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How to Build Capability in Armed Forces: An Examination of U.S. Marine Corps Processes and a Reflection on how the U.S. Department of Defense Attempts to Build Partner Capability

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Executive Summary

The Institute for Defense Analyses (IDA) has more than 30 years of experience assessing foreign defense institutions' ability to develop, resource, generate, and sustain capable armed forces. Concurrent with our assessments, IDA has equivalent experience working with partners to increase their abilities to develop, resource, generate, and sustain. IDA's methodology and practice is well documented and published.* Since the 9/11 attacks—and especially since the advent of specific Department of Defense authorizations to transfer equipment and training to allies and partners—we have observed a steady decrease in the resources devoted to assess our partners' overall armed forces' capability requirements, much less their ability to develop, resource, generate, and sustain their armed forces.

This has created a backwards cycle. Pressure to increase partner capability leads to decisions to transfer weapons before a robust assessment of a nation's ability to integrate new weapons into their armed forces and then operate and sustain them. This paper provides a detailed explanation and example of United States Marine Corps capability requirements, resourcing, and acquisition processes. The purpose is to provide a mirror to the Department of Defense to reflect upon how it builds sustainable capability for itself, compared to how it attempts to build capability with its partners.

* IDA publications include both the methodology and practice of institutional capacity building. Specific country case studies that detail the implementation of our methodology and the methodology itself are available through the Defense Technical Information Center and by request to the authors.

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1. Introduction

The Fiscal Year 2017 National Defense Authorization Act (FY17NDAA) created section 333 of Title 10 United States Code (10USC). Section 333 authorizes the Department of Defense (DOD) to build the capacity of national security forces of foreign countries to conduct various types of operations.¹ Section 333 also stipulates that a program of institutional capacity building (ICB) [a program to enhance the capacity of a foreign country to organize, administer, employ, manage, maintain, sustain, or oversee its national security forces²] be a required element of any capacity building program.³

Elaborating on the new capacity building authority, the House and Senate conference report for the FY17NDAA⁴ stated, “The Department’s security cooperation⁵ activities over the last 15 years have emphasized building the capacity of partner forces at the tactical and operational level. However, the conferees are concerned that insufficient attention and resources have been provided for building institutional capacity at higher echelons, particularly the generating force (e.g., those with ‘man, train, and equip’ responsibilities) and at the strategic level (e.g., ministerial and general staff levels). The conferees expect the Department to increase its emphasis on strengthening the defense institutions of friendly foreign nations...to develop security cooperation programs that integrate activities to simultaneously engage partners and build capacity at each of these levels—tactical, operational, and strategic.”⁶

1 “United States Code,” U.S. House of Representatives Website, accessed August 24, 2020, <https://uscode.house.gov/browse/prelim@title10/subtitleA/part1/chapter16/subchapter1&edition=prelim>.

2 Ibid, section (c)(4).

3 Ibid, section (c)(2)(B).

4 National Defense Authorization Act for Fiscal Year 2017, Report 114-840, 114th Cong. (2016), <https://www.congress.gov/114/crpt/hrpt840/CRPT-114hrpt840.pdf>.

5 United States Code,” U.S. House of Representatives Website, accessed August 24, 2020, <https://uscode.house.gov/browse/prelim@title10/subtitleA/part1/chapter16/subchapter1&edition=prelim>. Specifically, per 10USC, Section 301, Security Cooperation programs and activities are any program, activity (including an exercise), or interaction of the Department of Defense with the security establishment of a foreign country to achieve a purpose as follows: (A) To build and develop allied and friendly security capabilities for self-defense and multinational operations, (B) To provide the armed forces with access to the foreign country during peacetime or a contingency operation, and (C) To build relationships that promote specific United States security interests.

6 National Defense Authorization Act for Fiscal Year 2017, Report 114-840, 114th Cong. (2016), <https://www.congress.gov/114/crpt/hrpt840/CRPT-114hrpt840.pdf>, specifically, Subtitle E – Reform of Department of Defense Security Cooperation.

Another aspect of the FY17 reforms were measures to streamline management of DOD’s security cooperation programs and activities. The conference report noted, “the Department’s organizational structure for the security cooperation enterprise has undermined the ability of senior Department officials to adequately oversee, prioritize, and synchronize security cooperation programs and activities to support strategic priorities. Currently, there is no individual or office below the Deputy Secretary of Defense with responsibility to oversee strategic policy and resource allocation for the security cooperation enterprise.”⁷

To this end, 10USC sections 381 and 382 consolidated the budget for security cooperation programs listed in 10USC, Chapter 16, and directed the Secretary of Defense to assign a single office to be responsible for policy and guidance and overall resource allocation for security cooperation programs and activities of the DOD. Additionally, section 382 also designated the Defense Security Cooperation Agency (DSCA) responsible for the execution and administration of all security cooperation programs and activities.⁸

But what does it mean to build capacity? The United Nations Development Programme (UNDP) asserts that capacity building is a process that supports the initial stages of building or creating capacities and assumes that there are no existing capacities to start from.⁹ By itself, this definition is not robust enough to capture the intent of section 333 authority or the objectives of the Department of Defense, and almost all nations have some extant defense capacity.

Going further, UNDP defines capacity development as, “the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own objectives over time.”¹⁰ We propose that building partner defense capacity is creating (when necessary), obtaining (when possible), and strengthening and maintaining capabilities to set and achieve objectives over time that are in the mutual interest of the United States and the ally or partner that benefits from our effort to build capacity.

Building capacity means helping a partner to create, obtain, strengthen, and maintain capabilities to set and achieve objectives

The implication of this definition is that capacity equals sustainable capability. It is not enough to help a partner create or obtain something. We believe Congress would agree with our definition, or else the law would not require that when the DOD obtains and transfers equipment

⁷ Ibid.

⁸ “United States Code,” U.S. House of Representatives Website, accessed August 24, 2020, <https://uscode.house.gov/browse/prelim@title10/subtitleA/part1/chapter16/subchapter7&edition=prelim>.

⁹ Kanni Wignaraja et al., *Capacity Development: A UNDP Primer*, (New York, NY: United Nations Development Programme, November 2015), 54.

¹⁰ Ibid.

and training to foreign partners, it must also be accompanied with programs to build the capacity of the partner to sustain its forces.

However, we see a flaw in DOD's persistent implementation of its main capacity building authority (i.e., 333 authority). We observe that DOD planners first determine the equipment to obtain for a foreign partner before assessing whether that equipment will result in a sustainable capability. This puts the cart before the horse. Building sustainable capability requires knowledge of a partner's institutional arrangements, leadership, technical knowledge, and systems of accountability¹¹ before making decisions about what to buy and transfer. Assessing the capacity to sustain after the decision to obtain has already been made is a recipe for failure, not success.

Assessing sustainability requires inquiry into the institutional arrangements between the individual military services in a nation, between the services and the headquarters of the Chief of Defense and/or the Ministry of Defense, and between the Ministry of Defense and the rest of the government. It requires some knowledge about who decides how the military services are designed and operate, and who prepares and manages the budgets of the military services. It means determining what capacity for operations already exists. Finally, it requires knowledge about the limits of the authority of the leaders within the defense sector and who those defense leaders accountable to.

Within the Department of Defense, we believe those responsible for the planning, management and execution of the 333 program and its predecessors¹² can learn from the Military Services of the United States Armed Forces. More specifically, we mean that any individual or organization generally responsible to think about and plan for building partner capacity can learn from the military services.

Our military services do not improve, upgrade, or modernize their capabilities by investing in new equipment first and then figuring out what is required to integrate that new equipment into their force structure so it is sustainable. Rather, the U.S. military services assess the existing capability of their force and then make decisions to create, obtain, or strengthen capabilities with a concomitant knowledge of their capacity to sustain capability. To that end, this paper describes the United States Marine Corps (USMC) force development process, provide examples of how it has been implemented, and concludes with recommendations to improve DOD's efforts to build capacity in its partners' defense sectors.

¹¹ Ibid, 13-16.

¹² Authority to build capacity in foreign partner defense sectors was first granted by the fiscal year 2006 National Defense Authorization Act through section 1206 authority. Section 1206 authority later became section 2282 authority. Today, the historic authorities are rolled into 10USC, section 333.

With that said, this paper is not intended to recommend the USMC processes described within as the best approach for force development. It is an approach with shortcomings, which stimulates the U.S. Military Services to develop rapid acquisition processes when material solutions are needed to close capability gaps. This paper acknowledges that these nontraditional approaches may become the new normal and may be of significant value to our allies and partners.

2. Marine Corps Capability Requirement Determination, Resourcing, and Acquisition Processes

In 2020 and early 2021, IDA analyzed and documented the Marine Corps' force development processes. The basis of the analysis was published documents and interviews (see Appendix A) with Marine Corps personnel in positions responsible for Force Development. This section describes those processes.

The Marine Corps does not field new items or systems, such as helmets, weapons, or vehicles, without extensive planning and analyses. The Marine Corps uses deliberate processes to determine its capability requirements and develop capabilities. These processes operate within the context of the Department of Defense's three major defense planning systems—the Planning, Programming, Budgeting, and Execution (PPBE) system; the Joint Capabilities Integration and Development System (JCIDS); and the Defense Acquisition System.

The Marine Corps' processes ensure materiel solutions¹³ synchronize with non-materiel solutions (i.e., doctrine, organization, training, leadership and education, personnel, facilities and policy) in order to deliver holistic capabilities for Marine forces. Figure 1 to 3 show the Marine Corps' capability requirement determination and resourcing processes, the capability acquisition process, and their interrelationships. The remainder of this section summarizes these processes.

¹³ MCO 3900.20 derives definitions for two terms—"solution" and "materiel"—from CJCSI 3170.01I and the JCIDS Manual. "Solution" is "[a] materiel solution or non-materiel solution to satisfy one or more capability requirements (or needs) and reduce or eliminate one or more capability gaps. Non-materiel solutions are changes to doctrine, organization, training, leadership and education, personnel, facilities, and/or policy implemented to satisfy one or more capability gaps, without the need to develop or purchase new material capability solutions." "Materiel" is defined as "[a]ll items (including ships, tanks, self-propelled weapons, aircraft, etc., and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities) necessary to equip, operate, maintain, and support military activities without distinction as to its application for administrative or combat purposes."

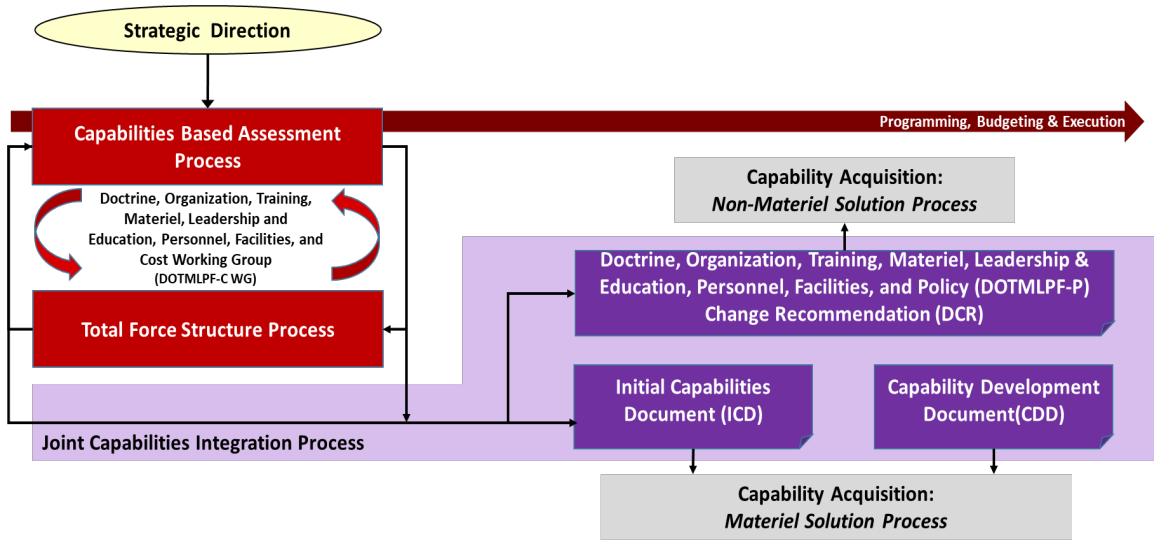


Figure 1. Depiction of the Marine Corps Capability Determination & Resourcing Processes

