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Transformation in Contact: An Analysis of U.S. Army Acquisition Modernization Strategy

June 2026

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ABSTRACT

Army Acquisitions is a rapidly evolving environment where capabilities must be delivered to the warfighter at the speed of relevance. The Army introduced Transformation in Contact (TiC), a new strategy that can be utilized within the Adaptive Acquisition Framework (AAF), to ensure units can dominate modern threats. This strategy is designed to expedite the delivery of warfighter capabilities by utilizing commercial off-the-shelf (COTS) solutions and rapid prototyping. The end state is to rapidly field capabilities in an incremental framework that effectively counters emerging threats. This research analyzes two current programs of record (PORs) that use this delivery strategy. It aims to assess TiC's scalability and delivery capability for the broader Army Acquisition portfolio.

By leveraging doctrine, organization, training, materiel, leadership, and education (DOTmLPF-P) analysis alongside structured programmatic data, these PORs delivered high-capability systems on accelerated timelines. This rapid prototyping and fielding effort relied heavily on continuous user testing, validation, and strategic COTS integration to maintain the schedule. Ultimately, these results validate the TiC framework and demonstrate its scalability to larger programs across other acquisition portfolios.

Continued evaluation of TiC remains necessary to fully understand its long-term impacts on capability development and fielding times as it is implemented across more PORs.

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This thesis and the work it contains have been a journey for all the authors involved. Through the process, we have learned immensely and developed our understanding of the Army's acquisition strategy and its implementation. None of this would have been possible without the large group of people surrounding us, who ensured we had the time, knowledge, and capacity to conduct the research and writing for this process.

First, to our advisor, Dr. Robert Mortlock, and first reader, Dr. Raymond Jones, thank you for teaching us and providing valuable insights throughout this process. To the faculty of the Defense Acquisition, Finance, and Manpower, thank you for your dedication to teaching and expanding the capabilities of the next generation of military acquisition professionals.

Lastly, and most importantly, we would like to thank our spouses and families. Thank you for your love and support throughout our careers and our time at the Naval Postgraduate School. You are the reason we do what we do, and your encouragement and support have allowed us to succeed.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAR	After Action Review
AER	Army Evaluation Report
ATEC	Army Test and Evaluation Center
ATI	Army Transformation Initiative
AUPC	Average Unit Procurement Cost
BCT	Brigade Combat Team
COTS	Commercial off-the-shelf
CSIS	Center for Strategic International Studies
CSO	Commercial Solutions Opening
DoD	Department of Defense
DOTmLPF-P	Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy
FAR	Federal Acquisition Regulation
FRK	Field Repair Kit
GAO	Government Accountability Office
ICS	Interim Contractor Support
ISV-H	Infantry Squad Vehicle Heavy-
JCIDS	Joint Capabilities Integration and Development System
LSCO	Large Scale Combat Operations
MBCT	Mobile Brigade Combat Team
M-CDID	Maneuver Capabilities Development and Integration Directorate
MDA	Milestone Decision Authority
MOS	Military Occupational Specialty
MRL	Manufacturing Readiness Level
MTA	Middle Tier Authority
MTBOMF	Mean Time Between Operational Mission Failure
OEM	Original Equipment Manufacturer
OT	Operational Testing
OT&E	Operational Test and Evaluation
OTA	Other Transaction Authority
PAE	Portfolio Acquisition Executive

PEO	Program Executive Officer
PM	Program Manager
PoR	Program of Record
PPBE	Planning Programming Budgeting and Execution
RCA	Root Cause Analysis
SRR	Short Range Reconnaissance
sUAS	Small Unmanned Aircraft System
TiC	Transformation in Contact
TOC	Tactical Operations Center Technology Readiness Level
TTP	Techniques Tactics and Procedures
WAS	Warfighting Acquisition System

DISCLOSURES

The Authors are active-duty Army officers and experienced acquisition professionals currently attending the Naval Postgraduate School. Research is based on personal and professional expertise in operational testing and capability development. The views, findings, and conclusions expressed in this paper belong solely to the authors and do not represent the official policy or position of the Department of the Army, the Department of War, or the U.S. Government. The authors received no external financial funding, corporate sponsorship, or commercial benefits for this work. Furthermore, the authors utilized generative artificial intelligence (genAI) as a collaborative brainstorming and editing tool during the research and writing phases. The authors generated all core arguments, case study selections, operational insights, and final conclusions; genAI did not produce unique data, conduct independent analysis, or alter the substantive interpretation of the research.

Permission to use Gemini to support preliminary research was granted following a discussion with our thesis advisor regarding research methodology standards. We used Gemini to streamline the literature review for TiC research by efficiently identifying relevant studies, themes, and data trends. In addition to Gemini, we also relied on the Dudley Knox Library (DKL) website to identify and validate sources.

The authors used the enhanced version of Grammarly to proofread this paper to save time, improve the draft's readability, and learn to recognize grammar errors. Our thesis advisor approved the use of generative AI in this way but cautioned the authors to minimize AI influence on phrasing and style. The authors considered each recommendation given, accepted, rejected, and made other edits sparked by Grammarly's recommendations. It would be risky to blindly accept recommended edits, because sometimes the recommendations made the writing more unclear or changed the meaning. There are also acquisition terms that Gen AI wants to change but should not.

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I. INTRODUCTION

The U.S. Army's Transformation in Contact (TiC) initiative represents a fundamental shift in defense acquisition, prioritizing the rapid procurement and fielding of critical capabilities to maneuver forces (Army Public Affairs, n.d.). Unlike previous transformation periods in which acquisition reform occurred amid relative stability, today's environment requires the Army to deliver new capabilities while simultaneously engaging in competition below the threshold of armed conflict (Harrell et al., 2025), supporting allies in crisis, and preparing for high-intensity Large-Scale Combat Operations (LSCO). To maintain technological overmatch in these contested environments, the Army's new modernization initiative is guided by the TiC strategy. A growing number of acquisition programs operate under this strategy and are serving as real-world test cases for the Army's ability to balance rapid capability deployment with long-term institutional readiness.

A. PROBLEM STATEMENT

While the strategic demand for rapid capability delivery is clear, Army senior leaders believe legacy acquisition frameworks are not optimized to meet emerging challenges. Current acquisition processes are rooted in the Army Capabilities Integration and Development System (ACIDS), the Warfighting Acquisition System (WAS), and traditional Operational Test and Evaluation (OT&E) events. While these frameworks emphasize rigor, oversight, and accountability, they often struggle to deliver the speed, flexibility, and adaptability required for real-time transformation.

B. RESEARCH QUESTIONS

Research is conducted to identify current challenges and limitations affecting TiC programs and to determine the most effective ways to integrate and implement solutions to address them. This research aims to explore the overall success and impact of the Army Transformation Initiative (ATI), with a specific focus on the outcomes of its modernization imperative, TiC. By objectively evaluating key performance indicators, the research seeks to assess the effects of ATI's aggressive strategy and rapid acquisitions of solutions on the delivery of critical warfighting capabilities.

The primary and secondary questions for this research are as follows:

1. Primary Research Questions

- To what extent are ATI's prioritized programs, particularly those developed through the TiC framework, capable of scaling into enduring Programs of Record (PoRs), and what structural, institutional, or resource constraints may affect this transition?

2. Secondary Research Questions

- Effectiveness of Agile Implementation: To what extent has the adoption of agile acquisition methodologies within the TiC framework reduced capability delivery timelines while maintaining operational effectiveness and long-term sustainment?
- Institutional and Structural Barriers: What are the primary institutional barriers that influence the integration and scalability of TiC initiatives into enduring PoRs within the Army acquisition system?
- System-Level Impacts and Tradeoffs: How do rapid acquisition tools, including OTAs and prototyping pathways, shape interoperability, industrial base participation, and logistical supportability, and what metrics best assess their effectiveness in achieving ATI's transformation objectives?

By answering these questions, this research aims to provide an objective evaluation of ATI's progress, highlighting the current successes and impact of the TiC imperative on the force. It also seeks to identify the challenges and limitations affecting ATI and its subsidiary programs and to determine the most effective approaches for their integration and implementation.

C. RESEARCH OBJECTIVES

The objectives of this research are to evaluate the relative scalability of TiC PoRs, compare the strengths and weaknesses of the TiC approach with the traditional acquisition approach, and identify key challenges associated with rapid fielding. The research also aims to identify best practices (i.e., a decision framework) for acquisition leaders, helping them balance speed, risk, and accountability when implementing the TiC approach.

D. RESEARCH METHODOLOGY OVERVIEW

This project employs a comparative case study approach, using Doctrine, Organization, Training, materiel, Leadership & Education, Personnel, Facilities, and Policy (DOTmLPF-P), Root Cause Analyses (RCA) and an Intentionality Analysis to evaluate acquisition programs executed under traditional and adaptive frameworks to answer primary and secondary research questions. An Intentionality Analysis models one of the case study systems as a what-matters system, validating the program's agency by focusing on desired outcomes and purposeful refinements (Turner, 2017); this approach moves beyond the value-neutral principle of causality associated with Root Cause Analyses, suggesting that the program's intent and the vehicle's mechanical state can offer dramatically different yet equally valid explanations for the same behavior (Turner, 2017). Data sources include policy documents, Department of Defense Instructions, Army Directives, government reports (Government Accountability Office [GAO]; Director, Operational Test and Evaluation; Congressional Research Service), After Action Reviews (AARs), and published program data. The analysis focuses on program execution timelines, risk management strategies, testing approaches, and fielding/ sustainment outcomes. Best practices and recurring bottlenecks are mapped against TiC requirements.

