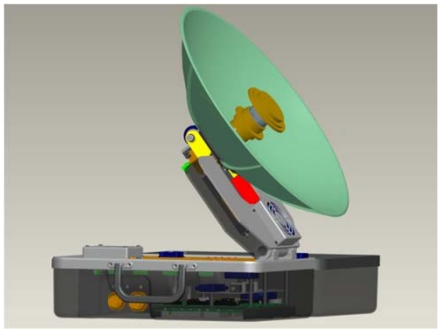
Transitioning Innovative Technology to the US Warfighter



MILTECH

Chain of Command

OSD – Office of the Secretary of Defense

AT&L – Acquisition, Technology and Logistics

DDR&E – Defense Research and Engineering

AS&C – Advanced Systems and Concepts

OTT – Office of Technology Transition

MilTech

MILTECH

- MilTech is an OSD Managed Program
- MilTech helps DoD PMs and DoD customers solve:
  - Technology scouting and market research challenges
  - Product development, prototyping, quality, manufacturing and delivery problems
- MilTech delivers services by providing industry experienced, hands-on assistance to PMs and their small company vendors
- Some projects are funded by MilTech, others by MIPR'd funding

The 7 MilTech Core Competencies:

1) Tech Scouting / Market Research
2) Design, Design Review, and Prototyping
3) Independent Government Cost Estimates
4) Cost reduction recommendations
5) Vendor manufacturing capability assessment and review
6) Vendor/Partner scouting/ID and assessment
7) Provide design and manufacturing expertise to IPTs

1) Tech Scouting / Market Research (Non-Typical)

Scouting completed through:

- Dept. of Commerce's MEP Network …1600 Field Engineers, 200,000 small companies
- DoD, NASA, NIST Labs
- SBIR/STTR Network
- Partnership Intermediary Network
- CRADA, SBIR, licenses
- MilTech Staff and Customer Base

When appropriate, MilTech may employ design and manufacturing services through the U.S. Department of Commerce NIST MEP program.

Manufacturing Extension Partnership Office Locations

- 59 MEP Centers
- 1600 Field Staff
- 440 Service Locations
- Relationships with 200,000 small companies

Tech Scouting Examples

Navy EOD Tech Div

- Objective: Upgrade performance from current model
- Identify relevant technologies
- Identify companies
- Assess company capabilities
  - engineering
  - manufacturing
  - quality
- Final Report w/ recommendations

Tech Scouting Examples

MARCORSYSCOM PMIW

US Made Foreign Designed Weapons

- AK47, AK74, RPG, PKM, RPD, SVD, G3, FN-FAL
- Technical Data Package (TDP) Assessments
- Mfg Readiness Level (MRL) Assessments
- Quality Management System (QMS) Audits
- Final Report with rankings for each of the 7 companies and 8 products

Tech Scouting Extreme
"Design Light"

- BLUF:
  - Found ways to reduce a Marine Rifle Squad's gear weight by 22% with materials and manufacturing processes available today
- End Product:
  - 500+ page report. Detailed design, material, COTS, manufacturing process recommendations, multiple prototypes. Path forward.
- Funding
  - $350,000 PM MERS, $150,000+ MilTech

2) Design, Design Review, and Prototyping

Can provide:

- Product design review and recommendations from industry experienced SMEs
  - Manufacturability, materials, integration, cost
- Experts from DoC MEP network
- Design and packaging expertise
- Prototyping

Can evaluate a TDP for manufacturability

- Can, at DoD customer request, help company overcome shortcomings in the TDP

Design for Government owned TDP

Distributed Sound and Light Array

LASER SPECIFICATIONS

- Coherent 8W 532 nm laser
  - 6.3W output from lens
- Variable Beam Area
  - from 0.5m^2 to 10m^2 at 200m
- Continuous and pulsating modes

