

Pilot Programs Accelerate Insertion of Homeland Security Technology

NDIA 21st Annual National T&E Forum

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March 8, 2005



Transportation
Security
Administration

Office of Security Technology

Outline

Introduction

Background

Operational Integration Pilot Programs

Airport Access Control Pilot Program (AACPP)

Future Joint Pilot Programs

National Safe Skies Alliance Pilot Programs

UAV Pilot Programs

Industry Pilot Programs

Summary



Department of Homeland Security

Vision

Preserving our freedoms, protecting America... we
secure our homeland

Mission

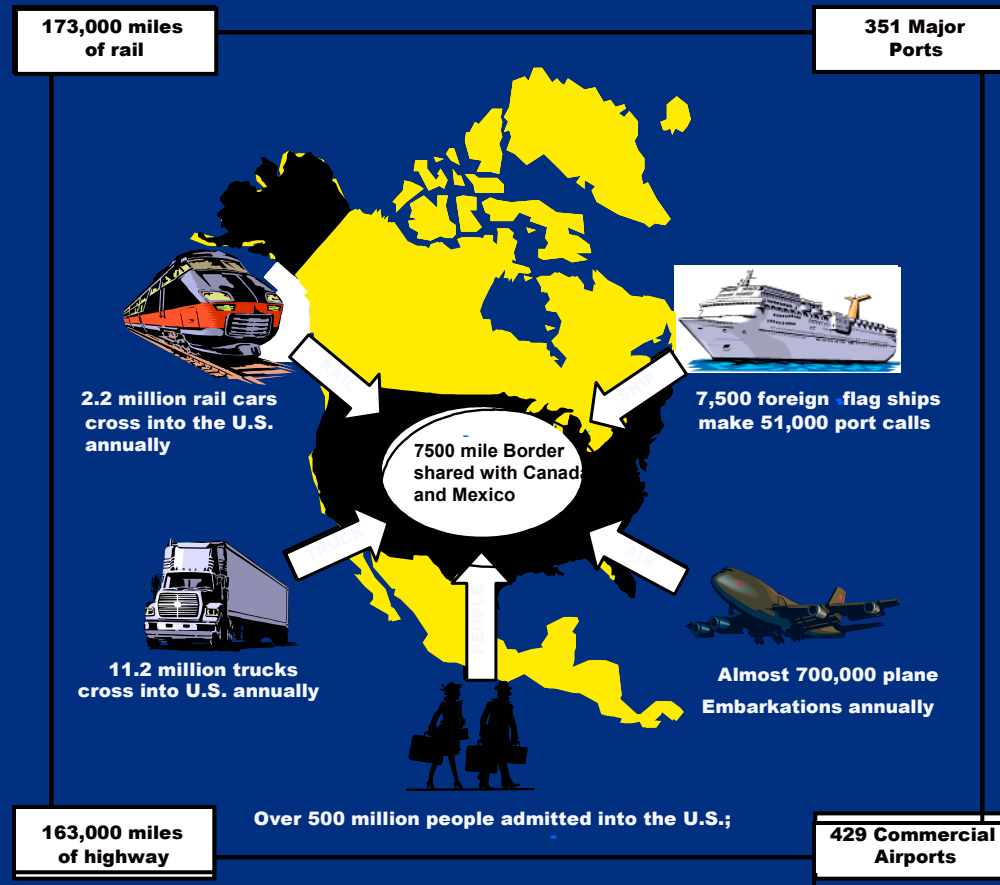
“lead the unified national effort to secure America”
“prevent and deter terrorist attacks”
“promote the free flow of commerce”

TSA Responsibility
Transportation Security



Transportation
Security
Administration

Transportation Security Challenges



Note: Mexico Border 2004 - 1.1 million illegal immigrant apprehensions



Current Condition

- Country is engaged in manifold counterterrorist activity.
- Focus is on commercial aviation security.
- Terror fighters need technology now.
- Requirements do not need extensive documentation.
- Requirements are numerous and beyond available budget.
- Technology-transfer opportunities are many.
- Industry partners are willing to share technology T&E costs.



Commercial Airport Axiom

“If you see one airport
you have seen one airport!”



Security Incident Chronology

- 1975 – Skyjackings Start Technology Insertion.
- 1979 – Takeover of the American Embassy in Iran.
- 1983 – Bombing of Marine Barracks in Beirut
- 1988 – Loss of Pan Am 103 over Scotland
- 1991 – First Gulf War
- 1993 – First World Trade Center Bombing
- 1995 – Planned Bombing of Multiple US Flag Carriers
- 1996 – Loss of TWA 800 (initially a possible terrorist concern)
- 2001 – 9/11 Homeland Attacks