E. RESEARCH SCOPE AND LIMITATIONS

Research is limited to post-test and experimentation data, although reliability data is available. The research topic is new and emerging, so quantitative data is limited. The research has limited historical data. TiC is a new initiative; therefore, long-term sustainment data does not yet exist. Conclusions on supportability are predictive, based on early fielding metrics rather than historical life-cycle data. Additionally, few programs have fully completed the TiC cycle from prototype to fielding, which precludes broad statistical analysis; instead, findings focus on qualitative trends rather than quantitative correlations. Data from After Action Reviews (AAR) is also subjective and difficult to quantify. Finally, this research is conducted at an unclassified level, and no classified documents or data are used.

F. SUMMARY

Current evaluations of the TiC acquisition strategy for the Army is conducted through the analysis of current programs within the TiC umbrella. The primary focus of this research is to evaluate the available information for the feasibility and scalability of TiC within current big "A" acquisition PoRs. Utilizing a DOTmLPF-P analysis of the currently available information, these primary and secondary questions will be answered. Prior to the full evaluation of the programs to answer these questions, however, the background of TiC and its effect on the Army's acquisition structure is discussed within further chapters.

II. BACKGROUND

Success on the modern battlefield demands perseverance, tenacity, and adaptive leadership from Soldiers who are capable of critical, agile thinking. As operational demands change and the character of war becomes more dynamic, the equipment used to find, fix, and neutralize enemy combatants is as essential as the determination with which Soldiers employ it. Ensuring technological overmatch requires sustained modernization to equip warfighters with platforms capable of defeating both exposed and concealed threats in dynamic, contested environments.

The Army Acquisition Corps plays a crucial role in providing the force with technological advantages needed to maintain its competitive edge. Incremental modernization is essential to this mission, ensuring Soldiers are equipped with the best available systems while retiring outdated and unnecessary technologies. Through proactive adaptation, acquisition professionals improve lethality, survivability, and operational capabilities across the Joint Force.

The ATI was launched in 2025 and is a comprehensive modernization effort focused on restructuring the force, upgrading technological capabilities, and redefining employment strategies for future conflicts (Driscoll, 2025). It mandates an aggressive transition toward a leaner and more lethal force by retiring legacy systems, including dismounted weapon systems, ground vehicles, and aircraft, and reallocating resources for the rapid acquisition and deployment of critical warfighting capabilities (Hoyle, 2025). According to Secretary of the Army Dan Driscoll and Chief of Staff of the Army General Randy George (Driscoll, 2025), ATI centers on three strategic efforts:

- Delivering critical capabilities, such as long-range precision fires and AI-enabled command nodes,
- Optimizing force structure by merging headquarters elements and forming flexible, expeditionary units,
- Reducing waste and inefficiency through acquisition reform and disposal of obsolete platforms. (Driscoll & George, 2025)

Collectively, these efforts position the United States to confront near-peer adversaries in contested operational environments and ensure readiness for future large-scale combat operations.

To achieve ATI's modernization goals, the Department of Defense (DoD) formally integrated TiC into the broader implementation strategy. TiC is designed to rapidly integrate technology and essential equipment into Army units and enable faster delivery of warfighting capabilities through rapid prototyping, commercial off-the-shelf (COTS) procurement, and iterative field testing. Over the past three years, TiC projects have grown under the leadership of portfolio acquisition executives (PAEs), who oversee both traditional programs and TiC efforts across various acquisition phases. The Army explains TiC as follows:

> Transforming in Contact is the Army's adaptation of its organizations and delivery of new technology into the hands of Soldiers so they can experiment, innovate, and be ready to fight on a modern battlefield. … Soldiers can organize and integrate capabilities during realistic training scenarios, adapting their formations to meet needs and making technology work for them rather than working for the technology. (Youngren, 2025, p. 1).

This framework enables TiC to accelerate capability deployment and ensures that equipment is tested under operationally relevant conditions. Soldier feedback guides acquisition decisions, influences unit-level organizational structure, and improves the Army's ability to respond to new threats. TiC marks a strategic shift in the traditional acquisition process. Rather than relying exclusively on traditional acquisition pathways that contain milestone reviews and formal OT&E events, the TiC framework embeds iterative testing directly in the tactical environment. This change highlights the importance of end-user evaluation, real-time data collection, and ongoing product improvement. The goal is to boost survivability, lethality, and reliability while giving units greater influence over the systems they use.

As the modern battlefield evolves quickly, shortening the acquisition timeline has become essential. TiC enables the Army to adapt to enemy strategies, rapidly adopt new technologies, and remain effective in fast-changing tactical situations. ATI provides the overarching framework guiding Army modernization across the spectrum of competition, crisis, and conflict (Driscoll & George, 2025). In the evolving 21st-century battlefield, TiC provides a structure through which ATI can effectively be seen and influence the drifting threat patterns observed by the warfighter.

While traditional processes such as the Joint Capabilities Integration and Development System (JCIDS), the WAS, and OT&E provide rigor and oversight, they are often not well understood or executed to meet warfighter capability needs. TiC addresses these challenges by providing speed, flexibility, and adaptability. Understanding TIC's role in shaping the current and future battlefield is crucial for maintaining operational dominance.

TiC represents a significant shift in how the Army acquires, deploys, and evaluates new capabilities. By accelerating modernization, reducing acquisition timelines, and enabling Soldiers to contribute directly to system development, TiC strengthens the Army's ability to remain agile, responsive, and lethal against adversaries. As part of the broader ATI framework, TiC helps the Army maintain a competitive edge in 21st-century battles.

The DoD's "Big A" framework is a complex triad designed to synchronize requirements, resourcing (Planning, Programming, Budgeting & Execution (PPBE)), and execution (Warrior Acquisition System (WAS)). The AAF offers six pathways to match a program's specific needs to provide warfighters with reliable, survivable, and cost-effective solutions at the speed of relevance. Within this framework (Figure 1), MDAs and PMs select a specific pathway that best fits the unique technical and operational needs of the technology they are developing (WAU, 2026).

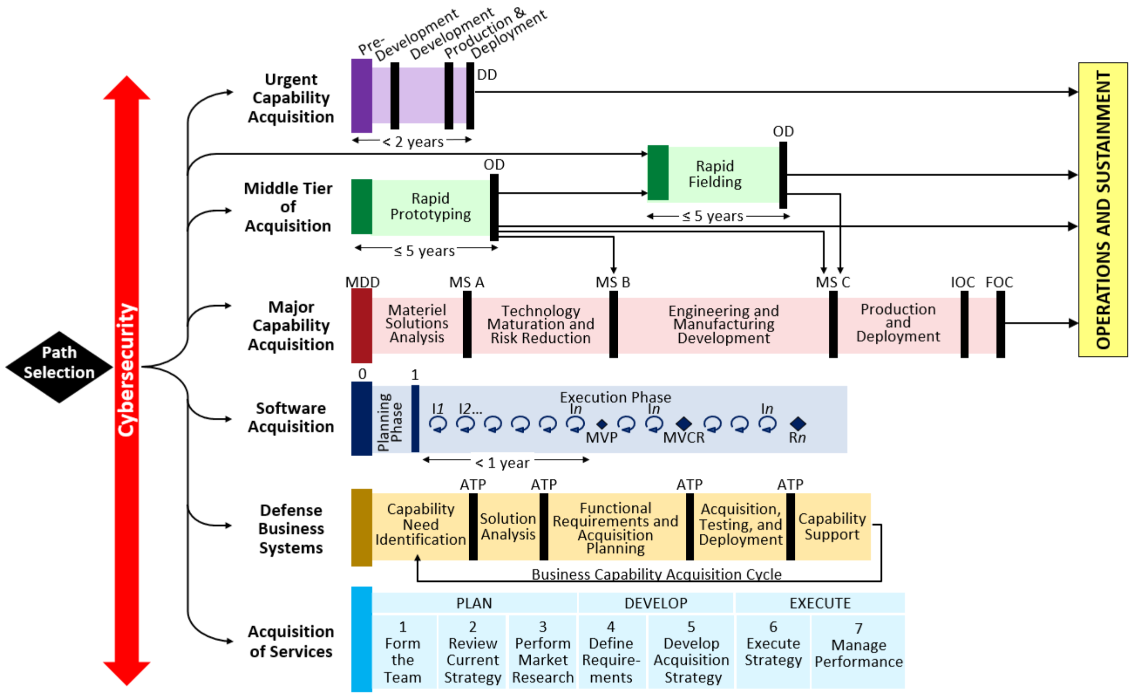

Figure 1. “Adaptive Acquisition Framework Pathways,” Source: (Department of Defense, 2026a).

These pathways are supported by a contracting cone of diverse approaches that enable rapid engagement with industry partners. The Contacting Cone (Figure 2) “outlines the full spectrum of available FAR and Non-FAR contract strategies” (DoD, 2026, pg. 1).

