TRADOC Pamphlet 525-97

SOLDIER AS A SYSTEM

FOREWORD

> ***"An Army is capable of functioning without horses or cannon, but an Army ceases to exist without Soldiers"***
> ***Author – An Unknown Soldier***

The Soldier as a System (SaaS) Concept will enhance individual Soldier capabilities to protect and defend ones self. In doing so, the collective efforts of this modernization program will provide a more efficient and effective Future Combat Force.

The Army's senior leadership recognizes the Soldier is the single most important asset in the Army. It is Soldiers, with their intelligence, flexibility, and adaptability, who ultimately accomplish the Army's missions and functions. The Soldier must operate the simple and complex equipment and weapon systems the Army uses. As Army equipment and weapon systems become even more sophisticated and complex, the Soldier's intelligence, training, flexibility, and adaptability become increasingly important.

The intent of the SaaS Concept is to provide all individual Soldiers with superior capabilities to accomplish assigned tasks and conduct missions against any opponent, based on a holistic approach to modernization. This includes a full Doctrine, Organizations, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) analyses approach to resolve issues and address Soldiers' needs.

In future warfare, more than ever before, technology will increase man-machine requirements with the Soldier. The individual Soldier will remain the Army's center of gravity. The successful identification and validation of SaaS requirements are critical in the establishment of better DOTMLPF that will enable Soldiers to do their jobs more efficiently and effectively. This integration concept will enhance Soldier capabilities and provide for efficient and effective use of Soldier funding in support of The Army's vision of the Future Combat Force.

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TRADOC Pamphlet 525-97

24 February 2006

Military Operations

SOLDIER AS A SYSTEM

Summary. This pamphlet is the Army's holistic concept for identifying Soldier capabilities for the Future Combat Force. It views the Soldier as an extension of the Army's ability to maintain critical maneuver operations for all advanced full-spectrum Army operations. The concept addresses Soldiers of the force, in all missions, and presents ideas on evolutionary and revolutionary capabilities, leveraging the military advantages of Soldier warfighting capabilities. This concept is the basis for developing Doctrine, Organizations, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) solutions. This concept was approved by HQ TRADOC prior to Chief of Staff, U.S. Army (CSA) renaming Future Combat Force organizations. This document has been updated to reflect the CSA changes.

Applicability. This concept applies to all maneuver, maneuver support, and maneuver sustainment operations' support to the Army Future Combat Force, executing simultaneous tactical, operational, and strategic levels of warfare in support of national, regional, and theater missions. National, international, and host-nation treaties and political agreements may restrict its application.

Suggested improvements. The proponent of this pamphlet is the Director, Army Capabilities Integration Center, Concepts Development and Experimentation Directorate. Send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to Commander, TRADOC (ATFC-ED), 10 Whistler Lane, Fort Monroe, VA 23651-1046. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program Proposal).

Availability. This publication is distributed solely through the TRADOC Homepage at http://www.tradoc.army.mil.

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Chapter 1
Introduction

1-1. Purpose.

a. The purpose of the Soldier as a System (SaaS) concept is to support the Army Vision that "Soldiers remain the centerpiece of our combat systems and formations." The Army Vision further states that "Soldiers remain the crucial link to both realizing Future Combat Force (FCF)

capabilities and enhancing the effectiveness of current forces."[1] The SaaS Concept will aid in fully integrating the individual Soldier with the Army's capstone concept (TRADOC Pamphlet 525-3-0). This Training and Doctrine Command (TRADOC) pamphlet defines the SaaS Concept and provides a strategy to modernize the individual Soldier to meet the requirements of future Army concepts.

b. The 1991 Army Science Board Summer Study[2] identified a need for the Army to manage the Soldier as a system. It further stated Soldier requirements should be derived from the functions Soldiers must perform in the face of the threat on the future battlefield, and for TRADOC to provide a list of prioritized capability needs in the form of requirements to guide the DOTMLPF development process for future Soldier Systems.

c. The purpose of the SaaS effort is to provide every Soldier with superior capabilities, based on a DOTMLPF analytical approach, to accomplish assigned tasks and conduct missions against any opponent. The SaaS Concept will help achieve the Vision that calls for ***a trained and ready Soldier with a fully integrated modular capability to outperform any opponent in the full spectrum of Army, Joint, and Coalition operations within the Army's FCF architecture.***

d. "We must prepare our Soldiers for the stark realities of the battlefield. No Soldier can survive in the current battle space without constant training in weapons, field-craft, and a continuous immersion in the Army's Warrior Culture".[3] To meet this FCF need, all of the DOTMLPF enablers must support Soldier capabilities. This concept establishes a strategy to ensure the full integration of proponent-sponsored Soldier requirements for current and FCF operating systems and functions. This will enable individual Soldiers with superior capabilities to accomplish assigned tasks across the spectrum of conflict, in any operational environment. An approved SaaS Concept will provide increased visibility and improved understanding of Soldier needs and enable Soldier requirements to compete with other major programs for prioritization and funding.

1-2. References. Appendix A contains required and related publications.

1-3. Explanation of abbreviations and terms. The glossary contains abbreviations and terms used in this pamphlet.

1-4. Concept development. The SaaS Concept is a proponent document of the U.S. Army Infantry Center, using the currently established Tier One SaaS Integrated Concept Team (ICT).[4] The concept will address all Soldier DOTMLPF issues and use emerging ideas from the military, scientific, academic, industrial, and international communities. The concept will also incorporate Advanced Warfighting Experiments, and Future Combat Systems (FCS), and Objective Force Warrior data to identify Soldier needs and required capabilities.

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[1] Army Vision, November 2003.
[2] 1991 Army Science Board Summer Study, Final Report, Soldier as a System, December 1991.
[3] Army Vision, November 2003.
[4] Integrated Concept Team Tier 1 Charter for Soldier as a System, 18 June 2002.

Chapter 2
Overview

2-1. Need of concept.

a. There is currently no approved Army concept to:

(1) Support the institutionalization of an Army management structure and process to ensure the full integration of the Soldier in current and FCF Army Concept Strategy (ACS) Concepts.

(2) Resolve Soldier DOTMLPF issues and insure full integration of these enablers to respond to individual Soldier needs and provide enhanced Soldier capabilities.

