Individual Protection in a CBRN Environment: Case Studies of the Role of T&E in Requirements Generation

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Topic area: Requirements Generation Process
and How the T&E Community Can Improve It

Joint Program Manager (JPM) for Individual Protection (IP)

JPM IP is responsible for development, procurement, and sustainment of CBRN environment IP for the Joint Services

The Joint Service Aircrew Mask (**JSAM**) is being developed in conjunction with the Joint Protective Aircrew Ensemble (JPACE) to replace all current aircrew masks.

The Joint Service General Purpose Mask (**JSGPM**) system has been developed to replace existing masks for ground and shipboard applications. The JSGPM will provide protection against chemical, biological and radiological agents, as well as toxic industrial materials. It is being designed to give the wearer the widest possible field of view, with a lower breathing resistance and weight/bulk less than other masks.

Part of the JSLIST Block I ensemble, the **JB2GU FR** will provide hand protection from liquid, vapor, and aerosol CB hazards for users with a flame resistant requirement (ground vehicle crewmen, SOF, Small Boat Teams).

JPM IP Case Studies

Resolution of conflict between requirements and tests designed to demonstrate them:

- **Quantifying and characterizing wear as part of chemical permeation testing (JB2GU FR)**
- **Ability to obtain airworthiness certification in order to complete OT (JSAM)**
- **Quantifying and refining the TIC/TIM threat for IP (JSGPM)**

T&E Community has a role to play in requirements generation

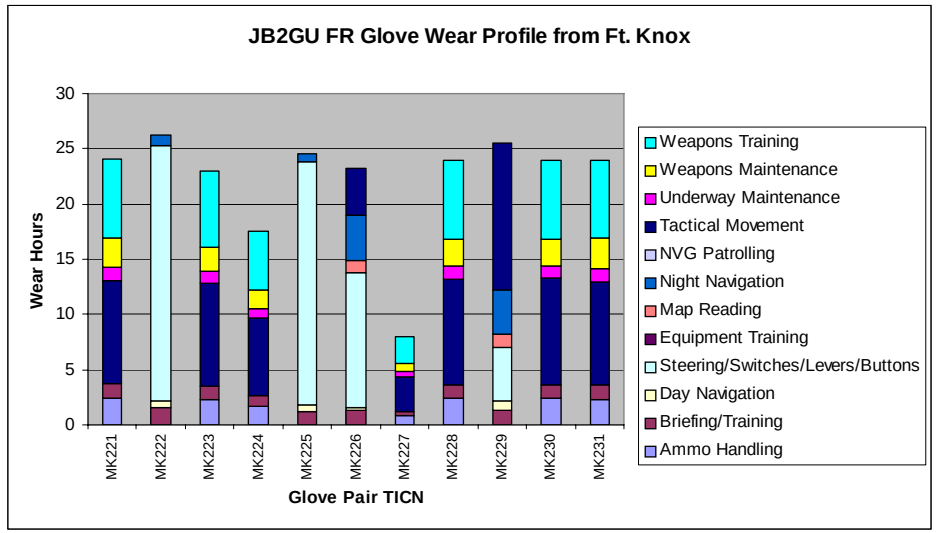
JSLIST Block 2 Glove Upgrade Flame Resistant (JB2GU FR)

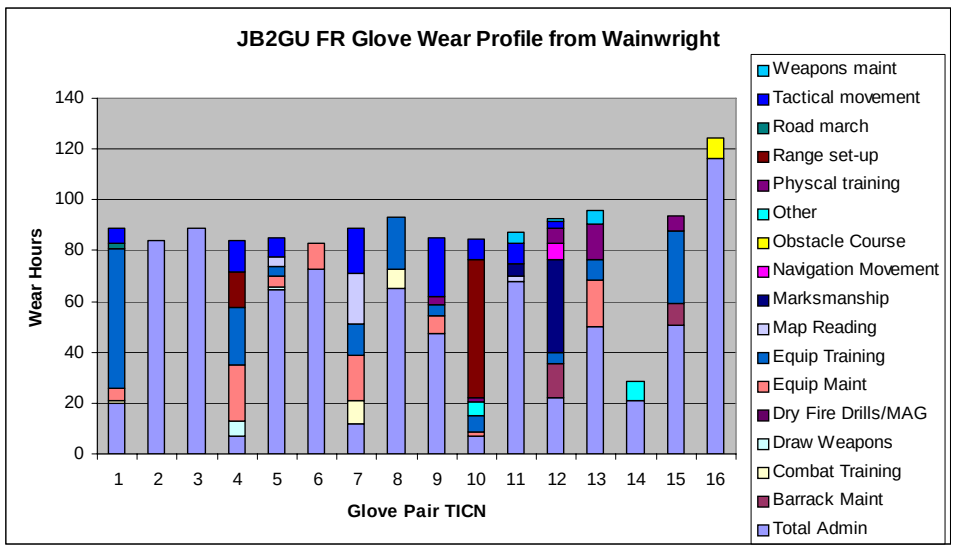
- Requirements indicate the need for chemical protection following “wear” hours
- Practice has been to use representative war fighters—piggy-back training opportunities to maximize “realistic” wear through conduct of mission tasks
- Challenge of data collection and control of test parameters/assets during a training rotation

