecture**
 - **Continue external engagement with civil partners to shape NextGen way ahead**
 - **Meet challenges of SecDef stated reduced budget of \$400B over next 12 years and continue to stay connected to NextGen**
-



Discussion





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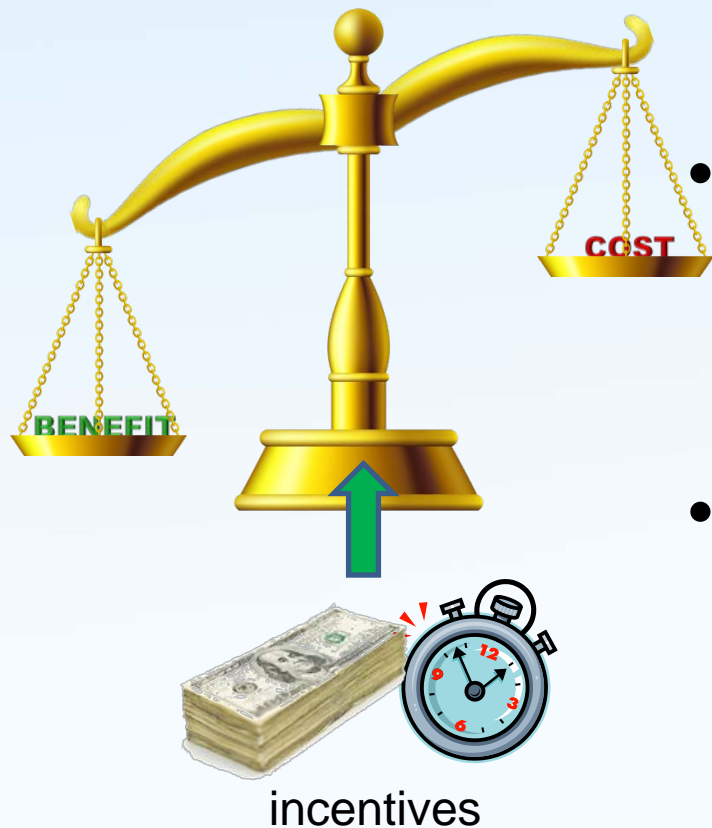
Accelerating NextGen Through Public-Private Partnership



Debby Kirkman
NextGen Performance Integration Lead
The MITRE Corporation

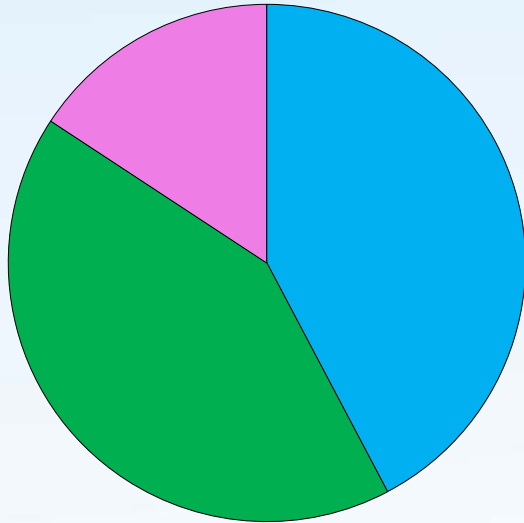
- NextGen Metrics
 - Recommend operational metrics that are most important to measuring NextGen implementation impacts
 - Seek agreements with stakeholders to provide new data sources that illuminate key NextGen metrics
- NextGen Business Case
 - Identify what financial business case gaps exist for priority capabilities involving NextGen equipage
 - Assess the impacts of incentives to close those identified business case gaps

Why do Equipage Gaps Occur ?



- System or social benefits for capabilities requiring NextGen equipage can significantly outweigh the costs, but
- Individual benefits may not exceed the costs for each stakeholder (or for specific individual aircraft) that needs to invest for the system benefit to accrue
- FAA has asked RTCA to identify financial and operational incentives that could close those gaps and achieve system-wide benefits