(3) Provide an individual Soldier modernization strategy that supports a SaaS architecture that is fully integrated and maintains pace with current and FCF concepts and programs.

b. History gives many examples of the need for addressing the Soldier as a system. In the book, "The Soldier's Load,"[5] S.L.A. Marshall recognized the need to manage the Soldier as a complete system in order to make the Soldier more efficient and effective. Mr. Marshall pointed out that more thought and care was needed in the overall design of not only what Soldiers are expected to carry into battle, but how they carry the total ensemble more efficiently and effectively.

c. The 1991 Army Science Board Study[6] on Soldier Systems provided the recommendation that Soldiers must be managed as a system. Shortly thereafter, the Soldier Integrated Protective Ensemble Advanced Technology Demonstration[7] verified this need, as well as the increased Soldier capability achieved when developing the SaaS. The follow-on March 1997 Land Warrior Early Operational Experiment Report[8] confirmed the fact that a systems approach to Soldier requirements would provide greater payoffs in lethality, survivability, mobility, and situational awareness, for both the individual and the unit.

d. Capability gaps exist in the current force, and the requirement to fill those needs should be expedited. Currently, not all Soldiers are being modernized in a holistic manner. There is a lack of integration between Soldiers and their equipment, as well as between Soldiers and other Army systems. This is due to the Combat Developers' lack of requirements integration and Materiel Development community's lack of configuration, manpower and personnel integration management, and control of Soldier items. For example, Soldier's weapons and night vision systems organizations were not aligned with the primary Soldier developer. This resulted in the fielding of equipment that was heavy, bulky, and burdensome, degrading the Soldier's

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[5] The Soldiers Load and Mobility of a Nation, S.L.A. Marshall, Combat Forces Press, 1951.
[6] 1991 Army Science Board Summer Study, Final Report, Soldier as a System, December 1991.
[7] Advanced Technology Demonstration Report for Soldier Integrated Protective Ensemble Tactical Field Demonstration, Infantry School, Fort Benning, GA, 16 March 1993.
[8] Land Warrior Early Operational Experimentation Report, PM-Soldier, 27 March 1997.

effectiveness and performance. The newly established Program Executive Office (PEO)-Soldier will aid in resolving most materiel issues; however, more work is required within Army Major Subordinate Commands to address other DOTMLPF issues.

e. In addition, initially, only specific Soldiers were targeted for modernization, such as the Land Warrior, Air Warrior, and Mounted Warrior. Different functional areas have unique requirements, in addition to the Army's core Soldier requirements, and funding for Soldier modernization efforts will remain a limiting factor. These modernization efforts only cover a very small percentage of the force, specifically the Soldiers on the "front lines," such as the infantry and those who support or fight alongside the infantry. However, Soldiers also include combat support and combat service support (CSS) personnel. If the Army, as the dominant land force, is to become more efficient and effective, the Army must strive to modernize **all** Soldiers to the same basic level for full compatibility. The Chief of Staff of the Army says, "Every Soldier a Rifleman." The SaaS Concept will enable the Army to define and fund a minimum level of Soldier capability.

2-2. Threat.[9]

a. Threat to counter. The Soldier's primary threats range from individuals and small bands of terrorists or insurgents, through organized regional factions, to major military powers capable of conducting small-scale adaptive operations, to special operations and conventional operations. The SaaS will frequently conduct operations in complex terrain and populated urban settings against targets within structural barriers. Threats also include light armored personnel carriers (M113A1, ballistic test reports, BRDMs), infantry fighting vehicles (BMPs1-3), modified commercial vehicles, fixed and rotary wing aircraft, indirect fire, mines, and chemical, biological, radiological, and nuclear effects.

b. Projected threat environment. Military operations will most likely commit U.S. forces to short-notice, early entry operations in environments characterized by complex and urban terrain, lack of front lines, insecure flanks, dismounted combat, and constantly fluctuating situations, with the possibility of rapid transitions into regional, major theater war, and stability operations. Primary threats to SaaS will include fragments, bullets, blast, thermobaric, flame, and incendiary weapons. Secondary threats include falling debris and rubble. Threat systems and technologies may include chemical, biological, radiological, nuclear and explosive, laser weapons, laser range finders, image intensification, active and passive infrared, electronic countermeasures (electronic attack, electronic warfare support, degradation and/or destruction of command, control, communications, computers, and intelligence (C4I) systems), and other improved reconnaissance, surveillance and target acquisition (RSTA) measures. Threat artillery employs a full range of ordnance, including chemical, biological, and scatterable mines.

(1) Close proximity of forces ensures combat engagements with greater frequency and shorter duration. These engagements are more manpower and resource (ammunition, food, water, engineer materials, etc.) intensive and less system centric. Greater opportunity for battlefield surprises exists. Loss of contact with the enemy has greater consequences than in

[9] Future Threat to the Soldier Systems, National Ground Intelligence Center, NGIC-1149-0469-00, April 2000.

more open environments and we can expect that Threat forces will use all means to infiltrate into areas where they can place strength against U.S. and/or coalition force perceived weaknesses. Extensive human intelligence networks are more effective than technical intelligence, surveillance, and reconnaissance in these environments and provide opponents with equal or greater situational awareness. Lines of communication are more difficult to secure on a continuous basis leaving CSS units more vulnerable. No sanctuary exists for force reorganization and regeneration. Increased global urbanization means decreased engagement ranges for weapons and target acquisition systems and, therefore, degraded standoff advantages. This environment requires maneuver warfare with greater speed, adaptability, lethality, and precision.

(2) Within the complexities of this environment, adversaries attempt to force units into rapid and continuous transitions between types of tactical operations to create windows of vulnerability. Noncontiguous enemy actions within the tactical battle space force rapid changes in organization for combat. The enemy seeks to create conditions for which the unit is not properly prepared, either in organization or in planning. Battles are more or less continuous. Finally, future enemies probably possess somewhat less advanced systems. In complex terrain and urban settings, these systems may include mortars and rocket-propelled grenades.