Site of Many Pilot Programs



Transportation Security Laboratory
Atlantic City, New Jersey

World Airport Security Pilot Programs*

August 1995

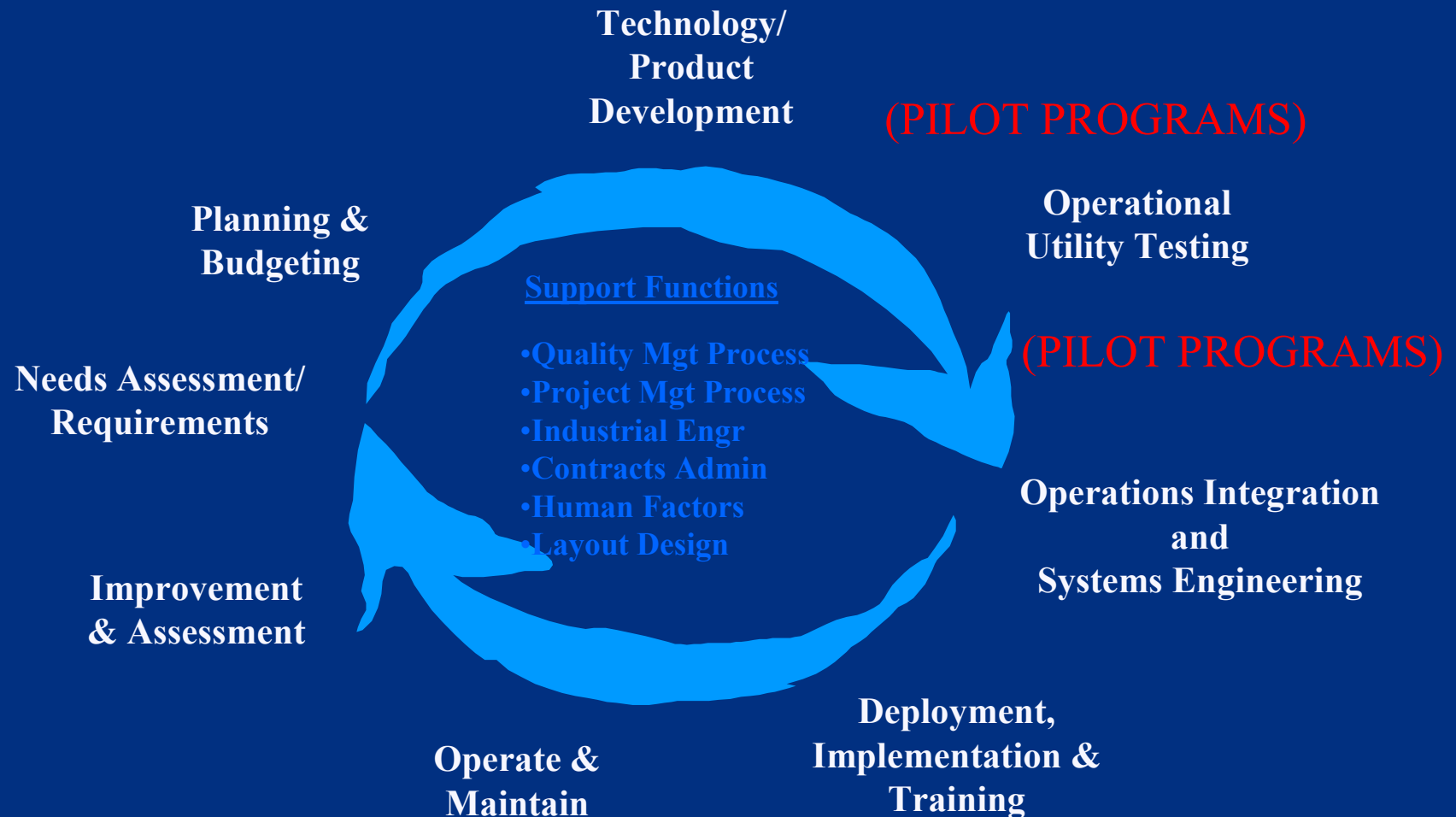
Countries: 1. Germany, 2. UK, 3. Italy, 4. Belgium, 5. Israel, 6. Saudi Arabia, 7. USA, 8. China, 9. Japan, 10. Sweden, 11. Spain, 12. Holland, 13. Gulf States, 14. Malaysia, 15. Hong Kong, 16. Singapore, 17. Korea, 18. Canada, 19. Taiwan, 20. India, 21. Austria, 22. Indonesia, 23. France, 24. Switzerland

US Technologies: 1. EGIS, 2. CTX, 3. VIVID, 4. EG&G *From Dr. Etter Report

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | |
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Technology Insertion Life Cycle



Pilot Program Measures of Performance

Operational Effectiveness

Representative personnel,
Operational environment,
Mission Accomplishment.
Need for Configuration Control

Operational Suitability

Degree product satisfies:
R.M.A.,
Compatibility,
Transportability,
Interoperability,
Safety,
Human factors,
Documentation,
TSA maintenance,
Certification criteria,
Training Effectiveness.