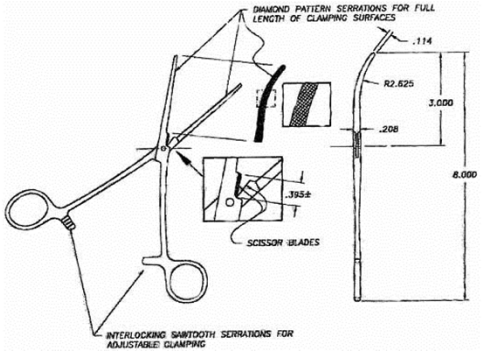
ACOUSTICAL SPECIFICATIONS

- Electronic beam steering
  - Fully configurable acoustical beam capable of being steered independently of laser beam
- Maximum SPL of approximately 153 dB
- Frequency range of 400 Hz to 6 kHz

BRIGHT WHITE LIGHT (BWL) SPECIFICATIONS

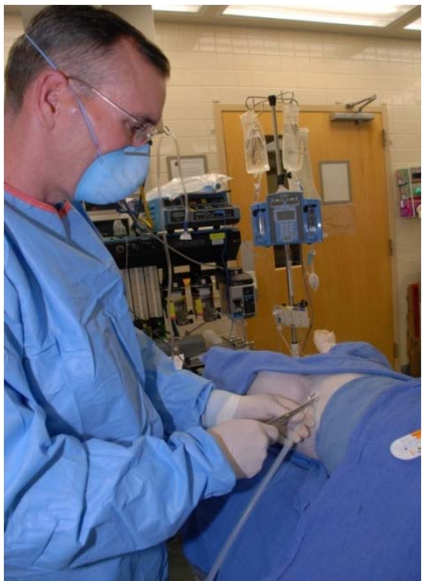
- (2) Peak Beam Systems Maxabeam Enhanced Searchlights
  - 12 million candlepower each
  - 1º beam divergence
  - Continuous and pulsating modes
- (2) Larson Electronics X930-S Spotlights
  - 20 million candlepower each
  - 10º+ beam divergence

AISR Tharocostomy Clamp Design



MilTech Assistance

- Work with AISR Commander to design an innovative hemostat clamp
- AISR owns the TDP
  Approximately 12 weeks from initiation to prototype
- MilTech will establish supply chain



JMIC: Joint Modular Intermodal Container

Study included

- Design
- Material selection
- Product forms
- Fabrication process
- Assembly technologies
- Unit cost in production

U.S. Army ARDEC requested that MilTech perform a producibility study for high volume production of a lightweight composite version of the JMIC

MilTech also provided:

- Design For Manufacturing Review
- MRL Assessment
- Composites Expertise

ASITS TDP and Manufacturability Review

Objective: Review TDP to determine if product is capable of being manufactured, offer assistance to company in making corrections

Benefits: Marine Corps was able to cancel project that was an unwanted congressional plus-up

Technology: Company, using congressional plus-up funding, developed a sniper detection system that uses video to find a sniper's vector. System requires 4 generators to power the system.

Participants:

- United States Marine Corps
- MilTech (Bozeman, Montana)

Status:

- Project killed due to MilTech input

Sniper Detection System

3) Independent Government Cost Estimates

- Can provide cost data / knowledge to PM from a non-advocate source
- Can provide basis for contract parameters
- Broad network of industry experts to validate cost estimates

IGCE for PM ICE




Item, all sizes

Size	*MKI*	*MKII*	*$ Difference MKI - MKII*	*% Difference*
XS	$ 670.50	$ 705.58	$ 35.08	5%
S	$ 689.25	$ 725.25	$ 36.00	5%
MD	$ 725.85	$ 774.36	$ 48.51	6%
L	$ 758.65	$ 817.65	$ 59.00	7%
XL	$ 789.56	$ 846.74	$ 57.18	7%