(3) The enemy is difficult to template as they adapt and attempt to create opportunity. They develop patterns of operation that will change as they achieve success or experience failure in engagements. The enemy's doctrine does not change, but their operating methods do. The enemy is not predictably echeloned in depth and takes actions based purely on mass and momentum. Instead, potential enemies exploit complex terrain and urban environments to maneuver close to friendly forces in confined spaces where tracked and wheeled platforms cannot gain access. Threat personnel seek to engage friendly forces in close combat in close, restrictive terrain, often with noncombatants present, to obtain tactical advantage by negating friendly overmatch in firepower and standoff. They prefer decentralized, dispersed, or distributed operations in an attempt to throw U.S. units off balance, but mass to exploit opportunities or when forced to do so. They set sophisticated ambushes and raids using improvised explosive devices, as well as established conventional operations, to lure units into kill zones. They use civilians as obstacles and sanctuary to shape the battlefield. Their emphasis will be on inflicting personnel casualties to SaaS.

(4) The Land Warrior (LW) System Threat Assessment Report (STAR) is the baseline threat document. The Defense Intelligence Agency validated the LW STAR in Mar 02. The FCS STAR, Feb 02, augments threat documentation for the SaaS in the Unit of Action (UA) and Transformation environment.

2-3. Capstone Concept.

a. The Soldier is the centerpiece of the Army–a force that is responsive and dominant across the full spectrum of possible conflict and an integral part of the nation's Joint military force. The vision calls for the Army to be:

- Strategically responsive.

- Deployable.
- Agile.
- Lethal.
- Survivable.
- Sustainable.
- Versatile.

These characteristics are the foundation for the development of the SaaS Operational Concept, as well as Soldier capabilities and individual tasks.

b. In addition, the vision of the Army Strategic Planning Guidance (ASPG) calls for providing two core competencies:

(1) Train and equip Soldiers and grow leaders

(2) Provide relevant and ready land power capability to the combatant commanders as part of the Joint Team.[10]

c. In support of the ASPG, the Army's FCF Concept will provide a strategically responsive, precision maneuver force, dominant across the range of military operations. The key enabler to the Concept will be the establishment of decisive tactical combat units based on small unit excellence and well-trained and equipped Soldiers.

d. The SaaS Concept is necessary to link Soldiers with the joint operational framework of FCF requirements. The SaaS Concept will provide a source document for the development and integration of Soldier Systems with Force Operating Capabilities (TRADOC Pam 525-66).

e. Finally, as the cornerstone to combat developments, the SaaS Concept will provide a common reference for all Soldier systems/subsystems proponent integration across the domains DOTMLPF domains.

2-4. Joint interagency and multinational concepts. The fundamental principle for employment of U.S. joint forces is to commit decisive force to ensure achievement of the objectives established by the National Command Authorities while concluding operations in the shortest time possible and on terms favorable to the U.S.[11] This Concept focuses on providing capabilities to Soldiers involved primarily in the tactical level of both war and military operations other than war and may be in conjunction with other air, land, sea, space, and special operations forces. The SaaS Concept will provide a model for the other services that ensures Sailors, Airmen, Marines, National Guards, Army Reserves, and U.S. Coast Guards are central to the transformation of their proponent service as the Department of Defense advances technologically across the full spectrum of military operations, on all types of terrain, and under all types of climatic conditions. Increased capability in survivability, lethality, mobility,

[10] Army Strategic Planning Guidance and 2004 Army Posture Statement.
[11] Joint Publication 3-0, Doctrine for Joint Operations, chapter 2, paragraph 1a, 10 September 2001.

sustainability, and command and control (C2)/situational awareness are immediate results gained from this concept.

2-5. Limitations/constraints on the Concept.

a. A Joint Program Office addresses Soldier nuclear, biological, and chemical requirements in accordance with (IAW) public law. Since some decisions this organization made directly affect what the Soldier wears or carries, integration of these program requirements into this process may be a challenge.

b. Lastly, policies and procedures may need to be updated or eliminated to provide the Soldier, as well as the FCF, with increased capabilities. For example, the potential requirement for secure radios at the Soldier level must be balanced against other criteria (for example, security level requirements give need for Common Operational Picture).

Chapter 3
Soldier as a System Concept

3-1. General summary. The SaaS Concept will address the Soldier's role in the Army's Modular and Future Combat Force. It will assist in the transformation of today's Soldier into a FCF Soldier, thereby, enhancing the Army's capability to provide the Joint Force Commander a dominant land force capability by directly supporting the accomplishment of the individual tasks associated with the Army Universal Task List (AUTL) (Field Manual 7-15).

3-2. Concept.

a. The SaaS Concept includes all Soldiers and is focused on individual tasks derived from Army Tactical Tasks that all Soldiers must be capable of performing in support of current and Future Combat Force operations. The Soldier System includes the Soldier and those items and equipment the Soldier wears, carries, or consumes. It includes all items in the Soldier's load and those items of equipment to accomplish individual tasks and missions (for example, crew-served weapons, inter-unit radios) that the Soldier must carry. The Soldier System includes physiological, as well as applied capabilities and considerations for the operational environment (both natural and man induced) that range from home station to the battlefield. This concept includes the full range of DOTMLPF enablers that must be addressed in a holistic manner to ensure a fully capable Soldier System. The SaaS Concept is based on the mission of all Soldiers as stated in the Soldiers Creed (see fig 3-1).

b.[12] The primary function of the Army is to have fully trained and ready Soldiers with the capability to outperform any opponent on the battle field. The SaaS concept will support all current and future Soldiers, regardless of their role or mode of entry into the battle, and once there, will make Soldiers more efficient and effective.

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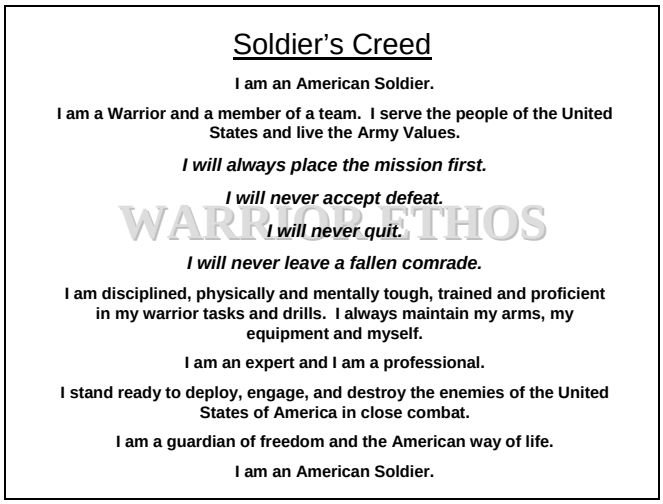
[12] Field Manual 7-15, The Army Universal Task List.