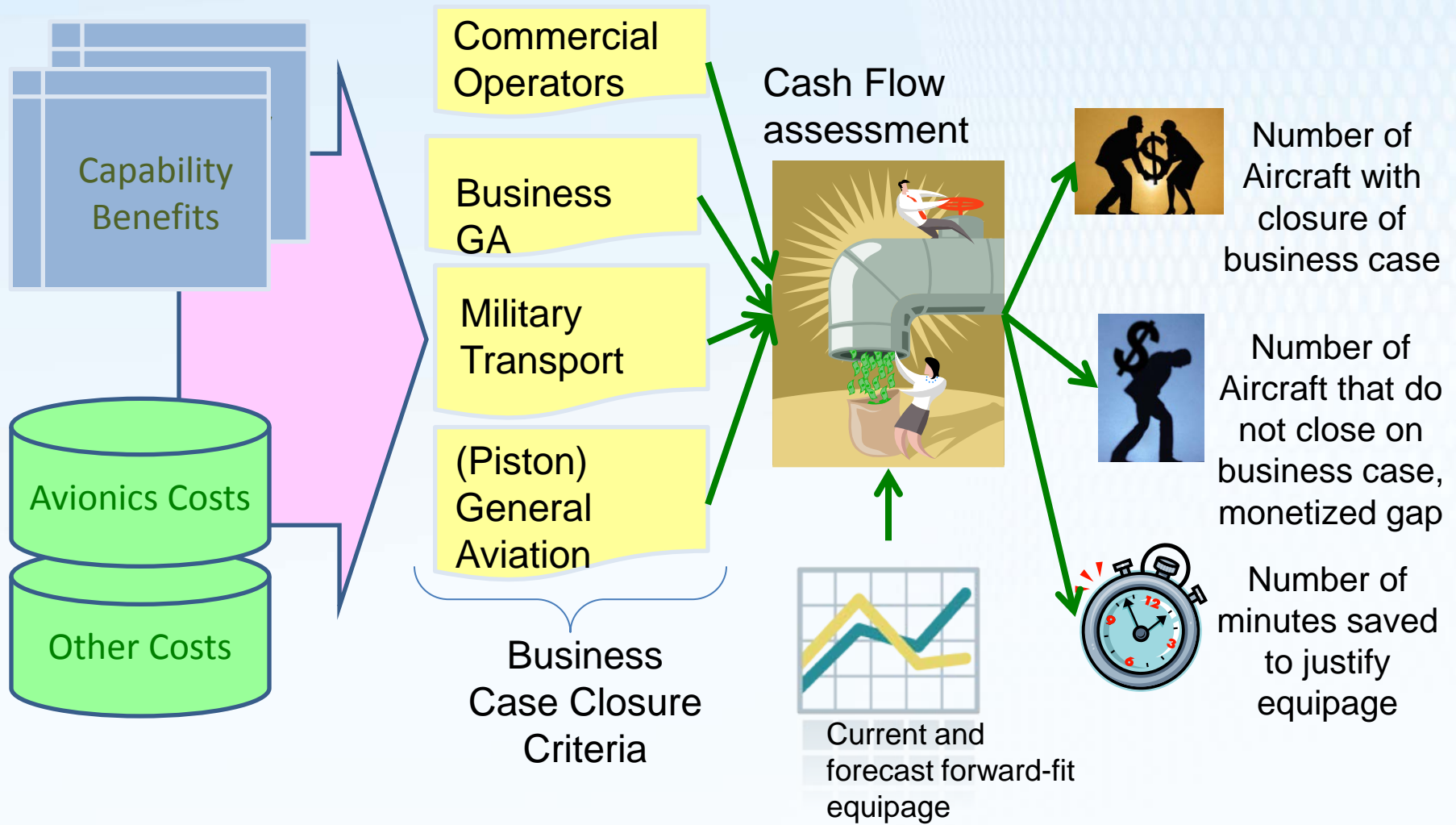
Stakeholder Investments are Critical to NextGen Delay and Efficiency Benefits



- 42% of value from FAA investments; eg, OAPM, arrival/dept management
- 42% of value from TF5-recommended capabilities involving joint investments, such as Data Comm, surface traffic management, and CDM
- 16% of value from capabilities requiring emerging avionics such ADS-B in or advanced Datacomm

Source: MITRE analysis of the Mid-Term NextGen Concept

Gap Analysis Methodology



Business Case Closure Criteria

	Commercial	Business GA	Military Transport	(Piston) General Aviation
Payback Period (years)	2.5	5	15	n/a
Discount Rate	10% forward fit 17.5% retrofit	10% forward fit 17.5% retrofit	7%	n/a
Benefits included	Airline Direct Operating Costs	Fuel savings	Fuel savings	Fuel savings
Other Criteria	"System" benefits are not included	Access	Access	Access and safety Avionics cost threshold of ~\$1500

