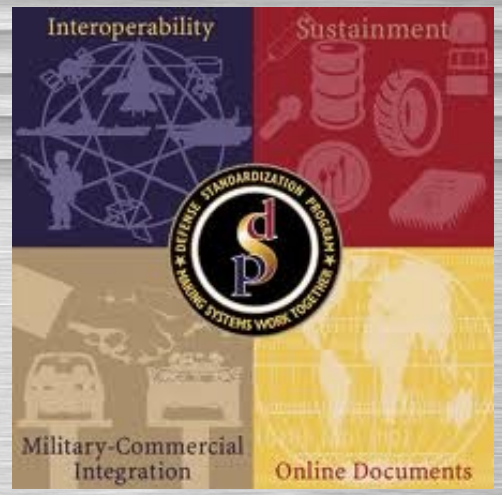


SUCCESS with STANDARDIZATION

Defense Standardization Program Workshop

10 July 2018

Richard J. Squillacioti

U.S. Army Research Laboratory

- **Current ARL Specifications & Standards Personnel**
  - Richard J. Squillacioti, Leader, is retiring in August
  - Brian E. Placzankis is taking over as office lead
  - William S. Lum
  - *Chris E. Miller will begin assisting part time

- *Best mechanism for Technology Transfer from R&D to the Soldier.*
- *Directly Supports Army Futures Command and the Warfighter.*
- *Specifications at ARL actively monitored and maintained & evolve to support changing requirements.*
- *Facilitates coordination between ARL technical subject matter experts and the end user community products or processes.*