Soldier's Creed

I am an American Soldier.

I am a Warrior and a member of a team. I serve the people of the United States and live the Army Values.

I will always place the mission first.

I will never accept defeat.

I will never quit.

I will never leave a fallen comrade.

I am disciplined, physically and mentally tough, trained and proficient in my warrior tasks and drills. I always maintain my arms, my equipment and myself.

I am an expert and I am a professional.

I stand ready to deploy, engage, and destroy the enemies of the United States of America in close combat.

I am a guardian of freedom and the American way of life.

I am an American Soldier.

Figure 3-1. The Soldier's Creed

(1) These capabilities require the employment and use of Soldiers in the performance of a multitude of various individual tasks. These tasks originate from statutory requirements, operational experience, strategies for employing military forces, and operational requirements of the combatant commanders. Soldier as a System supports the Army Vision by providing all Soldiers with improved capability to enable America to fulfill its global obligations, as well as enabling Soldiers to maintain pace with the Army's vision of Army Transformation.

(2) While focused on the Brigade Combat Team (BCT), Army forces complement other service forces in Unit of Employment (UE). The ability of the Army forces to perform individual tasks efficiently and effectively generates the credible land power necessary for the Joint Force Commanders to preclude and deter enemy action, win decisively if deterrence fails, and establish a rapid return to sustained post-conflict stability. The AUTL categorizes the various Army tactical tasks (ARTs) into various Battlefield Operating Systems (BOS). A BOS is represented by an organization, as opposed to a specific branch or echelon. Such organizations may cross BOS boundaries, depending on the tactical situation.

(3) However, each ART can break down into subordinate ARTs, and subordinate ARTs can break down in a cascade fashion, until they are no longer collective tasks. At that level, tasks become individual tasks addressed in Soldier's Manuals and net ready systems that will facilitate training which supports live, constructive, and virtual training environments, and links to platform-based systems. It is here where the Soldier variants come into play.

c. Regardless of force structure and organization, the Army can expect to continue to support the Joint Force Command with the capabilities specified in the AUTL. As such, Soldiers will be expected to support the AUTL with individual tasks. Based on these AUTL tasks, all Soldiers must be ready to deploy, engage, and destroy the enemies of the United States of America at all times. As a minimum, all Soldiers must have the capability of defending themselves in execution of their duties, regardless of military occupational specialty (MOS), task, or mission. It also implies there are specific battlefield tasks that every Soldier is required to perform in order to survive.

d. The SaaS Concept supports the establishment of specific capabilities to improve all Soldiers' ability to perform tasks and missions more efficiently and effectively. This includes the ability of all Soldiers to accomplish core competencies. The core Soldier is the baseline for the establishment of the minimum acceptable system architecture necessary to learn and perform basic combat training tasks. It is the base architecture upon which other Soldier variants build.

e. Regardless of MOS, basic combat training establishes the foundation for a core SaaS by defining those tasks, conditions, and standards that are common and all Soldiers must perform. In doing so, the basic combat training program of instruction (POI) lays out the challenge to the Soldier community to find ways for Soldiers to become more efficient and effective in the performance of those common tasks through DOTMLPF solutions. The materiel items that are worn, carried, or consumed to facilitate accomplishment of these common tasks become the Core Soldier System.

f. The Individual Soldier's Operational concept is comprised of battlefield survival skills consisting of over 140 core tasks common to all Soldiers. These tasks comprise approximately 40 to 50 percent of tasks taught in basic combat training, which is the first segment of initial entry training (IET). These essential battlefield survival skills (shoot, move, communicate, and fight) directly support ART 8 of the AUTL ("Conduct Tactical Mission Tasks and Operations")and are required of every Soldier, regardless of MOS, unit, or organization. The SaaS basic tasks are part of the basic combat training POI to ensure that the basic requirements of all Soldiers are fully met and integrated. These core tasks are categorized in general functional areas which supports all Soldiers in the accomplishment of Army Tactical Tasks.

g. In addition to Core Tasks, Soldiers with various MOS and missions must be capable of performing specified tasks and missions. Figure 3-2 graphically depicts the SaaS Concept and looks at the individual Soldier tasks and missions that build on the Core Soldier Tasks. The results are specific and/or mission unique needs and requirements. Common Soldier requirements will be developed leveraging the Core Soldier System. These common Soldier requirements will address the basic needs of the Ground, Air, Mounted, Maneuver Support, and

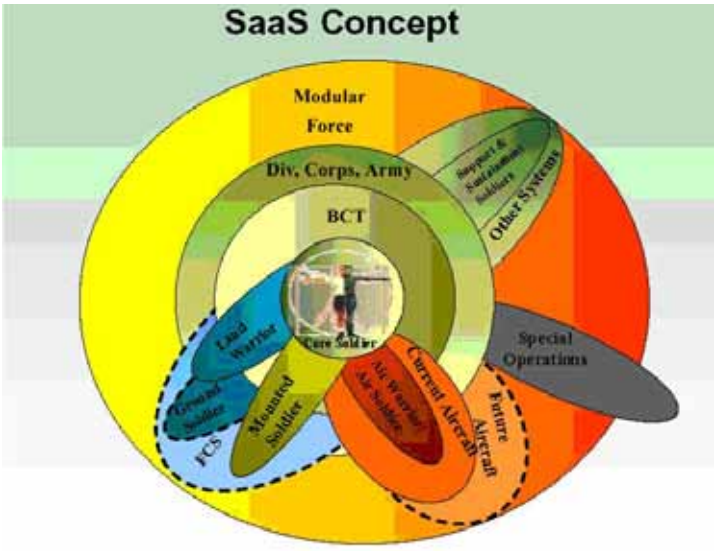


Figure 3-2. SaaS Concept

Maneuver Sustainment Soldier. The other three Soldier variant Capability Development Documents (CDDs) will address other specific Soldier needs as they are identified. Finally, the concept will support the development of a fully integrated FCF Soldier System whose capability is optimized to reflect his or her mission tasks within the FCF Operational Concept, to include the Maneuver BCT and Division, Corps, and Army, as well as other FCF subordinate concepts. These individual tasks become the operational and tactical structure for future Soldier operations and Battle Command capability requirements.