Operational Integration Pilot Testing

FY 04 & FY 05

Checked Baggage = 3 programs

Checkpoint = 15 programs

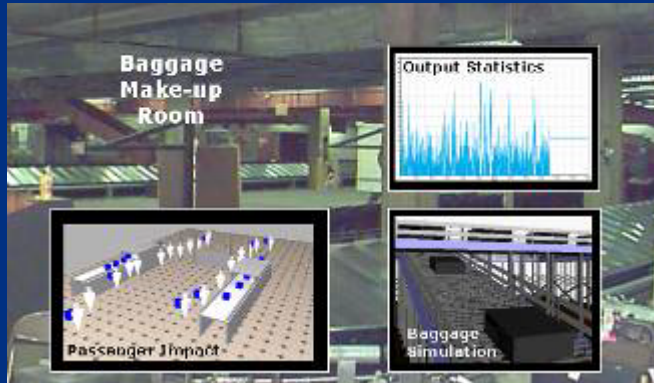
Cargo = 7 programs

Access Control = 14 programs

total 39 Pilot Programs



Checked Baggage



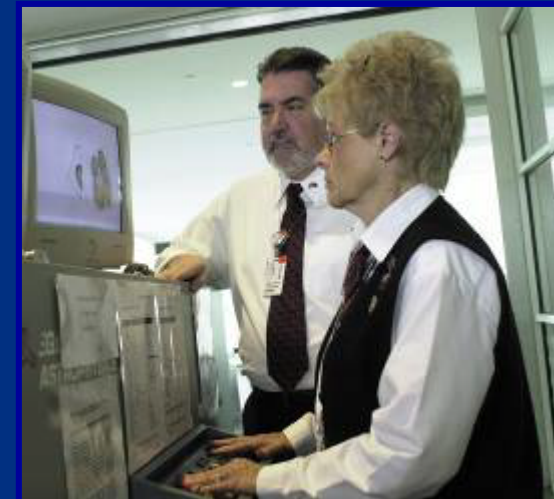
System Design



System RMA @ SOC



Imaging Technologies



Human Factors



Airport Access Control Pilot Program

“No fewer than 20 participating airports”

Aviation and Transportation Security Act, ATSA, (PL 107-71)

- Technologies include:
 - Biometric identification devices.
 - Intrusion surveillance and tracking equipment.
 - Portal control systems.
 - Tailgating, piggybacking, and pass back countermeasures.
 - Perimeter control systems.
 - Vehicle identification
 - Fingerprint systems



Access Controls



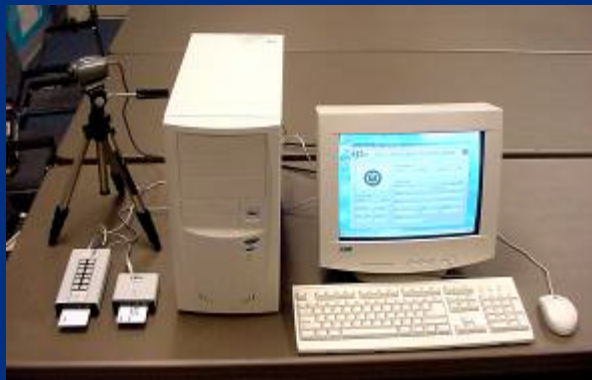
Biometrics



CCTV & C4I



Personnel Portals



Smart Cards



Perimeter Protection



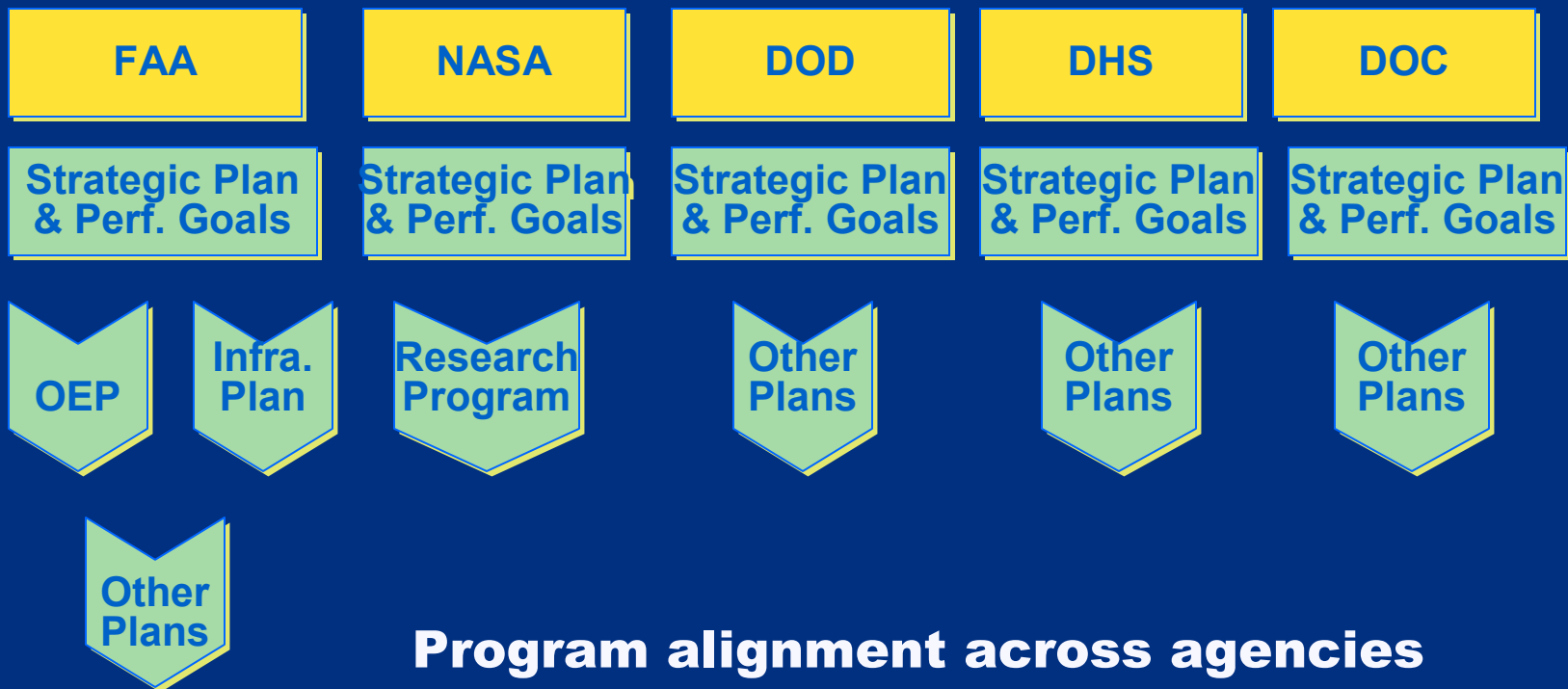
Joint Pilot Programs

- Numerous National and International
- Technical Support Working Group (TSWG)
- Next Generation Air Transportation System
 - Public Law 108-176 Sections 709 & 710 – 2003
 - Integrated Plan for NGATS to Congress – December 2004
 - Program Alignment - Joint Planning and Development Office
 - www.jpdo.aero



