Global ATM Market Drivers

- Growth Capacity
- Cost of Congestion and Delay
- Systems Interoperability
- Air-Ground Integration
- Equipage
- Environmental Improvements
Air Traffic System – Current State

Current

Communications:  
- Voice-based communication  
- Primarily one-way information flow from ATC

Navigation:  
- Filed flight plan over points on the ground  
- Changes by voice command

Surveillance:  
- Based on radar technology  
- Large separation criteria

Command & Control:  
- Air Traffic Controller-centric  
- Non-integrated command decisions
Air Traffic System – Future State

**Current**

**Communications:**
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- Non-integrated command decisions

**Information Management:**
- Limited information distribution

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**Future**

**Communications:**
- Digital information for command and control
- Two-way information flow between the air and ground

**Navigation:**
- Trajectory-based operations; time addition
- Primarily satellite navigation

**Surveillance:**
- Based on satellite-enabled technology
- Optimized spacing and separation criteria

**Command & Control:**
- Distributed ATC/airplane command and control
- Integrated decision making

**Information Management:**
- Enabled, secure network-centric operations
- High degree of automated distribution
Why is Boeing in the ATM Business?

- Current air traffic management systems are constrained and limited in capacity growth
- Robust, flexible, and globally harmonized ATM systems are critical for success and continued long-term growth

2012 Current Market Outlook
- 20 years – 34,000 airplanes
  - $3.8T market

Growth versus Replacement
- Growth – 67%
- Replacement – 33%

Safe and efficient ATM systems are key enablers of future airplane sales
An Holistic Approach to ATM

- Looks at Air Traffic Management as a completely integrated, aircraft connected, shared command & control system
- Fully integrates the current and future capabilities of the aircraft
- Utilizes the best communications, navigation, and surveillance capabilities
- Considers the full breadth of the ATM system
  - Enterprise Architecture, Concept of Operations, Procedural Development, Training, and Maintenance
- Balance all stakeholder requirements to ensure each mission and objective can be accomplished – while reducing operating cost
- Creates a more robust, flexible, and seamless ATM system that allows dynamic airspace allocation for more effective & efficient use of airspace
Metrics for Success

- Improved safety and security
- Meet future requirements for civil air traffic systems
- Reduced operating costs
- Transition through mixed fleet operations
- Improved shared situational awareness between stakeholders
- Capacity and efficiency improvements
- Environmental improvements