3-3. Capabilities needed.

a. SaaS Capabilities. The capabilities needed to deploy, employ, and/or sustain the Soldier System missions, ranging from home station, peacekeeping, support and stability operations, to Major Combat Operations, are as follows:

(1) Lethality. The Soldier System must have the capability to detect, recognize, acquire, and identify to "rapidly" mass effects (focus, distribute, and shift), in order to kill or achieve desired effects against selected targets throughout the full spectrum of military operations, and in all operational environments. The Soldier System must be capable of self-defense during task performance. In addition, the Soldier System of those individuals in crew positions must provide enhanced man-machine interface capabilities to fully exploit the capabilities of combat platforms and associated equipment.

(2) Survivability. The Soldier System must have effective protection and survival (to include combat identification) within the full spectrum of military operations and in all operational environments.

(3) Mobility. The Soldier System must be able to maneuver across the full spectrum of military operations and in all operational environments. Soldier as a System maintains the goal of reducing the weight load. In addition, SaaS must be able to perform all common and MOS related tasks under specified conditions and standards within the given environment.

(4) Sustainability. The Soldier's physical, spiritual, social, mental, and physical health and performance must be sustained across the full spectrum and duration of military operations, and in all environments, as addressed in joint and Army doctrine (Joint Publication 4-02 and a TRADOC pamphlet on global force health protection in a global environment, still under development). This sustainment occurs from either within the Soldier System (self sustaining) or from an outside source at higher levels. Power management and more efficient power sources will reduce the Soldier’s weight load. It must provide and sustain capability solutions that are reliable and durable, enhancing the autonomous ability to sustain performance to well-documented standards of effectiveness (to include requirements for food, water, power, and other supplies) across the full spectrum and duration of military operations. When required, the Soldier System must be resupplied under all climatic conditions and in all environments. This includes all the supply, services, and maintenance required for Soldier System care, use, or consumption.

(5) Battle Command/Situation Awareness and Understanding. The Soldier System must have the ability to perceive and comprehend real-time information on demand that command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) tools provide, and the ability to exchange pertinent information up and down the chain of command and laterally across the full spectrum of military operations, under all climatic conditions and all environments. Soldier specific interfaces will be echelon and situation dependent.

(6) Training and Facilities. Soldier as a System must provide training and facilities to maintain Soldier System readiness, perform all common and MOS related skills, and store equipment.

b. Key Operational Capabilities. The force capabilities must provide exceptionally high levels of mobility, lethality, situational awareness, survivability, and sustainability in order for the Soldier System to possess the ability to dominate any opponent. The Army's FCF concept employs a functional framework in which the Division, Corps, and Army performs tasks assigned to service headquarters above brigade level. The BCT is the tactical warfighting echelon of the FCF and comprises echelons at brigade and below to fight tactical engagements and win battles.

(1) Mobility at the Tactical Level. The FCS family of systems, to include the Infantry Carrier Vehicle and Multifunction Utility/Logistics and Equipment Vehicle, will be in the force and will provide Soldiers better tactical mobility by reducing Soldier System weight and volume and enable Soldiers to gain maneuver dominance through speed over the ground. In those cases where Soldiers are not supported by enabling assets, Soldier Systems must be able to gain and maintain maneuver dominance on their own, with minimal assistance from other force capabilities. Agile Forces will be required to transition from stability operations and support operations to warfighting and back. As the Army crafts a more rapidly deployable force structure, it must continue to grow leaders who can adapt quickly to change.

(2) Lethality, with Embedded Capabilities. Both current and Future Combat Forces must strive to provide an overmatching capability to all forces to detect, identify, counter, and kill—or achieve desired effects—against selected enemy threats, throughout the full spectrum of military operations, through greatly enhanced situational awareness.

(a) The SaaS will provide the Soldier with the capability to detect, identify, counter, and kill—or achieve desired effects—against selected targets, throughout the full spectrum of military operations, under all climatic conditions, and in all operational environments.

(b) Enhanced lethality allows Army forces to destroy any opponent quickly. Army forces can combine the elements of combat power to provide overwhelming and decisive force at the right time, at the right place, and for the right purpose.

(3) Enhanced Situational Awareness. The organic RSTA elements and the networked intelligence available from higher headquarters must provide Soldiers with sufficient situational awareness to be effective in individual and collective tasks, in both mounted and dismounted

roles. The SaaS will provide Soldiers with the capability to receive and send information. These capabilities may not be activated (fully or partially) or present at all times. As a minimum, the SaaS capability will allow for receipt of information that will enhance the individuals' ability to conduct tasks or missions. It will also provide the Soldier with the capability to communicate to other individuals, or to the next level of command, and provide enhanced situational awareness and understanding to enhance individual and collective task performance and efficiency.

(4) Advanced Force Protection and Survivability through Active and Passive Capabilities. Soldiers and Soldier teams will be protected to a greater degree through enhancements in situational awareness, as well as survival capability that FCS brings to the future combat force Soldier. The SaaS will provide lethality (with embedded capabilities), force protection and universal survivability (active and passive capabilities), improved soldier mobility, soldier sustainability, enhanced communications/situational awareness, and soldier training/mission rehearsals. The primary threat to Soldiers is fragments, bullets, blast, thermobaric, flame, and incendiary weapons and obscurants. Secondary threats will include falling debris and urban rubble. Threats may include lasers, laser range finders, image intensification, active and passive infrared, electronic countermeasures (electronic attack, electronic warfare support, degradation and/or destruction of C4I systems), and other improved RSTA measures. Threat artillery will employ a full range of ordnance, including use of chemical, biological, and scatterable mines.

(5) Improved Sustainability. The SaaS must facilitate the reduction of fuel consumption, munitions, and other expendables, as well as provide improved power supplies, enhanced systems reliability, and allow rapid deployment and effective sustainment of Soldiers to reduce Soldier loads.

3-4. SaaS and the Army Vision.

a. *"We are a Nation and an Army at war."* The Chief of Staff, Army has articulated a clear Focus.

The Army's core competencies are:

(1) Train and equip Soldiers and grow leaders.