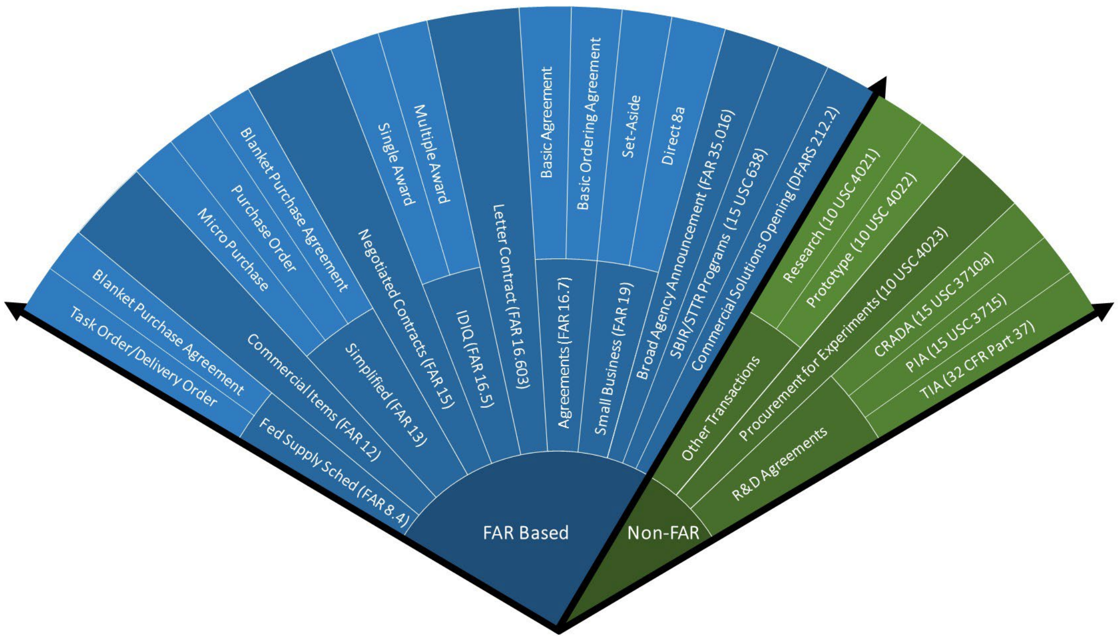

Figure 2. “Acquisition Contracting Cone,” Source: (DoD, 2026b).

Transformation in Contact reorients this framework toward the warfighter’s immediate need. Rather than relying on fully defined, top-down requirements, TiC frames initial fielding as a continuous operational experiment. Embedding engineers alongside tactical units enables real-time data collection and rapid feedback loops (Youngren, 2025). This approach shifts the emphasis away from rigid, milestone-based reviews toward iterative refinement during sustainment, allowing capabilities to evolve as operational environments change.

The strategic shift toward TiC transitions the Army away from deliberate modernization efforts and towards continuous adaptation. Operationalizing this speed, however, requires changing traditional acquisition norms/behaviors. The following literature review analyzes the institutional barriers, commercial agility requirements, and supply chain limitations that currently define rapid procurement approaches.

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III. LITERATURE REVIEW

This chapter provides an overview of the strategic priorities driving the Army's TiC initiative and examines the institutional and industrial barriers impeding its implementation. The literature is organized into three main themes: the doctrinal shift from episodic to continuous modernization; bureaucratic delays within current acquisition authorities; and the physical limitations of the industrial base, such as surge capacity and supply chain resilience. This review establishes the theoretical foundation for this study, emphasizing the significant gap between the Army's goal of delivering capabilities quickly and the manufacturing realities required to sustain those same capabilities during large-scale combat operations. Additionally, the literature review includes specific practical case studies, with their respective experimentation results and outcomes, which utilize the TiC framework to rapidly deploy equipment to the warfighter.

A. THE STRATEGIC IMPERATIVE FOR CONTINUOUS TRANSFORMATION

To understand the urgency of the TiC initiative, it is essential to analyze the doctrinal shift from episodic to ongoing modernization. In his foundational article, *Continuous Transformation: Transformation in Contact,* Rainey (2024) argues that the Army's traditional modernization cycles, which primarily occurred during periods of stability, are no longer suitable for today's threat environment. Rainey suggests that, as technological adaptation in areas such as unmanned systems and electronic warfare now occurs in weeks rather than years, the Army must modernize continuously while deployed and competing.

Rainey (2024) introduces the "three-time horizons" framework (24 months, 2–7 years, and the deep future), which synchronizes operational planning with the pre-existing rapid pathways of the Adaptive Acquisition Framework (AAF), specifically leveraging Urgent Capability (less than two years) and Middle Tier of Acquisitions (less than five years) authorities. By arguing that the Army must fundamentally change how it writes requirements, Rainey's article supports the broader consensus that traditional, deliberate requirements processes, such as the legacy Joint Capabilities Integration and Development System (JCIDS), can no longer keep pace with peer adversaries. However, while Rainey articulates the operational necessity for this speed, the concept places heavy emphasis on integrating doctrine and training. It leaves a notable gap regarding the materiel supportability of this strategy, specifically how logistics systems designed for static sustainment can adapt to a force that changes its equipment every 24 months.

B. INSTITUTIONAL BARRIERS TO AGILE IMPLEMENTATION

While the strategic imperative is clear, recent assessments suggest that the Army's acquisition machinery has struggled to operationalize these concepts. The GAO provides a critical evaluation of the implementation of the Adaptive Acquisition Framework in its 2024 report, *DoD Acquisition Reform: Military Departments Should Take Steps to Facilitate Speed and Innovation*. Despite the introduction of the Middle Tier of Acquisition pathways intended to bypass bureaucratic hurdles, the GAO (2024) found that slow, linear development approaches persist across multiple Army programs. This highlights a persistent disconnect between policy intent and program execution: Program managers often default to traditional risk-avoidance behaviors even while operating under rapid authorities. The 2024 GAO report also suggests that the mere existence of agile authorities is insufficient to generate speed without a corresponding shift in institutional culture and workforce training. The findings of this study are significant because they indicate that the scalability of TiC is currently limited not only by external industrial factors but also by internal resistance to abandoning the WAS's "checklist" culture (GAO, 2024).

C. SHIFTING FROM OLIGOPOLIES TO COMMERCIAL AGILITY

The tension between traditional defense primes and the commercial sector is central to the scalability debate and further acts as an institutional barrier. *The Pentagon is Overhauling the Defense Acquisitions Process* (Goldstein, 2025) analyzes recent DoD policy shifts intended to break the reliance on the "Big Five" defense contractors. In his analysis, he suggests that the current acquisition system rewards oligopolies that prioritize high-end, low-volume systems, which are antithetical to TiC's goal of mass-fielding, low-end, expendable assets. Goldstein argues that to achieve true scalability, the Army must utilize the capabilities of commercial players already culturally adapted to high-volume manufacturing. However, a rigid regulatory compliance environment historically designed for deliberate, large-scale defense programs currently hinders this transition, rather than supporting the rapid procurement of attritable unmanned systems (Goldstein, 2025). Furthermore, while integrating agile commercial production methodologies is essential to meet the growing demand signal, Goldstein's argument heavily prioritizes industrial speed while largely bypassing the tactical realities of fielding non-ruggedized, commercial-grade equipment to warfighters in contested environments.

Closing the feedback loop to address these barriers, a system's scalability is closely tied to its battlefield relevance. Youngren (2025) explores an innovative approach to this challenge in *From Front Lines to Factories: Embedding Industry in U.S. Army Units*. Youngren (2025) suggests that the traditional separation between the developer and the user causes delays that slow deployment, and that by embedding industry engineers directly with tactical units, the Army can shorten the iteration cycle. Furthermore, (Youngren, 2025) notes that, unlike government engineers, industry representatives have direct reach-back to commercial supply chains and production lines, ensuring that manufacturing constraints are identified during the design phase rather than after the prototype is completed. Youngren (2025) supports this claim with observations from the ongoing conflict in Ukraine. Ultimately, this framework suggests that scalability is most effectively achieved when industrial realities are integrated into tactical experimentation.

D. THE CONSTRAINT OF INDUSTRIAL BASE SCALABILITY

Beyond internal bureaucratic friction points, a perhaps more tangible barrier exists within the manufacturing base itself. When assessing the scalability of TiC initiatives, it is crucial to examine the commercial sector's physical capacity and capability. In the analysis *Industrial Roadblocks: Producing at Scale and Adopting New Technologies*, Cynthia Cook (2025) of the Center for Strategic and International Studies (CSIS) challenges the common assumption in acquisition that successful prototypes can be easily militarized at scale. Cook (2025) underscores a critical misalignment between the Army's legacy just-in-time efficiency model, which emphasizes cost savings and lean inventories, and a just-in-case capacity needed for wartime surge.

Cook (2025) suggests that this fragility leads to a scalability trap, in which rapid prototyping teams succeed in creating concepts but struggle to transition to mass production due to insufficient dormant manufacturing capacity and raw material reserves. She also presents the idea of "Production as Deterrence" (Cook, 2025). This publication argues that opponents are discouraged not just by a single platform's technological edge but also by the visible industrial base's ability to replace losses and rapidly increase output (Cook, 2025). Overall, this shows that scalability for TiC programs should not be measured only by the transition to program of record but must also consider the industrial base's capacity to scale up manufacturing quickly to fulfill total Army fielding needs within specified timelines.

E. THE REQUIREMENT FOR FLEXIBLE PRODUCTION

Expanding on the concept of surge capacity in their CSIS report, *Putting the Industrial Base on a Wartime Footing* (McGinn & Cook, 2025) argue that scalability requires a fundamental shift in the design of production lines. (McGinn & Cook, 2025) contend that the current industrial base is rigid, designed to produce specific variants efficiently, while a wartime footing requires flexible lines capable of rapid retooling. (McGinn & Cook, 2025) further suggest that, for TiC to be viable, the Army must invest in warm industrial bases, which the U.S. Army defines as maintaining a "survival workload" and the minimum personnel necessary to keep a depot's operations viable during peacetime (Browne, 2008), rather than independently projecting that commercial industry can switch to military production immediately during a crisis.

F. THE FRAGILITY OF THE SUB-TIER SUPPLY CHAIN

While the lack of domestic manufacturing capacity creates a physical barrier to scaling, a parallel risk exists within the lower levels of the supply chain. In *Defense Industrial Base: Actions Needed to Address Risks Posed by Dependence on Foreign Suppliers*, the GAO (2025) highlights a critical vulnerability in the Army's ability to increase production: dependence on adversarial nations for essential components. The GAO notes that although prime integrators may be domestic, the scalability of TiC systems, especially small, unmanned aircraft systems and batteries, is often limited by the availability of raw materials and subcomponents sourced from foreign suppliers. It argues that true scalability requires not just assembly lines but also clear visibility into the third and fourth tiers of the supply chain, a level of insight that current acquisition programs often lack.

