

TechSolutions

Rapid-Response S&T Solutions
to immediate Fleet/Force needs
identified by the Warfighter



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Needs Driven Process

I have a
Need!

REQUIREMENT

I have an
Idea!



CAPABILITY



What is TechSolutions?



Rapid-response S&T solutions
to immediate Fleet/Force needs
identified by Sailors and Marines

- New applications of emerging or existing technologies
 - Well-bounded problems with S&T solutions
 - Impacts the individual warfighter
 - Prototypes evaluated in an operational context
 - Fleet/Force feedback early and often
- Goal: prototype demonstration within ~14-16 months of request
 - Delivered to original requestor, when possible



Typical Project Profile



- Request submitted by deckplate Sailors or Marines
 - Ideally E4 to O4, but all are welcome
 - Also by ONR Science Advisors
- Solution developed by Naval Research Enterprise (NRE) or National Labs
 - Commercial &/or academic partners are common
- Average project ~\$750K total
- Maximum 12 months to complete
- Feedback from Fleet/Force used early and often in the solution development
 - Work closely with Subject Matter Experts and submitter
- Overall TechSolutions budget ~\$10M/yr



TechSolutions Process



Process Step	Goal
1. Request received	
2. Request validated	• 1 week
3. Problem & solution defined	• 40 days
4. Solicit solution ideas from NRE	• 45 days
5. Proposals invited	• 65 days
6. Project initiated	• 90 days
7. Prototype demo/evaluation in the field and transition to Fleet/Force	• ~12 months from start

Submitter, command staff and technical experts are involved throughout



Project Ranking Factors



- Scope of the solution
- Severity of the problem (impact)
- Level of S&T required
- Scope of the benefit
- Cost savings
- Transition potential



FY10-11 TechSolutions Projects by Enterprise



• **Aviation Enterprise**

- LSO APARTS Replacement
- Catapult CSV Calculator
- H-60 Corrosion Data Collection System
- ALE-43 Tactical Enhancements
- Non-incendiary Search & Rescue Marker
- Tool Room Management System

• **Surface Warfare Enterprise**

- SWOS Irregular Warfare Decision Training System
- Automated Shipboard Weather Observation System
- Phone & Distance Line Replacement
- AIS Identity Validation Tool
- Defense Against Terrorist Tactics
- EW Target Mapping Toolkit

• **Undersea Warfare Enterprise**

- ASPM Software Update
- Single Ping Sonar Algorithm
- Solid State Lighting for Subs
- Oceanborne Radionuclide Monitoring_(pending)
- CASS Software Update

• **Expeditionary Combat Enterprise**

- M203 Indirect Fire Sight
- Power Management Kit for EOD Teams
- Powered Rope Ascender
- Expeditionary TACSAT Surrogate
- X-Met Expeditionary Meteorological Sensor
- High-Energy Underwater Battery
- Driver Vision Enhancement Improvements
- Expeditionary TACSAT Surrogate
- Fast-Tint Protective Eyewear
- Enhanced Lightweight AUV
- M777 Brake & Shock Sensors
- Imaging Through Walls
- SDV 360-degree Sensors
- SDV Waterproof Transport Canister

• **Information Dominance Enterprise**

- XR-2000 SIGINT Receiver Upgrades

• **Provider Enterprise (NAVSUP)**

- Improved Flight Deck Clothing
- Food Service Management Software Replacement

Green = ongoing
Black = complete



Improved Flight Deck Clothing



FY11-12 TechSolutions project

OPERATIONAL NEED

Objective: Incorporate high-tech fabrics into flight deck clothing to enhance wearer comfort and safety.

Value to Warfighter:

- Breathable fabric increases comfort, especially in hot weather
- Flame-resistant fabric provides safety

Impact if Not Addressed: Current jerseys and trousers are uncomfortable, contributing to wearer fatigue and stress, and do not provide any fire protection.

Submitter: Science Advisor at COMNAVAIRFOR



SOLUTION

The Technology:

- Commercially available moisture-wicking fabric will replace the 100% cotton fabric currently used.
 - Must be durable, quick-drying and comfortable
 - Must provide fire protection
 - Must resist absorption of petroleum products
- Existing design and patterns for the jersey will be maintained. An updated pattern to improve fit and provide required design features will be required for the trouser.

NRE Performer: NAVAIR

BUSINESS CASE

Project Cost:
\$2.119M TechSolutions
\$174K PMA-202

Start date: April 2011
End date: April 2012

Status: Fabric performance requirements undergoing review and approval

Transition Sponsor: PMA-202 (Aircrew Systems)

S&T Focus Area: Warfighter Performance



M203 Indirect Fire Sight



FY10-11 TechSolutions project

OPERATIONAL NEED

Problem:

Current M203 sighting systems do not support indirect fire (high angle) mode, are too heavy, and break easily.

Value to Warfighter:

Adds new offensive/defensive capability to engage targets between max throwing distance for hand grenades and minimum range of high angle supporting mortar fire.