Senior Policy Committee

Joint Planning and Development Office (JPDO)



Program alignment across agencies includes joint pilot programs



Pilot Programs Needed to Help Meet NGATS Metrics

- Reduce aviation system costs by 25%.
- Create 100's of thousands of new jobs.
- Provide three times the current capacity.
- Meet future air transportation demand.
- Reduce curb-to-curb transit time 30%.
- Limit passenger time in airport to less than 30 minutes.
- 95% of aircraft arrivals & departures to be on-time.
- Seamless security with other aviation operations.
- Maintain aviation as safest mode of travel.
- Retain role as aviation world leader.



NGATS IPTs For Joint Pilot Opportunities

- 1. Develop Airport Infrastructure to Meet Future Demand IPT,
Lead: Dennis E. Roberts, FAA.
- 2. Establish Comprehensive Proactive Safety Management IPT,
Lead: Dorenda Baker, FAA.
- 3. Environmental Protection with Sustained Aviation Growth IPT,
Lead: Carl E. Burleson, FAA.
- 4. Harmonize Equipage and Operations Globally IPT,
Lead: Jack Howell, FAA.
- 5. Establish Effective Security without Limiting Mobility IPT,
Lead: Susan Hallowell, DHS
- 6. Establish User Specific Situational Awareness IPT,
Lead: Dave Rhodes, DOD.
- 7. Develop Capability to Reduce Weather Impacts IPT,
Lead: Mark J. Andrews, DOC.
- 8. Establish an Agile Air Traffic System IPT
Lead: Douglas Arbuckle, NASA.



National Safe Skies Alliance

- **Not-for-Profit 501(c)3 Corporation**
- **Founded in 1997**
- **Industry Based, 70 Member Alliance**
- **Facilities: Knoxville, TN; DOD Secret**
- **Supports TSA OTE & Pilot Programs**
- **www.sskies.org**



National Safe Skies Alliance OTE & Pilot Program Test Sites



DHS UAV Surveillance Pilot Program Opportunities

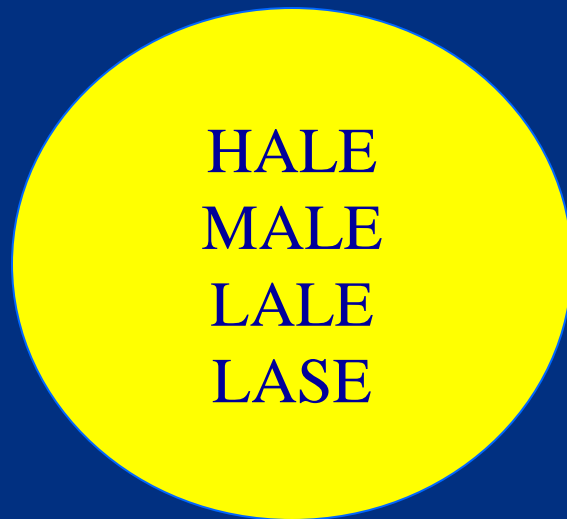
- Coast Guard Areas
- Border Patrol Areas
- Oil Fields and Pipe Lines
- Power Facilities, Transmission Lines and Grids
- Security Sensitive Events and Facilities
- Airports, Seaports and Land Transportation Hubs
- Transportation Conveyances
- Other



Accelerating the UAV Standard will Accelerate Technology Insertion

DHS UAV Types

Standards Developers



Cooperative Approach



DHS UAV Pilot Programs

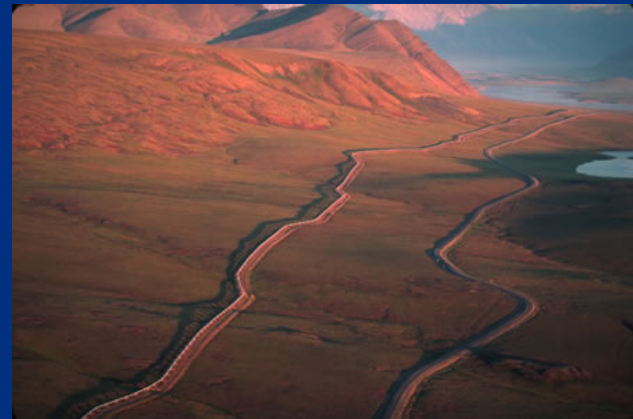
- August 2002 - CG R&D Sentry UAV Demo (Galveston)
- August 2003 - CBP/JTF-6 UAV Missions (Zapata, TX.)
- October 2003 - CBP UAV Demos (Fort Huachuca)
- November 2003 - ICE Operation Desert Safeguard,
Predator B UA (AZ Border)
- November 2003/July 2004 - USCG UAV Alaska Missions
& TSA Pipeline, Altair UAV (Predator B+)
- June 2004 - February 2005 - Arizona Border Control
Initiative (ABCi) with Hermes and Hunter UAVs