G. GAPS IN LITERATURE

While the current body of literature thoroughly defines the strategic importance of TiC and highlights the economic constraints on the industrial base, notable gaps are still in the implementation of specific programs within this new ecosystem.

1. Lack of Empirical Program Analysis

Existing analyses of TiC are, at best, theoretical or doctrinal, with limited research and little background documentation due to the initiative's immaturity. These analyses present unique challenges that inform the empirical examination of the program. While Rainey (2024) establishes a clear operational need for speed and identifies policy barriers, there is a scarcity of empirical data on whether specific MTA programs successfully overcome the scalability trap identified by (Cook, 2025).

2. The Sustainment Void

Existing research focuses heavily on production capacity and acquisition authorities. There is, however, a notable absence of literature addressing the long-term supportability of these rapidly fielded systems. While Youngren (2025) suggests embedding industry for design feedback, there is little analysis of how the Army's legacy sustainment infrastructure adapts to support systems that may change every 24 months; this is largely due to the Army's current design for multi-decade platforms. Current literature has yet to reconcile the friction between disposable, attrition-based assets and the Army's traditional doctrine of long-term life-cycle management.

H. LITERATURE REVIEW SUMMARY

This research aims to bridge these gaps by moving beyond macro-level industrial analysis to conduct a comparative case study of specific TiC programs. By evaluating these programs against both manufacturing constraints and institutional supportability requirements, this study analyzes whether the current acquisition approach is truly scalable or merely accelerates the development of prototypes that cannot be sustained in war.

IV. ANALYSIS

Analyses on the topic of TiC were conducted through a thorough review using a dual analytical approach, evaluating current documentation from two programs within the TiC umbrella: the Short-Range Reconnaissance (SRR) and the Infantry Squad Vehicle – Heavy (ISV-H). These two programs were analyzed at the program level and compared to assess current metrics for TiC programs within the force.

A. METHODOLOGY

This research uses a comparative case study approach to qualitatively assess the scalability and supportability of the Army's TiC initiative. The study employs a dual-analytical approach to thoroughly compare rapid acquisitions under the TiC framework against traditional models. This method includes DOTmLPF-P analyses, an RCA, and an Intentionality Analysis.

1. Case Study Selection:

To evaluate the practical application of the TiC strategy across different warfighting domains, this study examines two distinct acquisition efforts at varying stages of maturity:

- Program A: SRR. This case represents a mature, fielded unmanned aerial system (UAS) that successfully transitioned from rapid prototyping to a major capability acquisition (MCA) pathway (Phillips, 2025, p. 1).
- Program B: ISV-H. This case represents an emerging, heavy ground mobility platform currently navigating the preliminary stages of the acquisition life cycle under the TiC strategy.

This research deliberately contrasts these two programs to evaluate them at separate phases of the acquisition life cycle. By evaluating the programmatic characteristics of a mature system, such as the SRR, against the acquisition strategy of an emerging system, such as the ISV-H, the research assesses whether the TiC strategy is universally scalable or structurally biased toward specific equipment types.

2. Analytical Frameworks and Measures of Effectiveness

- DOTmLPF-P Analysis: This research applies Doctrine, Organization, Training, materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTmLPF-P) framework to both case studies. This method identifies the institutional and organizational friction points that occur when rapid prototyping initiatives transition to fielded Programs of Records (PoRs).
- RCA. Building on the DOTmLPF-P findings, a subsequent RCA isolates the underlying variables that created bottlenecks in program execution, focusing on schedule delays and the friction associated with scaling rapid prototypes into sustained PoRs.
- Comparative Measures of Effectiveness (MOEs): To objectively assess scalability and supportability, the study evaluates both programs against four specific criteria as follows:

1. Acquisition Velocity: The measured timeline from the initiation of rapid prototyping to low-rate initial production (LRIP) or initial operational capability (IOC).
2. Operational Reliability: Formal test and evaluation metrics, such as mean time between operational mission failure (MTBOMF) or overall system availability rates, measure system dependability.
3. Sustainment Burden: The system’s life cycle sustainment plan (LCSP) dictates the logistical footprint required for supportability. This metric analyzes the reliance on contractor logistics support (CLS) versus organic Army maintenance.
4. User Integration and Usability: The friction associated with adopting the system at a tactical level. Standardized usability scores (e.g., the usability metric for user experience (UMUX) evaluate this friction during operational testing.

3. Data Collection

Data is derived from a review of controlled unclassified information (CUI) and open-source documentation. Primary sources include acquisition decision memorandums (ADMs), Army Test & Evaluation Command (ATEC) operational test evaluation reports (AERs), life cycle sustainment plans (LCSPs), expeditionary operational assessment (EOA), memorandums of observation (MOO), and published program execution data. The study relies on formal usability and training evaluations, documented in ATEC post-test data, to assess operational integration, given the lack of tactical AARs.

B. CASE STUDY A: SHORT RANGE RECONNAISSANCE

1. Short Range Reconnaissance Case Study Overview

The SRR program equips infantry platoons with a dedicated aerial reconnaissance platform. The program office defines system as follows:

> The SRR is a platoon-level uncrewed aircraft system, which provides maneuver elements with enhanced situational understanding and standoff capability with a dedicated aerial reconnaissance and surveillance platform. SRR has Vertical Take-Off and Landing (VTOL) capability, can be deployed from mounted or dismounted locations, and can be launched and recovered by hand in confined areas. The SRR system fits into or attaches to the standard Soldier rucksack system and is stowed in a transport case or man-packed by the Soldier (PM UAS, 2026).

To manage and upgrade this capability, the program office utilizes the Army's TiC initiative. Rather than a traditional acquisition schedule, the program office uses an iterative "tranche" strategy to rapidly push commercial technology upgrades to the field (White, 2025). One example of this was the milestone decision authority's initial approval of Tranche 1 for low-rate initial production (LRIP) in October 2021 (Barrie, 2021). However, the program office quickly identified a critical capability gap because the commercial systems lacked the multiband datalink frequencies required for overseas operations. TiC did not introduce a new statutory acquisition pathway to address this; instead, it served as a prioritization mechanism that leveraged existing middle-tier acquisition pathway authorities. Under the TiC umbrella, the program office used the MTA authorities to expedite procurement of 303 upgraded systems to close this tactical gap (Phillips, 2024). Through this continuous iteration, the SRR program successfully demonstrated how TiC can help accelerate the existing AAF, maturing from a rapid-prototyping effort into a formal MCA pathway (Phillips, 2025).

A key element of the SRR's concept of operations (CONOPs) is the employment of hunter-killer tactics, techniques, and procedures (TTPs). The SRR system serves as the organic hunter, using its sensors to identify threats and designate targets for a separate, one-way loitering munition to destroy said targets. Because the SRR serves as a mature, recoverable platform—assessed at a technology readiness level (TRL) 9—rather than an expendable asset, its programmatic profile reflects a higher baseline, with an average unit procurement cost (AUPC) of $65,000 (PM UAS, 2026). Despite the high AUPC, there is a growing perception across the defense enterprise that the high-threat environment of LSCO will ultimately force these platforms to be used as attritable systems in practice (Beinart, 2025). Anticipating this reality and the associated need for surge capacity, the Army deliberately avoided vendor lock-in for Tranche 2, awarding production contracts to multiple competitors to maintain a broader, warmer industrial base capable of scaling rapidly (Collins, 2025).

2. Acquisition Velocity

The SRR program is a clear example of how to execute rapid acquisitions under the TiC strategy when looking strictly at the speed of relevance, or acquisition velocity. To accelerate development, the program office leveraged the MTA-RP pathway, which proved highly effective and delivered immediate results. On October 28, 2021, the MDA approved Tranche 1 for LRIP (Barrie, 2021). In less than a year, the program office began fielding the RQ-28A systems to tactical units on September 6, 2022 (Phillips, 2024). By using an iterative tranches approach, the program office was able to continuously field upgraded capabilities to warfighters. Recent program data confirm this, with the Army successfully fielding 141 systems specifically for the TiC 2.0 initiative, all within a 3-month timeframe (PM UAS, 2026).

3. Operational Reliability

During an operational test for the SRR, the Army evaluated Tranche 2 candidate systems using MTBOMF to measure materiel reliability. According to the system's key system attributes (KSAs), the platform must meet specific MTBOMF thresholds to ensure a high probability of completing standard mission durations without experiencing an operational mission failure (Rojero, 2024a). However, test data for both candidates demonstrated a significant shortfall against these metrics, failing to meet the minimum threshold objectives (Rojero, 2024a, 2024b). Evaluators determined that command and control (C2) link failures drove these low reliability scores. Both systems frequently experienced dropped video feeds, loss of link, and other C2 connectivity issues, which accounted for the majority of the mission failures (Rojero, 2024a, 2024b). Ultimately, while the rapid acquisition pathway succeeded in fielding the capability quickly, these failure rates indicate that commercial off-the-shelf (COTS) systems can struggle to maintain consistent, reliable data links when subjected to operationally realistic military environments.

4. Sustainment Burden.

The SRR program's sustainment strategy relies heavily on commercial technology. The life cycle sustainment plan (LCSP) outlines a simple two-level maintenance concept, operator level, and depot (White, 2025). On the physical side, the systems are easy to carry and set up. Both candidate systems met the 19-pound weight limit and fit easily into standard rucksacks (Rojero, 2024a, 2024b). Soldiers used field repair kits (FRKs) to successfully swap broken rotor arms in under 90 seconds (Rojero, 2024b).

