

Air Traffic Services Performance Metrics



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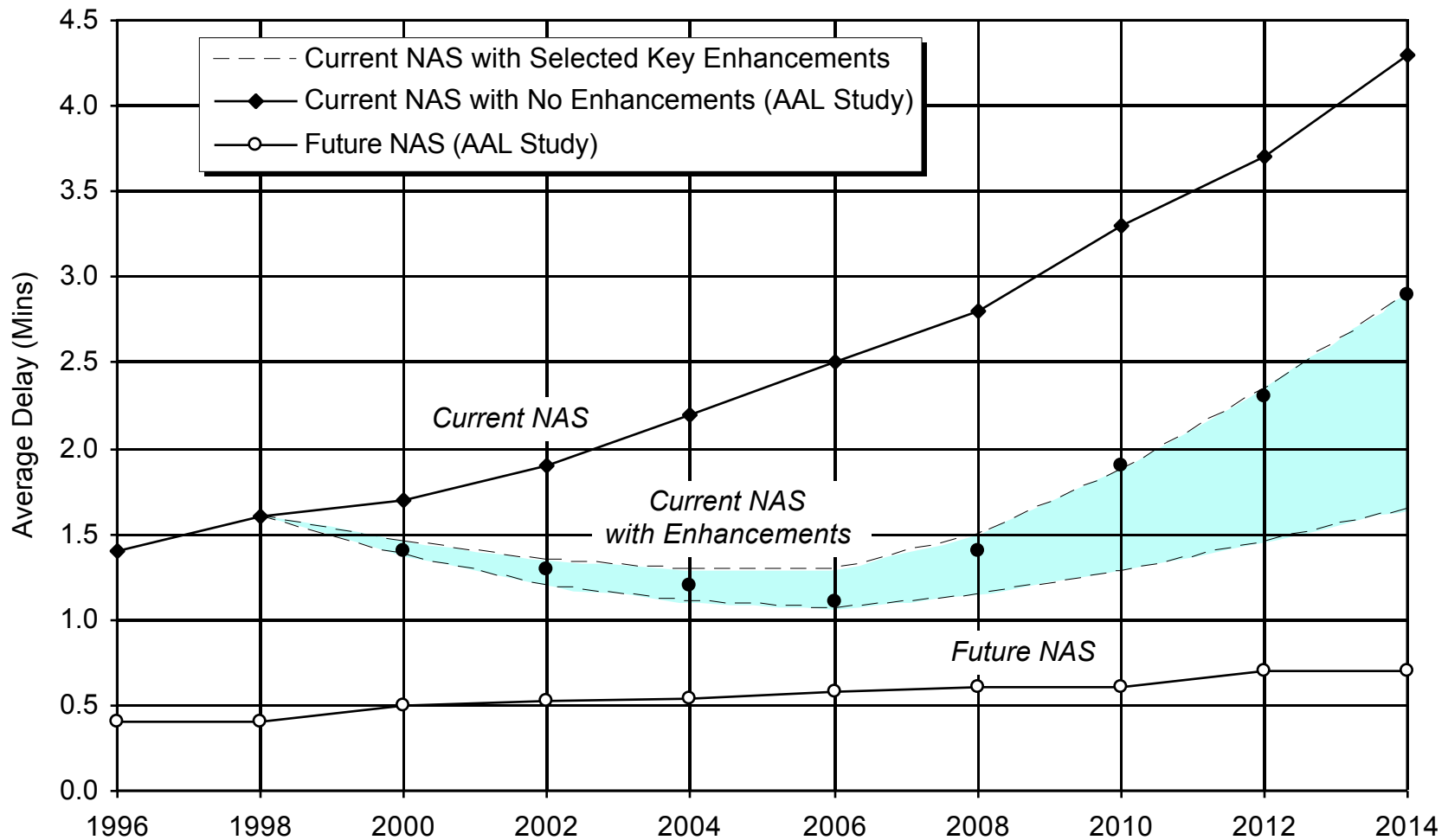
Presentation Outline

- Context of NAS modernization
- Measurement concept
- Current approach as implemented in the “*ATS Performance Plan*”
- Next steps for refinement and development

Observations from the NAS Modernization Offsite

- Users have strong unmet service expectations
- Users assert they incur costs of \$3 to \$5 billion due to ATM system inefficiency
 - » These costs are expected to increase
 - » Increased delay and lower predictability will result in major disruptions
 - » Adverse weather will exacerbate these costs
- Recent efforts focus on specific NAS improvements

Effect of Modernization on Delay



Selected Key Factors Influencing ATS


- External

- » Users' need to control their own operations
- » Need for collaborative decision-making between FAA and users
- » ...