(2) Provide relevant and ready land power capability to the Combatant Commanders as part of the Joint Team. The Army's focus is to meet the defense challenges of the future and provide the Commander in Chief a more relevant and ready campaign-quality Army with a Joint and Expeditionary Mindset.[13]

b. The Army Vision places the Soldier as the centerpiece of the Army, in order to make the force more responsive and dominant across the full spectrum of possible conflict. The Vision recognizes the role the Army plays in our nation's Joint military force and the characteristics that

[13] Army 2004 Posture Statement.

become the foundation for the development of Army organizations, their operational concepts, required capabilities, and missions.[14]

c. The Army's Soldier Modernization Vision directly supports the Army's goals and objectives by providing "A trained and ready Soldier with fully integrated capability to outperform any opponent in the full spectrum of Army, Joint, NATO, and Allied Force operations". Soldier as a System supports this vision by providing all Soldiers with improved capability to enable America to fulfill its global responsibilities, as well as enabling Soldiers to maintain pace with the Army's vision of Army Transformation.

3-5. SaaS contribution to Joint Vision 2020.

a. The goal of Joint Vision (JV) 2020 is "the creation of a force that is dominant across the full spectrum of military operations—persuasive in peace, decisive in war, preeminent in any form of conflict."[15] The purpose of JV 2020 is to describe in broad terms the human talent—the professional, well trained, and ready force—and operational capabilities that will be required for the joint force to succeed across the full range of military operations and accomplish its mission in 2020 and beyond. The overarching focus of this vision is full spectrum dominance—achieved through the interdependent application of dominant maneuver, precision engagement, focused logistics, and full dimensional protection, all of which is enabled by information superiority. Attaining that goal requires the steady infusion of new technology and modernization and replacement of equipment. However, materiel superiority alone is not sufficient. Of greater importance is the development of doctrine, organizations, training, leadership and education, leaders, and people that effectively take advantage of the technology.

b. Soldier as a System will be fundamental in enabling the Services to achieve the JV 2020 full spectrum dominance (see fig 3-3). Although on a smaller scale, the Soldier capabilities mentioned in paragraph 2-2, above, directly support each one of the operational capabilities outlined in JV 2020. The SaaS capabilities will collectively provide the Army with the ability to conduct dominant maneuver and precision engagements, provide full dimension protection, and focus logistics efforts in support of the Joint Force Commander. At the same time, SaaS will improve the Soldier's situational awareness and facilitate an information dominant force, beginning with each individual. The SaaS will support the capability to provide commanders critical information requirements, with regard to the Soldier's mission and disposition, across a given operational environment (optimized at each organizational level).

[14] Army Transformation Concept Development and Experimentation Plan.
[15] Joint Vision 2020.

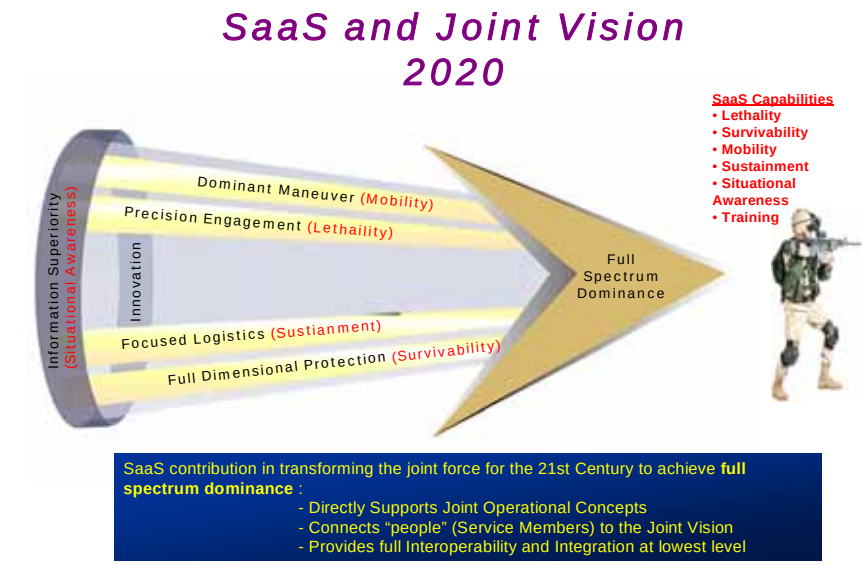


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Figure 3-3. SaaS and JV 2020

c. Networked access to the BCT and Division, Corps, and Army infrastructure provides the Soldier with support from organic and external assets at a much more decentralized level than the Current and Stryker Force capabilities allow. The Soldier will maintain Net Centric Common Situational Awareness while conducting MOS-related operations. The User Defined Operational Picture (UDOP) provided between mounted and dismounted operations remains the same, and the transition from FCS platform supplied UDOP and the SaaS-generated UDOP is seamless and transparent to users.

d. The sum of our future adversaries' efforts will be to seek defeat of the BCT by confounding its ability to achieve and maintain unparalleled situation development—superior knowledge of the enemy in relation to friendly forces and intentions—and through it, dominant situational awareness. The net effect will be to drive the increased speed and unparalleled decisiveness the BCT commander must possess to act within the opponent's decision cycle and win. Future Operational Environments will place mid-grade and junior leaders in complex situations with international informational and political importance, where their tactical actions have operational and strategic impact. These leaders must effectively recognize and solve challenging problems in these difficult circumstances. The unparalleled visibility and reach that both sensors and shooters available on the worldwide arms markets provide, means that BCT subunits must be capable of providing over-watch in mutual support of moving formations, and performing immediate action at ranges Beyond Line of Sight. The BCT can also expect engagement by opponents similarly equipped and trained, on their own ground.

e. Each of the Concept Capability Plans that support the ACS FCF Concept will determine capabilities required for the deployment, employment, and/or sustainment of Soldiers.

f. The BCT organizational and operational (O&O) Plan for each of the subordinate concepts that SaaS will support will determine operational and tactical structure for the operations and C2

arrangements. The Army's Soldier Modernization Objective is that "No Soldier will be placed in harm's way without appropriate training and individual equipment."

3-6. SaaS contribution to Army Transformation.

a. The primary goal of Army Transformation is the development of the FCF, a strategically responsive, precision maneuver force, dominant across the range of military operations. This force is under design to sharply expand the options available to the joint force to achieve rapid decision.

b. As a knowledge-based force, the Army will exploit the power of advanced information capability to:

- Facilitate operational maneuver from strategic distances.
- Conduct entry and shaping operations to set conditions for success.
- Conduct decisive operations to achieve accelerated desired effects.

c. Two critical enabling capabilities are essential for the success of the Army's contribution to the Joint fight:

(1) First, maintaining high levels of situational understanding will ensure the most effective application of power from each component of the future Army. Situational understanding further enables Soldiers to evolve from conditions of uncertainty to knowledge-based actions.