However, the software and long-term logistics tell a different story. The Army only plans to keep these specific commercial systems for about six years (White, 2025). Because of this short lifespan, establishing full Army depot support is not financially viable (White, 2025). Instead, the program relies on the manufacturer for major repairs through interim contractor support (ICS). While this might save money in the short term, it creates heavy reliance on contractors when technical issues arise. For example, when the systems lost their data links during testing, operators could not fix the connection in the field because they lacked straightforward troubleshooting guides (Rojero, 2024a, 2024b). While the physical parts are easy for Soldiers to swap in the dirt, the commercial software creates a troubleshooting burden that constantly requires contracted support.

5. User Integration and Usability.

User integration for the SRR depends heavily on the system's ability to maintain stable software. Operational tests showed that unstable C2 links significantly hinder mission success across all candidate platforms. For example, frequent loss-of-link events caused the aircraft to autonomously return to launch sites, risking the unit's position, mission, and safety (Rojero, 2024a, 2024b). Additionally, operator workload increased sharply during these events, as Soldiers had to troubleshoot connectivity issues rather than focus on the tactical missions (Rojero, 2024a, 2024b).

By contrast, when the commercial software remained stable, the platforms achieved high mission success rates comparable to those of the mature Tranche 1 system (Rojero, 2024a, 2024b). However, even during successful missions, Soldiers noted that adapting commercial infrared (IR) cameras to military standards remains a challenge. Pixelated video at high zoom levels often generated false positives during autonomous object detection, forcing operators to spend more time verifying targets (Rojero, 2024a, 2024b). Ultimately, while the TiC strategy enables rapid user integration, the usability of software-heavy systems remains entirely dependent on the stability of the commercial software.

6. SRR DOTmLPF-P Analysis

To evaluate the broader institutional impact of the TiC strategy, this research applies the DOTmLPF-P framework to the SRR program. Building on the friction points identified in the preceding measures of effectiveness (Acquisition Velocity, Operational Reliability, Sustainment Burden, and User Integration and Usability), this assessment analyzes the resulting programmatic friction. By collating operational test data and life cycle sustainment strategies, this analysis shows that aggressive prioritization of commercial-off-the-shelf integration often outpaces institutional readiness, creating systemic challenges across the Army enterprise.

Table 1. DOTmLPF-P Analysis for SRR

Domain	Analysis and Findings
Doctrine	The TiC strategy delivered sUAS systems to the warfighter faster than the Army could write doctrine for their employment. ATEC evaluators noted a critical lack of established tactics, techniques, and procedures (TTPs) for platoon-level sUAS operations (Rojero, 2024a, 2024b). This forces units to rely on interim, localized TTPs rather than wait for formalized field manuals to dictate employment concepts.
Organization	The SRR is fielded to standard maneuver elements, such as Infantry Brigade Combat Teams, without creating dedicated aviation units or altering the current organizational structure (Rojero, 2024a). Programmatically, this enables the Army to rapidly inject new capabilities into existing formations, avoiding the bureaucratic delays of formal force-structure changes.
Training	The iterative "tranche" fielding of commercial technology creates a persistent training burden. Evaluators noted that new equipment training (NET) models cover only basic flight operations and fail to build tactical mastery or data-link troubleshooting skills (Rojero, 2024a, 2024b). Because the TiC strategy replaces systems at an increasing rate, the Army struggles to establish long-term institutional master-trainer programs before the hardware becomes obsolete.
Materiel	The push to quickly deploy COTS technology in the military created a noticeable gap between commercial standards and tactical durability. Since the program skipped traditional, lengthy developmental testing to enable fast deployment, the Army accepted systems with certain design flaws common in commercial products. Evaluators identified serious materiel issues across all prototypes, such as exposed battery lighting that compromised tactical light discipline by making the aircraft easily visible through night-vision goggles (Rojero, 2024a, 2024b).
Leadership & Education	With the systems arriving in rapid succession, platoon and company leaders lacked the formal training to integrate them into their TTPs. ATEC specifically recommended establishing a dedicated sUAS Leaders Course to equip commanders with decision-making tools for determining when, where, and why to deploy decentralized commercial assets in contested environments (Rojero, 2024a, 2024b).
Personnel	The TIC strategy designates the SRR as a platoon-level asset operated by standard maneuver personnel (e.g., Infantrymen) rather than by specialized unmanned aircraft systems operators (Rojero, 2024a). This programmatic strategy assumes that COTS systems are intuitive enough to be "plug-and-play" without requiring the Army to create or allocate a specific military occupational specialty (MOS). However, this assumption creates friction when the commercial software fails. Because the systems lack tactical troubleshooting guides for C2 issues, the software's proprietary "black-box" nature prevents field-level operators from restoring C2 in-flight. Ultimately, the mission failures were not due to the Infantryman's capability but rather a structural vulnerability introduced by the TiC strategy itself. By prioritizing the rapid adoption of closed commercial architectures, the TiC model inherently denies operators the diagnostic tools needed to troubleshoot in tactical situations.

Facilities	The SRR sustainment strategy intentionally avoids long-term investments in military infrastructure. Because the program strategy expects to replace commercial tranches in less than six years, the product office deemed full organic depot support uneconomical (White, 2025). Consequently, the TiC strategy divests from building modernized military facilities, relying instead on portable field repair kits (FRKs) at the tactical edge and original equipment manufacturer (OEM) facilities for major overhauls (White, 2025).
Policy	The SRR effectively leverages adaptive acquisition policies to bypass regulatory barriers. The program utilizes the MTA rapid prototyping pathway to circumvent lengthy traditional procurement delays. Concurrently, broader Army aviation policies, such as Army Regulation 95-1 and Training Circular 3–04.62, are undergoing constant revision simply to manage the rapid influx of these commercial assets into the force (Rojero, 2024a).

7. Root Cause Analysis: The Friction of Velocity.

Building on the DOTmLPF-P findings, this research conducts a systemic root cause analysis (SRCA) to identify the underlying variables that generate programmatic friction as the SRR system scales from a rapid prototype to an MCA pathway. Unlike linear root-cause models designed for localized hardware failures, SRCA evaluates the complex interactions among competing institutional structures. This analysis examines the friction that arises when systems within the TiC strategy collide with traditional, deliberate Army sustainment and training paradigms. This systemic approach highlights that the bottlenecks and operational shortfalls observed in the SRR program are not primarily due to mechanical failures or end-user incompetence. Rather, the friction is a structural consequence of the TiC strategy itself, driven by three fundamental programmatic tensions: asynchronous maturation, the black-box paradigm of COTS software, and the economic dilemma of the tranche life cycle.

1. **Asynchronous Maturation: Acquisition Speed vs. Institutional Inertia.** The primary root cause of friction across the Doctrine, Organization, Training, and Leadership domains is the asynchronous maturation rate between commercial hardware and institutional Army processes. The TiC strategy successfully accelerates the materiel (m) domain by bypassing traditional multi-year developmental testing, putting hardware in the hands of maneuver units in less than a year. However, the institutional Army requires a significantly longer runway to develop finalized doctrine (Field Manuals), update professional military education (e.g., the dedicated sUAS Leaders Course), and validate comprehensive master training programs. Consequently, the hardware consistently outpaces the

institution's ability to scaffold it, forcing units to absorb advanced capabilities using interim TTPs and undeveloped NET.

2. **The COTS "Black-Box" Paradigm.** The root cause of the severe operational reliability shortfalls (e.g., failing the 12-hour MTBOMF metric) and the spikes in operator cognitive workload is the program's reliance on closed COTS architecture. To achieve acquisition velocity, the TiC strategy accepts commercial software that is inherently unsuited for contested, tactically demanding environments. Furthermore, because these architectures are proprietary black boxes, the Army is denied the technical data rights or diagnostic tools required for field-level software maintenance. While the physical hardware is highly modular (allowing 90-second FRK repairs), the closed software architecture prevents standard maneuver personnel from troubleshooting persistent command-and-control (C2) link drops. The usability friction is thus a direct result of relying on proprietary commercial software networks without providing technical diagnostic capability.
3. **The Economic Dilemma of the Tranche Life cycle.** The root cause of the shifted sustainment burden and the complete divestment from organic military facilities is the economic reality of the iterative "tranche" strategy. Because the TiC strategy plans to replace commercial hardware every four to six years—and software even more frequently—to keep pace with industry advancements, it mathematically discourages long-term institutional investment. Building modernized organic depots, adding to the preexisting specialized unmanned UAS operators force structure, or reverse-engineering technical data packages for systems with a five-year economic useful life is fiscally irresponsible. Therefore, the program is structurally forced to rely on ICS and OEM for major overhauls. This permanent tether to contractor logistics is not a temporary gap; it is a permanent feature required by the rapid replacement cycle.

8. Summary of SRR RCA Findings

Ultimately, the TiC strategy performs exactly as designed: it trades institutional readiness and deep organic sustainment for immediate tactical relevance and acquisition velocity. The systemic friction observed in the SRR program is the unavoidable cost of scaling commercial prototypes into tactical formations before the enterprise is prepared to support them.

C. CASE STUDY: INFANTRY SQUAD VEHICLE—HEAVY

1. Infantry Squad Vehicle—Heavy Case Study Overview

The Infantry Squad Vehicle-Heavy (ISV-H), formerly known as the Next Generation Tactical Vehicle (NGTV), is a "series hybrid-electric vehicle based on the Chevrolet Silverado" (Hufstedler, 2025, p. 1). It combines the chassis of a "Silverado 3500 Heavy Duty (HD) with the off-road suspension from the 2500HD ZR2, a high voltage (HV) battery pack sourced from the Cadillac Lyric electric vehicle (EV), and the 2.8-liter diesel engine from the U.S. Army ISV" (Hufstedler, 2025). ISV-H aligns with TiC by addressing key operational needs and enhancing current battlefield capabilities, serving as a mobile power and mission command hub for small, dispersed formations. "The purpose of the ISV-H is to fulfill critical operational roles such as exportable power for TOC operations and onboard vehicle power (OBVP) for Mission Command on the Move (MCOTM)" (Leon, 2026). These roles emphasize versatility, mobility, and support for tactical operations across diverse environments.