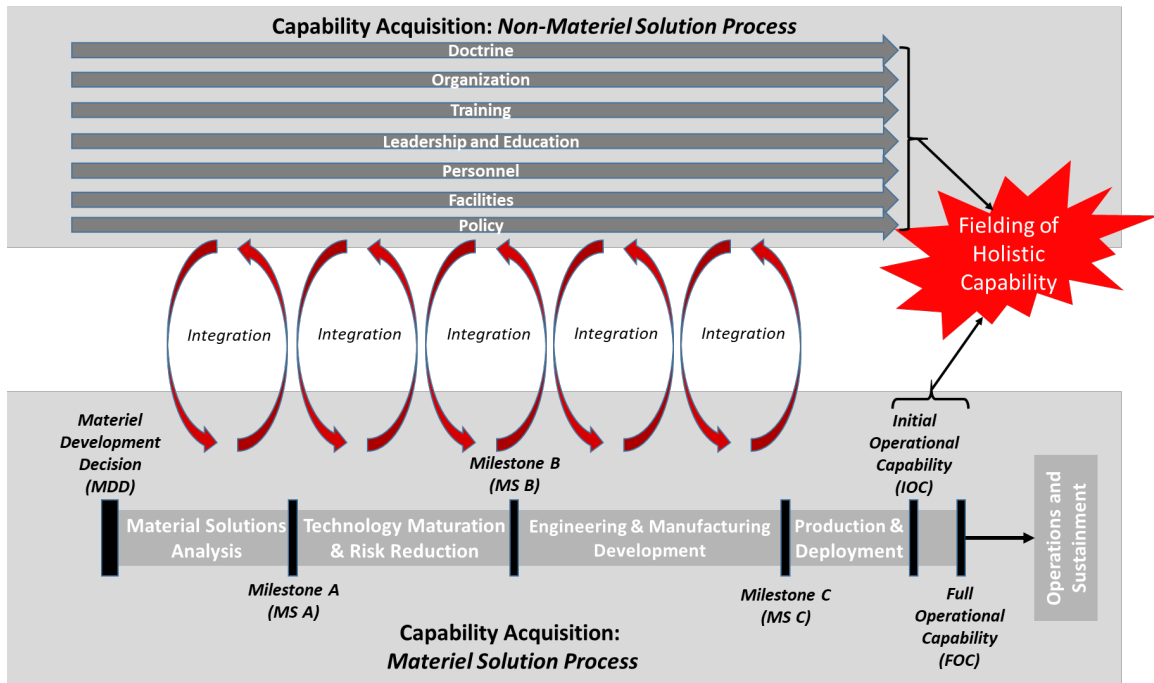


Figure 2. Illustrative Depiction of the Marine Corps Capability Acquisition Process

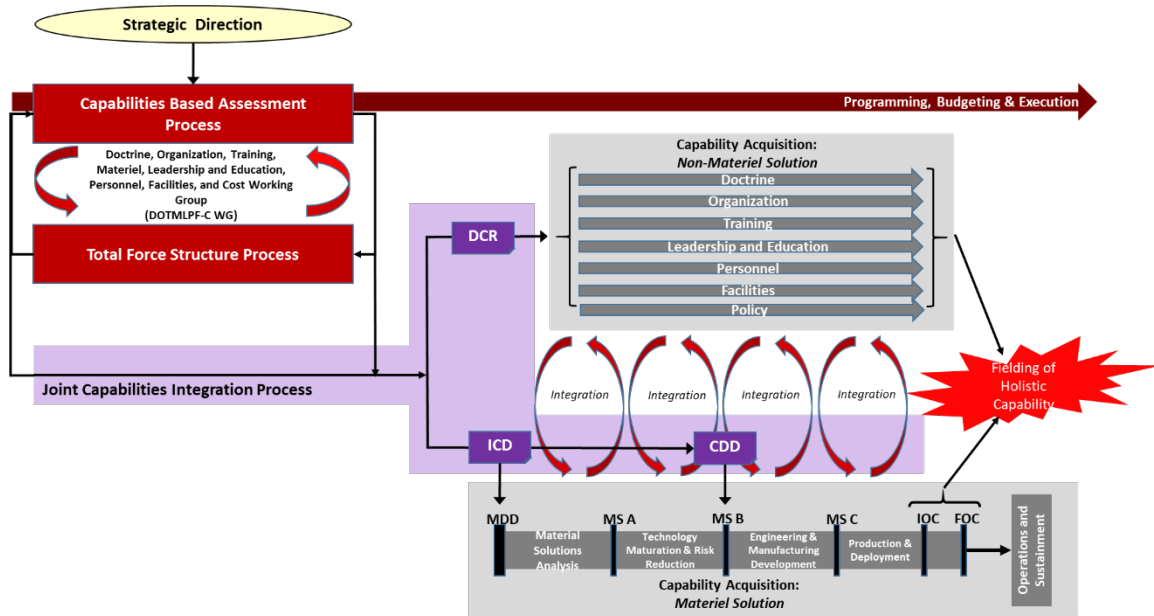
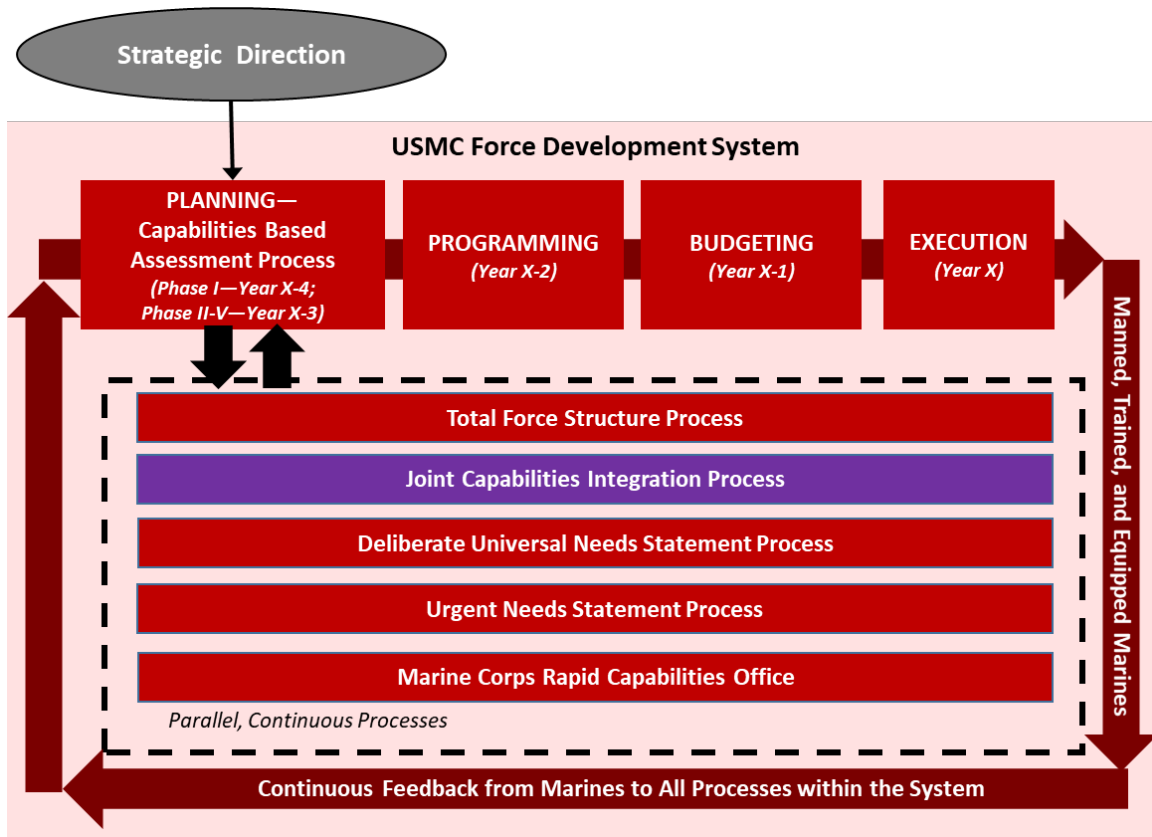


Figure 3. Interrelationships between Marine Corps Capability Determination & Resourcing and Capability Acquisition Processes

A. Capability Determination and Resourcing

Interrelated Joint and Marine Corps processes identify and prioritize capability gaps, and approve and implement materiel and non-materiel solutions to close those gaps. This section highlights three central processes used by the Marine Corps—the total force structure process, the capabilities-based assessment process, and JCIDS. Each of these interact within the Marine Corps Force Development System (Figure 4).¹⁴ The Deputy Commandant for Combat Development and Integration (DC CD&I) leads these processes with participation by Headquarters USMC and the Marine Corps operational forces.

¹⁴ The Marine Corps Force Development System consists of “activities [to] plan, design, and implement the translation of strategic priorities into manned, trained, and equipped Marine Corps organizations able to provide capabilities to Unified Combatant Commanders.” U.S. Marine Corps, *United States Marine Corps Force Development System User Guide*, (Washington, DC: Department of the Navy, Headquarters United States Marine Corps, April 2018), iii and 1.



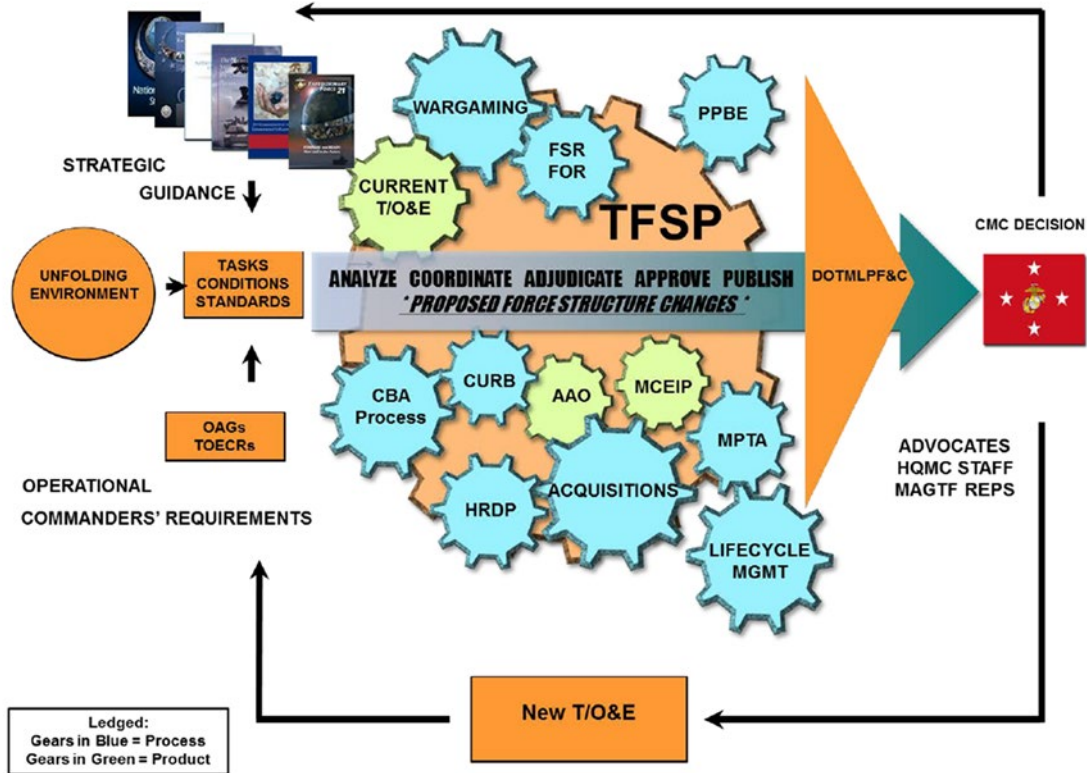
Note: Figure 4 is a simplified, IDA-derived version of the USMC Force Development System figure that appears in: United States Marine Corps Force Development System User Guide, 3. Red indicates a Marine process; purple is a Joint Process.

Figure 4. Illustration of the United States Marine Corps Force Development System

B. Total Force Structure Process¹⁵

The Total Force Structure Process (TFSP) focuses on the integration of Marine Corps unit, personnel, and equipment decisions to develop and maintain Marine forces. TFSP provides inputs to or receives inputs from parallel HQ USMC processes. Figure 5 depicts the integration of the TFSP with other headquarters processes.

¹⁵ Unless indicated otherwise, the primary source of the project team’s summary of the TFSP is: U.S. Marine Corps Order (MCO) 5311.1E, *Total Force Structure Process*, (Washington, DC: Department of the Navy, Headquarters United States Marine Corps, November 18, 2015).



Note: Derived from Figure 1-2 of *Total Force Structure Process (TFSP)*, MCO 5311.1E, (Washington, DC: Department of the Navy, Headquarters United States Marine Corps, November 15, 2015), 1-2.

Note: AAO – Approved Acquisition Objective; CBA – Capabilities Based Assessment; CMC – Commandant of the Marine Corps; CURB – Civilian Uncompensated Review Board; DOTMLPF&C – Doctrine, Organization, Training/Education, Materiel, Leadership/Communication Synchronization, Personnel, Facilities, and Cost; FOR – Force Optimization Review; FSR – Force Structure Review; HQMC – Headquarters Marine Corps; HRDP – Human Resource Development Process; MAGTF – Marine Air-Ground Task Force; MCEIP – Marine Corps Enterprise Integration Plan; MPTA – Manpower Personnel Training Analysis; PPBE – Planning, Programming, Budgeting and Execution; TFSP – Total Force Structure Process; T/O&E – Table of Organization and Equipment; TOECR – Table of Organization and Equipment Change Request

Figure 5. Integration of TFSP with other Parallel Processes

TFSP is initiated from the top down and the bottom up. From the top down, a review of national and Marine Corps guidance and strategies provides inputs to TFSP. From the bottom up, Commanders of Combatant Commands and Marine Forces provide demand signals to TFSP. These demand signals come from a mission-function-task analysis and can prompt a change in a unit’s mission or equipment. Analysis also flows from an annual USMC process (i.e., Strategic Total Force Management Planning).¹⁶ This is a command-level process to analyze current and future organizational structures within the context of strategic plans.

