CTTSO Remote Procedures Programs Brief

Ground Robotics Capabilities Conference and Exhibition
March 24,2011

Combating Terrorism Technical Support Office

CTTSO Organization

TSWG Organization

Subgroup Mission

Mission: Identify, prioritize, and execute research and development projects that satisfy mission critical needs, fill capability gaps, and **address** interagency **requirements** for advanced technologies to safely and effectively **defeat improvised terrorist devices.**

Membership:

- Department of Defense
- Department of Homeland Security
- Department of Energy
- Department of State
- Department of Justice
- Intelligence Community
- National Bomb Squad Commanders Advisory Board
- Federal, State and Local Bomb Squads

"I want to plead guilty and 100 times more" Faisal Shahzad

CTTSO Robotics

ARTS/TRAP

Micro Air Vehicle

MAARS

Land Shark

Vanguard MKII

Warrior

RUCK

BomBot

Power Hawk Integration

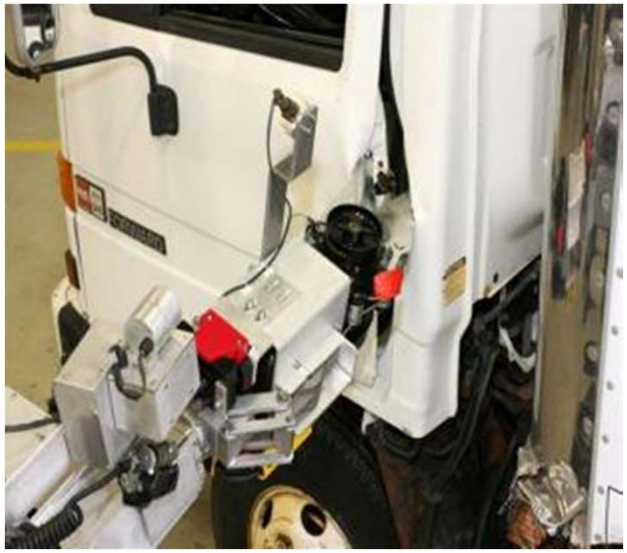
OBJECTIVE: Integrated the Power Hawk Rescue System as a Vehicle Borne IED (VBIED) access tool for onto the ANDROS F6A robotic platform

END USERS: USAF EOD, Civil Bomb Squads

DELIVERED: 8 Power Hawk Systems

SUCCESS: 113 first responder systems sold totaling **$3.39M**

PERFORMER: NORTHROP GRUMMAN Remotec



Affordable Robust Mid-Sized Unmanned Ground Vehicle

OBJECTIVE: Develop a low cost, robust, mid-sized UGV for Defense and Homeland Security app

CAPABILITIES:

- Remotely provides reconnaissance, tool delivery and disruption capabilities
- Utilizes JAUS communication architecture
- Plug and play payload deck
- Extended run time w/ generator
- Arm Reach 40” below ground
- End Cost 50K (Base Chassis)
- Uses Energid’s Actin Arm Control

END USERS: USAF EOD, Civil Bomb Squads, Customs and Border Patrol

PERFORMER: Black i

Robotic Mobility Platform (RMP 400)

OBJECTIVE: Enhance the Segway RMP 400 capabilities by integrating multiple sensors under a JAUS common architecture.

CAPABILITIES:

- Provides remote reconnaissance, sensor delivery and disruption capabilities
- Utilizes JAUS architecture
- Sensors include: Joint Chemical Agent Detector, ADM 300 Radiation Detectors, GR 135B Isotope Identifier, and the DFU 100 Dry Filter Unit, Multi-Rae Gas Detector an Ahura First Defender XLS3
- End Cost 46K (Base Chassis)

END USERS: USAF EOD, PFPA

PERFORMER:

Advanced Manipulators for VBIED

OBJECTIVE: Develop improved manipulator end effectors/grippers for robotic platforms that provide enhanced dexterity

CAPABILITIES:

- Utilizes JAUS communication architecture
- Automatic Tool Changing
- Tools carried onboard RCV
- Tools designed for VBIED Recon include:
  - Drill, Video scope, Soft Shears, Pinch Gripper, Parallel Gripper, Side Cutter
- Additional program integrates with F6A as possible upgrade path

