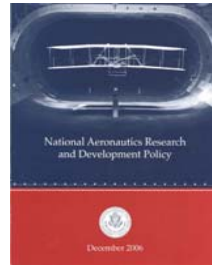# National Aeronautics Research and Development Plan

Chapter 5: Security

Public Outreach

Draft

Chapter 5: Security

Aircraft
Airspace Security
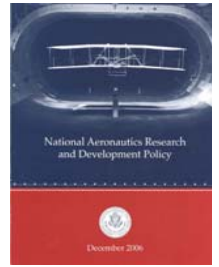Air Traffic Management
Airport Physical Security
Aviation Personnel Security
Passenger Screening
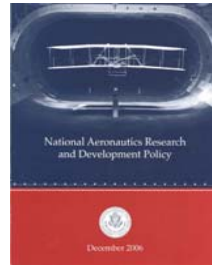Cargo Screening

Chapter 5: Security
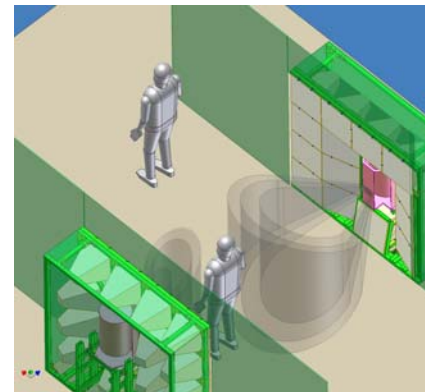
Representative Technologies

Based on the DHS Science and Technology Integrated Product Team process

Focus: Determine existing Technology Gaps in related Security focus areas.

# Explosives Prevention: Representative Technology Needs

- Standoff detection on persons (portable solutions) *(Explosives Division)*

- System solution for detection in baggage (checked & carried) *(Explosives Division)*

- Capability to detect VBIED / large threat mass (container, trailer, ship, vessel, car, rail) *(Explosives Division)*

- Capability to detect homemade or novel explosives *(Explosives Division)*

- Capability to assess, render safe, and neutralize explosive threats *(Explosives Division)*

- Optimize canine explosive detection capability *(Explosives Division)*

People Screening:
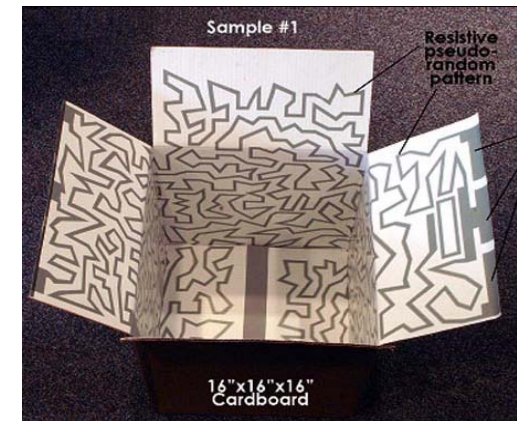# Representative Technology Needs

- Systematic collection and analysis of information related to understanding terrorist group intent to engage in violence *(Human Factors Division)*

- Non-invasive monitoring: Identifying and tracking unknown or potential threats from individuals at key checkpoints. Real-time detection of deception or hostile intent through integrated system of human and machine methods *(Human Factors Division)*

- Capability in real-time for positive verification of individual's identity utilizing multiple biometrics *(Human Factors Division)*

- Capability for secure, non-contact electronic credentials; contactless readers or remote interrogation technologies for electronic credentials *(Human Factors Division)*

- Mobile biometrics screening capabilities, to include hand-held, wireless, and secure devices *(Human Factors Division)*

- High-speed, high-fidelity ten-print capture capability *(Human Factors Division)*
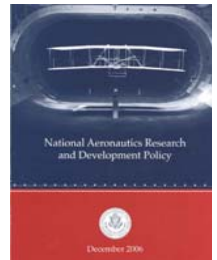
Cargo Security:
Representative Technology Needs
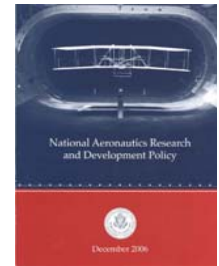
- Increased information fusion, anomaly detection, Automatic Target Recognition capability *(Borders/Maritime Division)*

- Detect and identify WMD materials and contraband *(Borders/Maritime Division)*

- Capability to screen 100% of air cargo *(Borders/Maritime Division)*

- Harden air cargo conveyances and containers *(Borders/Maritime Division)*

- Positive ID of cargo & detection of intrusion or unauthorized access *(Borders/Maritime Division)*

Chem/Bio Defense:
Representative Technology Needs

- Incident characterization capability for response & restoration *(Chem-Bio Division)*

- Improved ChemBio Forensic Analysis capability *(Chem-Bio Division)*

- National-scale detection architectures and strategies to address outdoor, indoor (e.g., highly trafficked transportation hubs) and critical infrastructure *(Chem-Bio Division)*

- Consequence assessments of attacks on chemical facilities and Chem Bio attacks on other critical infrastructure *(Chem-Bio Division)*

- Handheld rapid biological and chemical detection systems *(Chem-Bio Division)*

- Detection paradigms and systems for enhanced, emerging and novel biological threats *(Chem-Bio Division)*

Cyber Security:
Representative Technology Needs
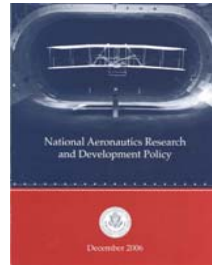
- Comprehensive next-generation network models *(C2I Division)*

- Composable and scalable secure systems *(C2I Division)*

- Technologies and standards for managing identities, rights and authorities used in an organization's networks *(C2I Division)*

- Information system insider threat detection models and mitigation technologies *(C2I Division)*

- Analytical techniques for security across the IT system engineering life-cycle *(C2I Division)*

Border Security:
# Representative Technology Needs
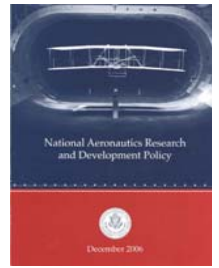
- Non-lethal compliance measures for vehicles, vessels, or aircraft allowing for safe interdiction by law enforcement personnel *(Borders/Maritime Division Lead)*

- Non-destructive tools that allow for the inspection of hidden or closed compartments to find contraband or security threats *(Borders/Maritime Division Lead)*

- Ability to non-intrusively determine the intent of subjects during questioning *(Human Factors Division)*

Information Sharing:
Representative Technology Needs

- Improved real-time data sharing of law enforcement information *(C2I Division)*

- Management of user identities, rights and authorities *(C2I Division)*

- Information sharing within/across sectors on terrorist threats *(C2I Division)*

- Automated, dynamic, real-time data processing and visualization capability *(C2I Division)*

- Sensor fusion between Law Enforcement and Intelligence Partners *(C2I Division)*

Homeland Security

Infrastructure Protection: Representative Technology Needs
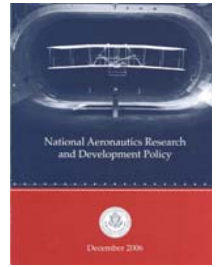
- Analytical tools to quantify interdependencies and cascading consequences as disruptions occur across critical infrastructure sectors *(IP/Geophysical Division)*

- Effective and affordable blast analysis and protection for critical infrastructure; improved understanding of blast failure mechanisms and protection measures for the most vital CI/KR *(IP/Geophysical Division)*

- Advanced, automated and affordable monitoring and surveillance technologies *(C2I Division)*