TSA Oil Pipeline UAV Pilot Program



Ground View



UAV Broad Angle View

52 Inch Pipe



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Industry (Boeing, et al) Airport Pilot Program

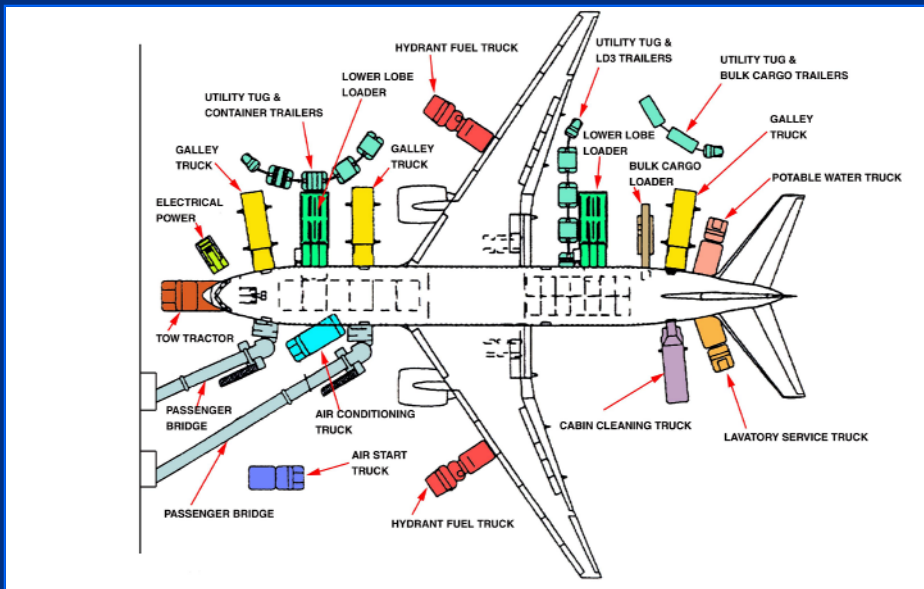
- Electric Motor integrated into Boeing 767 nose wheel,
- Aircraft lands, clears runway, shuts down main engines
- Auto-return to terminal using nose wheel powered by APU
- Passengers disembark via terminal jet way
- All other loading and unloading of aircraft is automated

Resulting in:

- a. Improved security due to elimination of vehicles/personnel
- b. Reduced ramp clutter and its effects improving safety/cost
- c. Decreased fuel use and emissions
- d. Streamlined transport of passengers & cargo

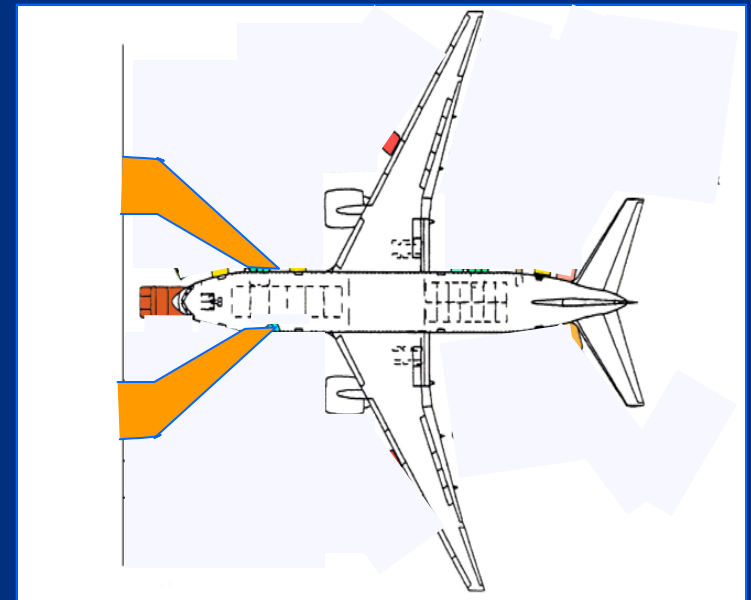


What's Possible



NOW
*Gate Congestion
 Increased Risk of Damage
 to Air Craft
 Decreased Security*

The Vision
*Clean Gate Area
 Reduced Risk of Damage
 to Air Craft
 Increased Security*



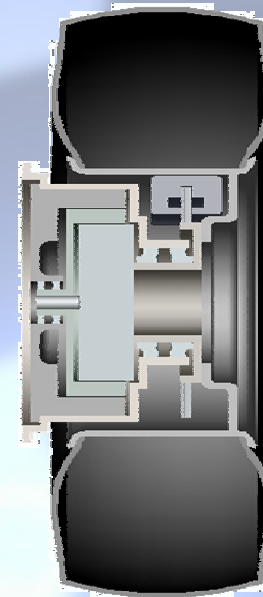
REVOLUTIONARY GROUND OPERATIONS



*Vehicle free gate – No transportation workers on the ramp.
Secure and fully automated utility connections for:
Fuel, electricity, conditioned air, water and waste.*

The Powered Wheel-In-Hub Motor

- Initial development Federally funded for commercial and military applications
- Currently used in transit service
- Emerging use in military vehicles, controls and rough terrain durability issues remain
- Torque density adequate for proof of principle
- Further system development needed to meet aircraft integration challenges (safety, certification, electrical power, thermal, weight, efficiency, EMI/RFI, control)



