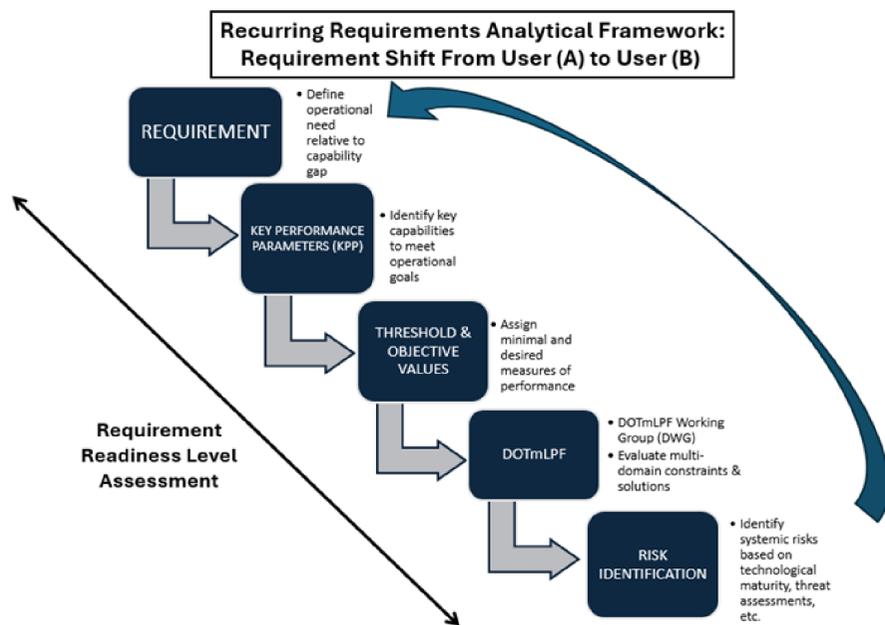


Abstract

This research identifies procedural shortcomings in the Department of War (DOW) requirements and acquisition processes that delay the rapid acquisition of evolving technologies. Legacy processes such as the Joint Capabilities Integration and Development System (JCIDS) lack formalized feedback mechanisms to rapidly iterate requirements for new technologies, inhibiting the speed at which the DOW can respond to emerging threats on 21st century battlefields. Through an analysis of defense acquisition reforms, recent conflicts, and a collaborative case study between the Naval Postgraduate School (NPS) and Naval Special Warfare (NSW), this research suggests that current DOW acquisition processes contribute to requirement rigidity and misaligned Key Performance Parameters (KPPs), resulting in increased program risk. This research proposes a framework to formalize operational feedback processes focused on agile requirements-generation that is responsive to an adaptive threat environment. By focusing on the development of requirements identified through capability gaps, this study offers recommendations to improve agility and responsiveness within the Defense Acquisition System (DAS) to better align materiel solutions with warfighter needs.

Methods

- This study supported the Naval Special Warfare Development Group's (DEVGRU) Combat Development Directorate in conducting a Group 3 unmanned aircraft system (UAS) requirements analysis
- **NSWDG System Requirements Analysis Worksheet**
 - Modified original user's requirements to fit NSWDG mission set and necessary system capabilities
 - Provided organizational impact if not funded
 - Established Key Performance Parameter threshold and objective values
 - Established table of organization / manpower requirements for system operation
 - Optimization analysis of launch and recovery methods for system and personnel
- **DOTmLPF Analysis**
 - Impacts to all elements of DOTmLPF regarding NSWDG system adoption



Results & Impact

- **Identified a structural agility gap in AAF (TMRR):** Linear, fragmented processes delay risk discovery and contribute to cost and schedule inefficiencies.
- **Developed RRAF and RRLs:** An iterative framework and maturity metric that continuously align requirements with operational needs, threats, and technological readiness.
- **Proposed a System Overview Network (SON):** A requirement-centric, graph-based model that visualizes interdependencies across DOTmLPF-P elements using readiness metrics.

RRL	Key Event	Description	
PLANNING	RRL 1	Capability Gap Defined	Initial capability gap identified, no formal validation, limited user input or data.
	RRL 2	Draft Requirement Defined	Basic KPPs drafted, initial DOTmLPF analysis conducted, early feasibility discussions.
	RRL 3	Preliminary Technical Analysis Conducted	Threshold and objective metrics proposed, early risk identification initiated.
VALIDATION	RRL 4	DOTmLPF Working Group Initiated	DWG convened, non-materiel and materiel solutions evaluated, multi-domain dependencies documented.
	RRL 5	Risks Quantified and Mitigation Planned	Operational risks defined and mitigation strategies identified through current environment threat assessment, ORM visualization introduced.
	RRL 6	Validated Requirement	Requirement's KPPs validated through developmental testing, metrics refined, DOTmLPF adjustments documented.
INTEGRATION	RRL 7	Integration Assessment	Requirement validated across multiple environments through operational testing, interoperability risks assessed.
	RRL 8	Pre-Milestone Validation	All major risks mitigated or accepted, requirement ready for inclusion in acquisition documentation (CDD validation).
	RRL 9	Operationally Proven Requirement	Requirement solution demonstrated in current operational environment, metrics verified, requirement confirmed effective.

DWG: DOTmLPF Working Group
 ORM: Operational Risk Management
 CDD: Capabilities Development Document

Future Research

- Assessing how artificial intelligence can be leveraged to create a dynamic system-overview network capable of providing program offices with a COP and enhanced situational awareness.
- Evaluating the impact of a system-overview network on the PPBE and contracting processes, with specific focus on how improved visibility and data integration could influence budgeting, prioritization, and acquisition timelines.
- Expanding research collaboration between the NPS and NSW through a multidisciplinary team representing all major components of the organization. This team should include special operators, intelligence professionals, aviation personnel, logisticians, and contracting specialists. Such diversity would enable a more holistic exploration of capability gaps and strengthen the applicability of future findings.