S&SO WILL:
LEVERAGE EVERYONE'S EXPERTISE
ENGAGE & GUIDE
FILL IN GAPS as needed
SUPPORT / SERVICE

GOVERNMENT AGENCIES

Defense Logistics Agency (DLA)
Defense Supply Center Philadelphia – DSCP

INDUSTRY

Producers / Manufacturers

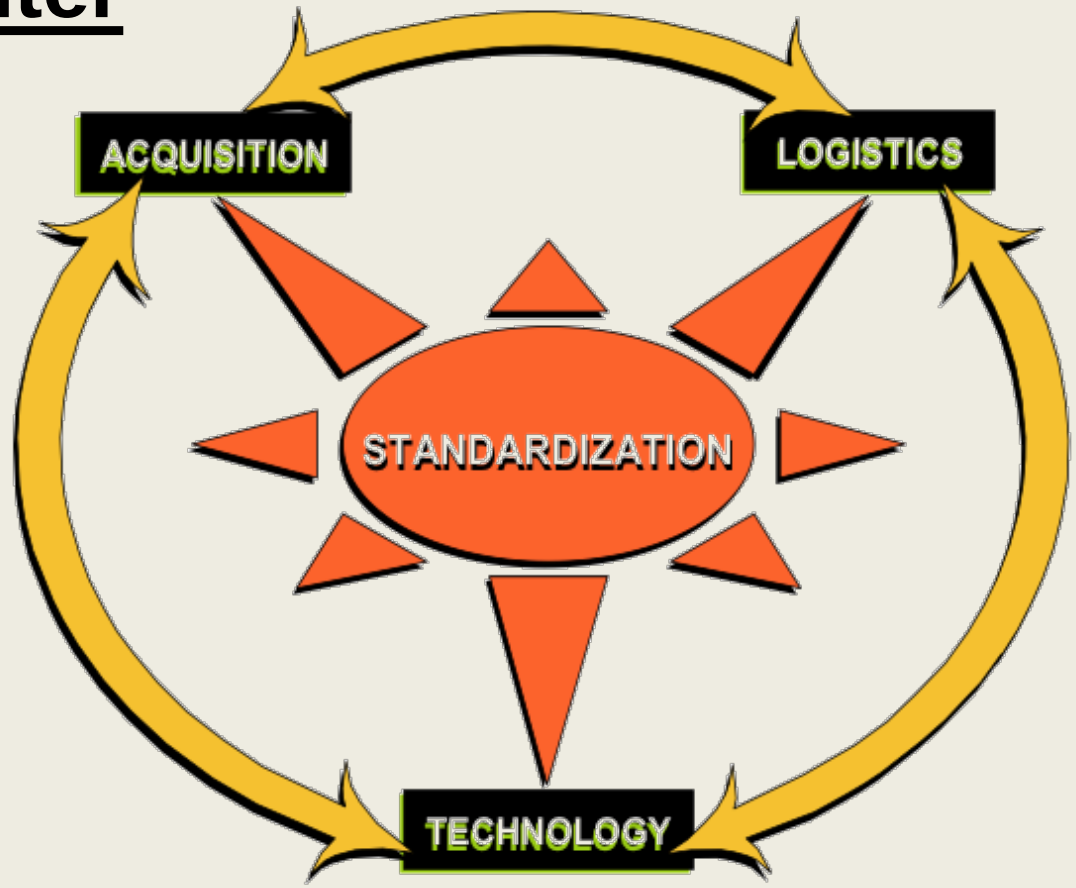
WMRD TECHNICAL CAPABILITIES

METALS
CERAMICS
COATINGS
CORROSION
POLYMERS
COMPOSITES
VEHICLE COMPONENT TESTING
NONDESTRUCTIVE TESTING
ARMOR CHARACTERIZATION
BALLISTIC RANGES & STATISTIANS
FABRICATED MATERIALS

Delivering Science and Technology Applications to the Warfighter

Specifications & Standards

- Complete the acquisition cycle
- Transition emerging technologies to the Soldier
- Maintain technological edge and battlefield overmatch
- No Specs = No Transition



NEW MATERIAL – POLICY / PROCESS INDUSTRY EXAMPLE

1. Collaborate with a **Sponsor** that has a Vehicle or Platform that is in production or will be in production in the near future or for repair or replacement.

2. **Letter(s) of Endorsement** are supplied indicating that the Sponsor would like to have the material characterized and validated in specific applications and will use the material on their vehicles/platform, if the full scale testing is acceptable.

3. The material must **pass full scale testing** including ballistics, fire/toxicity, and material properties. The cost of this testing is supplied by the Producer or Sponsor.

4. If the material passes full scale testing the **material will be detailed out** in a specification. The cost for developing the quality assurance provision (accept/reject criteria, required properties with minimum or maximum requirements, etc.) will be supplied by the ARL Specifications & Standards Office (OMA funds).

Standardization Vectors:

I. Addressing problems received from the field that effect the Soldier directly.

II. Addressing problems that are received from other DoD agencies, i.e. Program Managers (PMs), Program Executive Office (PEOs).

III. Addressing problems that are received from technical lab personnel.

IV. Responding to Industry concerns on requirements, requests for clarification and interpretation of our documents.

V. Overage documents and procurement issues remain due to cancelled documents. (Average age of documents 7+ years: Policy requires that documents be reviewed every 5 years.)

ANNUAL DSP ACHIEVEMENT AWARDS

FY 1987 Win: Individual Achievement Award Winner; Army - Member of S&SO - U.S. Army Materials Technology Laboratory, Watertown, MA.
FY 1993 Win: Organizational Achievement Award Winners; Army - The Materials Standardization Office, Materials Directorate, Army Research Laboratory, Watertown, MA.
FY 1998 Win: Individual Achievement Award Winner; Army - Leader of S&SO - U.S. Army Research Laboratory, Aberdeen, MD.

FY 2008 – TEAM GIVES ARMY A SUPERSONIC COLD SPRAY

- MIL-STD-3021,"Materials Deposition, Cold Spray"

FY 2009 – WARFIGHTERS NOW HAVE MORE AND BETTER STEEL

- MIL-DTL-32332 (MR), "Armor Plate, Steel, Wrought, Ultra-High-Hardness"
- MIL-PRF-32269 (MR), "Perforated Homogeneous Steel Armor"
- MIL-DTL-12560J (MR), "Armor Plate, Steel, Wrought, Homogeneous (For Use in Combat-Vehicles and for Ammunition Testing"
- MIL-DTL-46177C (MR), "Armor, Steel Plate and Sheet, Wrought, Homogeneous (1/8 to less than ¼ Inch Thick)" INACTIVE FOR NEW DESIGN
- MIL-DTL-46100E (MR), "Armor Plate, Steel, Wrought, High-Hardness"

FY 2010 – A NEW TEST STANDARD CUTS THE EROSION OF ROTOR BLADE PROTECTIVE MATERIALS

- MIL-STD-3033, “Particle/Sand Erosion Testing of Rotor Blade Protective Materials”

FY 2011 – NEW LIGHTWEIGHT ALUMINUM ALLOYS QUALIFY TO ARMOR MILITARY VEHICLES

- MIL-DTL-32375 (MR), “Armor Plate, Aluminum Alloy, 7085, Unweldable Appliqué”
- MIL-DTL-32341 (MR), “Armor Plate, Aluminum Alloy, 2xxx, Unweldable Appliqué”
- MIL-DTL-32262 (MR), “Armor Plate, Aluminum Alloy 6055 Weldable and Alloy 6061, Unweldable Applique”
- MIL-DTL-46027K (MR), ”Armor Plate, Aluminum Alloy, Weldable 5083, 5456, and 5059”
- MIL-DTL-32505 (MR), “Armor Plate, Aluminum, Alloys 7017 and 7020, Weldable”
- MIL-DTL-46063H (Notice of cancellation for new acquisition/design for replacement of AA7039)