KAMAN



Pilot T&E Program Outcomes

| <u>Category</u> | <u>Pilot Results</u> | <u>Outcome</u> |
|-----------------|----------------------|----------------------------|
| 1 | Very High | Acquisition & deployment |
| 2 | High | Maintain industrial Base |
| 3 | Good | Near term contingency plan |
| 4 | Fair | Long term contingency plan |
| 5 | Poor | Discard |



Conclusions

- TSA has a wide array of technology pilot programs.
- These programs have been very productive, providing:
 - Valid assessments of operational effectiveness
 - Excellent evaluations of operational suitability.
 - Credible estimates of acquisition and operating costs.
 - Noteworthy support for international purchases of US technology.
 - Accelerated insertion of vital technology for Homeland Security.
 - Prompt elimination of technology initiatives that are unacceptable.
 - Early awareness of public concerns for civil liberties.
 - Timely understanding of human factors and training requirements.
 - Accreditation of technology for possible future use based on threat.
 - Valid basis and appropriate data for acquisition decisions.



Summary

- Security requirements are more difficult to prioritize.
- Resources are not available to invest in all security needs.
- Pilot programs are ideal to determine best technologies.
- Pilot programs aid in determining industrial base needs.
- Security technology insertion differs from that of DOD.
- Security technology uses Surge and Mobilization approach.
- Contingent strategic planning accelerates technology insertion



Backup Material



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Department of Homeland Security (DHS)

Border & Transportation
Security
(BTS)

Transportation
Security Administration
(TSA)

