Research & Development
MILITARY UNIQUE SUSTAINMENT TECHNOLOGY

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OBJECTIVE

The Military Unique Sustainment Technology (MUST) program is an Industrial Preparedness Manufacturing Technology (ManTech) Program in DLA R&D that promotes manufacturing and logistics improvements in troop support clothing and textiles issues. The MUST program focuses establishing a "knowledge-based approach" to collaborate on development and acquisition of combat uniforms and individual equipment. MUST is researching and developing knowledge-based technologies to re-engineer the joint process and product, and to develop the foundation platform that enables technical data modernization.

- **COMBAT INDIVIDUAL EQUIPMENT**
- **RECRUIT & WARFIGHTER DLA CUSTOMERS**
- **THIRD PARTY LOGISTICS**
- **MANUFACTURING SERVICES'**
- **REQUIREMENT**
- **TECHNICAL DATA REQUIREMENTS**

INNOVATION & TECHNOLOGY

- Process re-engineering to streamline joint processes
- Semantic web technology for modeling text based technical requirements
- Knowledge-based approach for integrated supply chain functions and capabilities
- Application program interface with neutral data formats for seamless digital data model integration
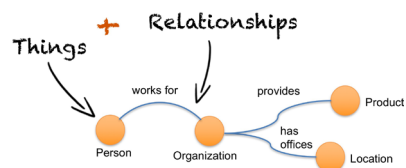
STRATEGIC THRUSTS

Collaborative Technical Requirements Management

Semantics = Things + Relationships

Semantic Based Military Uniform Item Technical Data Representation
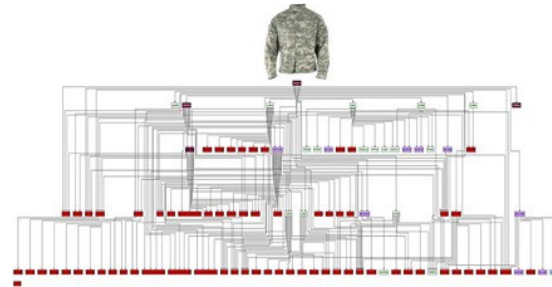
THE CHALLENGE

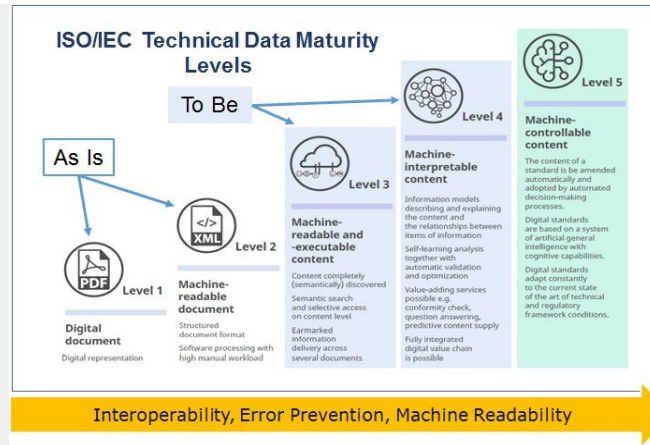### WIDELY DISTRIBUTED MANUAL TECHNICAL DATA REQUIREMENTS

Combat item technical requirements are documented in a complicated web of DoD, Government, and industry specifications. The top tier reference lower tier documents. Industry is responsible for compliance. The diagram to the right shows the complication of producing an acceptable Army Combat Uniform (ACU) coat. For example, the red boxes indicate the documents containing testing requirements.

WARFIGHTER READINESS

THE BENEFITS

- Streamlining vendor level-of-effort associated with military uniform-related procurement
- Overall quality improvement
- Eliminate errors, omission, and Uncertainties in uniform specifications

ISO/IEC Technical Data Maturity Levels

To Be

As Is

Level 1 — Digital document
Digital representation

Level 2 — Machine-readable document
Structured document format
Software processing with high manual workload

Level 3 — Machine-readable and -executable content
Content completely (semantically) discovered
Semantic search and selective access on content level
Earmarked information delivery across several documents

Level 4 — Machine-interpretable content
Information models describing and explaining the content and the relationships between items of information
Self-learning analysis together with automatic validation and optimization
Value-adding services possible e.g. conformity check, question answering, predictive content supply
Fully integrated digital value chain is possible

Level 5 — Machine-controllable content
The content of a standard is be amended automatically and adopted by automated decision-making processes.
Digital standards are based on a system of artificial general intelligence with cognitive capabilities.
Digital standards adapt constantly to the current state of the art of technical and regulatory framework conditions.

Interoperability, Error Prevention, Machine Readability

WHOLE OF GOVERNMENT AND INDUSTRY PARTNERSHIPS

- **DLA Troop Support Clothing & Textiles**
- **DLA Troop Support Product Test Center**
- **U.S. Marines**
- **U.S. Army**
- **U.S. Air Force**
- **U.S. Coast Guard**
- **U.S. Navy**
- **Industries and Test Labs**

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ACCOMPLISHMENTS & ONGOING EFFORTS

- Successful working prototype and functional requirements document
  - Stakeholders' testing and validation
  - Initiating vendor roll out for final transition
- Implementation scheduled and budgeted for FY23
- Converted 50% of relevant C&T documents to ISO Level 3/4 as the foundation of the digital model library