Note: These criteria are used for our general assessment and may not reflect an individual stakeholder's decision process

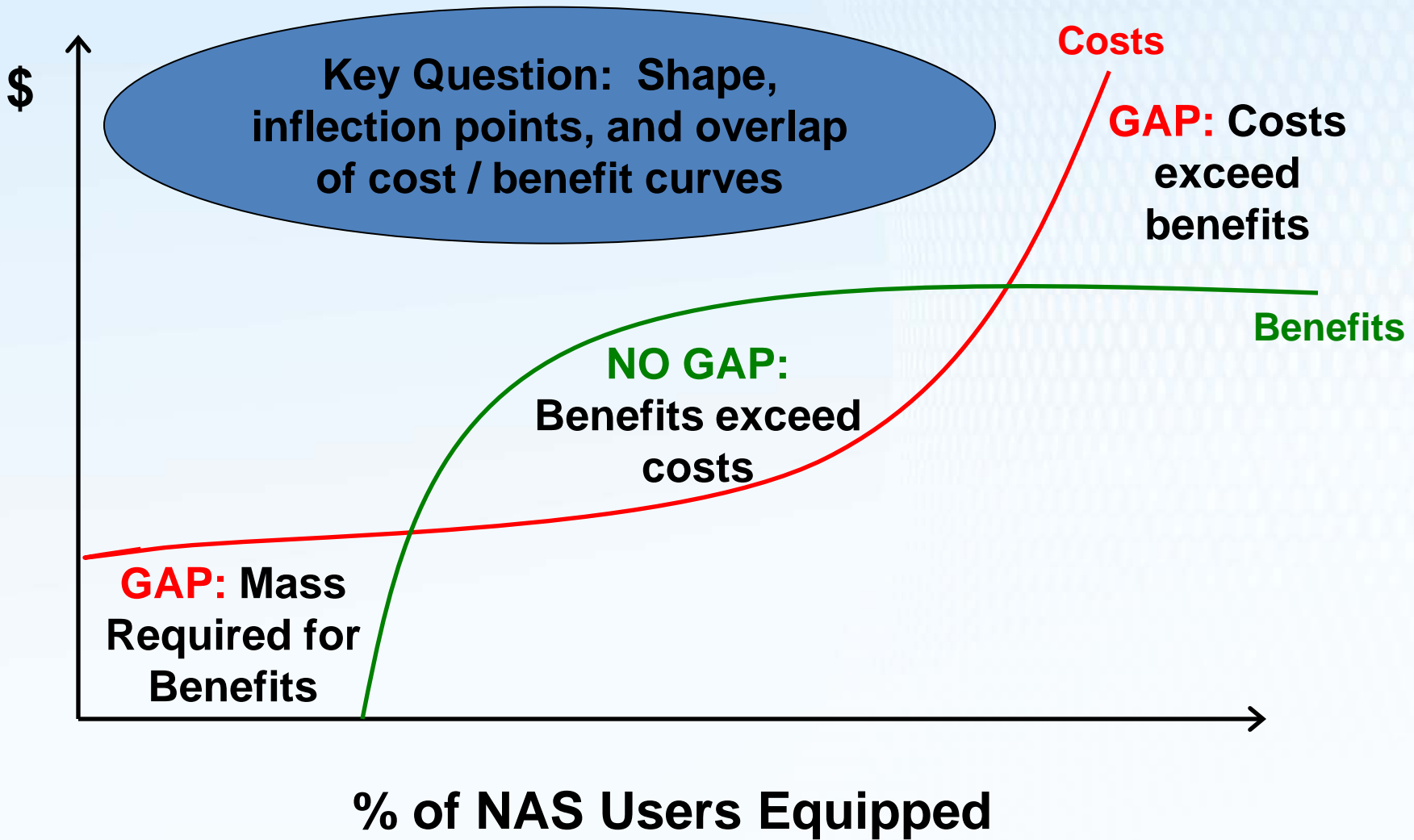
Initial Evaluation Scope

- Package 1: RNP.3/RF for commercial operators; GPS/WAAS for general aviation
- Package 2: ADS-B Out
- Package 3: Data Comm

Assumptions / Limitations

- Target year for evaluation is 2020
- Where no quantitative benefit evaluations are available, will identify criteria needed to justify equipage
- Not evaluating individual stakeholder business cases