Components, Size MD or Common Size

Component	*MKI Cost*	*MKII Cost*	*$ Difference MKI - MKII*	*% Difference*
Strap	$ 3.45	$ 3.45	$ -	0%
Adaptor	$ 12.57	$ 5.81	$ (6.76)	-116%
Armor Component	$ 187.85	$ 182.54	$ (5.31)	-3%
Armor Carrier Component	$ 45.00	$ 42.00	$ (3.00)	-7%
Front Protector	$ 41.25	$ 41.25	$ -	0%
Rear Protector	$ 29.85	$ 29.80	$ (0.05)	0%
Release Component	$ 9.50	$ 9.25	$ (0.25)	-3%
Back Component	$ 180.00	$ 183.41	$ 3.41	2%
Back Carrier Component	$ 30.54	$ 36.74	$ 6.20	17%
External Component	$ 45.00	$ 52.47	$ 7.47	14%
Top Component	$ 17.50	$ 17.50	$ -	0%
Outside/Top Component	$ 74.00	$ 74.00	$ -	0%
Second Strap	$ 1.25	$ 1.25	$ -	0%
Integration Component	$ 2.50	$ 2.10	$ (0.40)	-19%
Panel Component	$ 7.50	$ 45.00	$ 37.50	83%
MKII Internal Component		$ 12.00	$ 12.00	100%

IGCE reports include:

- Integrated Bill of Materials
- Financial Data (RMA, etc.)
- Work Breakdown Structure
- Report, Findings, Etc.

Raw Materials List

RM Item #	Type of Material	List of Material	Unit Size	Conversion		Cost/Unit Size
1	**Misc**	**Find right material**	each	1		$0.00
101	Hardware	ACME.Com Labels	each	1		$0.09
106	Hardware	1 1/2" D-Rings	each	1		$0.13
209	Fabric	1000D Nylon Coated Coyot	linear yard	2,160	sqin	$5.65
210	Fabric	500D Nylon Coated Coyote	linear yard	2,160	sqin	$5.59
304	Webbing	1 1/2" 7390 (Poly)	yard	36	lnin	$0.34
305	Webbing	2" 7390 (Poly)	yard	36	lnin	$0.20
306	Webbing	3" 7390 (Poly)	yard	36	lnin	$0.28

4) Cost Reduction Recommendations

Can find cost savings in:

- Manufacturing processes
- Materials
- Development of supply chain efficiencies
- Identification of new partners

SnapNet/WearNet Manufacturing Cost Reduction

Objective: AFRL requested that MilTech find a way to reduce the manufacturing costs of SnapNet/WearNet

Benefits: Reduced cost to DoD. Unit cost brought down from $12.00 to $1.70 for 50k units.

Technology: Physical Optics Corporation developed the SnapNet/WearNet system through SBIRs. The system allows the vast array of electronics that forward air controllers carry to be easily connected using common snaps

Participants:

- AFRL
- CMTC (Torrance, California)
- MilTech (Bozeman, Montana)

Status:

- Project complete with significant savings. Unit cost brought down from $12.00 to $1.70 for 50k units.

SnapNet System

5) Vendor manufacturing capability assessment and review

- Complete MRL assessments on potential vendors as a means of qualifying them or to assist in down-select process
- Can perform MRL assessments throughout the life cycle of the project to more quickly bring issues to the surface
- Quality system review (ISO9000, AS9100)
- Vendor network capabilities, internal processes, inventory management, using best practices, etc.
- Can assist vendor with implementation of supplier development, quality systems, or any manufacturing requirement in order to better meet DoD customer needs and remain a viable enterprise

NeX-Ray MMX for Navy EOD

Objective: Improve manufacturing processes to eliminate backorders of the NeX-Ray MMX portable IED detector

Benefits:

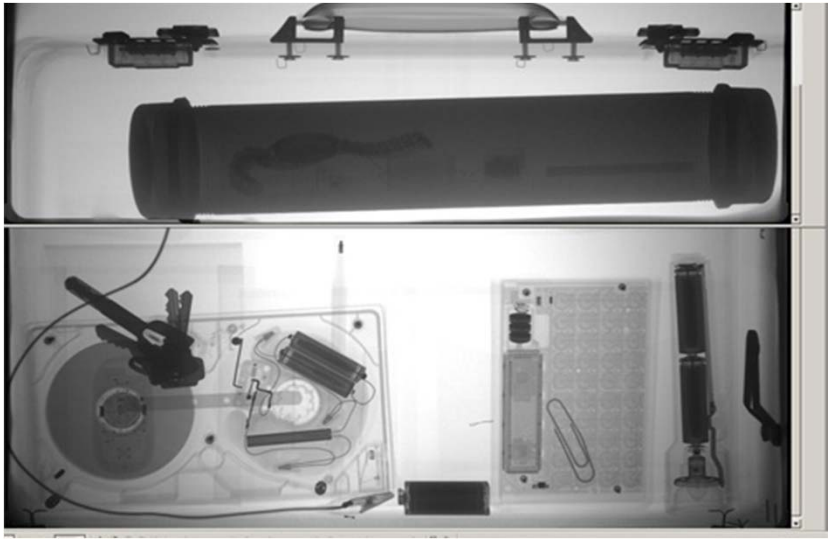
- Improved warfighter safety through the identification of hidden IEDs
- Reduced order back-log

Technology: The NeX-Ray MMX is one piece of a four-part system comprised of a pulse generated X-ray, the MMX, a CAT-5 cable and a ruggedized laptop with system supporting software. The MMX allows the user to identify hidden IEDs through x-ray images of the target item.

Participants:

- Navy EOD Group Two (Ft. Story, VA)
- MSPT, LLC (Mountain View, CA)
- ManEx (San Ramon, CA)
- MilTech (Bozeman, MT)

Status: Project completed, with product now in use by Navy EOD Group Two for detection of hidden IEDs



Lightweight Polymer-Cased CAL .50 Ammunition

Objective:

1. Install an AS9100 compliant quality management system
2. Improve process control

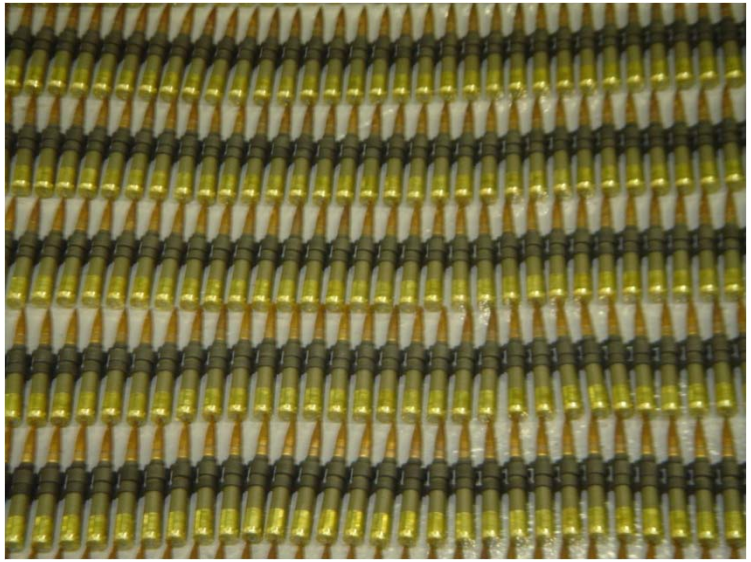
Benefits: Lightweight ammunition permits lighter loads for the warfighter or more rounds for the same weight.

Technology: A proprietary polymer is used to mold the round caselette. The caselette is held in place by snap-fit geometry with the machined basecap and an epoxy seal that also acts as a water-proof barrier to keep the propellant dry.

Participants:

- AFRL Title III (Wright-Patterson AFB, OH)
- Marine Corps PM-Ammo (Stafford, VA)
- MAC, LLC (Bay Saint Louis, MS)
- MS MEP (Ridgeland, MS)
- MilTech (Bozeman, MT)

Status: In progress.