Impact if Not Addressed:

Inability to engage enemy forces behind walls/buildings or in defilade positions such as ditches or ravines, or forces in open terrain that are too close for traditional indirect fire weapons.

Submitter: CWO5 at The Basic School, Quantico



SOLUTION

The Technology:

- Smaller and lighter than existing AN/PSQ-18A
- Day/night aiming capabilities for both direct and indirect fire
- Ballistics tables for multiple launchers and munitions
- Back-up sight in case of power failure

NRE Performer: MARFORPAC Experimentation Center

Partners:

- U.S. Army Armament Research, Development and Engineering Center (ARDEC)
- L3 Insight Technology, Inc.

BUSINESS CASE

Project Cost:

\$842K

Start date: Sept 2010

End date: Sept 2011

Status:

- Phase I complete: validated safety, reliability and accuracy of 40mm low velocity ammunition fired at high angle trajectories

Transition Sponsor: MCSC PM-ONLS

S&T Focus Area: Power Projection



Power Management Kit



FY10-11 TechSolutions project

OPERATIONAL NEED

Objective: Reduce weight, size, number of batteries and chargers required for EOD equipment.

Value to Warfighter:

- Reduce the size, weight, and component count of batteries and charging devices.
- Alternative charging methods
- Eliminate duplication of power sources

Impact if Not Addressed:

- Current size and weight of chargers needed for EOD equipment is a great burden to the warfighter and transport

Submitter: LCDR at COMEODGRU TWO



SOLUTION

The Technology:

Smart adaptors and cables to interface with additional equipment/batteries. All interfaces will be intelligent requiring no user input and will be capable of charging or sourcing power from any of the batteries.

Status:

- Final cable /adapter design complete
- XR-150 Adapter prototype under construction

NRE Performer: NSWC Crane

Partners:

- Protonex Technology Corp
- Science Applications International Corporation

BUSINESS CASE

Project Cost:
\$ 539K

Start date: MAY 2010
End date: MAY 2011

Potential Transition Sponsors:

- Navy Explosive Ordnance Disposal Technical Division (NAVEODTECHDIV)
- Defense Supply Center Columbus (DSCC)

S&T Focus Area: Total Ownership Cost



LSO APARTS Database Replacement



FY10-11 TechSolutions project

OPERATIONAL NEED

Problem:

Automated Pass and Recovery Tracking System (APARTS) database used to track carrier landings is not networked, requires manual data entry, does not capture all needed data, has insufficient analysis tools, and uses unsupported software.

Value to Warfighter:

Reduced workload; improved data tracking and analysis; improved software reliability.

Impact if Not Addressed:

Risk of data loss; resource decisions made on insufficient data; increasing workload for decreasing performance level.

Submitter: CO of Landing Signal Officer (LSO) School



SOLUTION

The Technology:

- Three solution components:
 - Rugged data collection handheld for use on the deck
 - Shipboard system with local data, trend analysis, training and review tools
 - Fully accessible central data server
- Handheld automatically uploads to shipboard system
- Networked system automatically uploads data to server

NRE Performer: Naval Post-Graduate School

BUSINESS CASE

Project Cost:

\$600K

Start date: Sept 2010

End date: Oct 2011

Status:

- Project kick-off August 2010

Potential Transition Sponsor: NAVAIR

S&T Focus Area: Warfighter Performance



Fast-Tint Protective Eyewear



FY10 TechSolutions project

OPERATIONAL NEED

Problem:

Pausing to manually change fixed-tint ballistic eyewear lenses in response to differing lighting conditions (interior/exterior movement) during the conduct of combat operations is not practical.

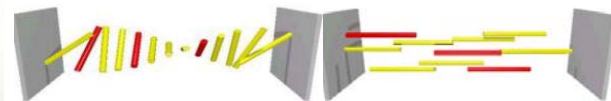
Value to Warfighter:

Increased situational awareness and eye safety during transitions between light and dark environments

Impact if Not Addressed:

Operators compromise visual acuity when moving from light to dark spaces, or risk eye injury due to removal of eye protection

Submitter: N833 CIV at NAVSPECWAR



SOLUTION

The Technology:

A liquid crystal host containing dichroic dyes is sandwiched between two flexible plastic substrates coated with transparent electrodes, and applied to a lens.

- ANSI ballistic protection lens
- Tint change time < 0.5 sec
- Four colors: clear, dark gray, blue, amber
- Battery lasts 55 + hrs per charge

NRE Performer: NSWC Crane

Partners:

AlphaMicron, Inc
WSTIAC

BUSINESS CASE

Project Cost:
\$307K

Start date: Feb 2010
End date: Jan 2011

Status:

- 30 prototype pairs delivered January 2011
- NSW assessment through April 2011

Potential transition sponsor: NSW/USSOCOM

S&T Focus Area: Naval Warfighter Performance
(Warfighter Protection)



Contact Info



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 - ETCM(SS) Charles Ziervogel
 - Jesse Miles

Get Involved!