(2) Second, decisive tactical combat, based on small unit excellence and well-trained and equipped Soldiers, will always dominate action in the close fight.[16] The total force's agility and response to command decisions is dependent on the capability to pass information to the lowest level. Only then will the Army attain the FCF vision.

d. This Capstone Concept supports the family of subordinate concepts that focus more on detailed definition and description of operational methods, functional areas, and force operating capabilities. The SaaS Concept is intended to support the Army's Capstone Concept by addressing specific DOTMLPF Soldier issues associated with each of the subordinate concepts (see fig 3-4).

[16] The Army Future Force: Decisive 21st Century Landpower, HQ TRADOC, August 2003.

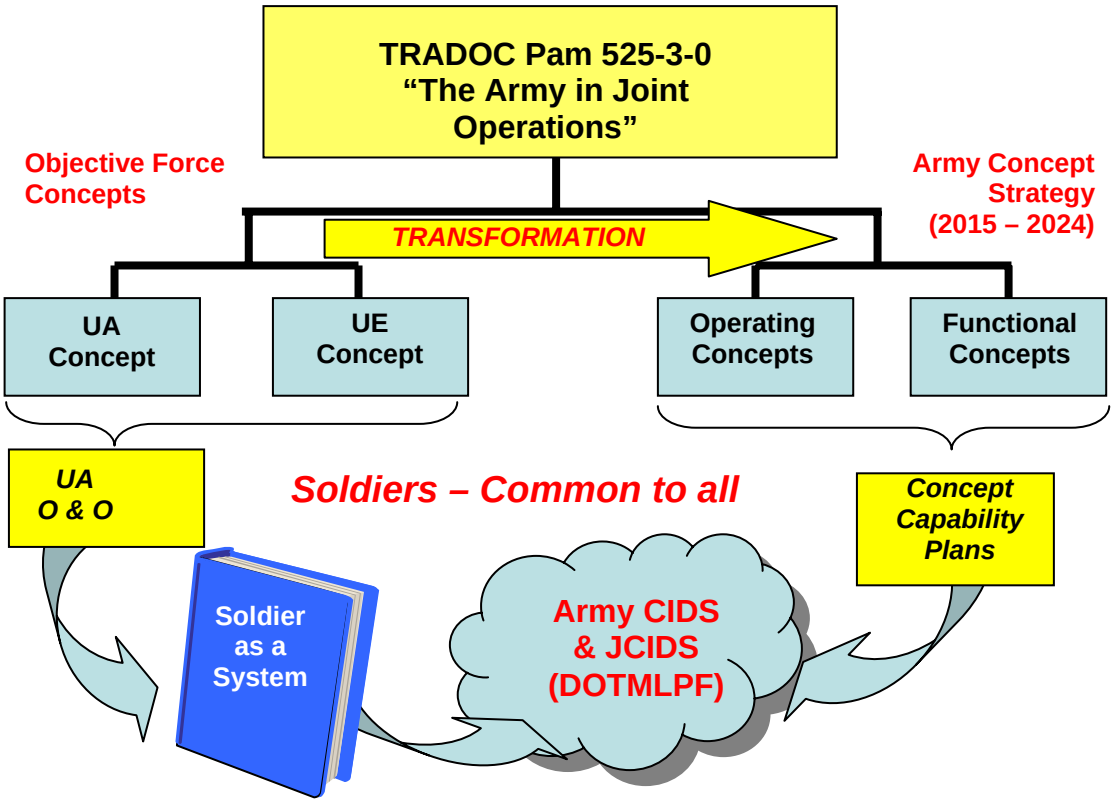

Figure 3-4. Transformation linkage

e. The focus of this concept is not so much on Force Composition, but on the individual Soldier. It is Soldiers accomplishing numerous individual tasks that leads to the success or failure of a unit mission. These individual tasks, eventually derived from AUTL ARTs, show little difference in the tasks Soldiers are required to perform today and what Soldiers will be required to perform in the future. Developments of Soldier Systems for specific MOS requirements will begin with the Core Soldier System. The Core Soldier System will become the Army's minimum modernization standard for all Soldiers, with the intent to add capability as required. The variables will lay in the factors of mission, enemy, terrain and weather, time, troops available, and civilian that produce the operational environment/specific situation in which the individual is expected to conduct the task (condition), and the minimum acceptable proficiency required in the performance of that task. The focus of the leader development system at junior levels will be to inculcate new leaders with a common set of values and tradition, train them in the conduct of war, and provide them the minimum skills and knowledge necessary to make the initial transition to their first assignment.

f. It is here that this concept will make a major contribution in providing more favorable conditions for Soldiers to accomplish their individual task, and possibly to higher standards. This concept will strive to improve the conditions all Soldiers must function under, and at the same time, incorporate those characteristics that will support the establishment of future combat force concepts. The Core Soldier System provides the foundation for the development of specialized Soldier capabilities for the ground, air, mounted, maneuver sustainment and support Soldiers of the current and future combat force.

3-7. Battlefield functions.

a. Although the individual Soldier remains the ultimate weapon on the battlefield, technology enables the BCT to understand, shape, engage, consolidate, and transition to control and win the next battle. Casualties and collateral damage are minimized, while operational success is expedited. The individual Soldier is not only a common factor in all battlefield functions, but central to future formations in all combat environments or scenarios. No battlefield function can occur without direct or indirect involvement of Soldiers. The SaaS will support all current and future Soldiers, regardless of their role or mode of entry into the battle, and once there, will make Soldiers more efficient and effective, as well as more lethal and survivable.

b. The Army's current force will benefit from the implementation of the SaaS Concept by providing a process and management structure with which to identify and respond to operational needs of deploying units, and formalize these needs into validated requirements for enhanced soldier capability. This process will also ensure the integration and compatibility of current and FCF DOTMLPF requirements and capabilities for all Soldiers.