Wear is a required treatment for every IP system

JB2GU FR Wear Testing

- Need to refine wear requirements; better quantification and data capture
- Not all wear data created equal





Articulate specific type of wear acceptable for the user. Consider mechanical "wear" as part of developmental test events

Lessons Learned: JB2GU FR Wear Testing

- ***Interpretation of the wear requirement***
  - **Control of variables for subsequent testing**
  - **Increased understanding of true capability of the system under test**
  - **Greater assurance to user community**
    - **Realistic, representative wear**
- ***More powerful results, increased correlation between stresses applied to system and subsequent system performance***

Joint Service Aircrew Mask (JSAM)

Key performance parameters met—obstacles to OT execution:

- **Air worthiness criteria and "safe-to-fly" certification—service specific requirements for Navy, Army, Air Force**
- **Multiple configurations on multiple platforms (rotary and fixed wing)**
- **Structure T&E events to address airworthiness in increments (configurations) up front and early**

Airworthiness certification required to conduct OT for aviation systems

Lessons Learned: JSAM

- ***Close co-development of requirements and T&E structure in future efforts***
  - **Joint Experimentation—field representative DT-type experiments to identify integration and flight issues early in program**
  - **Collaboration, cooperative experimental design, analysis**

- ***Airworthiness criteria addressed upfront and early***
  - **Structure T&E events to address airworthiness in increments (configurations)**

Joint Service General Purpose Mask (JSGPM)

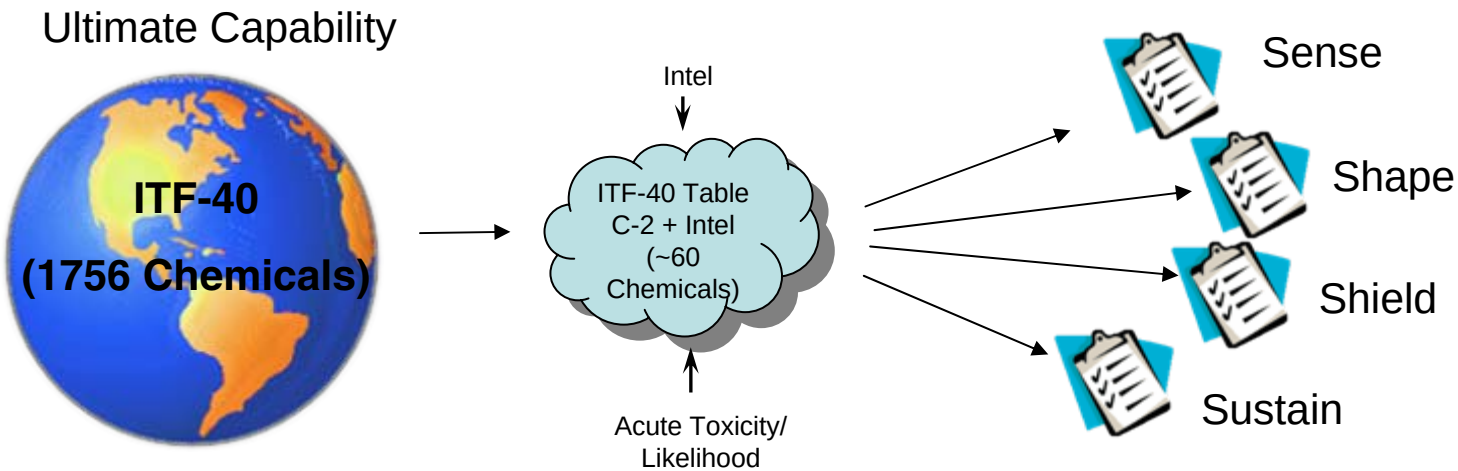
Emerging threats (TICs/TIMs) impacting systems at all points in the acquisition cycle

- **Existing guidance has been the ITF-25 list—not all chemicals have the exposure potential and chemical properties to make them viable threats**
- **JPEO requirement refinement—defining TICs/TIMs of interest based on prioritization strategy**
  - **Cost, schedule, performance control**

Lack of threat definition for TIC/TIM environment impacting the ability to verify operational effectiveness

