

Requirements Rationale – Guidance

Guidance

At times, the Capability Development Document (CDD) or requirements documents do not provide an operational rationale for the requirements or their thresholds. To develop an adequate operational test and evaluation strategy, the operational testers and evaluators need an understanding for why the requirement exists and of the possible consequences of failing to meet the thresholds.

There have been cases when the Key Performance Parameters (KPPs) and Key System Attributes (KSAs) do not form a sufficient basis for evaluation of mission effectiveness. See the [Inspector General report dated May 15, 2015](#) for two examples. If the requirements cannot be revised to define those system characteristics most critical for providing an effective military capability, the TEMP must identify and define those characteristics. See guidance on [Mission-Focused Metrics](#).

If the key requirements are appropriate and their rationale documented in the requirements document is adequate to support test planning and evaluation, *no further clarification is necessary*. In cases where the requirement is derived or transformed for testability or the operational rationale is unclear, the TEMP should have an appendix that explains the operational rationale and/or the derivation of the metric as well as the chosen numerical thresholds.

If not adequately documented in the CDD or other requirement documents, add rationale to the TEMP. Here are three examples.

Example 1

Requirement: The Dakota Attack Aircraft must be capable of receiving full motion video from unmanned aircraft systems (UAS). The Dakota must be able to receive and display to the crew the following minimum information via Ku Band: encrypted and non-encrypted streaming and still video imagery, sensor platform position, sensor azimuth, target location, and range-to-target. The Dakota must be capable of storing and transmitting this data to other members of the Joint/Combined Arms air/ground maneuver team, including legacy Dakota aircraft. The acceptable level of communication performance must be such that a two-way, line-of-sight data link and appropriate upload/download data rate can be maintained between the Dakota and the unmanned aircraft at no less than 50 km (threshold) (100 km objective).

Rationale: Integration of information is critical for aircrew situational awareness. Ground maneuver commanders rely heavily on variety of data sources and types to develop courses of action and to initiate engagements. Displaying information in an accurate and organized manner reduces cockpit workload and enhances mission effectiveness and survivability. Additionally, Dakota-UAS interoperability supports the future Modular Force, Networked Lethality, and Networked Battle Command concepts, tactics, techniques, and procedures. It extends detection/targeting ranges; teams manned and unmanned aircraft systems for maximum synergy; and avoids placement of manned aircrews at unnecessary risk.

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Example 2

Key Performance Parameter	Threshold	Objective
Mission Reliability	89%	90%

Mission Reliability. The mission reliability rate of 89% (Threshold, KPP), 90% (Objective) is required. Mission Reliability is the probability that the Heavy Lift Replacement (HLR) shall successfully support the USMC Ship to Objective Maneuver (STOM) concept. In the course of one period of darkness, an HLR unit of 28 aircraft must transport 73 external loads from ship to shore, a distance of 110 nautical miles. Each of the 73 external loads consists of various amounts of ammunition, fuel, water, supplies, or equipment weighing up to 27,000 pounds.

Example 3

Reliability. The threshold requirement for mean time between mission failure (MTBF(M)) is 20 flight hours (objective of 22 flight hours). The threshold requirement for mean time between essential maintenance action (MTBEMA) is 2.9 flight hours (objective of 3.1 flight hours). The specified reliability is needed to ensure a dependable level of aircraft performance and to ensure that operations and support costs of the current fleet of Dakota helicopters are reduced. Achieving the reliability thresholds will assure that the user obtains an aircraft with improved reliability performance and improved mission success capability. The reliability thresholds reflect a 20 percent improvement over the reliability performance of the current Dakota fleet, and the reliability objectives reflect a 30 percent improvement over the reliability performance of the current Dakota fleet.

References

[DoDI 5000.02, 7 January 2015](#)

[Inspector General Report, May 15, 2015](#)