¹⁶ The Marine Corps uses Strategic Total Force Management Planning as its command-level planning for “determining Total Force requirements to accomplish missions and tasks.” U.S. Marine Corps, MCO 5311.1E,

The Total Force Structure Process (TFSP) consists of five elements: 1) analysis, 2) coordination, 3) adjudication, 4) approval, and 5) publication. Analysis compares strategic requirements to the structure and capabilities of the current force. During coordination, capability gaps are identified and courses of action to address those gaps are considered. The Marine Corps’ Total Force Doctrine, Organization, Training/Education, Materiel, Leadership/Communication Synchronization, Personnel, Facilities, and Cost (DOTMLPF-C) working group reviews the implications of identified gaps and the supportability of courses of action.

Table 1 lists the DOTMLPF-C pillars and the Marine Corps organization responsible for each pillar. The TSFP process owner¹⁷ or the Marine Corps Requirements Oversight Council adjudicates disagreements between pillars. The Commandant of the Marine Corps (or his delegate) approves initiatives to change the force structure. The Total Force Structure Management System publishes the approved changes in the authorized strength report and Tables of Organization and Equipment.

Table 1. Marine Corps DOTMLPF-C Pillars and Responsible Organizations

DOTMLPF-C Pillar	Organization Responsible for Pillar
Doctrine	DC CD&I (Capability Development Directorate)
Training and Education	Commanding General of Training and Education Command (TECOM)
Organization	DC CD&I (Total Force Structure Division)
Materiel	Marine Corps Logistics Command (MARCORLOGCOM)
Leadership and Communication Synchronization	Office of Legislative Affairs
Personnel	DC for Manpower and Reserve Affairs (M&RA)
Facilities	DC for Installations and Logistics (Logistics Facilities)
Cost	DC for Programs and Resources (Program Assessment and Evaluation)

C. Capabilities-Based Assessment Process¹⁸

Annually, the Marine Corps conducts a five-phase Capability-Based Assessment (CBA) process.¹⁹ The purpose of the assessment is to evaluate whether Marine Corps capability

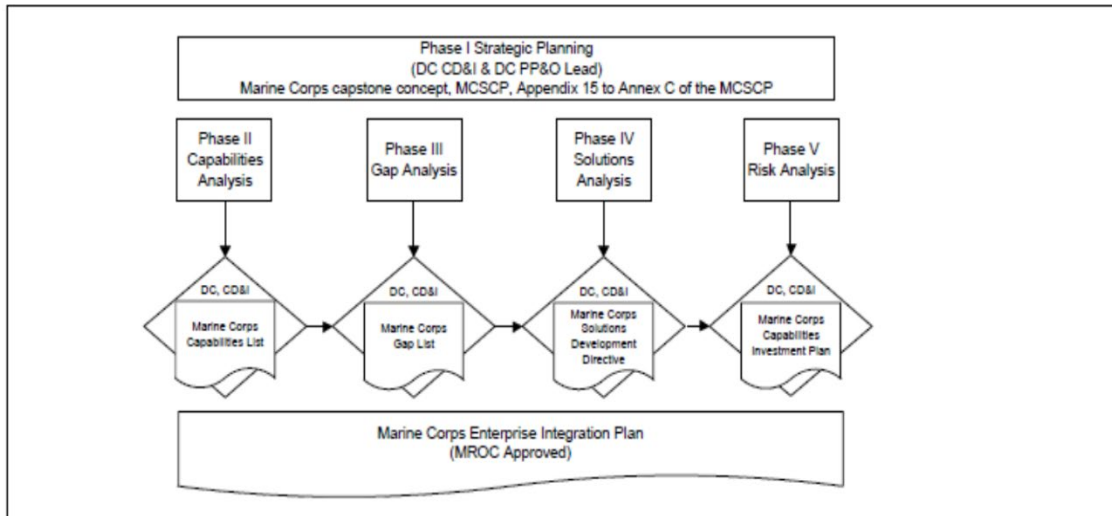
Total Force Structure Process, (Washington, DC: Department of the Navy, Headquarters United States Marine Corps, November 15, 2015), 3-9.

¹⁷ The Deputy Commandant for Capability Development and Integration is the process owner per MCO 5311.1E.

¹⁸ The Commandant of the Marine Corps has directed the development of a new process to transition from the use of “capabilities-based planning” terminology. This transition began to support POM-23; however, it will take time to develop, implement, and formally document policy that captures the new process. Derived from Representative of the Marine Corps Integration Division, interview with author, June 18, 2020. Unless indicated otherwise, the primary source of the project team’s summary of the CBA process is: MCO 3900.20.

¹⁹ Urgent Needs Statements, Deliberate Universal Needs Statements, and the Marine Corps Rapid Capabilities Office can also inject out-of-cycle inputs from operational units into the process. Capability Development and

development activities support its strategic objectives (see Figure 6), and to plan for the resources to implement solutions.



Note: Derived from Figure 0-2, “Marine Corps Capabilities-Based Assessments Phases,” MCO 3900.20, 3.

Note: DC CD&I – Deputy Commandant for Combat Development and Integration; DC PP&O – Deputy Commandant for Plans, Policy, and Operations; MCSCP – Marine Corps Service Campaign Plan; MROC – Marine Corps Requirements Oversight Council

Figure 6. Marine Corps CBA Process Phases

Accordingly, this process identifies and prioritizes capability gaps and the resources required to implement approved solutions through the end of the Future Years Defense Program (FYDP). For example, the Fiscal Year 2020 USMC CBA focuses on FY23-27.²⁰ The CBA process is the planning phase of the Marine Corps’ Planning, Programming, Budgeting, and Execution (PPBE) process.²¹ Results from the CBA process inform the Marine Corps’ programming of its’ Program Objective Memorandum (POM).²²

Integration receives those statements and routes them through the staff to ensure the input of the DOTMLPF-C pillars; the same stakeholders and basic phases apply, but generally faster. Derived from IDA Discussion with Representatives of DC, CD&I and Training and Education Command (TECOM), interview with author, June 29, 2020, and U.S. Marine Corps, *Force Development System User Guide*, (Washington, DC: Department of the Navy, Headquarters United States Marine Corps, April 2018), 3 and 14-15.

²⁰ Representative of the Marine Corps Integration Division, interview with author, June 18, 2020.

²¹ MCO 3900.20, 1.

²² A POM is a plan to allocate resources in accordance with planning and programming guidance. It is the final product of the programming process within the PPBE system. A POM may also be called a Fiscal Year(s) Defense Plan. In the United States Department of Defense, a POM is a 5-year plan (e.g. POM-21 would cover Fiscal Years 2021 to 2025).

1. Phase I – Strategic Planning

During this phase, “the Marine Corps capability developers...ensure their actions adhere to the strategic objectives for the Marine Corps.”²³ Strategic guidance, assessments, doctrine, concepts, and the Marine Corps Base Plan establish the foundation for a CBA. Table 2 documents the inputs and outputs of Phase I.

Table 2. Inputs and Outputs of Phase I of the Marine Corps’ CBA Process

Inputs	Outputs
<ul style="list-style-type: none"> • National and defense strategic guidance • Assessment of threats and the operating environment • Support for Strategic Analysis (SSA) scenario(s), Marine Air-Ground Task Force (MAGTF) CONOPS and associated enterprise Concepts of Support. • Allied, Joint, Naval and Marine Corps doctrine and concepts. • Marine Corps Lessons Learned • Marine Corps Total Force Structure Authorized Strength Report • Commandant’s Planning Guidance • Advocates and Proponents Roadmaps • Marine Corps studies, wargaming, experimentation, and science and technology exploration results • Marine Corps Strategic Health Assessment 	<ul style="list-style-type: none"> • Marine Corps capstone concept • Marine Corps Service Campaign Plan (MCSCP) Base Plan and Appendix 15 update to Annex C²⁴ • Tasks needed to perform mission outlined in MAGTF CONOPS and support concepts “as well as the identified capabilities and associated tasks, conditions, standards, and performers.” • Updates and refinement of capability requirements based on changes to Appendix 15, Annex C of the MCSCP

Note: Derived from MCO 3900.20, 1-1—1-6.

²³ MCO 3900.20, 3.

²⁴ The U.S. Marine Corps Service Campaign Plan (MCSCP) “aligns operational commitments and capabilities development” by, “directing short-term actions and establishing mid-term and long-term objectives to guide the development and maintenance of the Commandant’s priorities in supporting the Combatant Commanders (CCDRs).” MCO 3900.20, 1-2. Appendix 15 of Annex C of the MCSCP describes the Commandant’s priorities and areas where the Commandant will accept operational and institutional risk. This Appendix “provides guidance to the [Marine Corps Capability Based Assessment] process and the development of the [Marine Corps Enterprise Integration Plan] to ensure alignment with the Service’s mid- and long-term objectives.” MCO 3900.20, 4.

2. Phase II – Capabilities Analyses

Phase II’s purpose “is to identify, define, categorize, and prioritize [Marine Corps Capability Areas]²⁵ to produce a [Marine Corps Capabilities List].”²⁶ First, the phase focuses on identifying capabilities necessary to implement concepts and achieve strategic objectives. The Marine Corps defines a capability as tasks performed under certain conditions in accordance with a set of standards.²⁷ Second, the phase updates Marine Corps Capability Areas (MCCAs) descriptions and prioritizes those MCCAs, resulting in an updated Marine Corps Capabilities List (MCCL). Table 3 documents the inputs and outputs of Phase II.

Table 3. Inputs and Outputs of Phase II of the Marine Corps’ CBA Process

Inputs	Outputs
<ul style="list-style-type: none"> • Applicable Joint, Naval, and Service concepts • Service strategic guidance • Results of the Marine Corps’ CBA Wargame results • Threat and operating environment assessments • Deliberate Universal Need Statements • Marine Corps Capabilities List and capability requirements from previous years • Total Force Structure Authorized Strength Report • Marine Corps Task List • Prioritization criteria based on Service strategic guidance for capabilities planning 	<ul style="list-style-type: none"> • Updated capability requirement data elements • Marine Corps Capabilities List

Note: Derived from MCO 3900.20, 2-1—2-5.

3. Phase III – Gap Analysis

This phase compares the capability requirements identified in Phase II to the Marine Corps’ existing and programmed capabilities. More specifically, Phase III determines whether specific Marine Corps units identified in Phase II can perform tasks to standard, under specified conditions. Capability gaps and redundancies emerge during this phase. Guidance from the Secretary of Defense, the Commandant of the Marine Corps, and other guidance and risk analyses serve as considerations to prioritize gaps. The final product of Phase III (i.e., the Marine Corps Gaps List, or MCGL) is an approved, prioritized list of capability gaps. These gaps are consolidated at the

²⁵ All Marine Corps capabilities are nested within the U.S. Joint Staff Joint Capability Area Taxonomy. Each capability requirement corresponds to a Tier 3 Joint Capability Area (JCA), which aligns with Tier 1 and Tier 2 JCAs. This enables Joint Force planners and warfighters to more easily understand and integrate Marine Corps capabilities into Joint Operations.

²⁶ MCO 3900.20, 2-1.

²⁷ MCO 3900.20, 4.

Marine Corps Capability Area (MCCA) Tier 2 level of detail.^{28,29} Table 4 documents the inputs and outputs of Phase III.

Table 4. Inputs and Outputs of Phase III of the Marine Corps’ CBA Process

Inputs	Outputs
<ul style="list-style-type: none"> • Service strategic guidance • Approved, current year Marine Corps Capabilities List • Previous year’s Marine Corps Gaps List • Current and programmed Marine Corps Forces (derived from the previous year’s USMC POM) • Deliberate Universal Needs Statements • Integrated Priority Lists from the Combatant Commands and Marine Corps Forces • Prioritization criteria based on Service strategic guidance. 	<ul style="list-style-type: none"> • Updated Marine Corps Gaps List • Documentation of the analyses

Note: Derived from MCO 3900.20, 3-1—3-5.

4. Phase IV – Solutions Analysis

Phase IV considers each element of DOTMLPF-P to analyze whether doctrine needs to be updated or how Marine Corps units or organizations may need to change in order to close a capability gap. Through this analysis, DOTMLPF-P actions necessary to implement those solutions are proposed. Phase IV also includes a review of the existing USMC program of record (i.e., the USMC Program Objective Memorandum, or POM). Programs that are behind schedule or no longer a priority may be a source of funding for solutions that address capability gaps in other programs. Solutions that require funding above what is available in a specific Marine Corps program (e.g., the Marine Corps F-35 aircraft program or the Marine Corps infantry rifle program) are marked for further review. In these instances, proposed solutions must describe the rationale for additional funding.

Per Marine Corps Order 3900.20 (Capabilities Based Assessment) 30, solutions are developed for gaps on the MCGL which:

²⁸ Per MCO 3900.20, there are three tiers in the USMC Capability Taxonomy. Tier 1 MCCAs are the service level representation of Tier 1 Joint Capability Areas. These support investment decision-making, capability portfolio management and analyses, and capabilities based and operational planning. A Tier II Marine Corps Capability Area (MCCA) is a functional or operational capability with sufficient detail to support Service-level operations/missions, or force generation/force management activities. Tier II MCCAs scope, bound, clarify, and better define the intended mission set of their Tier I MCCAs. Tier III MCCAs further decompose Tier II MCCAs.

²⁹ For reference, the 2019 CBA found 246 gaps, per a representative of the Marine Corps Integration Division, interview with author, June 18, 2020.