END USERS: USAF EOD, Civil Bomb Squads, PFPA, FBI

PERFORMER: re2 NORTHROP GRUMMAN Remotec

Camera Boom

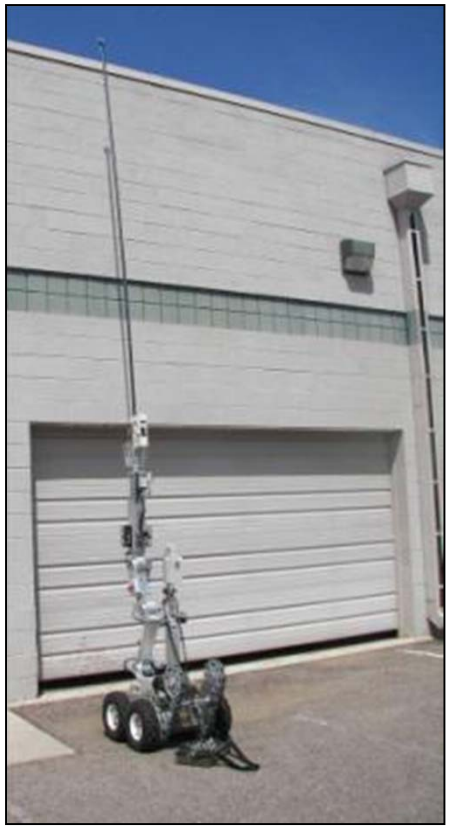
OBJECTIVE: Provide a tool to extend the reconnaissance capability of robotic platforms used by the military and public safety bomb technician community.

CAPABILITIES:

- Extend Camera reach 8 Ft Horizontal, 11 feet vertically
- Viewed through OCU
- Additional sensor payload capable

END USERS: Joint Service EOD, Civil Bomb Squads

PERFORMER:



Body Bomb Tool Kit

OBJECTIVE: Develop a set of tools that can be changed and operated remotely that address the specific threat of an explosive device attached to an individual.

CAPABILITIES:

- Totally mechanical
- Tool Changing at Crisis site
- Tools carried onboard RCV
- Tools designed for person Borne IED/IED
- Kit consist of 15 tools
- Initial installation on Andros F6A/Wolverine and Black I Land Shark

END USERS: USAF EOD, Civil Bomb Squads, PFPA, FBI

PERFORMER: Israeli National Police

Agile AWE

OBJECTIVE: Enhance development of the AWE frequency agile radio system to address the needs of military SOF and EOD personnel as well as those of the Law Enforcement SWAT and Public Safety Bomb Technician communities.

CAPABILITIES:

- The Agile AWE is a compact two radio, frequency agile, MIMO mesh router
- The Agile AWE is able to shift radio frequencies in order to find the optimal frequency for any situation
- Operating frequencies can be changed on the fly in software

- **END USERS: JSEOD**
- **PERFORMER:** NOMADIO

Advanced X-Ray Imaging Single-Sided System (AXISS)

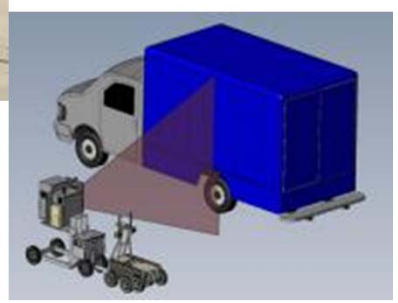
OBJECTIVE: Develop a system capable of obtaining an internal X- Ray image of the target from a single side and be deployed by a small robot.

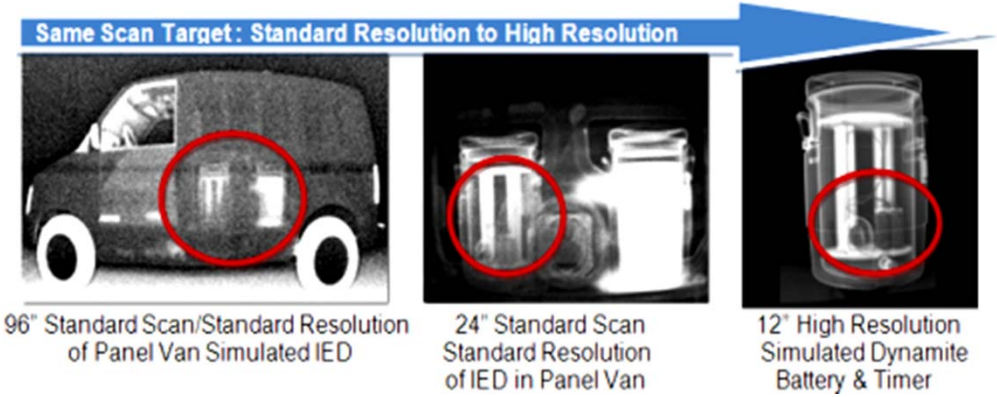
CAPABILITIES:

- Remotely employed
- Uses a scan to Backscatter X-Ray internal components
- 2 minute scan, increase for higher resolution
- Current phase integrates the robotic interface and prototype delivery

END USERS: USAF EOD, Civil Bomb Squads, PFPA, FBI

PERFORMER: AS&E





Summary

- CTTSO has a long history developing robotic solutions for various communities
- User-focused approach to IED Defeat
- Solutions for both military and civilian bomb technicians
- Leveraging interagency and international partnerships

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