National Transportation System Security Plan

Rail

Maritime

Transit

Pipeline

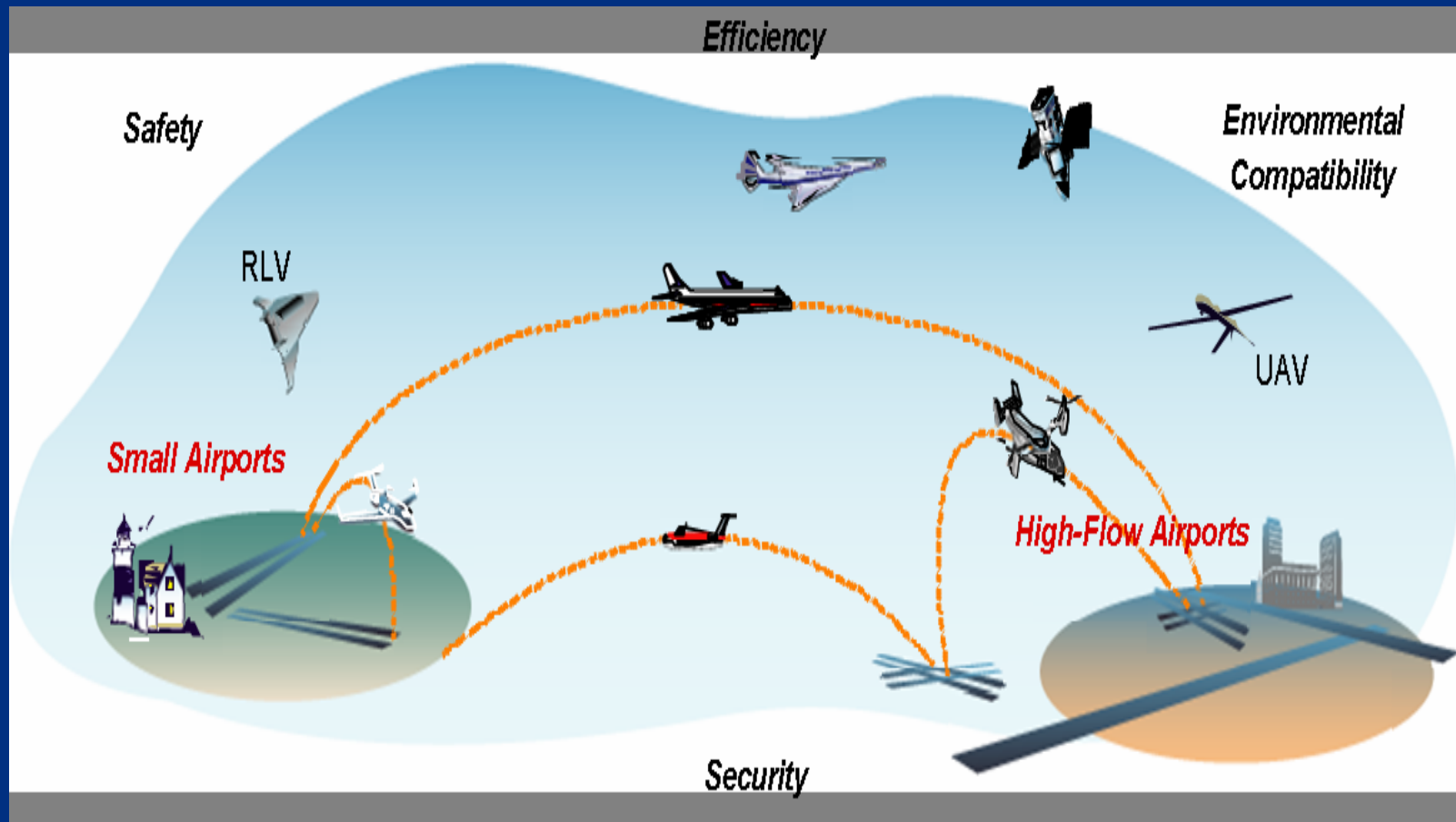
Aviation

Highway

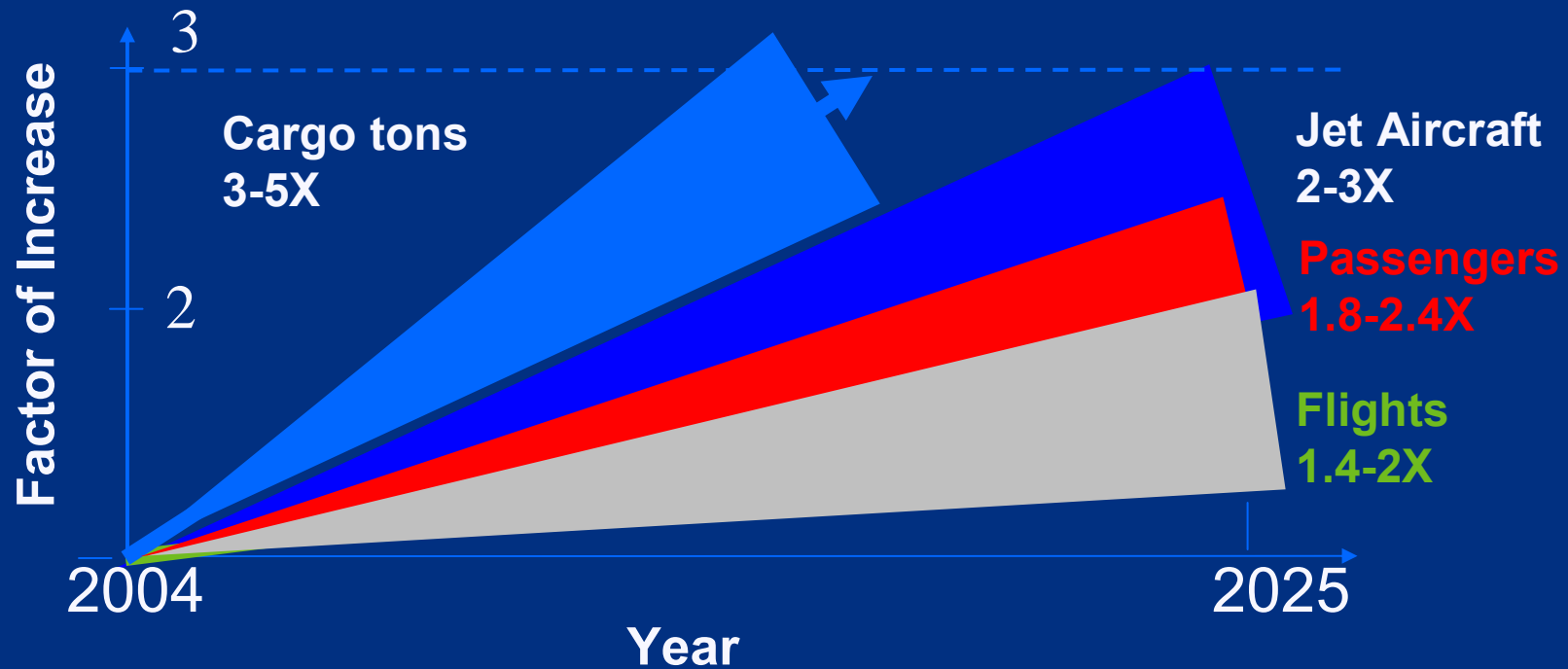


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Scope



Aviation Commerce Forecast Growth



NGATS Integrated Plan Security Objectives

- Ensure security efficiently serves demand.
- Tailor strategies to threats, balancing costs and privacy issues.
- Mitigate new and varied threats.
- Ensure traveler and shipper confidence in system security.



DHS Security IPT Potential Joint Pilot Programs with Other IPTs

- **Enable User-specific Situational Awareness**
 - Coordinated National response to threats/incidents
- **Establish an Agile Air Traffic System**
 - Procedural integration – Information flows
 - UAV access to civilian airspace
 - Reduce impact on air traffic flows of TFRs and other security measures
 - Protection of the ATM infrastructure from attack or malicious intent
- **Harmonize Equipage and Operations Globally**
 - International security standards
 - International information exchange (threats and operational data)
- **Develop Airport Infrastructure to Meet Future Demand**
 - Protection of Infrastructure
 - Airport Construction guidelines to enable embedded security
- **Establish a Comprehensive Proactive Safety Management Approach**
 - Integrated approach for safety and security
 - Regulatory mechanism