³⁰ “MCO 3900.20,” U.S. Marine Corps Website, accessed February 3, 2021, <https://www.marines.mil/News/Publications/MCPPEL/Electronic-Library-Display/Article/976739/mco-390020/>.

- Have not been previously addressed or,
- Require updates to previously approved solutions

Due to resource constraints and policy limitations, not all gaps on the MCGL have solutions. For these gaps, the appropriate Capability Portfolio Manager (CPM)³¹ documents the rationale for accepting risk.

Phase IV is complete when an approved Marine Corps Solutions Development Directive (MCSDD) is issued. The MCSDD describes the approach to close each gap addressed and the specific DOTMLPF-P solutions and supporting actions required. Marine Corps review boards at the O-6 and flag officer level review, prioritize, and validate the proposed approaches and solutions.³² The Deputy Commandant for Capability Development and Integration approves the MCSDD. Table 5 documents the inputs and outputs of Phase IV.

Table 5. Inputs and Outputs of Phase IV of the Marine Corps’ CBA Process

Inputs	Outputs
<ul style="list-style-type: none"> • Current Marine Corps Gaps List • Prior year’s Marine Corps Solutions Development Directive and the status of those solutions • Marine Corps studies, wargaming, experimentation, exercises, and science and technology exploration results and lessons learned • Service strategic guidance 	<ul style="list-style-type: none"> • Marine Corps Solutions Development Directive • DOTMLPF-P solutions for MCGL capability gaps • A set of actions for each DOTMLPF-P solution

Note: Derived from MCO 3900.20, 4-1—4-4.

5. Phase V – Risk Analysis

The focus of Phase V is to identify MCCAs where the USMC should accept, maintain, or reduce risk. The analyses occur at Tier II and III MCCAs (see footnote 22 for a description of Tier I-III MCCAs). The most current position in the Marine Corps POM is the fiscal baseline for the risk evaluation. All Tier II and III MCCAs are mapped to a Marine Corps program code³³ to establish a fiscal link between programs and capabilities. MCO 3900.20 reads:

³¹ Per MCO 3900.20, a Capability Portfolio Manager is the individual aligned to a specific Marine Corps Capability Area that integrates capability development activities while managing existing capabilities to optimize resources. The CPM provides resource allocation recommendations to inform investment planning, and promotes cross portfolio decision-making across DOTMLPF-P areas.

³² There are two review boards. The Capability Portfolio Integration Board (CPIB) and the Capability Portfolio Review Board (CPRB). The CPIB is an O-6 forum. The CPRB is a flag officer forum.

³³ Program codes (also known as program elements) are a necessary element of a multi-year budget planning system (i.e., a Program Budget system). The program codes link budget codes to capabilities. They provide means to do multi-variate qualitative and quantitative analyses. For detailed information on program elements and program budgeting, see Aaron Taliaferro, et al., *Program Budgeting*, IDA Paper NS P-5317 (Alexandria, VA: Institute for Defense Analyses, March 2017).

“[Associating] Marine Corps program codes with MCCAs enables assessments of the collective capabilities provided by each MCCA and a view of the interdependencies within each MCCA and among groups of MCCAs to support risk analysis. Each MCCA is evaluated for its contribution towards achieving the objectives outlined in Service strategic guidance relative to its [POM] position.”³⁴

The output of Phase 5 is the Marine Corps Capabilities Investment Plan (MCCIP). For each Tier II and III MCCA, the MCCIP provides recommendations on where to reduce and accept risk. The Deputy Commandant for Programs and Resources provides fiscal constraints to ensure the MCCIP is feasible within the anticipated Marine Corps’ total anticipated budget limit over the POM (e.g., a 5-year period of time). Phase V concludes when the DC CD&I approves the MCCIP. Table 6 documents the inputs and outputs of Phase V.

Table 6. Inputs and Outputs of Phase V of the Marine Corps’ CBA Process

Inputs	Outputs
<ul style="list-style-type: none"> • Service strategic guidance • Marine Corps Phase I-IV CBA outputs • Fiscal analyses and analytic support tools • Marine Corps Program Budget Codes mapped to Marine Corps Capability Areas • Program Objective Memorandum (POM) • Anticipated fiscal constraints 	<ul style="list-style-type: none"> • Recommendations to accept, maintain, or reduce risk for each of the Tier I and II Marine Corps Capability Areas • Fiscally constrained Marine Corps Program Assessment • Marine Corps Capabilities Investment Plan

Note: Derived from MCO 3900.20, 5-1—5-4.

If the Marine Corps Capability Investment Plan (MCCIP) does not prioritize additional resources for newly identified capability gaps, this does not mean that those gaps will never be addressed. For example, the under-execution of planned expenditures in one program may result in the Corps redirecting funds to implement a solution tied to a prioritized but unfunded gap in another program.³⁵ In other instances, policy or doctrinal changes may not require funding if policy, concept, or doctrine development is resourced within the day-to-day duties of existing personnel assigned to organizations responsible to develop policy, concepts, or doctrine.³⁶

The completion of Phase V of the CBA coincides with the end of the Marine Corps’ planning phase of its PPBE process. The MCCIP is an input to the Marine Corps Requirements Oversight

³⁴ MCO 3900.20, 5-3(b).

³⁵ Representative of the Marine Corps Integration Division, interview with author, June 18, 2020.

³⁶ Ibid.

Council. The oversight council uses this input to approve the Marine Corps Enterprise Integration Plan.³⁷ This plan serves as an input to the Marine Corps’ programming phase of its PPBE process.

The Marine Corps’ CBA process also interfaces with the Defense Department’s Joint Capabilities and Integration Development System (JCIDS). JCIDS documentation includes DOTMLPF change requests for non-material solutions and Initial Capabilities Documents for material solutions.

D. Joint Capability Integration and Development System (JCIDS)

Like each of the Military Services of the United States Department of Defense, the Marine Corps’ uses the JCIDS to generate and document requirements.³⁸ Under the leadership of the Joint Staff J8 (Director, Force Structure, Resource, & Assessment), JCIDS “ensures joint military capabilities necessary to execute missions assigned to each military service are identified, assessed, validated and prioritized.”³⁹ Validated capability requirements facilitate DOTMLPF-P changes, guide the defense acquisition system, and inform the Department’s PPBE processes.⁴⁰

Outputs of Phases II-IV of the Marine Corp’s CBA process provide one source of its inputs to the JCIDS process.⁴¹ Figure 7 illustrates the elements of the JCIDS process. JCIDS validates capability gaps and confirms whether gap mitigation requires a materiel or non-material solution. If the capability gap requires—

- A non-materiel solution, a DOTMLPF-P Change Request (DCR) is developed
- A materiel solution, then a number of additional JCIDS activities provide inputs to and parallel the capability acquisition process. These activities include:
 - Development and validation of an Initial Capabilities Document, which serves as “the basis for a Materiel Development Decision by the materiel developer and ... as the starting point for analysis supporting trade-offs and guides the Analysis of Alternatives (AoA).”⁴²
 - The development and validation of a Capability Development Document (CDD) for a specific materiel solution.

³⁷ The MCEIP translates future-focused Service guidance into an enterprise-wide plan. It is a single, integrated, and consolidated capabilities development and resource allocation recommendation for a given POM (i.e., Planning and Programming) cycle. Its goal is to align enterprise-wide efforts to programmatic decisions that support priorities aligned with future objectives (see MCO 3900.20, 6-4).

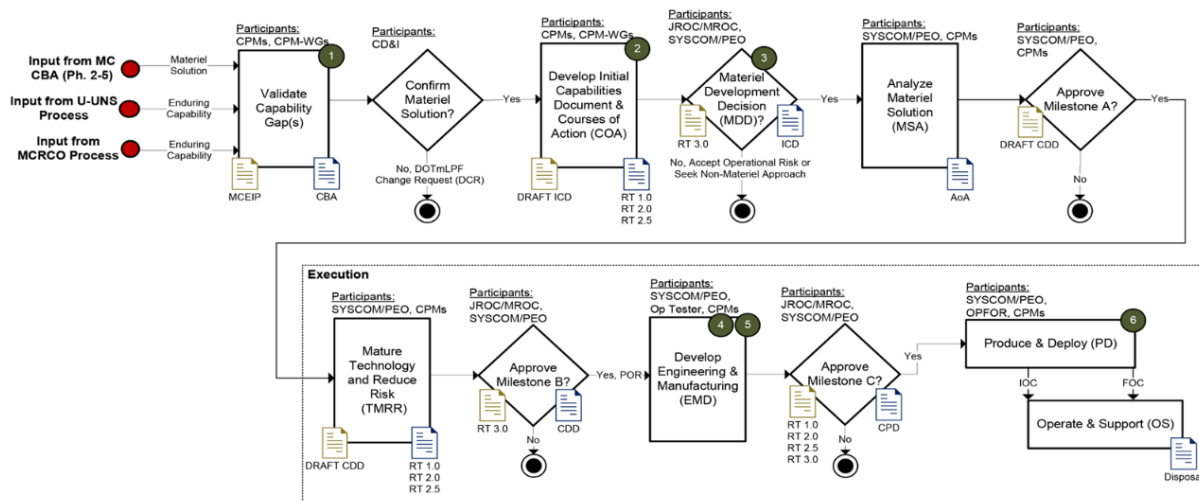
³⁸ JCIDS is described in detail in CJCSI 5123.01H, Enclosure D.

³⁹ *United States Marine Corps Force Development System User Guide*, 36.

⁴⁰ CJCSI 5123.01H, Enclosure D (1.b.)

⁴¹ Other Marine Corps inputs to JCIDs include Urgent Universal Needs Statements and Marine Corps Rapid Capabilities processes. See *United States Marine Corps Force Development System User Guide*, 36.

⁴² *United States Marine Corps Force Development System User Guide*, 36.



Note: Derived from *United States Marine Corps Force Development System User Guide*, 37.

Note: AoA – Analysis of Alternatives; CBA – Capability Based Assessment; CDD – Capability Development Document; CD&I – Combat Development and Integration; COA – Courses of Action; CPD – Capability Production Document; CPMs – Capabilities Portfolio Manager; CPM WGs – Capabilities Portfolio Manager Working Groups; DCR – DOTmLPF Change Request ; DOTmLPF – Doctrine, Organization, Training, Materiel, Leadership, Partnership and Education, Personnel, and Facilities; EMD – Engineering and Manufacturing Development; ICD – Initial Capabilities Document; JROC – Joint Requirements Oversight Council; MC – Marine Corps; MCEIP – Marine Corps Enterprise Integration Plan; MCRCO – Marine Corps Rapid Capabilities Office; MDD – Materiel Development Decision; MROC – Marine Corps Requirements Oversight Council; OPFOR – Operating Forces; OS – Operations and Support ; PD – Production and Deployment; PEO – Program Executive Officer; RT – Requirement Transition; SYSCOM – Systems Command; TMRR – Technology Maturation and Risk Reduction; U-UNS – Urgent Universal Need Statement

Figure 7. Joint Capabilities Integration and Development System Flowchart

1. Capability Acquisition

The Marine Corps’ capability acquisition process parallels the Defense Acquisition System as documented in DOD instructions and taught by Defense Acquisition University.⁴³ The Marine Corps process CD&I applies to:⁴⁴

- Large, complex systems, such as an Amphibious Combat Vehicle that require years to develop and field. These systems have high unit costs and the Marine Corps purchases a relatively small number of them.
- Smaller, largely commercial-off-the-shelf systems (e.g., integrated helmet, squad common optics, modular handgun system, new rifle) based on mature technology that already exists in military and law enforcement markets. Fielding can occur more quickly for such systems (e.g., one year to 18 months). These items have smaller unit

⁴³ Representatives of MCCDC and TECOM, interview with author, June 29, 2020.

⁴⁴ Representative of Infantry Weapons, Ground Combat Element Systems, Marine Corps Systems Command (MCSC), interview with author, June 23, 2020.

costs, but the Marine Corps purchases large quantities of them. For example, the M18 Modular Handgun System program plans to purchase 28,000 of these pistols.

The capability acquisition process begins with materiel solution requirements as documented in an Initial Capabilities Document (ICD). A new ICD or the modification of an existing ICD can represent the departure point for an acquisition program, such as an approved solution that called for a new Marine Corps helmet. This ICD was initially included within the 2016 *Marine Expeditionary Rifle Squad ICD*.⁴⁵ The Marine Expeditionary Rifle ICD was structured to include all gaps related to a Marine rifle squad. However, the Marine Corps has now decided to develop a stand-alone ICD for an integrated helmet system apart from the Rifle Squad ICD.⁴⁶

An ICD initiates the acquisition process; however, acquisition personnel perform some preparatory actions prior to process initiation.⁴⁷ As an example, Marine Corps acquisition personnel are expected to reach out to industry and other DOD organizations, such as the Department of the Army or Special Operations Command, to determine the potential to leverage other existing solutions.⁴⁸

Marine Corps acquisition professionals must identify specific materiel solutions to address materiel gaps. However, their analyses has a broad aperture. For example, if the Marine Corps decided to purchase a new amphibious assault vehicle or new infantry rifle, then the acquisition process would also identify necessary changes to armories, supply facilities, hangars, and training ranges. Environmental impacts related to the fielding and sustainment of a new system are also considered.⁴⁹ To facilitate the identification of these additional changes, the Marine Corps relies on “good business practices and continuous communication”—formal and informal.⁵⁰ Communication and integration mechanisms include:

- Early meeting(s) to map out everything the materiel solution will touch⁵¹
 - The participants examine a system to determine what it will interface with and who should work through any impacts. As an example, a meeting for the Squad Common Optics system looked at the physical impact of the added weight of the optic on a Marine’s ability to shoot. For the replacement to the M240 Medium

⁴⁵ Representatives of Ground Combat Element Division – Fires and Maneuver, CDD, CD&I, MCCDC, interview with author, August 12, 2020.