While TiC focuses on improving the Army's ability to rapidly adapt/respond effectively in dynamic and contested environments, the ISV-H contributes to this initiative in multiple ways, first, by "providing silent, mobile power generation to support critical battlefield operations (e.g., powering tactical-level C2 nodes, small, unmanned aircraft systems (sUAS), and other critical mission equipment" (Leon, 2026). This capability aligns with TIC's emphasis on providing power at the point of need to enhance operational effectiveness. "ISV-H also features a silent drive and extended operational reach via a hybrid-electric design. These capabilities enhance survivability (and lethality) by reducing its audible signature and fuel consumption" (Leon, 2026). At the same time, its modularity enables it to support a range of mission sets. These features highlight the ISV-H's potential to improve the Army's operational effectiveness in complex, contested environments. This capability is central to the intent of the Transformation in Contact initiative.

> The program utilizes a Commercial Solutions Opening (CSO) to leverage existing industrial innovation rather than traditional, slow-cycle development. The Government shall evaluate and select offerors using specific factors, including technical merit and applicability of desired capabilities, price to the appropriate extent (fair and reasonable), and

> importance to agency programs (including but not limited to logistics data delivery, schedule, right to repair provisions, and level of data rights proposed. (Leon, 2026)

Bypassing slow-paced development efforts in favor of CSO enables the program to accelerate innovation and rapidly field to the Warfighter.

2. Acquisition Velocity

The ISV-H program mirrors the rapid timelines seen in the SRR initiative. The Army "accepted two vendor-loaned prototypes from GM Defense for experimentation to support the Transformation in Contact (TIC) initiative" (Lucas, 2025). "These prototypes moved from delivery into an operationally realistic environment within a single year" (Leon, 2026). This velocity allowed the 3rd Brigade, 10th Mountain Division (3/10 MTN) to evaluate the platform during JMRC Rotation 25–01 from 4 January to 13 February 2025 (Operation Atlantic Resolve). By utilizing vendor-owned equipment for testing, the Army reduced the traditional technology transition timeline, "moving directly toward a production competition in 2026 for up to 606 vehicles" (Lucas, 2025).

TiC has fundamentally reshaped 3/10 MTN, pivoting toward a lighter, more mobile structure designed to survive high-threat environments. The brigade's transition into a "light infantry brigade combat team was driven by modifications designed to increase mobility and reduce its operational footprint" (WETSU Company, 2025). By integrating the ISV-H, the unit has enhanced its tactical flexibility, allowing for rapid movement across complex terrain. This transformation also addresses the loss of traditional cavalry assets through a new reliance on technology: "by deploying drones across every echelon, from squad to brigade level, the 3rd BCT has been able to maintain situational awareness and provide reconnaissance without risking human life" (Transforming in Contact, 2025, pg. 2). This evolution represents a strategic shift where "robots, rather than Soldiers, make initial contact with enemy forces" (Transforming in Contact 2025). This aligns with broader TIC goals of reducing risk to human life while maintaining battlefield dominance.

3. Operational Reliability

During the JMRC 25–01 rotation, ATEC and the U.S. Army Operational Test Command (USAOTC) observed the ISV-H prototypes in an operationally realistic environment. Feedback from 3/10 MTN leadership and Soldiers highlighted the platform's "ability to provide mobile power generation at the point of need" (Becera, 2025, p. 1). This capability was highly valued across all echelons for sustaining localized mission command and electronic warfare systems. However, unlike the SRR's specific MTBOMF, the ISV-H's reliability data is currently characterized by qualitative feedback noting that "several limitations must be addressed to optimize the prototype for future operations" (Lucas, 2025).

The operational assessment revealed that, while the ISV-H prototypes show significant promise, their reliability is currently hampered by the lower TRL integration of its immature electronic systems. Over the course of the JMRC 25–01 rotation, soldiers encountered 19 controller area network bus (CANBUS) faults, which caused a "complete restart of the vehicle and its subsystems to continue with the mission" (Lucas, 2025). These recurring technical failures directly impacted user trust in the platform, with observers noting that the "frequent faults resulted in Soldiers losing confidence in the system" (Lucas, 2025).

The assessment also emphasized that these mechanical and software-related vulnerabilities hindered the vehicles' effectiveness as a persistent command node. "Future efforts should use more mature systems so that Soldiers can focus on technologies and not on the system failures of an immature system" (Lucas, 2025). Beyond software faults, "hardware limitations (specifically lack of ground clearance) led to significant dragging and scraping over moderate terrain features" (Lucas, 2025) during off-road excursions. These combined factors indicate that, while the ISV-H's power-generation capability is unmatched for tactical operations, the vehicle currently requires significant "further vendor fault testing and corrective actions" (Lucas, 2025) to meet the reliability standards expected of a mission-ready tactical vehicle.

4. Sustainment Burden

The sustainment strategy for the ISV-H focuses on avoiding the "Sustainment Void" often found in rapid acquisitions. While the SRR relies on ICS, ISV-H emphasizes organic maintenance. The Army's approach seeks to integrate "Right to Repair" provisions, ensuring that unit-level mechanics can service the hybrid-electric systems without total reliance on the OEM. This shift aims to reduce the fleet's long-term logistical footprint and increase its supportability in contested environments.

5. User Integration and Usability

The integration of the ISV-H within the TiC initiative signals a fundamental shift in Army modernization, moving away from forcing Soldiers to adapt to rigid technology, toward developing platforms/systems that enhance human performance and tactical efficacy. While the ISV-H's ability to deliver "mobile power generation at the point of need" (Lucas, 2025) is recognized as a significant asset for sustaining mission command and electronic warfare systems, the OA clarifies that "several limitations remain impacting effectiveness and suitability" (Lucas, 2025). These challenges underscore the friction between "deploying advanced hybrid capabilities and the necessity of ruggedization for high-intensity, austere environments" (Lucas, 2025). The ISV-H represents a shift from working with technology to making technology work for the Soldier. Specifically, "the integration of hybrid platforms requires new training for operators to manage silent-watch power cycles and thermal signature with technology to make 2025.

While Soldiers have successfully used the vehicle's exportable power for tactical innovation, institutional integration remains an unresolved bottleneck. Specifically, the "DOTmLPF-P Analysis has not been conducted by either Army Capability Managers (ACMs) or Capability Developers within the Training and Transformation Command (T2COM)" (Lucas, 2025). This leaves a notable gap between the proven utility of "silent power generation" and the militarization/ruggedization essential for sustained operations (Lucas, 2025). The OA highlights that unless the Army systematically addresses the institutional and technical deficiencies, the ISV-H will remain more of an experimental testbed than a fully mature combat asset.

6. ISV-H DOTmLPF-P Analysis

This research applies the DOTmLPF-P framework to the ISV-H program to assess the broader institutional implications of the TiC initiative. This assessment analyzes programmatic friction by building on the performance gaps identified in measures of effectiveness, including acquisition velocity, operational reliability, sustainment burden, and user integration and usability. By synthesizing operational test data and life-cycle sustainment strategies, this analysis demonstrates that the aggressive prioritization of commercial-off-the-shelf integration outpaces institutional readiness, thus creating systemic challenges across the Army enterprise. The ISV-H program lacks maturity; "a DOTmLPF-P analysis has not been conducted by either Army Capability Managers (ACMs) or Capability Developers at any Capability Development Integration Directorate (CDID) within the Training and Transformation Command (T2COM)" (Lucas, 2025).

Table 2. DOTmLPF-P Analysis ISV-H

Domain	Analysis and Findings
Doctrine	ISV-H reinforces emerging mobility and dispersion doctrine yet remains ahead of formal guidance on its employment in drone- and electronic warfare-contested environments. The TiC strategy forces units to rely on localized TTPs to bridge the gap between rapid prototype capability and the lack of codified operational concepts.
Organization	The ISV-H enables agile, decentralized formations but constrains scalability due to a lack of standardized procedures for force-structure changes. Programmatically, it enables rapid capability injection but risks creating non-scalable unit designs that lack the institutional support currently provided to structured maneuver units.
Training	Frequent tranche fielding creates a persistent training burden, as NET models emphasize basic operations over tactical mastery or data-link troubleshooting. The current lack of institutionalized master trainer programs means proficiency remains tethered to individual/unit experience rather than an army-wide standard.
Materiel	Leveraging COTS-based design achieves TiC velocity goals, but bypassing traditional development/testing forces the user to accept design flaws that undermine tactical durability and effectiveness.
Leadership & Education	TiC demands that leaders embrace rapid dispersion and high-risk experimentation; PME has not yet fully integrated the technical depth required for brigade-level UAS/electronic warfare Command.
Personnel	Rapid fielding ISV-H assumes that maneuver personnel can safely operate hybrid-electric systems. This creates systemic vulnerability when

	proprietary software fails, specialized MOS diagnostic tools are unavailable, or on-hand personnel are not trained to use them properly.
Facilities	The sustainment strategy intentionally divests from permanent military infrastructure, relying instead on portable field repair kits (FRKs), whose long-term readiness is at risk if OEM-level support becomes unavailable.
Policy	OTAs and MTA pathways circumvent regulatory delays but introduce inertia when broader enterprise policies (e.g., PPBE and life cycle management) fail to keep pace with COTS iteration.