FY 2012 – NEW STANDARDIZED ARMOR MATERIALS CUT COSTS AND IMPROVE SAFETY

- MIL-DTL-64154, “Laminate: Fiberglass-Fabric-Reinforced, Phenolic”
- MIL-DTL-32378, “Laminate: Unidirectional, Reinforced, Cross-Plied, Aramid Fiber, Plastic Armor Material”
- MIL-DTL-32398, “Laminate: Cross-Plied Ultra-High Molecular Weight Polyethylene Unidirectional Reinforced Plastic Armor.”

Kopp-Etchell's Effect

APPROVED FOR PUBLIC RELEASE

FY 2012 – NEW MILITARY COATINGS ENHANCE THE DURABILITY OF DoD ASSETS

- MIL-DTL-53039, “Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant”
- MIL-DTL-64159, “Camouflage Coating, Water Dispersible Aliphatic Polyurethane, Chemical Agent Resistant”
- MIL-PRF-32348, “Powder Coating, Camouflage Chemical, Agent Resistant Systems”
- MIL-DTL-53022, “Primer, Epoxy Coating, Corrosion Inhibiting Lead and Chromate Free”
- MIL-DTL-53030, “Primer Coating, Epoxy, Water Based, Lead and Chromate Free”
- MIL-DTL-53084, “Primer, Cathodic Electrodeposition, Chemical Agent Resistant”
- MIL-DTL-11195H (MR), “Enamel, Lusterless, Fast Dry, VOC Compliant, (For Use on Ammunition and Other Metals)”
- MIL-P-14105E, “Paint, Heat-Resisting (For Steel Surfaces)”
- MIL-PRF-22750G, “Coating, Epoxy, High-Solids”
- MIL-DTL-53072, “Chemical Agent Resistant Coating (CARC) System Application Procedures and Quality Control Inspection”

ANNUAL DSP ACHIEVEMENT AWARDS (CONT.)

FY 2013 – NEW PERFORMANCE SPECIFICATIONS PROVIDE FOR ENVIRONMENTALLY SAFE AND COST-EFFECTIVE CLEANERS

- MIL-PRF-32359, "Cleaner, General for Ground Vehicles and Ground Support Equipment, Hazardous Air Pollutant (HAP)-Free"
- MIL-PRF-32405 (MR), “Cleaner, Hand Wipe, for Aviation and Missile Systems, Metallic Substrates, Low or Exempt VOC“

FY 2013 – REVISED SPECIFICATION PROVIDES “GREEN” METHODS FOR PRETREATING METALS

- TT-C-490F, “Chemical Conversion Coatings And Pretreatments For Metallic Substrates (Base For Organic Coatings)”, **[Best of the Best]**

FY 2014 – NEW SPECIFICATION FOR ALUMINUM-BASED POWDERS FOR COLD SPRAY DEPOSITION SAVES MILLIONS OF DOLLARS

- MIL-DTL-32495, “Aluminum-Based Powders for Cold Spray Deposition”

FY 2015 – REVISION OF DoD DESIGN CRITERIA STANDARD: NOISE LIMITS

- MIL-STD-1474, “Design Criteria: Noise Limits” **[HRED document]**

Laminated Polypropylene Composite Armor

FY 2016 – LAMINATED POLYPROPYLENE COMPOSITE ARMOR

- MIL-DTL-32549, "Laminate: Multi-layer Polypropylene Thermoplastic Composite Armor"

GOAL: Characterize a polypropylene tape-based laminated material (fiber) along with documented quality assurance parameters for the final armor panel.

This standardization effort enhances two aspects of DOD acquisition:

(1) Increasing the robustness of the industrial base for DOD armor material by adding an additional qualified product to the supplier base and
(2) Reducing the time to manufacture in an emergency situation.

It also;

(a) Ensures future polypropylene material bought by the DoD meets acceptable performance quality standards.
(b) Ensures that the Army is getting an adequate supply of high-quality composite armor produced by the most effective processing available today.
(c) Will provide some assurance that the materials procured will provide our soldiers with the expected level of armor protection they need and deserve.
(d) Effort should reduce the possibility of inferior or counterfeit materials from being procured.

QUESTIONS

Thanks!