⁴⁶ Ibid.

⁴⁷ Representative of Infantry Weapons, Ground Combat Element Systems, Marine Corps Systems Command (MCSC), interview with author, June 23, 2020; and Representatives of MCCDC and TECOM, interview with author, June 29, 2020.

⁴⁸ Ibid.

⁴⁹ Representative of Infantry Weapons, Ground Combat Element Systems, Marine Corps Systems Command (MCSC), interview with author, June 23, 2020.

⁵⁰ Representatives of MCSC, interview with author, July 29, 2020.

⁵¹ Ibid.

Machine Gun, the integration mapping considered the need for training, maintenance, test, storage, and facility impacts of the new system. They also considered how its use would interface with hearing protection, ammunition carriage, personal protective equipment, optics, and weapon mounts.⁵² As required, Navy liaisons examine how a potential new Marine Corps system will fit onto ships.

- Formal documents required as part of the acquisition process. They address questions, such as—
 - How will new systems integrate with existing systems?
 - What is the test and evaluation plan for the proposed new system?
 - What is the fielding plan as unit items are purchased?
 - What is the impact on existing facilities?

All of these questions and others are answered and documented as part of the acquisition process.⁵³

- Outreach on plans and progress of an acquisition system⁵⁴

Outreach occurs to identify any issues that need to be resolved before new systems are acquired. System acquisition personnel reach out to the operations, personnel, training, and logistics communities through formal briefings, conference and symposia presentations, and other information releases. Any issues that will delay fielding or hinder sustainment are what outreach seeks to identify.

- Integrated product teams (IPTs)

IPTs are formed to examine the materiel solution throughout the system's expected life cycle. IPTs can exist for any number of topics (e.g., integration, sustainment, or training). One IPT may focus on system maintenance. Such an IPT will identify the parts, tools and training required for maintenance. The number, composition, and focus of IPTs depends on the complexity of the system.

⁵² Provided to IDA, Integration Mapping for the Replacement to the M240, September 9, 2020 email.

⁵³ Provided to IDA, list of acquisition documents, September 9, 2020 email.

⁵⁴ Representatives of MCSC, interview with author, July 29, 2020.

2. Potential Best Practices or Lessons Learned from Marine Corps Capability Determination and Acquisition Processes

For security cooperation planners considering the capability requirements of partner nations, the Marine Corps' capability determination and acquisition processes offers the following principles and lessons learned:

- Capability development requires multi-year, cyclical implementation of integrated processes to plan, program, and budget for capabilities.
- Changing the structure of military units, developing new doctrine, and acquiring and fielding new weapon systems takes years of integrated effort.
- Introducing a new weapons system into military units cannot come at the risk of disabling existing unit capability, unless there is a deliberate plan to phase out old classes of weapons systems or to identify offsets in other capabilities to free up resources to procure new systems to improve priority capabilities.
- Use policy guidance, strategic objectives, scenarios, and existing operating concepts as a foundation for analyses to determine capability requirements.
- Always analyze the sufficiency of existing and already programmed capabilities before pursuing new capabilities. Capability gaps that can be closed through non-material solutions are easier to implement than those that require material solutions.
- When identifying solutions to address capability gaps, do not consider materiel solutions in isolation from supporting non-material solutions. Also, ask whether non-material solutions provide a good enough answer. A materiel solution on its own often does not satisfy a capability gap. A non-material solution on its own may reduce the capability gap to a level that meets requirements.
- If a materiel solution is approved and funded, assess the implementation and integration of that materiel solution with other systems already fielded or under development.
- To ensure the successful fielding and sustainment of materiel solutions throughout their life cycle, new weapon systems may require development of new support activities and infrastructure (e.g. maintenance training, maintenance facilities). Specific examples include:
 - Training
 - Training range impacts
 - Major equipment, tools, facilities, and supplies for training
 - Maintenance and Test
 - Tools
 - Test equipment

- Maintenance facilities
- Storage
 - Armories
 - In-transit storage
- Support equipment
 - Front-end loaders, bomb loaders, fork-lifts, information systems
- Interface with other equipment worn or carried by a service member (e.g., protective equipment, carriage methods, optics, communications equipment)
- Interface with other systems with which a service member interfaces (e.g., ground vehicles, ships, aircrafts)

Finally, it is important to note that the Marine Corps and all other U.S. military services have organizations designated and personnel assigned for capability development and acquisition processes. Many partner nations do not have similar organizations or personnel; however, if the U.S. Government wants to transfer weapons systems to a partner nation, then these principles still apply prior to weapon system transfer. Otherwise, the Government should not expect the partner will be able to successfully field and/or sustain a weapon system over time. The net result will be a reduction in the partner's capability.

3. Examples of How the United States Marine Corps Capability Determination, Resourcing, and Acquisition Processes Work

Based on open source information, this section provides three examples of how the Marine Corps develops its force through changes across Doctrine, Training, Materiel & Equipment, Leadership & Education, Personnel, Facilities, and Policy (DOTMLPF-P). The examples are:

- Replacing the M249 Squad Automatic Weapon (SAW) light machine gun with the M27 Infantry Automatic Rifle (IAR)
- Expanding the role of the M27 in order to replace the M4 and M16 service rifles
- Changing the size and composition of Marine Rifle Squads as the M27 was fielded

These examples demonstrate the multi-year, interactive, and evolutionary nature of capability determination, resourcing, and acquisition. The description interweaves these examples chronologically. Figure 8 depicts a summary chronology of the three examples.

What Figure 8 does not portray is the policy guidance from DOD and the corresponding strategic guidance provided by the Commandant of the Marine Corps that preceded these changes. In addition, Figure 8 does not adequately portray the experimentation, exercises, and wargames that tested new organizational designs and weapons systems before they were adopted across the Marine Corps' units. Some historical guidance and a description of some of the experimentation is provided in the narrative of this section.

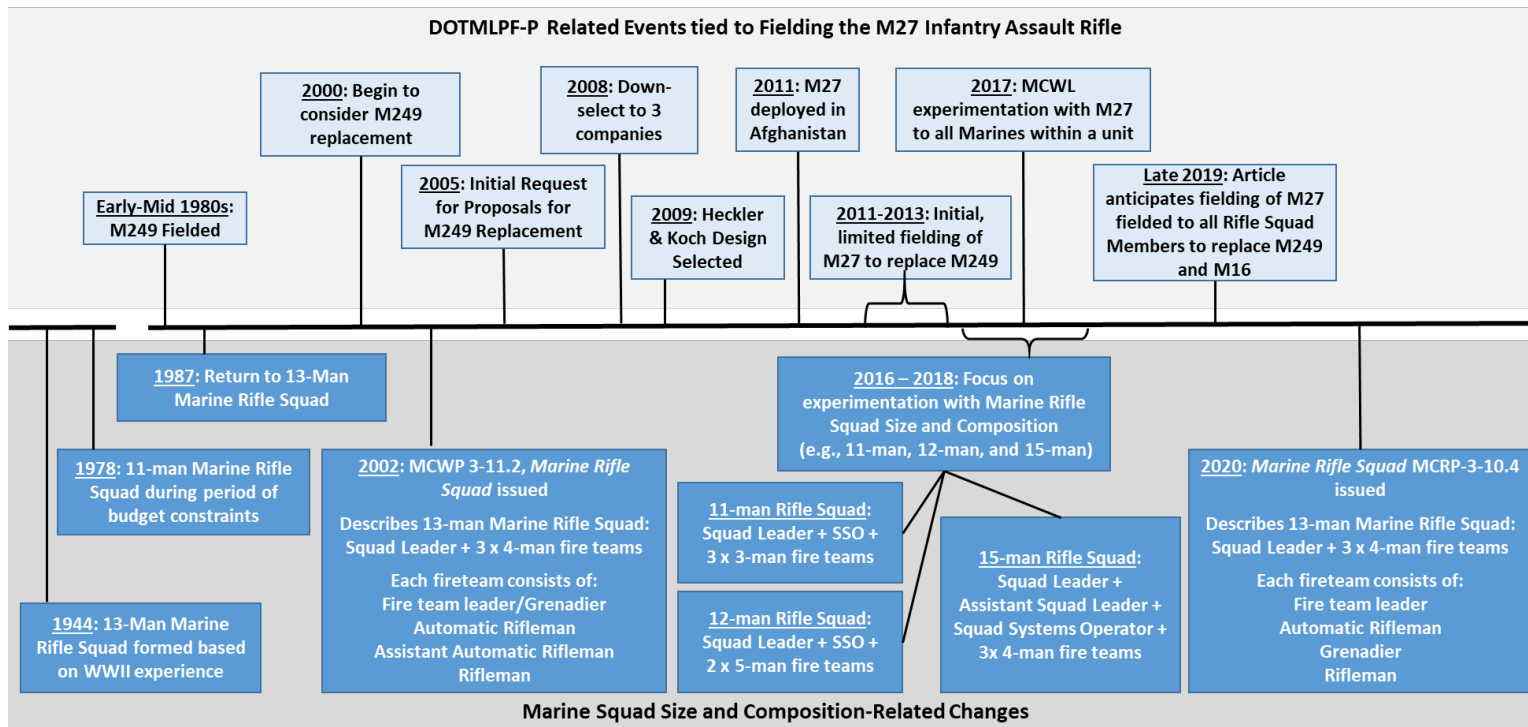


Figure 8. Chronology of DOTMLPF-P Related Events tied to Fielding the M27 Infantry Assault Rifle

A. Replacing the M249 Squad Automatic Weapon

1. Capability Determination and Resourcing

a. Strategic Direction

The M249 is a shoulder-fired automatic weapon. It is an air-cooled and gas-operated rifle that can be fed by ammunition belts or magazines.⁵⁵ The M249 provided Marine Corps rifle squads the ability to provide suppressive fire that enabled rifle squads to maneuver.⁵⁶ First fielded by the Marines in the 1980s, planning to replace the M249 SAW began in 2000.⁵⁷

In 1997, the Marine Corps Commandant signaled the Marines needed to prepare for a different kind of warfare. He said:

*“In one moment in time, our service members will be feeding and clothing displaced refugees, [and] providing humanitarian assistance. In the next moment, they will be holding two warring tribes apart—conducting peacekeeping operations—and, finally, they will be fighting a highly lethal mid-intensity battle—all on the same day... all within three city blocks. It will be what we call the “three block war.” In this environment, conventional doctrine and organizations may mean very little.”*⁵⁸

This impetus led to new concepts and capability requirements. Fighting in three city blocks implied military operations in urban terrain (MOUT). The M249 was viewed as “more of a hindrance than a help in close-quarters urban warfare situations.”⁵⁹ A Marine Gunner at The Basic School elaborated—

“One of the required capabilities of the automatic rifle should be that it can be easily taken into the final assault. ... We need a weapon that can be easily employed in the close fight. We need an automatic rifle that can be accurately

⁵⁵ U.S. Marine Corps, *M249 Light MachineGun: B3M4138 Student Handout*, (Camp Barrett, Virginia: United States Marine Corps, The Basic School, Marine Corps Training Command. <https://www.trngcmd.marines.mil/Portals/207/Docs/TBS/B3M4138%20M249%20Light%20Machine%20Gun.pdf?ver=2015-05-07-103752-850>).

⁵⁶ “IAR What IAR: The USMC’s SAW Substitution,” *Defense Industry Daily*, November 13, 2012, <https://www.defenseindustrydaily.com/iar-what-iar-the-usmcs-saw-substitution-05240/>.

⁵⁷ Todd South, “All of the Marine M27 rifles are in—if you are not a grunt or working with them, you’re not getting one,” *Marine Corps Times*, April 19, 2019, <https://www.marinecorpstimes.com/news/your-marine-corps/2019/04/19/all-of-the-marine-m27-rifles-are-in-if-youre-not-a-grunt-or-working-with-them-youre-not-getting-one/>; and “IAR What IAR: The USMC’s SAW Substitution,” *Defense Industry Daily*, November 13, 2012, <https://www.defenseindustrydaily.com/iar-what-iar-the-usmcs-saw-substitution-05240/>.

⁵⁸ Charles C. Krulak, “The Three Block War,” *Vital Speeches of the Day* 64, no. 5 (December 15, 1997), 139.

⁵⁹ “IAR What IAR: The USMC’s SAW Substitution,” *Defense Industry Daily*, November 13, 2012, <https://www.defenseindustrydaily.com/iar-what-iar-the-usmcs-saw-substitution-05240/>.

*fired from other than the prone position. We need an automatic rifle that is easy to move with. That's especially important in the jungle and in the MOUT. A shorter SAW may be the answer, but we also need to solve the problem of the 200-round drum. How often do we see that thing fall off a weapon? What kind of a nightmare does that present? Picture that happening as the SAW gunner is attempting to enter a building through a window!"*⁶⁰

2. Capabilities-Based Assessment and Total Force Structure Process

Given this context, the Marine Corps sought a lighter, more resilient weapon with improved accuracy to replace the M249.