- Internal

- » Need for common definition and measurement of ATM performance
- » Need to shift orientation
 - from rules compliance
 - to include results achievement
- » ...

Air Traffic System Performance Measurement Effort

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- Late 1995** Work Begins
 - » Cross-organizational working groups evaluated existing measures
 - » Focus and involvement by FAA external customers – aviation system users
 - Early 1996** Initial metrics structure developed, evaluated, and baselined
 - Mid 1996** FAA Management Board acceptance of structure as the measurement framework for air traffic system performance
 - Early 1997** Outcome- and output-based measures and targets incorporated in ATS Performance Plan
 - Current** Quarterly tracking of performance against targets

Lessons Learned from Initial Evaluation of Existing Measures

- Delay *alone* is not an adequate measure of what users need and desire
- New measurement system must be multi-dimensional
 - » Different users have different expectations of the system
 - » Multiple measures give insights into operational trade-offs
 - » Trade-off information supports meaningful dialog on full range of *customer* requirements and preferences
- Three additional performance outcomes included:
 - » Predictability
 - » Flexibility
 - » Access

Predictability

Variability in Ground Movement Times



What allowances does the user have to make for variability in taxi-out times?

- Variability in time from out-of-gate to off-of-ground at major airports

Variability in En Route Times



How accurately is the user able to predict en route time?

- Variability in the difference between actual arrival time and estimated arrival time

Total System Variability



Flexibility

Scheduling



How restrictive are the ATC-preferred routes?

- Difference between ATC-preferred route and great circle weighted by use
- % of flight segments flown off ATC-preferred routes

Flight Planning



How well does the flight planning system deal with user preferences?

- Flight plan approved vs. ATC-preferred route

Operating

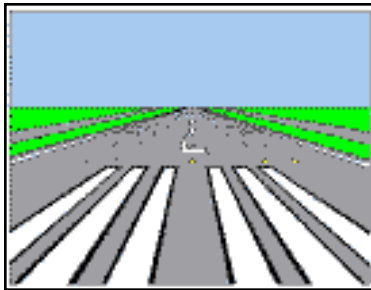


To what extent does the system allow users to operate the way they want?

- Extent of restrictions

Access

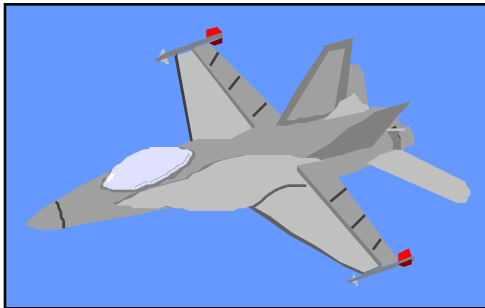
Airports



Ability of users to access airports in a variety of weather conditions

- Airports with IFR approaches
- Airports with precision approaches
- Number of GPS approaches

Airspace



Civilian utilization of Special Use Airspace when not in use by the Military

Services



Ability to access ATC services

- Radar and comm coverage
- Availability and quality of VFR services
- FSS call waiting times

ATS Performance Outcomes

- Purpose:
 - » Focus ATS on actions that will provide value to the user of the system
 - » Ensure that ATS is providing and developing the right type and level of services for its customers
- Formulated in consultation with the user community to represent the operational outcomes desired by system users
- Reflect ATS' overall performance across all services that it provides

Measures and Targets in ATS Performance Plan

<u>Outcome</u>	<u>Measures</u>	<u>Targets</u>
System Safety	Operational errors Operational deviations	Reduce by 10% by 2000 Reduce by 10% by 2000
System Delay	Equipment and volume delay rates	Reduce by 20% by 2000
System Flexibility	Extra flight-plan miles Flight segments off ATC-preferred routes	Reduce by 10% by 1999 Reduce by 80% by 1999
System Predictability	Taxi time variability	Under development
User Access	GPS approaches Call waiting time for flight services	500 per year for next 3 years Reduce by 20% by 1999
System Availability	Equipment availability	Maintain current levels

Summary and Next Steps

- Air traffic system performance outcome measures are developed and under refinement
- Outcome measures are being tracked
- Update ATS Performance Plan
- These performance goals and measures provide the foundation for improved ATS service