Notional Marginal Cost vs. Benefit



- Average benefits per flight (by service, eg, DCL, Airborne Reroute)
 - Minutes avoided per benefitting occurrence
 - Frequency of benefitting occurrence
 - Number of flights per airframe
- Average cost per airframe/flight (eg,. ATN Baseline 1, FANS 1/A+)
 - Capital Acquisition Expense: Cost of avionics and installation
 - Operating Expense: Per-minute cost of operating the aircraft (Airborne vs Surface)

NEXT STEP:

To collect the parameters above from the various constituencies

Early Findings

- Confidence in the benefits and implementation schedule of FAA infrastructure and associated procedures is a critical precursor for operator investment commitment
- Benefits requiring a “critical mass” will not justify retrofit unless there is a significant equipage base to build on
 - Incentives may be applied to accelerate achievement of the critical mass or to close the business case gap to achieve a critical mass.
 - DOD existing transport aircraft are primarily “analog” (ie, expensive to retrofit) and are not likely to contribute to a critical mass, except for mandated capabilities
 - Significant differences in retrofit suitability exist between narrow- / wide-body aircraft and RJs (eg, RNP.3, Data link)
- The cost of an FMS upgrade requiring a type certificate is a significant barrier to retrofit decisions.

Closing the Gap: Incentives to Evaluate

Financial



- ✿ Grants or Subsidies
- ✿ Loans
- ✿ Tax incentives

Operational



- ✿ Improved or Preferential Service

Closing the NextGen Business Case

One FAA Perspective

Presented to: RTCA Annual Symposium

By: Kristen Burnham, Director, Investment Planning
& Analysis, FAA

Date: June 15, 2011



Federal Aviation
Administration



The Challenge Continues

The [] is a pantheon of values, and a lot of hard cases are hard because the [] gives no simple rule of decision for the cases in which one of the values is truly at odds with another.

David Souter

NEXTGEN

Improve safety	AND	Increase capacity
Decrease costs	AND	Expand access
Reduce staffing	AND	Create jobs
Reduce fuel use	AND	Reduce noise
Be equitable	AND	Reward investors
Increase profits	AND	Strengthen security
Arrive on time	BUT	Leave late and spend more \$ at the airport

The NextGen Business Case: What do we really mean?

- There is no ONE NextGen business case.
- There are hundreds of business cases within NextGen.
- The rationale for NextGen investment is tightly linked to the rationale for maintaining existing infrastructure, avionics, etc.
- The ***transition*** has to make sense from a business perspective .



A Quick Look Back: Business Case as Risk Management Tool

- In this forum last year, focused on the business case as a risk management tool
 - Expect yes/no answer when enough is known
 - If not, use business case to drive progress
 - Highlight promising benefits
 - Identify risks and expect resolution
 - Build momentum, credibility through program planning and stakeholder involvement
 - Mature business case(s) to help investors gain confidence



Is the FAA using this approach?

- Over the last 3 years, FAA's 40 major investment decisions have mirrored this approach
 - More than half involved sustainment of legacy systems
 - Most were final decisions (we knew enough to say yes or no)
 - Focus was on cost, schedule, and management risk
 - Slightly less than half were NextGen investments
 - Most decisions set direction rather than providing the final answer
 - Focus has been on understanding potential value—and in that context—refining program plans, increasing stakeholder involvement, and reducing risk
 - Several programs are expected back with more mature business cases in the coming months.



Closing the Business Case: Ongoing Challenges

- Complexity and scope
 - Across objectives, stakeholders, solution space(s), etc.
- Connectivity
 - Between aircraft, airspace, ground, human, machine, etc.
- Context develops as we make decisions, not always before
 - Strategies defining legacy/NextGen relationship continue to emerge
- Investor patience
 - While risk management approach is yielding important information driving better decisions, it takes time
- Budget constraints
 - *Although*, they are helping us to prioritize and reach consensus faster



The Elusive Portfolio: Can it help (and can we get there)?

- We are closer, but we still don't have a clear set of investment *packages* that
 - Achieve value for more than one stakeholder group
 - Are manageable from an execution standpoint
 - Respect and refine the air/ground relationship
 - And are affordable
- To a large degree, we still have individual investments competing against each other for a limited pool of resources
 - As these one-at-a-time investments win, lose, and change over time, it is difficult for investors to know what they'll get
- The ongoing challenge to the community is to design, analyze, commit to (i.e., finance), and manage a reasonable number of meaningful portfolios that result in measurable change