The USMC identifies gaps during Phase III of its capability-based assessment (CBA) process. Once identified, the DOTMLPF-P Working Group and its corresponding functional pillars within the Total Force Structure Process identifies solutions (Phase IV of the CBA process).

The following are examples of gaps related to the M249:⁶¹

- **Training**

*"The inability of Marines to qualify with the M249 SAW has been identified throughout the Marine Corps as a problem. This problem is often blamed on the weapon system and does not focus on the real problem—our inability to proficiently train the owner of the weapon. The main contributors to this problem are time and ammunition... [We] should work on improving our skills with the M249 SAW. These skills include: how we fire and move with the SAW; how we assume fighting positions with the SAW; how we manipulate the SAW to engage targets and how we prevent ammunition drums from falling off the SAW."*⁶²

- **Employment Concepts**

A more appropriate rate of fire (i.e., 3 to 5 round bursts for a total of 36 to 60 rounds per minute) for the M249 would enable improved accuracy, and improve reliability by preventing the barrel from overheating.⁶³ This will decrease ammunition requirements.

- **Training Ranges and Ammunition**

⁶⁰ CW02 Jeffrey L. Eby, "M249 Employment Concepts," *Marine Corps Gazette*, April 2001, 24.

⁶¹ Studies done for the Army also support Marine Corps complaints about the M249. See Sara M. Russell, *Soldier Perspectives on Small Arms in Combat*, (Alexandria, VA: Center for Naval Analysis, December 2006).

⁶² Cannon C. Cargile, "M249 SAW?," *Marine Corps Gazette*, April 2001, 27.

⁶³ CW02 Jeffrey L. Eby, "M249 Employment Concepts," *Marine Corps Gazette*, April 2001, 24.

An increase in training would result in increased demand for range capacity and ammunition.

To determine solutions, the Total Force Structure Process would also analyze the existing allocation of M249s to Marine units and how M249s are used. The M249 was used by fire teams in a Marine Rifle Squad.⁶⁴ There were three fire teams in each squad. A two-man crew operated the M249 in each of the fire teams. Each of the fire teams consisted of a fire team leader, automatic rifleman, and rifleman. Figure 9 depicts the doctrinal composition of a Marine Rifle Squad as of 2002. Going further, Rifle Squads exist in Rifle Platoons that exist in Rifle Companies, which exist in Infantry Battalions. Accordingly, TFSP would examine how replacing the M249 impacts each hierarchy in an Infantry Battalion's structure.

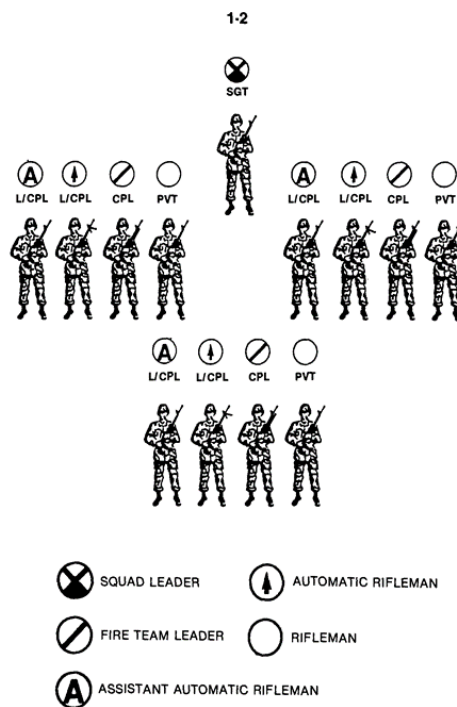


Figure 1-1. Marine Rifle Squad.

Note: Derived from United States Marine Corps, *Marine Rifle Squad* MCWP 3-11.2 w/Ch 1, November 27, 2002, 1-2.

Figure 9. Doctrinal Depiction of Marine Rifle Squad, circa 2002

⁶⁴ The Marine Corps rifle squad is the fundamental maneuver unit of the Marine Corps infantry. United States Marine Corps, *Marine Rifle Squad* MCRP 3-10A.4 (Washington, DC: Department of the Navy, U.S. Marine Corps, August 7, 2020), 1-1.

Years of urban experimentation and combat development led to battlefield predictions proven true during the 2004 battle in Fallujah.⁶⁵ This and other battles in Afghanistan and Iraq provided opportunities for feedback and lessons learned from operations in a contested, urban environment. This is representative of the feedback loop seen in Figure 4 from the previous section (the Marine Corps' Force Development System).

The CBA, which represents the planning element of the PPBE process, would have taken place four years prior to the first year the Marine Corps had funds to begin the acquisition process for an M249 replacement. This aligns with accounts that the Marine Corps issued its first requests to industry to provide a new weapon for the Marine Corps in 2005.⁶⁶ Engagement with industry signaled entry into the capability acquisition process. A request to industry would have included specifications like the following:⁶⁷

- The gun “has to fire from either the open or closed bolt position”
- The gun needs “single-shot and ‘first through the door’ capabilities”
- The gun needs to be able to sustain fire longer than an M-16 without overheating
- The gun should not weigh more than 12.5 pounds (ideal weight 10.5 pounds)

Given these specifications, the Marines traded the SAW's belt-fed design for switchable 30-round magazines, which are used up more quickly, but can be changed more quickly.⁶⁸

3. Capability Acquisition

Formal communication of the requirements for a replacement of the M249 would have been issued via an Initial Capabilities Document and later a Capability Development Document approved through the Joint Capabilities Integration and Development System.

In 2008, the Marine Corps selected proposals by Heckler & Koch, Colt, and FN USA as possible replacements for the M249.⁶⁹ Initial testing was conducted by the 1st Marine Division's

⁶⁵ Col Gary W. Anderson, USMC (Ret), “Fallujah and the Future of Urban Operations,” *Marine Corps Gazette*, November 2004, 52.

⁶⁶ Todd South, “All of the Marine M27 rifles are in—if you are not a grunt or working with them, you're not getting one,” *Marine Corps Times*, April 19, 2019, <https://www.marinecorpstimes.com/news/your-marine-corps/2019/04/19/all-of-the-marine-m27-rifles-are-in-if-youre-not-a-grunt-or-working-with-them-youre-not-getting-one/>.

⁶⁷ All listed specifications come from: “IAR What IAR: The USMC's SAW Substitution.” *Defense Industry Daily*, November 13, 2012, <https://www.defenseindustrydaily.com/iar-what-iar-the-usmcs-saw-substitution-05240/>.

⁶⁸ Ibid.

⁶⁹ Todd South, “All of the Marine M27 rifles are in—if you are not a grunt or working with them, you're not getting one,” *Marine Corps Times*, April 19, 2019, <https://www.marinecorpstimes.com/news/your-marine-corps/2019/04/19/all-of-the-marine-m27-rifles-are-in-if-youre-not-a-grunt-or-working-with-them-youre-not-getting-one/>; and David Crane, “U.S. Marine Corps Selects Heckler & Kochler Infantry Automatic Rifle (HK IAR) Candidate as Replacement for FN M249 SAW/LMG,” *Defense Review*, December 15, 2009,

2nd Battalion, 7th Regiment. In late 2009, the Heckler & Koch Infantry Automatic Rifle (IAR) was chosen as the replacement, and assigned the M27 nomenclature in honor of the regiment that conducted the tests.⁷⁰ Based on the HK416 carbine/Short Barreled Rifle platform, the M27 provides:

*“[M249]-type capability in a lighter-weight rifle/carbine package that’s not only easier for mobile infantry warfighters to carry and employ/deploy than the M249, but also [provides] them a similar weapon signature to the rest of the fire team/ rifle quad, so they’re harder to identify and target by enemy forces.”*⁷¹

The Marine Corps began fielding the M27 in 2010 and 2011.⁷² At the time, fielding was limited to infantry, reconnaissance, and light armored reconnaissance units, some of which used the M27 in Afghanistan.^{73,74}

Feedback from Marines using the M27 in Afghanistan highlighted the benefits of the weapon’s “direct piston system, fewer moving parts, easier maintenance, and greater accuracy.”⁷⁵ Operations in Afghanistan proved the IAR allowed Marines to provide suppressive fire with greater precision.⁷⁶

<https://www.defensereview.com/us-marine-corps-selects-hk-iar-infantry-automatic-rifle-as-replacement-for-fn-m249-sawlmg/>.

⁷⁰ Robert Bruce, “M27, Part Two: From BAR to IAR – How the Marines Finally Got Their Infantry Automatic Rifle,” *Small Arms Defense Journal*, November 20, 2012, <http://www.sadefensejournal.com/wp/m27-part-two-from-bar-to-iar-how-the-marines-finally-got-their-infantry-automatic-rifle/3/>.

⁷¹ David Crane, “U.S. Marine Corps Selects Heckler & Kochler Infantry Automatic Rifle (HK IAR) Candidate as Replacement for FN M249 SAW/LMG,” *Defense Review*, December 15, 2009, <https://www.defensereview.com/us-marine-corps-selects-hk-iar-infantry-automatic-rifle-as-replacement-for-fn-m249-sawlmg/>.

⁷² Miguel Ortiz, “5 rifles that almost replaced the M4/M16... and the one that did,” *We are the Mighty*, August 27, 2020, <https://www.wearethemighty.com/mighty-trending/rifles-almost-replaced-m4/>; “U.S. Marine Rifle Platoon (Planned),” Battle Order Website, accessed 2020, <https://www.battleorder.org/us-marine-platoon-2020>; and “Marine Corps Getting More M27 Rifles to Partially Replace M4s,” *Signal*, April 30, 2018, <https://www.afcea.org/signal-media/contracting/marine-corps-getting-more-m27-rifles-partially-replace-m4s>.

⁷³ Miguel Ortiz, “5 rifles that almost replaced the M4/M16... and the one that did;” and “Marine Corps Getting More M27 Rifles to Partially Replace M4s.”

⁷⁴ Todd South, “All of the Marine M27 rifles are in—if you’re not a grunt or working with them, you’re not getting one,” *Marine Corps Times*, April 19, 2019, <https://www.marinecorpstimes.com/news/your-marine-corps/2019/04/19/all-of-the-marine-m27-rifles-are-in-if-youre-not-a-grunt-or-working-with-them-youre-not-getting-one/>

⁷⁵ “IAR What IAR: The USMC’s SAW Substitution.” *Defense Industry Daily*, November 13, 2012, <https://www.defenseindustrydaily.com/iar-what-iar-the-usmcs-saw-substitution-05240/>.

⁷⁶ Jeff Schogol, “The Corps’ quest for the best rifle for infantry men,” *Marine Corps Times*, April 2, 2017, <https://www.marinecorpstimes.com/off-duty/gearscout/2017/04/02/the-corps-quest-for-the-best-rifle-for-infantrymen/>.

Prior to and during fielding, some concerns about the M27 were raised. In response to a reporter's question at a 2009 Pentagon briefing, Marine Commandant, General James T. Conway said:

*"I got it that a SAW with a 200-round magazine is not perhaps terribly accurate shot to shot, but it's a light machine gun. Let's step away from accuracy for a moment and talk about suppression. And the psychology of a small-unit fight, that says that the other guy's got a light machine gun and I've got an automatic rifle, I'm going to be hard pressed to get fire superiority over him; you know, to keep his head down instead of him keeping mine down, because that 200-round magazine just keeps on giving...Let's talk about what it does to squad tactics and see how the troops feel about this thing, because you're not only changing the kit, you're changing the way, potentially, that we fight."*⁷⁷

In spite of these concerns, units that used the weapon provided positive reports. However, the Marine Corps did not entirely eliminate the M249 from its arsenal – ultimately the Corps decided it needed both weapons.⁷⁸

In parallel to the early fielding of the M27, the Marine Corps continued to examine other DOTMLPF-P changes necessary to support its employment. A 2011 article in the Marine Corps Gazette summarized some changes that were considered:⁷⁹

- Doctrine: Marine Corps Warfighting Publication 3-11.2, *Marine Rifle Squad*, required revision, although the article is unclear as to whether changes were required specifically to support the M27 alone or a more comprehensive revision was overdue.
- Equipment: To support the M27's full automatic capability, the Marine Corps was looking at large-capacity drum magazines. Sling and mounting hardware were also needed if there was a need to carry more than the standard load of six to seven magazines.
- Personnel: Existing tables of organization and equipment called for an automatic rifleman to be a senior Marine. In practice, junior Marines often carried the M249. Analysis found that junior Marines lacked training and experience with the M249 and also lacked familiarity with "fire team functions, squad organization, minor tactics, and

⁷⁷ Robert Bruce, "M27, Part Two: From BAR to IAR – How the Marines Finally Got Their Infantry Automatic Rifle," *Small Arms Defense Journal*, November 20, 2012, <http://www.sadefensejournal.com/wp/m27-part-two-from-bar-to-iar-how-the-marines-finally-got-their-infantry-automatic-rifle/3/>.

⁷⁸ Jeff Schogol, "The Corps' quest for the best rifle for infantry men," *Marine Corps Times*, April 2, 2017, <https://www.marinecorpstimes.com/off-duty/gearscout/2017/04/02/the-corps-quest-for-the-best-rifle-for-infantrymen/>.