SECURITY TECHNOLOGY DEVELOPMENT FRAMEWORK



Industry Partners



Transportation

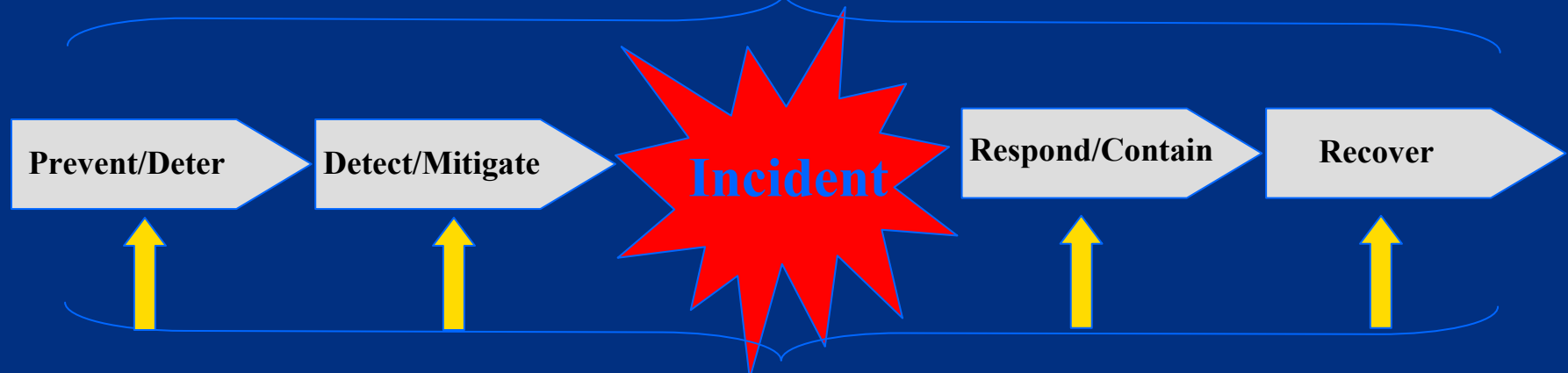


International Partners



Technology

Domain Awareness



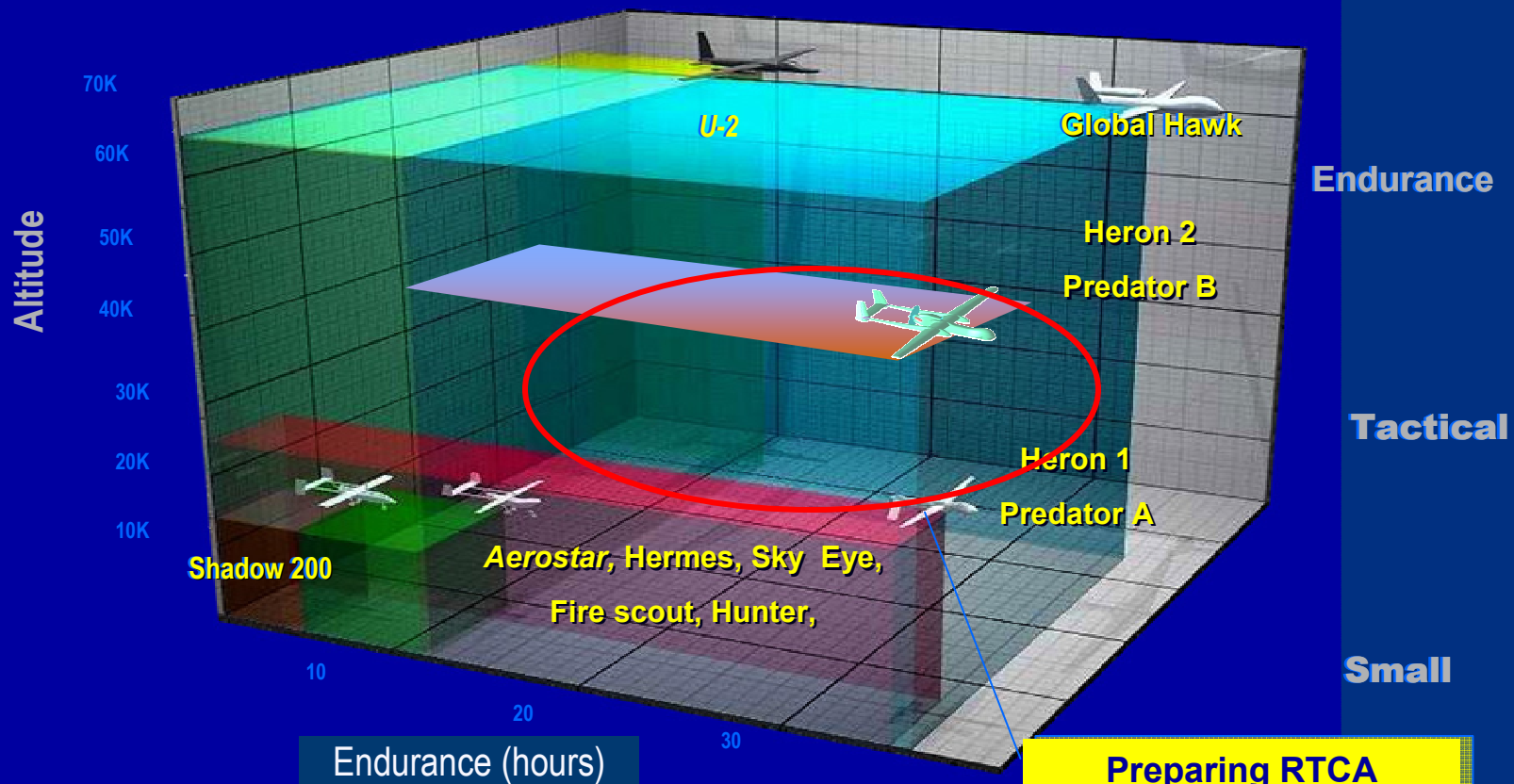
Technology Development Opportunities



A Challenging Balance



UAV Types, Operating Altitudes & Endurance Capabilities



Preparing RTCA standard for certification of DHS National UAV Performance Regime



Evolution of the NGATS (Notional)

