FAA Acquisition Reform
4 Years After Implementation

Implementation Status and Next Steps

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- Implementation of Acquisition Management System (AMS)
- Next steps to improve acquisition management
Overview of Acquisition Reform: ATC Modernization Program

The modernization program is expected to cost $40 billion between fiscal years 1982 and 2004. Congress has appropriated almost $30 billion through 2000.

Modernization Appropriations (FY 1982-2000)

- Ongoing projects ($16.7) 57%
- Completed projects ($7.9) 27%
- Personnel-related costs ($2.2) 7%
- Canceled/restructured projects ($2.8) 9%

Source: FAA.
Overview of Acquisition Reform: Need for Reform

- ATC modernization program has historically experienced cost overruns, delays, and performance problems.

- FAA attributed some of the delays to burdensome federal acquisition regulations.

- In November 1995, Congress
  -- exempted FAA from most federal procurement laws
  -- directed FAA to develop and implement a new acquisition management system.
AMS, implemented in April 1996, has 3 broad goals:

- develop a procurement system to provide flexibility in selecting contractors and managing projects
- develop an investment management system that spans the entire lifecycle of an acquisition, and
- reform the organization and culture to support the procurement and investment systems.
Implementation: Procurement System

Overall, FAA

- has reduced the time it takes to award contracts by 50 percent when compared to the old system,

- is awarding a greater percentage of its contracts competitively, and

- has awarded more contracts based on best value.
Strengths:

- Focuses on projects’ total lifecycle--from “cradle to grave.”
- Institute policies and procedures for selecting and controlling projects.
- Establishes senior level group to make key decisions about need for investments.
- Establishes procedures for identifying critical agency needs, analyzing alternatives, and recommending a preferred solution.
Implementation: Investment Management System

Strengths (continued)

- Establishes process for scoring and ranking projects prior to selecting those that will receive funding.

Weaknesses

- Provides limited oversight of operational projects.
Weaknesses (continued)

• Post Implementation evaluations of completed or cancelled projects not routinely done.

• Cost data used to select and monitor projects may not be reliable.

• Implementation of some projects do not comply with critical aspects of AMS policy.
Result

- Without a complete portfolio, decisionmakers are limited in their ability to make trade-offs between supporting existing systems or investing in new ones.
- Lack of post-implementation evaluations hinders improvements.
GAO Implementation: Organizational and Cultural Reform

Strength

- Focuses on a multidisciplinary team approach to acquiring and managing projects.

Weaknesses

- Integrated team approach has not been fully implemented.
- Continued existence of “stovepipes” limit the effectiveness of the team approach.
Implementation: Organizational and Cultural Reform

Result

- Problems in the team approach may have prolonged acquisition process and contributed to some of the problems with major acquisitions.
GAO Overall Status: 4 Years After Implementation

- Procurement System → 50% reduction in the time to award contracts since AMS
- Investment Management System → Major acquisitions still experiencing problems in meeting cost, schedule, and performance parameters
- Organizational and Cultural Reform → Organization still functioning in “stovepipes” rather than as integrated teams
Next Steps to Improve Acquisition Management

- Prioritize recommendations from internal and independent evaluations
- Develop implementation plans with specific milestones
- Follow-through on plans and monitor progress
- Use flexibility provided by acquisition reform
Free Flight Phase 1
Lessons Learned During Technology Transfer
April 6, 2000

Charles Keegan, Director
FFP1 Status

- **Collaborative Decision Making (CDM)**
  - On schedule --- over 5.8 million minutes of delay avoided

- **Surface Movement Advisor (SMA)**
  - Program completed --- 3 to 5 costly diversions adverted in inclement weather

- **User Request Evaluation Tool (URET)**
  - On schedule --- 22 x 7 availability
  - 220,000 flights saved 1 mile per flight
FFP1 Status (continued)

• **Traffic Management Advisor (TMA)**
  - Fully operational at Ft. Worth Center
  - Shadowing at Minneapolis Center
  - 5% increase in DFW arrival rate

• **passive Final Approach Spacing Tool (pFAST)**
  - Fully operational at DFW
  - Hardware delivered to SCT
  - Additional 2 aircraft per rush at DFW, total operations +6 aircraft
Successful Technology Transfer
Build Cheaper Bridges --- Early

R&D Institutions
FAA System Acquisition Management
FAA Site Operations

Research
Daily Use
Production
Operations

Common Standards
Early Integration
Measures of Benefit
Financial Strategy

Free Flight Phase 1
• **Customer expectation**
  - Speed of research to market

• **Transition from R&D to Production**
  - Government/Industry alike have difficulty in this area
    • Maturity of prototype vs. basis for program
    • NAS domain system engineering
    • Setting bounds for research
  - Need Operational and Engineering Metrics to choose programs
    • Demarcate production from research
    • Maintain program control
Beyond FFP1: Deployment Process

Unmet Needs

User Needs Transfer Decision

Transfer Core Package

Research Core Pkg

CCB

Daily Use

Core Pkg.