⁷⁹ Maj. John A. Custis, "The Infantry Automatic Rifle: Closing the last 5 yards," *Marine Corps Gazette*, June 3 2011.

the roles and missions of a rifle squad or scout section,” all of which hinders unit capability. Similar concerns were identified for the M27.

B. Expanded Role for M27 – Change to the Size and Composition of the Marine Rifle Squad

After almost a decade of experience with the M27, a statement from officials at Marine Corps Systems Command said, “The rifle received overwhelmingly positive feedback from Marines.”⁸⁰ This led to a decision to expand the role of the M27.⁸¹

1. Strategic Guidance

In September 2016, the Marine Corps released a new operating concept, *Marine Corps Operating Concept, How an Expeditionary Force Operates in the 21st Century*. An emphasis of the concept was the ability of “infantry units to maneuver rapidly and deeply throughout the battlespace” and “close with the enemy in any type of terrain or environment.”⁸²

The Sea Dragon 2025 exercise⁸³ followed the release of the Marine Corps Operating Concept. Sea Dragon is an exercise that feeds directly into Marine Corps capability development.⁸⁴ In 2018, following the end of Phase 1 of the Sea Dragon experiments, the Deputy Commandant for Combat Development and Integration released a report detailing how rifle companies with different configurations and equipment sets performed (some that included the M27).⁸⁵ Regarding the M27, members of 3rd Battalion/5th Marines (the unit which served as the base experiment force for Phase 1 of Sea Dragon⁸⁶) wrote the following in the Marine Corps Gazette:

“[The} M27 should be the Marine Infantry Service Rifle. Infantry Marines serving in the rifle squad should carry the M27 for its increased accuracy,

⁸⁰ Matthew Cox, “The Marines aren’t done issuing the M27, but they’re already looking to replace it with Army’s nest-gen rifle,” *Business Insider*, March 22, 2020, <https://www.businessinsider.com/marine-corps-wants-replace-m27-with-army-next-gen-rifle-2020-5>.

⁸¹ “IAR. What IAR: The USMC’s SAW Substitution.” *Defense Industry Daily*, November 13, 2012, <https://www.defenseindustrydaily.com/iar-what-iar-the-usmcs-saw-substitution-05240/>.

⁸² United States Marine Corps, *Marine Corps Operating Concept, How an Expeditionary Force Operates in the 21st Century*, (Washington, DC: Department of the Navy, U.S. Marine Corps, September 2016).

⁸³ The Marine Corps describes Sea Dragon as its engine for experimentation. It consists of live force experiments [exercises] to assess changes to the force structure to include infantry battalions. See <https://www.marines.mil/News/Messages/Messages-Display/Article/900781/sea-dragon-2025/>.

⁸⁴ “Sea Dragon 2025,” U.S. Marine Corps Website, accessed August 16, 2022, <https://www.marines.mil/News/Messages/Messages-Display/Article/900781/sea-dragon-2025/>.

⁸⁵ “Release of Final Report for Sea Dragon 2025 Phase 1 Experiment Campaign,” U.S. Marine Corps Website, accessed August 16, 2022, <https://www.marines.mil/News/Messages/Messages-Display/Article/1476312/release-of-final-report-for-sea-dragon-2025-phase-i-experiment-campaign/>.

⁸⁶ Ibid.

cleaner operating system, and higher rate of fire. Some worry that equipping Marines with the M27 will lead to wasting ammunition, but we have found through proper training...proper fire discipline is able to be taught and understood by Marines... [All Marines] in the fire team carrying the M27 will allow the squad leader the ability to order his entire squad to fire on automatic as required.”⁸⁷

2. Capabilities-Based Assessment and Total Force Structure Process

As noted, 3rd Battalion, 5th Marines was the base experiment force for Phase 1 of Sea Dragon 2025. One experiment was “to observe the effects of issuing M27 IARs to every Marine in a given unit (usually a Rifle Company).”⁸⁸ The purpose was to consider whether to replace the M16 and M4 within Rifle Squads⁸⁹ in order to increase the volume of fire and accuracy of units.⁹⁰ Concurrent with the exercises, in February 2017 the Marine Corps issued a request for information to determine whether industry could supply IAR capabilities for the entire infantry rifle squad.⁹¹

These M27-related experiments took place within the context of a broader examination of the size, configuration, and capabilities of Marine Rifle Squads.⁹² The impetus came from the Commandant’s guidance to reshape infantry squads.⁹³ Alternative Marine Rifle Squad structures were assessed and results published in 2018.⁹⁴

⁸⁷ “Sea Dragon 2025, Small Unit Leaders’ Thoughts by NCOs, SNCOs, and Officers, 3d Bn, 5th Marines,” *Marine Corps Gazette*, March 2017, <https://mca-marines.org/wp-content/uploads/SEA-DRAGON-2025.pdf>.

⁸⁸ CWO5 Christian Wade, “In Defense of the M27 Infantry Automatic Rifle,” *Task & Purpose*, March 28, 2018, <https://taskandpurpose.com/opinion/m27-infantry-automatic-rifle-defense>.

⁸⁹ The M16 rifle is the weapon assigned to the Squad Leader and Assistant Riflemen, and Riflemen within a Marine Rifle Squad. The Fire Team Leader/Grenadier is also assigned an M16 rifle, but with an attached 40 mm, M203 grenade launcher. United States Marine Corps, *Marine Rifle Squad*, MCWP 3-11.2 w/Ch 1, November 27, 2002, 1-1.

⁹⁰ “Marine Corps Getting More M27 Rifles to Partially Replace M4s,” *Signal*, April 30, 2018, <https://www.afcea.org/signal-media/contracting/marine-corps-getting-more-m27-rifles-partially-replace-m4s>.

⁹¹ *Ibid.*

⁹² Hope Hodge Seck, “Here’s The Marine Corps’ New Plan to Shake Up Rifle Squads,” *Task & Purpose* via *Military.com*, May 4, 2018, <https://taskandpurpose.com/news/marine-rifle-squad/>; and “15-Marine rifle squad: An exclusive look inside the future infantry,” *Marine Corps Times*, August 7, 2019.

⁹³ Shawn Snow, “Shrinking the infantry squad: Why the Corps wants to fight with fewer Marines,” *Marine Corps Times*, May 21, 2018, <https://www.marinecorpstimes.com/newsletters/daily-news-roundup/2018/05/21/shrinking-the-infantry-squad-why-the-corps-wants-to-fight-with-fewer-marines/>.

⁹⁴ Three different potential squad structures were cited in a February 2018 article released by the Marine Corps Times. An earlier proposal for a 12-man squad used two 5-man fire teams, similar to the Army. Shawn Snow, “Big changes coming to the Marine Corps’ rifle squads and scout sniper platoons,” *Marine Corps Times*, February 13, 2018, <https://www.marinecorpstimes.com/news/your-marine-corps/2018/02/14/big-changes-coming-to-the-marine-corps-rifle-squads-and-scout-sniper-platoons/>.

A 12-person squad was considered (Squad Leader, Assistant Squad Leader, and Squad System Operator + 3 three-man fire teams).⁹⁵ The addition of a new Assistant Squad Leader⁹⁶ and Squad System Operator⁹⁷ was intended to give units an ability to operate more independently and to manage a growing suite of advanced technology.⁹⁸

There was some criticism of reducing rifle squads from 13 to 12 people. Would fire teams be as effective in certain tasks, such as clearing buildings and rooms? Additionally, would a smaller squad increase the weight each Marine in the squad had to carry and would this inhibit the use of buddy teams for fire and maneuver (doctrine that is drilled into Marines from initial training onward).⁹⁹

The Corps hypothesized these potential shortcomings would be offset by providing each Marine in a fire squad with an automatic weapon. This would increase firepower by 300 percent.¹⁰⁰ Additionally, reducing the Marine Rifle Squad from 13 to 12 would free up 648 Marines across the Corps and those billets could be shifted to address cyber domain requirements, increase the number of Javelin anti-tank missile teams planned for the Corps' weapons companies, and fill infantry battalions' intelligence roles.¹⁰¹

Figure 10 depicts the proposed 12-man Rifle Squad.

⁹⁵ Hope Hodge Seck, "Here's The Marine Corps' New Plan to Shake Up Rifle Squads," *Task & Purpose* via *Military.com*, May 4, 2018, <https://taskandpurpose.com/news/marine-rifle-squad/>.

⁹⁶ The new Assistant Squad Leader billet is intended "to help command and control (previously one of the fire team leaders was appointed to this role) whilst also focusing on managing fire support and communications on the company and battalion net, freeing up the squad leader to focus on fighting the battle." Leigh N., "US Marines Begin Move to 15-Man Squads," *Overt Defense*, August 12, 2019, <https://www.overtdefense.com/2019/08/12/us-marines-begin-move-to-15-man-squads/>.

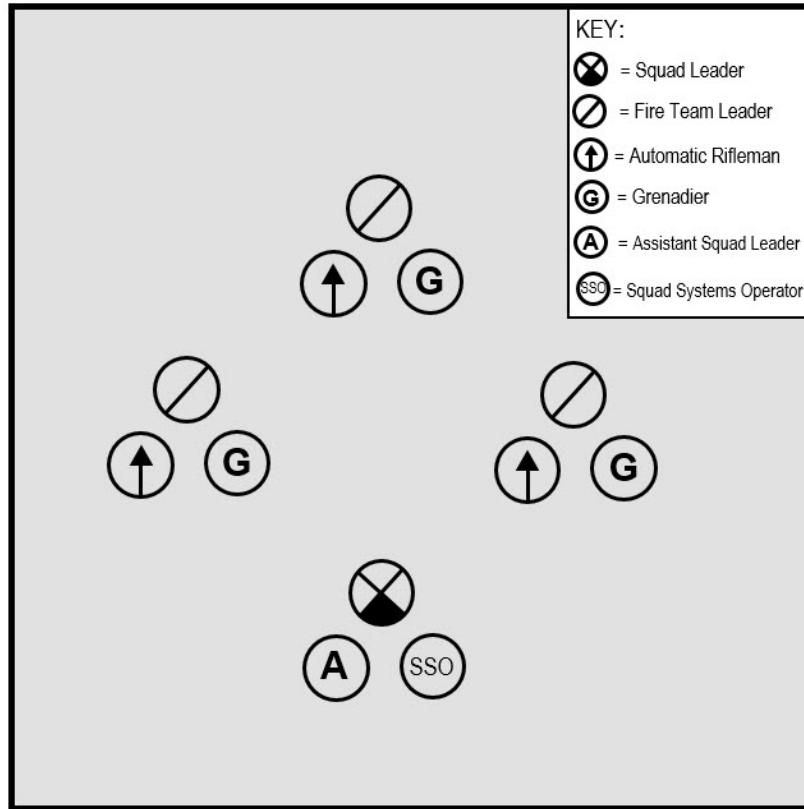
⁹⁷ The squad system operator has been added to manage squad level unmanned aerial systems (UAS), originally in response to the USMCs "Quads for Squads" project to embed quad-copter UAS platforms within every rifle squad, and responsible for man-pack counter-IED (improvised explosive device) and electronic countermeasures (ECM) systems. Leigh N., "US Marines Begin Move to 15-Man Squads," *Overt Defense*, August 12, 2019, <https://www.overtdefense.com/2019/08/12/us-marines-begin-move-to-15-man-squads/>.

⁹⁸ Hope Hodge Seck, "Here's The Marine Corps' New Plan to Shake Up Rifle Squads," *Task & Purpose* via *Military.com*, May 4, 2018, <https://taskandpurpose.com/news/marine-rifle-squad/>.

⁹⁹ Kyle Stubbeman, "Changes to the Marine Corps Rifle Squad Organization— One Marine's Opinion," *Leatherneck- Magazine of the Marines* 101, no. 9 (September 2018), 8-13. https://mca-marines.org/wp-content/uploads/2018/12/LNK-September-2018-sm_0.pdf.

¹⁰⁰ Cpl. Nikki Morales, "Rifle Squads to be redesigned in 2020 to meet future demands," *Camp Lejeune Globe*, May 24, 2018.

¹⁰¹ Shawn Snow, "Shrinking the infantry squad: Why the Corps wants to fight with fewer Marines," *Marine Corps Times*, May 21, 2018, <https://www.marinecorpstimes.com/newsletters/daily-news-roundup/2018/05/21/shrinking-the-infantry-squad-why-the-corps-wants-to-fight-with-fewer-marines/>.



Note: Derived from "Modernizing the Marine Rifle Squad," You Tube Website, accessed August 16, 2022, <https://www.youtube.com/watch?v=jfVxspzh0Pg>.

