



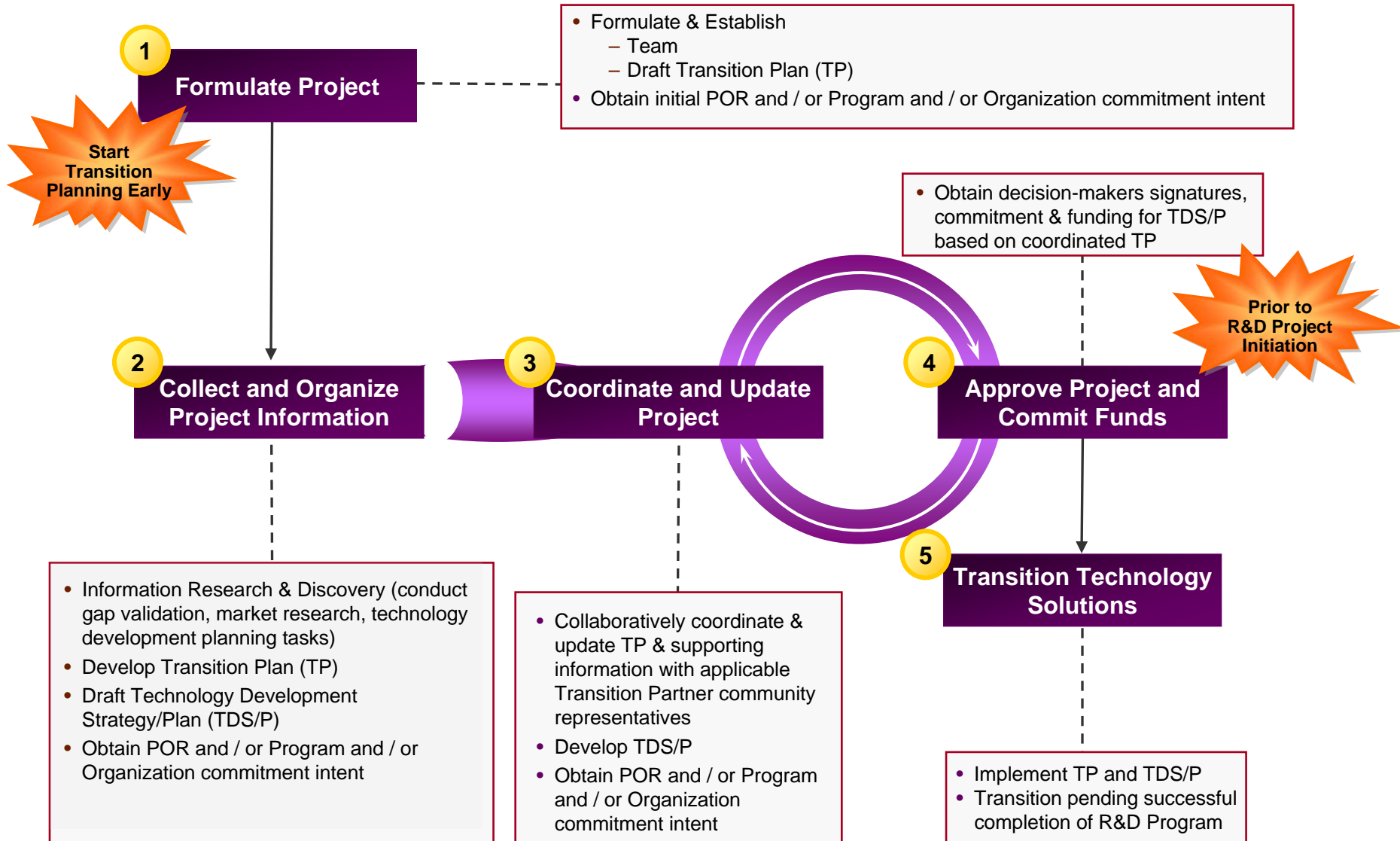
# Homeland Security

## DHS S&T Maritime Technology Program

November 19, 2008



- **Initiated in FY09 to develop and transition capabilities that have been successfully demonstrated to improve the security of our maritime borders**
- **Initially, the program's objectives are to address sensor and surveillance technology deficiencies associated with key Homeland Security maritime risks**
- **Plan to initiate several sensor and surveillance technology development and demonstration projects in FY10**





- **Approach for identifying sensor and surveillance technology deficiencies associated with key Homeland Security maritime risks**
  - Step 1: Use available risk assessments to characterize all hazards risks including deliberate events, natural phenomena, and accidents
  - Step 2: Identify key maritime risk scenario categories
  - Step 3: Identify key maritime risk attack modes and target categories relevant to the key maritime risk scenario categories
  - Step 4: Identify the dominant maritime risk attack mode – specific target pairs
  - Step 5: Use SMEs to identify activities associated with the detect, decide, engage, and defeat actions and the roles of these activities
  - Step 6: Determine whether there is a sensor or surveillance technology that is relied upon in the identified key maritime risk scenarios in detect, decide, engage, and defeat actions and evaluate ...