Production Builds

NAS

R&D Contractor Implementation Support

Free Flight Phase 1
Suggestions for post FFP1 research based on FFP1 experience

- Need structure for research
  - Benefits of capability
  - Design for NAS operations integrity
  - Sound engineering and system engineering
    - Extensibility and Portability
    - Spiral development
    - Integrated vs. distributed
  - Operational impact of functionality
  - Operational procedures
• **Post FFP1 capability development**
  
  - Establish processes, standards, and program decision criteria for R & D
  
  - Manage site and customer community expectations
  
  - Ensure inter-operability with NAS capabilities
  
  - Incorporate AT and AF requirements

(continued on next slide)
Post FFP1 capability development (continued)

- Conduct concept proofing and operational validation in the field
  - Evolutionary development to incorporate operational inputs
  - Progress in Daily Use operation

- Conduct effective technology transfer
  - Maximize reuse from research to production

- Assess benefits and affordability of new capability
Expediting The Implementation of Air Traffic Management System Improvements

“A Boeing Perspective on Complex Project Management Applicable to the National Airspace System”

National Academy of Sciences
Technical Review Board
Washington, D.C.

Timothy D. Fehr
Vice President
Boeing Phantom Works

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Current ATC Environment

Navigation
Ground based Navaids

Communication
Voice

Surveillance
Radar

ATM
Future CNS/ATM Environment

Navigation Satellites
- GPS Satellite
- GLONASS Satellite
- ADS-B

Communication Satellite
- ADS C/PDLC AOC
- WAAS

Surveillance
- Airline Dispatch
- ATM EATCHIP
- LAAS

ATM
- Telecommunications Network
- HFDL
- VHF
- GES

Telecommunications Network
- ADS C/PDLC AOC
What’s the issue? - Transition

A Miracle Occurs

Current ATC Environment

Future CNS/ATM Environment
Transition
(in the absence of a miracle)
Means We Need A Plan and Commitment to Execute the Plan

Vision

- Culture
- People
- Business Realities

Plan

Act

Check

Do
Developing the Plan

• Develop a Shared Vision of what success would look like
• Understand the starting point
  • Culture - characteristics and constraints
  • People - capability and capacity, limitations
  • Business Realities - stakeholder needs, resources constraints, overarching principles and themes
• Develop a portfolio of proposals/projects
  • Situation  | Target   | Proposal
  • Multiple alternatives per situation/target
• Develop the lens (evaluation Criteria) for evaluation of alternatives
  • Benefit/value  | Investment  | Risk   | Probability of success
• Evaluate the alternatives, rank order the proposals/projects
• Select the preferred set of projects
• Schedule the projects
• Apply constraints, reschedule the projects
• Test Probable Outcomes Relative to Vision, if acceptable, everyone signs the “Plan”
Executing (Doing) the Plan

- Commit the resources
- Emplace initial resources
- Set up the teams
  - Project teams A, B, C . . .
  - Analysis and integration team (A&IT or “SPO”)
  - Thrust leader; project team leaders
  - Multi-disciplinary, customer representation, supplier participation
- Develop the detailed (tier 4 or 5) plans
- Identify the risks and risk mitigation activities
- Agree on the critical path and integrated network of activities
- Agree on the key metrics (critical few performance measures, including earned value)
- Implement the plan
- Perform -- perform -- perform
Checking on Execution of the Plan

- Weekly reporting (schedule achievement, cost expended, issues, areas of concern, top project problems)

- Weekly project reviews (take corrective action)

- Monthly reporting (technical achievements, schedule performance indexes, cost performance indexes, earned value, issues, areas of concern, top project and thrust problems)

- Monthly project reviews (with A&IT)

- Monthly thrust reviews (with responsible executive and customer representatives)

- Quarterly thrust reviews and diagnosis (with executive leadership team)
Acting on Difficulties in Execution of the Plan

- Weekly project reviews
  - Internal project assistance, work-arounds, minor relief
  - External expertise, supplier assistance, corrective action team

- Monthly project reviews
  - Cross-project assistance, revised interface agreements
  - External assistance, significant work-arounds, scheduled overtime
  - Change request, apply budget from reserve, re-training

- Quarterly thrust review
  - Personnel change, major work-around, major re-plan
  - Mandatory overtime, capital investment, task force
  - Alternative source, second source, major change proposal
So Where Do We Start?
The Vision

- National Air Space System -- 2016
  - Safety -- accident rate <0.5 per million aircraft departures
    (Goal -- zero fatal accidents)
  
  - Capacity -- can handle a worldwide, jet transport fleet of 30,000 aircraft with average delays in the NAS of <1.0 minute per flight
    (Goal -- the average delay in the NAS never exceeds 2.0 minutes; implication -- we must sustain the system while we modernize)

- Efficiency -- the cost to operate and maintain the NAS is <500,000 per jet transport in the world fleet (in year 2000 $); alternatively, the cost to operate and maintain the NAS is < 1 cent per passenger mile
EXPEDITING ATM IMPROVEMENTS

- Oversight
- Pyramid
- Ownership and Privacy
- Corporate Cohesion and Sign Up
EXPEDITING ATM IMPROVEMENTS

- False Premise - The Requirements Are Known
- Development in a Procurement Straight Jacket
- A Learning Experience (Front End/Back End)
- Big Isn’t Beautiful
- Don’t Forget the Problem
- Inside Capability vs Outside
- Standard Hardware & NDI
- Do Something - It’s a Scrum
- It’s a Challenge
Time is Important

Results Count

Otherwise Nothing is Cost Beneficial And No Budget Is Big Enough
Training & Procedures

Gradual vs Big Bang Introduction

Involve Stakeholders