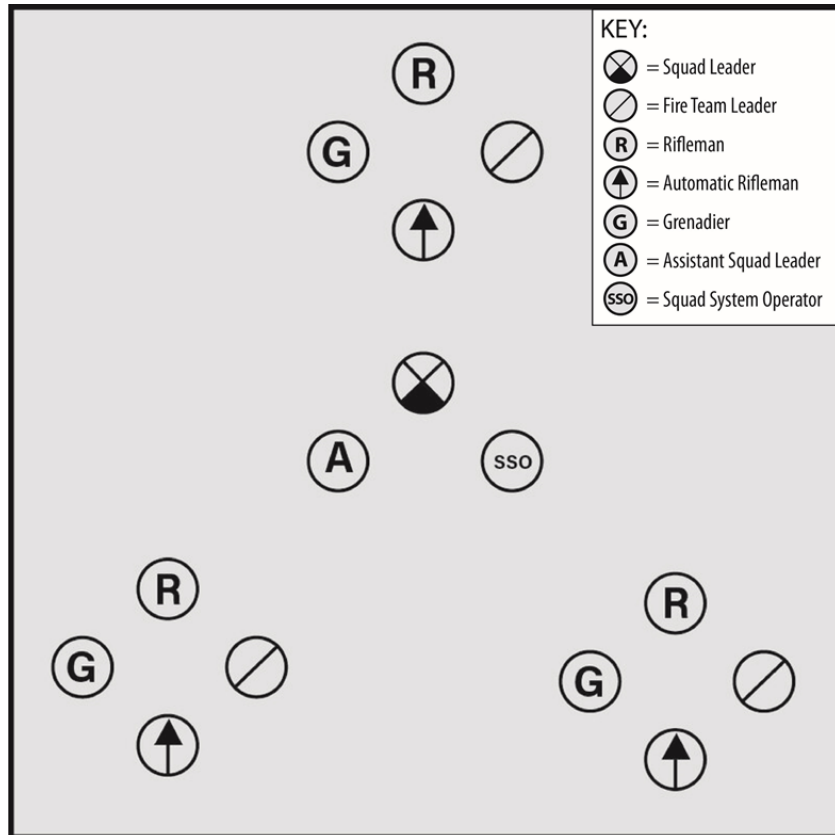
Figure 10. Depiction of Proposed 12-man Rifle Squad

A 15-person rifle squad was also assessed particularly for those squads deployed to Marine Expeditionary Units (MEUs).¹⁰² A 15-person structure retained the historical composition of a Squad Leader and 3 four-Marine fire teams with the addition of an Assistant Squad Leader and a Squad System Operator. The two new billets are to help absorb information from new technology like drones and to boost battlefield situational awareness.¹⁰³

Figure 11 depicts the concept for a 15-person Marine Rifle Squad.

¹⁰² Shawn Snow, "It soon may be a 15 Marine rifle squad—most likely for MEU deployments," *Marine Corps Times*, October 10, 2018, <https://www.marinecorpstimes.com/news/your-marine-corps/2018/10/10/a-15-marine-rifle-squad-may-be-the-reality-for-meu-deployments/>.

¹⁰³ Ibid.



Note: Derived from Todd South and Shawn Snow, “15-Marine rifle squad: An exclusive look inside the future infantry,” *Marine Corps Times*, August 7, 2019.

Figure 11. Conceptual Depiction of a 15-member Rifle Squad

3. Capability Acquisition

In 2018, the Marine Corps decided to expand the role of the M27 and replace the M16 and M4. The Corps announced it would buy 15,000 M27 IARs and spare parts from Heckler and Koch.¹⁰⁴ The acquisition and fielding plan was to issue M27s to infantry, reconnaissance, and combat engineering units first. The M4s belonging to those units would go to everyone else.¹⁰⁵

A 2019 article indicated that newly configured Marine Rifle Squads (i.e., all Marines equipped with an M27) were expected to begin their first deployments later that year;¹⁰⁶ however, the evolution of the Marine Rifle Squad’s size and composition appears to continue.

¹⁰⁴ “Marine Corps Getting More M27 Rifles to Partially Replace M4s,” *Signal*, April 30, 2018, <https://www.afcea.org/signal-media/contracting/marine-corps-getting-more-m27-rifles-partially-replace-m4s>.

¹⁰⁵ Sydney Freedberg, Jr., “Marines Reorganize Infantry For High-Tech War: Fewer Riflemen, More Drones,” *Breaking Defense*, May 4, 2018, <https://breakingdefense.com/2018/05/marines-reorganize-infantry-for-high-tech-war-fewer-riflemen-more-drones/>.

¹⁰⁶ Leigh N., “US Marines Begin Move to 15-Man Squads,” *Overt Defense*, August 12, 2019, <https://www.overtdefense.com/2019/08/12/us-marines-begin-move-to-15-man-squads/>.

The 2020 issuance of the *Marine Rifle Squad* MCRP 3-10A.4 still reflects a 13-person rifle squad.¹⁰⁷ Despite having the same number of squad members, the roles of the members are different (compare Figure 9 to Figure 12). The assistant automatic rifleman has been replaced by a grenadier because the M27 is not a crew-served weapon.

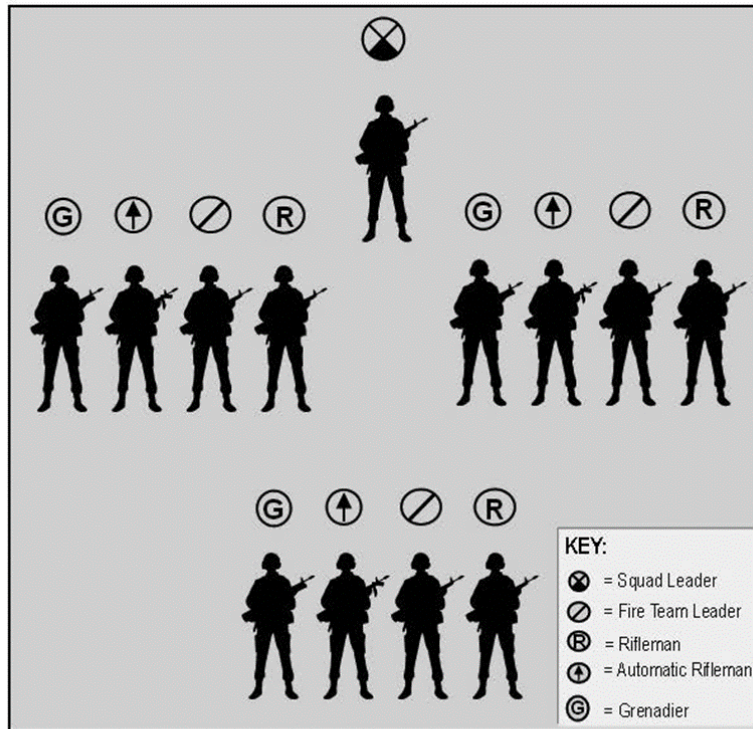


Figure 1-1. Marine Rifle Squad.

1-2

Note: Derived from U.S. Marine Corps, Marine Rifle Squad MCRP-3-10.4, 7 August 2020 and 14 January 2021, 1-2.

Figure 12. Doctrinal Depiction of 13-Man Marine Rifle Squad, circa 2020/2021

As the consideration of rifle squad changes continue, it is important to note that these changes occur in conjunction with a suite of additional, proposed changes across the DOTMLPF-P. For example, fire team leaders will no longer be equipped with M203s (an under-barrel attachment to the service rifle). Instead, grenadiers will carry the new side-loading M320s (capable of being used as an attachment or as a standalone weapon).¹⁰⁸ Other proposed changes include:

¹⁰⁷ U.S. Marine Corps, Marine Rifle Squad MCRP-3-10.4, August 7, 2020 and January 14, 2021, 1-2.

¹⁰⁸ Matthew Cox, "Here's How the Marine Corps Is Fielding its New 40mm Grenade Launchers," *Military.com*, March 10, 2020, <https://www.military.com/daily-news/2020/03/10/heres-how-marine-corps-fielding-its-new-40mm-grenade-launchers.html>.

- the assignment of a designated marksman in each rifle squad¹⁰⁹
- the inclusion of a mini-drone to provide organic unmanned aerial vehicle capability
- the provision of an M3 Multi-role Anti-armor Anti-tank Weapon System to each squad
- the provision of a new squad common optic to replace the existing Advanced Combat Optical Gunsight.

¹⁰⁹ Using the M38 rifle, a variant of the M27.

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4. Conclusion: Best Practices and Lessons Learned from Marine Corps Capability Determination, Resourcing, and Acquisition Processes

The two previous sections describe the Marine Corps capability determination, resourcing, and acquisition processes and provide implementation examples. The following are a list of principles and lessons learned for consideration by security cooperation planners and implementers as they try assist partner nations in building their own sustainable capability:

- All military capability is manifest in military units. Units are complex organizations. Given that, capability cannot be improved with new equipment alone. Specific unit training can improve the capability of a unit or group of units for a time; however, unless the institutions of a defense sector can sustain that training, the capability improvement will be temporary.
- Capability development requires multi-year, cyclical implementation of integrated processes to plan, program, and budget for capabilities. Changing the structure of military units, developing new doctrine, and acquiring and fielding new weapon systems takes years of integrated effort. Introducing something new in a military setting cannot come at the risk of disabling what capability already exists unless the existing capability is unnecessary or obsolete.
- Capability changes are not static, one-time events. One change (e.g. the equipment, doctrine, or organization of a unit) will illuminate the need for additional changes.
- Because capability improvements are a result of continuous and cyclical processes, they affect operating and support units over time. The improvements evolve more than they appear all at once.
- Use policy guidance, strategic objectives, scenarios, and existing doctrine and operating concepts as a foundation for analyses to determine capability requirements.
- Improving or changing military capability requires socialization and buy-in. Be prepared for pushback among experienced and veteran service members, and allow the public to participate in the discourse regarding proposed changes, to whatever extent possible.

- Challenges to proposed acquisition decisions will force proponents to develop stronger arguments in support of their programs or confront shortcomings in a way that benefits the process overall.
- Always analyze the sufficiency of existing and already programmed capabilities before pursuing new capabilities. Capability gaps that can be closed through non-material solutions are easier to implement than those that require material solutions.
- When identifying solutions to address capability gaps, do not consider materiel solutions in isolation from supporting non-material solutions. Also, ask whether non-material solutions provide a good enough answer. A materiel solution on its own does not satisfy a capability gap. A non-material solution on its own may reduce the capability gap to an acceptable level.
- If a materiel solution is approved and funded, assess the implementation and integration of that materiel solution with other systems already fielded or under development.
- The successful fielding and sustainment of new weapon systems throughout their life cycle may require other solutions to close other capability gaps created by the introduction of a new weapon. Examples include:
 - Training
 - Is firing range capacity sufficient
 - Major equipment, tools, facilities, and supplies for training
 - Maintenance and Test
 - Tools
 - Test equipment
 - Maintenance facilities
 - Storage
 - Armories
 - In-transit storage
 - Interface with other equipment worn or carried by a service member (e.g., protective equipment, carriage methods, optics)
 - Interface with other systems with which a service member interfaces (e.g., ground vehicles, ships, aircrafts)

Finally, it is important to note that the Marine Corps and all other U.S. military services have organizations designated and personnel assigned for capability development, resourcing, and acquisition processes. Many partner nations do not have similar organizations or personnel; however, if the United States Government wants to transfer weapons systems to a partner nation,

then these principles still apply prior to weapon system transfer. Otherwise, the Government should not expect the partner will be able to field and/or sustain a weapon system over time. When that is true, the result of transferring new weapon systems to a partner nation may be a net reduction, not an increase to the partner's capability.

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Appendix A. List of Interviews with USMC Representatives

June 18, 2020: U.S. Marine Corps Combat Development Command; Combat Development and Integration (CDI); Mr. James Ogershok; Capability Based Assessment Analyst

June 23, 2020: Marine Corps Systems Command, Ground Combat Element Systems, Infantry Weapons; LtCol Tim Hough

June 29 and July 29, 2020: Marine Corps Systems Command, Ground Combat Element Systems; Chief Warrant Officer David Tomlinson; Infantry Weapons Officer

June 29, 2020: Marine Corps Training & Education Command; Mr. Thomas Hartshorne; Doctrine Branch, Policy and Standards Division

June 29, 2020: Marine Corps Training & Education Command; Chief Warrant Officer Anthony Viggiani

June 29, 2020: U.S. Marine Corps Combat Development Command; Combat Development and Integration (CDI); Chief Warrant Officer Thomas Maguire

July 29, 2020: U.S. Marine Corps Combat Development Command; Combat Development and Integration (CDI); Major Billy Epperson, Weapons & Optics Chief Information Officer

July 29, 2020: Marine Corps Systems Command, Ground Combat Element Systems, Infantry Weapons; Tom Deaver & Kelly Sullivan

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Appendix D. Abbreviations

CBA	Capability Based Assessment
CPM	Capability Portfolio Manager
DC CD&I	Deputy Commandant for Combat Development and Integration
DCR	DOTMLPF-P Change Request
DOD	Department of Defense
DOTMLPF-C	Doctrine, Organization, Training/Education, Materiel, Leadership/Communication Synchronization, Personnel, Facilities, and Cost
DSCA	Defense Security Cooperation Agency
FY	Fiscal Year
FYDP	Future Years Defense Program
IAR	Infantry Automatic Rifle
ICB	Institutional Capacity Building
ICD	Initial Capabilities Document
IDA	Institute for Defense Analyses
IPT	Integrated Product Team
JCIDS	Joint Capabilities Integration and Development System
MCCA	Marine Corps Capability Area
MCCL	Marine Corps Capabilities List
MCCIP	Marine Corps Capabilities Investment Plan
MCGL	Marine Corps Gaps List
MCSDD	Marine Corps Solutions Development Directive
MEU	Marine Expeditionary Unit
MOUT	Military Operations in Urban Terrain
NDAA	National Defense Authorization Act
POM	Program Objective Memorandum
PPBE	Planning, Programming, Budgeting, and Execution
SAW	Squad Automatic Weapon
TFSP	Total Force Structure Process

UNDP
USC
USMC

United Nations Development Programme
United States Code
United States Marine Corps