6) Vendor/Partner scouting/ID and assessment

- Use Dept. of Commerce MEP network to scout for qualified partners
  - 200,000 small manufacturers
- Non-traditional vendors
- Assess capabilities
- Prep for down select

Vehicle Mounted IED Detection System

Objective: Design an innovative vehicle mounted IED detection system for HMMWV's that will allow in-vehicle IED detection and avoidance.

Benefits: Reduced mortality rates in IED explosions for HMMWV operators who operate in austere environments on uncleared roads.

Technology: Willowview Consulting, LLC's Vehicle Born Automated Detection System (VBADS) uses existing technologies for detecting explosive devices in a new and innovative way which allows the vehicle operators to remain in the vehicle and detect and avoid IED's during a mission. This is the first successful application of its kind in theatre.

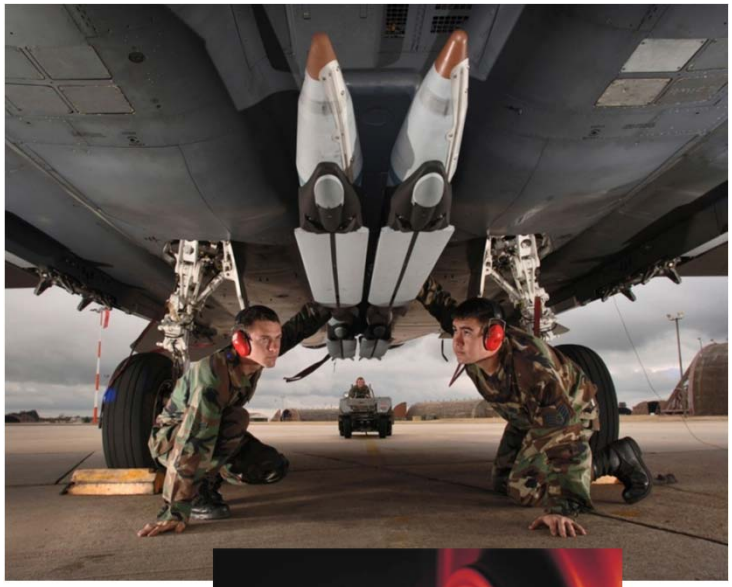
Participants:

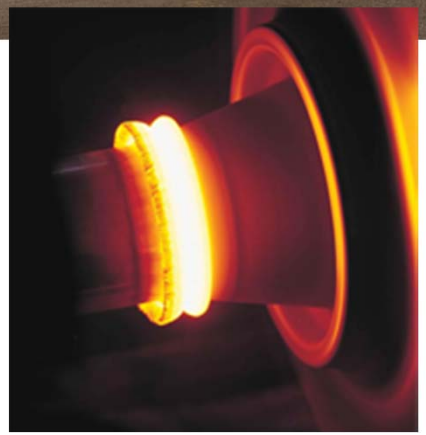
- Willowview Consulting, LLC (Boise, Idaho)
- MilTech (Bozeman, Montana)
- JIEDDO
- MARSOC
- Geonics Limited (Toronto, Ontario, Canada)

Status: Vehicle Mounted IED Detection System design complete, supply chain established, units deployed.

Willowview Consulting IED Detection System

AFRL Small Diameter Bomb Friction Stir Welding





MilTech Assistance

- Rapidly identify and qualify an alternative vendor of critically needed SDB components for AFRL/RWAV Eglin AFB
- Allow for cost effective continued production of SDBs.

7) Provide Design and Manufacturing Expertise to IPTs

- Can participate in IPTs as experts in all facets of design or manufacturing
- Can often identify key issues with transforming a prototype or concept into production equipment for testing or use
- Can lend manufacturing and design expertise during initial field tests

USAMRMC Oxygen Generator

Organization: Army Medical Command

Project: Assist inventors with control systems, software, hardware, and packaging to evaluate ceramic oxygen generator for medical applications

Technology: Ceramic oxygen concentrator to replace compressed oxygen

Users: Forward hospitals, CASEVAC

Results:

- Rapid development of support control systems, power management, insulation, and packaging
- Achieved desired test results
- Prototype packaging for demonstration

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