- **Approach for identifying sensor and surveillance technology deficiencies associated with key Homeland Security maritime risks (continued):**
  - Step 7: Use SMEs to identify the effectiveness of each sensor and surveillance technology and whether more effective sensor and surveillance technology would make a meaningful difference in the relevant maritime risk scenario
  - Step 8: If improving sensor and surveillance performance through further technology development will make a meaningful difference in mission effectiveness in the relevant maritime risk scenario then determine specifically what improvements will correct the technology shortfall and provide the needed capability and mission effectiveness
  - Step 9: If no sensor and / or surveillance technologies are identified as existing then identify relevant sensor and surveillance technology that could provide the needed capability and mission effectiveness



### **Product Description:**

- Delivers technologies that improve maritime security on inland waterways
- Provides advanced law enforcement capabilities, enhanced ability to protect critical infrastructure and key resources, and improved incident management along inland waterways
  
- Deliverable Type: New Technology
- TRL at Start: 5                      TRL at Transition: 7

### **Planned Demos/Deliverables/Transitions:**

- Deliverable 1: Gap Analysis Report – Q1FY09
- Deliverable 2: Market Research & Analysis Report – Q3FY09
- Deliverable 3: Technology Development Strategy – Q3FY09
- Deliverable 4: Technology Development and Demonstration Plan – Q3FY09
- Demos: Technology Development and Demonstration of Candidate Systems - Q1FY10-Q1FY12
- Deliverable 5: Final Report – Q2FY12
- Transition Path: DHS Component
- T&E Level: B



### **Homeland Security Payoff:**

- Situational Awareness for Command Centers
- Security of critical infrastructure sites and key resources on inland waterways
- Ability to track dangerous cargos on rivers and inland waterways
- Advanced apprehension and enforcement capabilities on inland waterways

Customers: USCG

TTA Status: Signed



Delivers technology that will service and protect over 12,000 miles of inland and intracoastal waterways. IWMSS technology will enable safe commerce and transportation as well as increased protection of the nations critical infrastructure sites.



● Tracking of Certain Dangerous Cargo Barges on Inland Rivers

- Hazardous Cargo
- Anhydrous Ammonia
- Ammonium Nitrate
- Chlorine
- Propylene Oxide

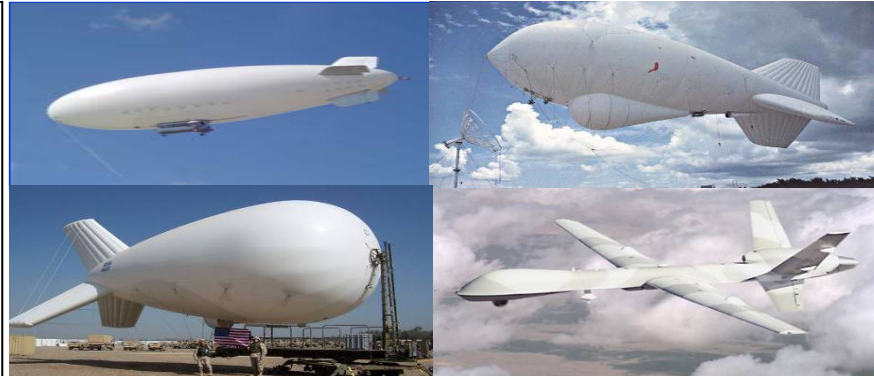
● Critical Infrastructure Riverside:

- 11 Nuclear Power Plants
- 53 Conventional Power Plants
- 7 Petroleum Refineries
- 236 Bridges and Tunnels



### **Product Description:**

- Capability to detect, track and classify vessel traffic 12-120 miles offshore
- Detection, tracking, and classification of vessels in this zone would allow CG forces cueing time to investigate suspicious vessels or anomalous behavior before the vessel is in the port
- Deliverable Type: New Technology
- TRL at Start: 5                      TRL at Transition: 7



### **Recommendations:**

- Deliverable 1: Gap Analysis Report - Q4FY09
- Deliverable 2: Market Research & Analysis Report - Q4FY09
- Deliverable 3: Technology Development Strategy - Q4FY09
- Deliverable 4: Technology Development and Demonstration Plan - Q2FY10
- Demos: Technology Development and Demonstration of Candidate Systems - Q4FY10-FY14
- Deliverable 5: Final Report - Q4FY14
- Transition Path: DHS Component
- T&E Level: B

### **Homeland Security Payoff:**

- Provides capability for guarding U.S. coastal approaches using persistent, wide-area airborne surveillance