7. Intentionality Analysis: Calculated Design

The ISV-H is not a traditional prototype but a purpose-built, persistent experiment. The constraints and limitations noted in the DOTmLPF-P domains (e.g., underdeveloped doctrine, fragmented organizational structure, and reliance on OEM support) are not unintended failures but the calculated cost of rapid modernization. They are deliberate trade-offs inherent in the TiC model.

Table 3. DOTmLPF-P Intentionality Table

Domain	Intentional Programmatic Trade-Off
Doctrine	Intentional Flexibility: By intentionally leaving formal doctrine underdeveloped, the Army forces unit-level innovation, ensuring that TTPs are generated from real-world OEs, rather than influenced by top-down mandates.
Organization	Intentional Agility: Fielding standard units without specialized MOS requirements avoids the bureaucracy associated with force-structure changes, ensuring the capability remains modular at the squad level.
Training	Intentional Decentralization: Reliance on unit-led adaptation rather than institutionalized training pipelines maintains the program's agility, allowing the Army to pivot training focus as the platform iterates.
Materiel	Intentional COTS: Using proprietary architecture is a deliberate choice to offload software sustainment to the OEM, thereby maintaining a lean maintenance footprint.
Leadership & Education	Intentional Risk-Tolerance: The requirement for commanders to manage prototype-heavy units is a deliberate leadership exercise, designed to push the mission command philosophy to its limit in contested OEs.
Personnel	Intentional Cognitive Loading: The Army avoids the burden of creating specialized personnel by tasking currently billeted personnel with maintaining the platform.
Facilities	Intentional Divestment: Army chooses portable Field Repair Kits over permanent depot infrastructure to avoid vendor lock-in and enable iterative upgrades.
Policy	Intentional Regulatory Bypass: The use of OTAs and MTAs prioritizes fielding and skirts typical delay catalysts.

The Army leverages this ambiguity to avoid the bureaucratic drag of traditional force-structure changes and longer-term infrastructure lock-in, and to ensure the platform remains agile and modular. The ISV-H program uses COTS architecture and external contractor support to maintain a lean maintenance footprint while offloading complex software sustainment. Rather than mirroring the static reliability of legacy platforms, the ISV-H continuously informs users and developers. Every technical fault or power-management struggle informs future requirements.

8. Summary of ISV-H Findings

The ISV-H is central to the Army's TiC initiative by shifting away from protracted development towards rapid, commercial-based modernization. Rather than pursuing a "lengthy clean-sheet development program" (Jones, 2026), the Army is prioritizing speed and adaptability to field capability for dispersed, mobile formations. The program serves as a critical test of the service's ability to "turn commercial vehicle technology into a field-ready combat capability." (Jones, 2026). The ISV-H is designed to function as a "mobile power and command platform, providing up to 60 kilowatts of power to support essential systems like battlefield communications equipment, drone systems, counter-drone tools, radars, and electronic warfare gear" (Jones, 2026). By leveraging existing commercial platforms, the Army aims to provide brigades with mobile, sustainment-focused nodes that can keep networks and sensors running at the front line, reflecting the service's broader shift toward modernizing with lighter, highly mobile, and tech-integrated vehicles (tactical and combat).

In April 2026, the U.S. Army announced the opening of a "competition for the new ISV-H, with up to three prototype awards planned for a commercially based platform to support MBCTs. The vehicle is intended to carry a six-soldier squad while providing up to 60 kilowatts of exportable power for communications, drones, electronic warfare, and command systems in mobile operations" (Jones, 2026).

The TiC strategy redefines success as seen with the ISV-H; the Army prioritizes fielding speed and the ability to adapt to emerging threats over initial system maturity. By externalizing the cost of institutional readiness to tactical formation, the ISV-H program trades the stability of a conventional program for the adaptability of an incrementally modernized capability.

E ANALYSIS SUMMARY

The evaluation of the SRR and ISV-H programs confirms that TiC successfully shifts Army acquisition from traditional, long-term development to an iterative, tranche-style model. However, rather than creating new statutory pathways, TiC serves as a prioritization mechanism, leveraging existing MTA-Rapid Prototyping authorities to bridge tactical gaps and accelerate the AAF. Analysis of these programs demonstrates TiC's feasibility and scalability, highlighting how continuous iteration can successfully mature a raid-prototyping effort into a formal MCA program of record.

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V. SUMMARY

Chapter V synthesizes the findings from the SRR and ISV-H case studies to evaluate the overarching efficacy of the Army's Transformation in Contact strategy. The chapter is structured into three primary sections. First, it directly addresses the primary and secondary research questions, analyzing the scalability, operational impacts, and structural trade-offs of agile acquisition methodologies. Second, it presents overarching conclusions, utilizing a synthesized DOTmLPF-P framework to contextualize systemic programmatic friction as intentional enterprise decisions rather than system failures. Finally, the chapter provides actionable, policy-level recommendations designed to align traditional Army training, sustainment, and testing infrastructures with the realities of continuous commercial iteration.

A. ANSWERS TO RESEARCH QUESTIONS

1. To what extent are ATI's prioritized programs, particularly those developed through the TiC strategy, capable of scaling into enduring Programs of Records, and what structural, institutional, or resource constraints may affect this transition?

This research indicates that the scalability of TiC programs depends heavily on the technology's baseline TRL. With the TiC strategy relying on iterative tranches and fielding in an agile style, direct feedback from fielded units, this strategy could prove highly effective across a variety of programs. However, with its heavy reliance on COTS and post-fielding-intensive T&E requirements, TiC may not prove universally scalable across the entire portfolio of acquisition requirements, particularly for newly emergent technologies or capabilities that would require years of development due to a lack of technological or manufacturing readiness levels (MRLs).

The primary challenges and institutional barriers to scaling these capabilities into enduring PoRs stem from the asynchronous maturation of commercial hardware and the traditional Army process. As demonstrated in the DOTmLPF-P and Intentionality analyses, the speed of the acquisition itself generates calculated programmatic friction. The full integration of TiC within the current WAS, when evaluated through the lens of DOTmLPF-P, is expounded upon in the DOTmLPF-P analysis of the ISV-H (Figure 2).

Primary markers of friction across most of these evaluation categories, however, are the speed of the acquisition itself. This creates significant stress throughout the entire chain of custody, from the program to the user. Rather than viewing this institutional strain as a system failure, scaling within TiC requires the enterprise to accept these constraints—such as underdeveloped doctrine or divested depot facilities—as intentional trade-offs necessary to maintain acquisition velocity. These expedited timelines can be planned for and mitigated; however, due to the expediency of fielding and testing, there should be a strain on the overall acquisition infrastructure of a program. Both programs evaluated also presented a significant tether to commercial capability and support. These factors conflate immediate tactical readiness and capability with long-term commercial capacity and supportability, posing a potential logistical vulnerability in future iterations of the TiC strategy of acquisition if the industrial base cannot sustain the required surge capacity.

2. Effectiveness of Agile Implementation: To what extent has the adoption of agile acquisition methodologies within the TiC strategy reduced capability delivery timelines while maintaining operational effectiveness and long-term sustainment?

Both SRR and ISV-H programs successfully compressed their timelines, transitioning from initial contracting action to fielding capable systems within one fiscal year. By utilizing agile contracting strategies, such as OTAs and CSOs, these programs bypassed the multi-year delays characteristic of traditional federal acquistion regulation (FAR) based contracting strategies. ATEC evaluations confirmed that this rapid fielding effectively delivered immediate, operationally relevant capabilities to tactical units.

This accelerated timeline, however, significantly degrades long-term sustainment and introduces friction into operational effectiveness. The observed limitations are the deliberate consequences of prioritizing acquisition velocity over institutional readiness. The implementation strategy for these new technologies, using methods shown in the ATI (such as OTAs and agile contracting actions and MTA pathways), accelerated fielding to a breakneck pace, whereas FAR based contracts and the major capability acquisition pathway take multiple years for a capability to reach users. Both programs exhibited rapid increases in capability with these new technologies and were considered overall successes by the evaluators. In terms of operational effectiveness and long-term sustainment, speed bumps exist within the logistics chain. An example of this includes but is not limited to the capability for fielding; as demonstrated within the SRR program, which actively outpaced the Army's institutional ability to develop formal doctrine, and produce technical and operator manuals.

Both programs rely heavily on closed, proprietary commercial software, which structurally denies the government technical data rights necessary for organic maintenance. This forces a persistent reliance on OEMs for system troubleshooting and support. The use of this software induces a contractual sustainment burden on the program until either an agreement on government use rights and training can occur to allow for internal maintenance of the systems, or long-term contractual support of the systems is established.

Through iterative rapid fielding and prototyping, the burden of technical capability is placed on users, with no training programs established beyond immediate unit use. The iterative fielding model shifts the technical burden directly onto tactical users/operators. The Army's reliance on non-traditional training for TiC-fielded systems creates a significant risk of institutional amnesia. As personnel cycle through tactical units, the absence of a standardized training framework leaves technical knowledge ephemeral, ultimately jeopardizing the sustained custody and utility of modernized equipment.

While future sustainment concerns remain, the accelerated acquisition timeline successfully delivered critical capabilities to the wargamer at the speed of relevance. Ultimately, agile methodologies fulfill the ATI's immediate modernization goals by rapidly deploying commercial technology to the tactical edge. However, this speed is achieved through a deliberate trade-off: the acceptance of substantial long-term risks in sustainment, institutional training, and organic software supportability.

3. Institutional and Structural Barriers: What are the primary institutional barriers that influence the integration and scalability of TiC initiatives into enduring PoRs within the Army acquisition system?

