

Testing for Capabilities: The Importance of Mission Accomplishment in T&E

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Operational Test – “It’s All about the Mission”

- **Title 10 USC defines operational test and evaluation:**
 - *the field test, under realistic combat conditions, of any item of (or key component of) weapons, equipment, or munitions for use in combat by typical military users; and the evaluation of the results of such test.” – 10 USC Section 139*
- **DoD Directive 5000.01 “The Defense Acquisition system,” states:**
 - *“The primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission capability and operational support ...”*
- **DoD Instruction 5000.02 “Operation of the Defense Acquisition System,” states:**
 - *“the primary purpose of IOT&E is to determine a system’s operational effectiveness and operational suitability,” and operational effectiveness is defined in terms of mission accomplishment, “Can a unit equipped with the system under test accomplish the mission?”*
- **HOWEVER, measuring Mission Accomplishment is hard:**
 - Requirements documents are often missing important aspects of mission accomplishment
 - Subjective (surveys, focus groups, interviews)
 - Binary outcome (yes/no); search for continuous metrics that are related?
 - Where do we draw the box? Section, Division, Platoon, Company, Ship, Fleet?
 - Comparison to current capability
 - Training Events
 - Live-Virtual-Constructive
 - Cybersecurity impact to mission



Example:

Joint Strike Fighter Close Air Support Mission

- **Close Air Support mission accomplishment**
 - Did JSF (section/division) meet Commander's Intent (yes/no)?
 - Does JSF provide measurable improvement over current CAS platforms?
 - Fraction of targets properly correlated
 - Fraction of valid weapon employments
- **Close Air Support mission battlespace effects (time of day, target environment, ground threat category, type of target) assessed with continuous response variables:**
 - Targeting accuracy
 - CAS Targeting Time
 - CAS Engagement Time
- **Correlation between binary, fractional, and continuous measures may not be direct/linear, but both will be used to support overall effectiveness determination**
 - Need to score the fight (mission accomplishment)
 - And to understand what happened (timeliness, accuracy, performance shortfalls...)