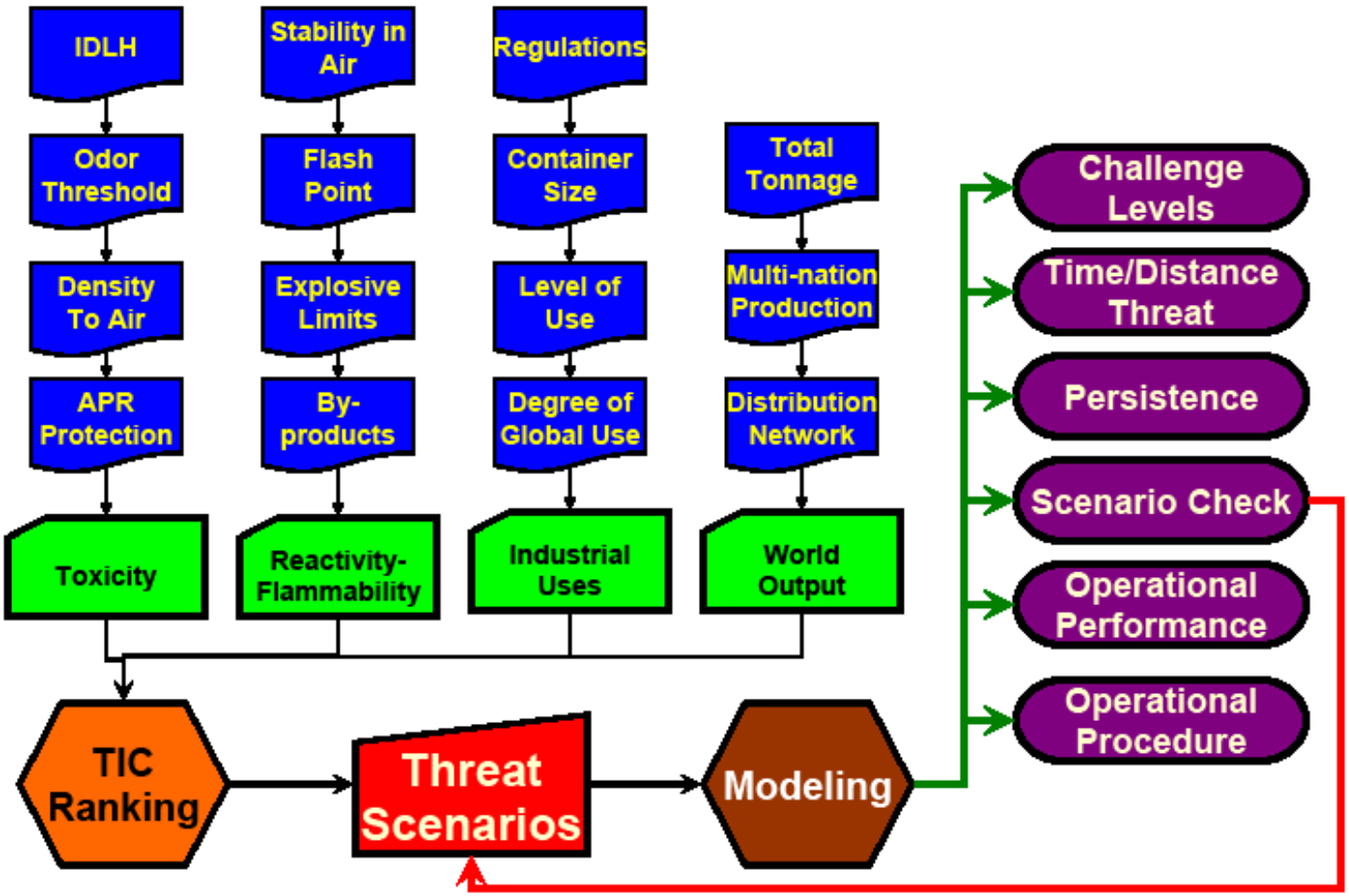
TIC/TIM Task Force

- **Generate specific capability area lists**



- **Generate vignettes to support operational hazard analysis, CONOPS development, and test planning.**

Approach to Requirement Refinement



Lessons Learned: JSGPM

- ***Requirement refinement necessary to direct future efforts***
  - **Assure prudent investments in technology**
  - **Better characterize current system performance**
- ***Augment redefinition of requirements across CB commodity areas***
  - **Approach translates to development of materiel solution for detection, collective protection, decontamination**
- ***Direct T&E infrastructure investments for future test needs***

Conclusion

- ***JPEO CBD directs JPMs to actively engage in requirements processes:***
  - **To insure clear understanding of the operational need**
  - **To prioritize limited resources**
  - **To understand the needs for technology insertion and future capabilities**
  - **To insure the existence of adequate test methodologies and facilities**

Our successes in T&E are helping to refine, improve, and drive requirements generation

Point of Contact

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