Customers: USCG, CBP  
TTA Status: Draft





- **USCG's number one priority gap**
- **Previous S&T-sponsored WAS analysis resulted in technology recommendations that were not viewed as affordable**
- **Presently no affordable technology has been identified for the layer of persistent coastal surveillance coverage from 12 nm to 120 nm**
- **Surveillance in the 12nm to 120nm band is currently provided by mobile-asset mounted sensors that lack persistence**
- **Airborne RADAR can track multi-Targets of Interest (TOIs) but coverage is spotty and persistent tracking typically ends when the aircraft runs low on fuel**
- **Coverage from cutters is more persistent, but is extremely limited in area coverage**
- **CG desires a more effective and efficient capability (within the 12 to 120 nm offshore band) to detect, track, and acquire sensor data on small vessels, geo-reference the sensor data, and provide it, in near-real time, to analysts ashore for appropriate action**

**"What we need out of a UAS, that we don't have, is a maritime radar. Our overall goal is a very, very good maritime radar."**

**Admiral Thad William Allen, Commandant USCG**



### Product Description:

- Procure recommended hardware and/or software and implement prototype RADAR system, enhanced for harbor and 0-12 nm offshore
- Characterize RADAR performance
- Deliverable Type: New Technology
- TRL at Start: 4                      TRL at Transition: 7



### Planned Demos/Deliverables/Transitions:

- Deliverable 1: Technology Development & Demonstration Plan – Q2FY09
- Demos: Technology Development and Demonstrations – Q1FY10-Q4FY14
- Transition 2: Final Report – Q4FY14
- Transition Path: DHS Component
- T&E Level: B

### Homeland Security Payoff:

- More effective surveillance – overcome RADAR clutter issues within the harbor environment enabling operators to seamlessly detect and track small and large, offshore (far) and harbor (near) targets

Customers: USCG

TTA Status: Draft



### **Product Description:**

- Assess available or near-term technologies for tracking small boats in a port environment
- Development of candidate technologies
- Implement/evaluate prototype system/pilot
  
- Deliverable Type: New Technology
- TRL at Start: 3                      TRL at Transition: 7



### **Planned Demos/Deliverables/Transitions:**

- Deliverable 1: Market Research & Analysis Report - Q3FY09
- Deliverable 2: Technology Development Plan - Q2FY10
- Demos: Technology Development & Demos - Q3FY10-Q4FY12
- Deliverable 4: Final report – Q2FY13
  
- Transition Path: DHS Component
- T&E Level: B

### **Homeland Security Payoff:**

- Improve port security by improving situational awareness by tracking small boat activity, detecting anomalous behavior, and providing actionable information to law enforcement, enabling an effective, timely response.

Customers: USCG, CBP

TTA Status: Draft



- **DHS S&T initiated the Maritime Security Program to develop technology solutions that address key Homeland Security maritime mission risks**
- **BMD established the Sensor and Surveillance Enabling Homeland Security Capability (EHC) to address sensor and surveillance technology shortfalls**
- **The DHS S&T Maritime Security Capstone IPT established four new start efforts to address sensor and surveillance technology shortfalls**
  - Inland Waterways Maritime Security
  - Affordable Wide Area Surveillance
  - Port and Coastal Radar Improvement
  - Small Boat Harbor Surveillance
- **Currently, in process of formulating specific sensor and surveillance technology development and demonstration strategies/plans that have been successfully demonstrated to improve security for our maritime borders**



# Homeland Security

**Back-up Slides**



- **Gap Validation & Characterization**
  - This effort will identify sensor and surveillance capability gaps require technological solutions based upon a risk informed prioritization of the sensor and surveillance capability gaps and the identified technology solutions to each gap
- **Technology Roadmap Development**
  - This effort will identify technology solutions to each sensor and surveillance capability gap based upon a technology assessment and road map of sensor and surveillance technology solutions
- **Market Research & Analysis**
  - This effort will identify specific sensor and surveillance capability gap technology solutions for DHS S&T Capstone IPT approved projects
- **R&D Strategy Development**
  - This effort will develop the R&D strategy required to develop and demonstrate sensor and surveillance capability gap technology solutions for DHS S&T Capstone IPT approved projects
- **Source Selection Planning**
  - This effort will develop the contract Scope of Work (SO) required to develop and demonstrate sensor and surveillance capability gap technology solutions for DHS S&T Capstone IPT approved projects
- **Synopsis and Solicitation**
  - This effort will develop procurement requests such as Requests for Information (RFIs), Broad Area Announcements (BAAs), and Requests for Proposals (RFPs)
- **Source Selection**
  - This effort will provide technical and cost evaluation of Offerors' proposals
- **Award**
  - This effort will provide review and assessment of Offerors' subcontracting plan



- **Post Award Technology Development and Demonstration**
  - This effort will provide independent DT&E and operational demonstration and user evaluation of the contract SOW
- **Technology Transition**
  - Transition pending successful completion of the technology development and demonstration effort