The primary institutional barriers to integrating entry for the TiC strategy within enduring large-scale acquisitions include regulatory friction, testing paradigms, and industrial capacity constraints. Regarding scalability and the full integration of PoRs, a few factors are at play. First, TiC's heavy reliance on OTAs could create regulatory friction when transitioning to a formal MCA pathway for full-scale use on major acquisitions. Because OTAs bypass standard FAR safeguards to accelerate prototyping and commercial integration, scaling these efforts into formal PoRs requires reconciling agile contracting with rigid statutory oversight. OTAs are typically used for R&D-heavy programs and do not have all the typical fail-safes built into them as you would see in a traditional acquisition, such as the mandated use of the FAR (Darmofal, 2025). Furthermore, many large-scale PoRs managed by prime contractors often lack the baseline TRL required to rapidly field prototypes, making TiC less viable for a foundational development program. Second, the Army must fundamentally restructure T&E frameworks to accommodate continuous iteration; legacy testing procedures are currently ill-equipped to rapidly evaluate tranche-style fielding. Finally, manufacturing capacity acts as a strict structural barrier. The TiC Strategy succeeds primarily in environments with heavy COTS requirements, where the industrial base already possesses the dormant capacity to surge production. Programs lacking this pre-existing manufacturing readiness cannot adopt this rapid strategy without triggering severe supply chain bottlenecks.

4. System-Level Impacts and Tradeoffs: How do rapid acquisition tools, including OTAs and prototyping pathways, shape interoperability, industrial base participation, and logistical supportability, and what metrics best assess their effectiveness in achieving ATI's transformation objectives?

Within the SRR and ISV-H programs, sustainment and development pathways were built in as the programs iterated. The OTAs used, and the use of dual manufacturers, increased the programs' sustainment capability, enabling higher levels of sustainment support for the systems. The SRR and ISV-H programs demonstrate that rapid-acquisition tools fundamentally alter traditional logistical supportability and industrial-base participation. By leveraging OTA contract mechanisms rather than traditional pathways, the Army can deliberately shape industrial participation to its advantage. For example, by using OTAs to award multiple production contracts—as seen in the SRR Tranche 2 dual-award (SRR Program Brief, 2026)—the Army successfully prevented vendor lock-in. It maintained a broader, more robust manufacturing base capable of rapid scalability and surge capacity.

However, these prototyping pathways severely complicate system interoperability and logistical supportability. Because the TiC strategy relies heavily on COTS technology to achieve speed, the resulting systems often run on closed, proprietary software architectures. This black-box paradigm prevents field-level operators from performing organic maintenance or troubleshooting, creating a permanent tether to contractor logistics. Furthermore, these rapid pathways highlight a growing doctrinal tension regarding system-level impacts: while both the Army and industry increasingly envision platforms such as the SRR as attritable to encourage aggressive tactical employment, the programmatic reality—such as the SRR's $65,000 AUPC (SRR Program Brief, 2026)—might push commanders to operate them as highly capable, recoverable assets to avoid significant financial liability.

Ultimately, evaluating the effectiveness of these rapid tools in achieving ATI's transformation objectives requires moving beyond hardware-level KPPs and KSAs and adopting holistic, programmatic measures of effectiveness. As demonstrated in this research, metrics assessing Acquisition Velocity, Operational Reliability, Sustainment Burden, and User Integration provide a more accurate assessment of a program's scalability and long-term enterprise viability.

B. CONCLUSIONS

The TiC strategy marks a paradigm shift in Army acquisition, prioritizing tactical velocity over traditional institutional readiness. Rather than a new statutory pathway, TiC serves as an aggressive prioritization mechanism, leveraging existing rapid authorities to deliver equipment to the tactical edge at the speed of relevance. Both the SRR and ISV-H case studies demonstrate that this strategy is highly effective at closing immediate gaps, provided the systems achieve sufficiently high TRLs and MRLs. However, this research concludes that the systemic friction observed across the DOTmLPF-P domains—ranging from immature doctrine to fragile software sustainment—is not an unintended failure but a calculated programmatic trade-off. While TiC equips units for immediate conflict, its long-term scalability depends entirely on the defense enterprise's willingness to accept the persistent sustainment risks associated with continuous commercial iteration. To fully capture these programmatic trade-offs, the system-specific data from both case studies have been synthesized into a single, high-level framework. Table 4 outlines the overarching enterprise impacts of the TiC strategy across the DOTmLPF-P domains, illustrating the institutional friction generated when prioritizing rapid commercial integration over traditional acquisition milestones.

Table 4. Overall DOTmLPF-P TiC Strategy

Domain	Analysis and Findings (Programmatic Themes & Institutional Impacts)
Doctrine	• Capability fielding significantly outpaces the development of formal doctrinal guidance. • Tactical employment relies heavily on decentralized, unit-driven interim TTPs rather than top-down institutional mandates.
Organization	• Capabilities are integrated into existing maneuver formations to avoid the bureaucratic delays associated with formal force-structure modifications. • Prioritizes modular, squad-level agility over large-scale, standardized unit redesigns.
Training	• Rapid hardware iteration creates a persistent training burden, tying units closely to baseline new equipment training (NET). • Established institutional training programs struggle to mature before current-generation commercial technologies become obsolete, risking significant knowledge loss during unit turnover.
Materiel	• Commercial integration achieves the required acquisition velocity but introduces vulnerabilities regarding tactical ruggedization and proprietary “black-box” software. • Bypassing traditional developmental testing shifts the burden of identifying critical design flaws directly to the end user.
Leadership & Education	• Demands a highly risk-tolerant leadership culture capable of managing continuous experimentation in live environments. • Professional military education (PME) currently lacks the technical depth needed to manage rapid technology integration.
Personnel	• Intentionally avoids creating new military occupational specialties (MOS), shifting the cognitive and technical maintenance burden onto standard maneuver personnel. • Creates systemic tactical vulnerabilities when operators lack the diagnostic data rights to troubleshoot closed-architecture systems.
Facilities	• Iterative “tranche” life cycles economically discourage investment in permanent, organic military depot infrastructure. • Sustainment strategies intentionally divest from military facilities, pivoting them to tactical field repair kits and long-term reliance on the OEM.

Policy	• Adaptive acquisition pathways (MTAs, OTAs) are highly effective at circumventing traditional procurement delays. • Broad enterprise policies—specifically, long-term PPBE and legacy life cycle management framework struggle to synchronize with continuous capability iteration.

C. RECOMMENDATIONS

Based on the systemic friction points and programmatic trade-offs identified in this research, the Army must adapt its institutional frameworks to support the Transformation in Contact strategy. The TiC strategy offers a unique opportunity to enhance and field new capabilities rapidly to the warfighter to overcome the challenges of a rapidly evolving battlespace. This capability enables enhanced prototyping, testing, and evaluation of these critical capabilities, with increased functionality through direct user input and implementation. To successfully scale rapid prototyping into enduring Programs of Record, this research recommends the following actions:

1. Codify Diagnostic Data Access and Rights in Rapid Contracts

To mitigate the vulnerabilities inherent in the black-box COTS paradigm, acquisition professionals must mandate baseline technical data rights or access to organic diagnostic software across all OTAs and CSOs. Tactical operators must be able to troubleshoot C2 link failures without relying on OEM intervention. To mitigate the vulnerabilities inherent in the COTS paradigm, acquisition professionals should mandate baseline rights to technical data access or organic diagnosis software within all OTAs and commercial solutions openings. Users at the tactical level must possess the capability to troubleshoot C2 link failures without mandatory reliance on OEM intervention.

2. Institutionalize Training Pipelines for Iterative Systems

Integrate TiC systems into institutional training: The iterative fielding model shifts the technical burden directly to tactical users. By bypassing established institutional training programs, the Army risks significant knowledge loss regarding TiC fielded systems as tactical units turnover personnel. To mitigate this, the Army must prioritize developing formal schoolhouse instruction alongside rapid fielding. The iterative fielding model shifts the technical burden directly onto the user. To prevent knowledge gaps created by routine personnel turnover, the Army must move beyond purely embedded instructor training. Developing condensed, formal schoolhouse instruction at installations and centers of excellence must occur in parallel with rapid fielding to ensure long-term operational efficiency. This implementation of rapid fielding, in conjunction with the Army's Center for Lessons Learned repository, will enable Army units to integrate these emerging capabilities into their force structures rapidly and will lead to further development of TTPs for their use.

3. Implement a Holistic Measure of Effectiveness for TiC Governance

The Army should move beyond hardware-centric key performance parameters (KPPs) to evaluate the success of TiC initiatives. While traditional metrics are sufficient for technical testing, acquisition leadership must adopt holistic measures of effectiveness (MOEs) to assess the program's strategic health. These metrics should specifically assess Acquisition Velocity (speed of iteration), Sustainment Burden (tether to OEMs and future sustainment viability), and User Integration (ease of tactical adoption). Transitioning to MOE-based governance ensures that a program is graded on its ability to transform the force, not merely on the system's mechanical performance.

D. FUTURE RESEARCH

TiC is a relatively new acquisition initiative; this research was limited by the lack of historical, long-term sustainment data. Future research must conduct long-term studies of TiC programs over a five- to ten-year horizon to measure the actual life-cycle costs and operational readiness rates associated with continuous commercial iteration. Specifically, subsequent studies should investigate whether the financial savings gained by divesting from organic military depot infrastructure are ultimately offset by the recurring costs of rapidly replacing commercial tranches and by maintaining a permanent tether to contractor logistics.

Additionally, while this research evaluated the scalability of TiC using systems with high TRLs and existing COTS applications, future research should explore the strategy's viability for highly developmental, non-commercial technologies. Future research must assess whether the iterative, rapid-fielding mechanisms that make TiC successful for COTS platforms can withstand the lengthy, rigorous development timelines required for major acquisition systems.

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