3-8. Future combat force capabilities.

a. Army FCF units will dominate land operations, providing the decisive complement to air, sea, and space operations. The SaaS will provide Soldiers with situational dominance in applying lethal and nonlethal effects with unprecedented precision across the spectrum of military operations.

b. The Soldier is the most capable, all-weather, intelligence collection asset on the battlefield. The "Every Soldier is a Sensor" initiative aims to give soldiers personal digital assistants to make the reporting of intelligence from the battlefield quick and simple. The handheld computer will use the Battle Command Brigade-and-Below system to digitize intelligence at the point of origin for use at all levels. The SaaS information systems will enable Soldiers to collect and receive data and provide dominant situational awareness and understanding that will enable combined arms units to conduct simultaneous, noncontiguous, distributed operations. The SaaS, supported by other Army systems, will provide FCF units the lethality and survivability needed to deliver full-spectrum dominance, the versatility to change patterns of operation faster than the enemy can respond, and the agility to adjust to enemy changes of operation.

Chapter 4
DOTMLPF Implications

4-1. Use of DOTMLPF analysis.

a. Soldier as a System is an enabling concept. Central to this concept is a management process to identify shortfalls and recommend solutions to perceived or real shortcomings in materiel by conducting a DOTMLPF analysis. It applies to specific Soldier needs and Soldier requirements. In the end, an ICT, made up of proponent representatives, weigh the recommendations made, evaluate their merit based on the desired Soldier capabilities, as well as

compatibility, connectivity, integration, training, and interoperability, and make final recommendations to the Commanding General (CG), TRADOC.

b. Two considerations drive this process—one is threat based, the other capability based—to fix unidentified Soldier gaps. Where the Army met or exceeded weapons overmatch, based on opposing threat weapons, it based its modernization program on technology capabilities to widen its advantage. The Soldier is the Army's most vulnerable asset and is susceptible to almost every threat known on the battlefield. The primary consideration for any analysis of the Army's present Soldier capabilities will be based on the threat to the individual Soldier. Each area of the DOTMLPF is analyzed. We will use concept of operation and tactical vignettes, based on potential "real world" scenarios, to facilitate analysis. This type of analysis begins with identification of collective and individual Soldier tasks, and identifying those tasks that will evaluate the Soldier's ability to accomplish the assigned mission. These tasks and functions form the construct of an operational architecture.

4-2. Doctrine. Evaluation of Soldier tasks, functions, and associated tactics, techniques, and procedures (TTP) may provide a solution or change in the way we fight, based on an enemy threat. The potential solutions are then evaluated, to include impact on the areas of Soldier Lethality, Survivability, Mobility, Sustainability, and C4ISR, individually and collectively. When conducting capabilities-based analysis pertaining to SaaS, also consider doctrine and associated TTP. With the changes brought about from new or improved materiel solutions, expect new or modified doctrinal procedures. This will result in required revision of field manuals, technical manuals, regulations, etc.

4-3. Organizations. At the Soldier level, organizational changes do not apply. However, they do affect the Soldier in the manner in which he is employed and the conduct of tasks and functions. Reorganization of unit personnel, as an example, may require Soldiers to perform more tasks and functions than previously required. This would impact other areas in the DOTMLPF assessment such as training, leadership and education, development, and doctrine, to name a few. However, the potential exists for modification of organizational structure with the advent of new capabilities.

4-4 Training.

a. "While there will be changes in the framework of the strategic environment; national military strategy; the contemporary and future operational environment, doctrine, and force structure; the most significant difference will be how we apply advanced and dynamic technology to create a full spectrum Army with a fully integrated, relevant training environment that seamlessly merges training across the institution, unit, home station, Combat Training Centers (CTCs), and deployed theaters."[17]

b. The SaaS process provides a chance to fundamentally change Training in the Army. The user goal is to train anywhere, any time, which means the Army will take training with them. Technology has matured to a level that supports these requirements. Embedded Training (ET) is

[17] Objective Force Doctrine, Training, and Leader Development Plan.

the user's primary option for SaaS training in all training domains—institution, home station, and deployed, including Army CTCs and the Joint National Training Center. Separate training devices will be built only for those tasks that are unaffordable, unreasonable, or unsafe in an ET environment. The SaaS process will ensure ET development as an integral part of the SaaS architecture, not as a set of add-ons and software applications.

c. The Soldier System will have an embedded individual and collective training capability that supports requirements' definition of live, virtual, and constructive training environments. Designing ET at the start of the program will ensure it is developed in conjunction with the FCS's System of Systems components. To do otherwise would lead to needless duplication of software development, potential negative training as a result of inevitable baseline divergence (as training tries to keep pace with operational software functionality) and additional space/weight/power claims for training. The SaaS must be capable of supporting operations, mission rehearsal, and training of separate audiences (Soldiers, units, leader/staff teams) simultaneously.

d. The SaaS Concept will support distributed man-in-the-loop Training Support Packages (TSPs) for individual Soldiers on their equipment, as well as units, leader teams, and staff groups located in separate platforms, on the same synthetic natural environment, joined by the C4ISR system. The structure of collective TSPs will ensure performance evaluation through After Action Reviews. Training Support Packages will support SaaS development testing, and left with the units for sustainment training. Increased technology in modeling and simulation will enable the Soldier System to train in a controlled environment. Training simulations can provide an infinite number of scenarios that the Soldier can use for training and rehearsal prior to deployment. Soldiers can accomplish simulation at home station, in garrison, and in field holding areas. The SaaS Concept will ensure the Soldier's ability to train anywhere.

e. The Soldier System will ensure that each Soldier has embedded training management services and/or the ability to link to these services via the C4ISR system—including the Army Unit Training Management System and the Army Learning Management System—to facilitate training and learning management in any training domain. Each system will also have an embedded exercise scenario development system to enable the user to build or modify collective training TSPs. This capability also allows for putting modified exercises back into the Army knowledge repositories, thus contributing to and updating the overall database of exercises and scenarios with the most recent combat experiences.

4-5. Materiel.

a. Materiel solutions greatly impact the Soldier. A thorough analysis of materiel solutions is accomplished to select the right solution, and assess its impact on doctrine, organization, training, leader development, personnel, and facilities. From a doctrinal perspective, materiel solutions may provide not only combat overmatch and standoff capabilities to counter a specific threat, but also added capabilities, which may impact TTPs. New materiel solutions may alter organizational structure in that Soldiers might be assigned differently in units. To ensure Soldiers gain maximum capability from the new equipment, they must receive new equipment training. In addition, training considerations must be given to the training base, institutional training

requirements, and common task training. New materiel solutions also affect leadership and education. Leaders must learn how to properly operate, maintain, train, and employ the new equipment. New materiel solutions affect personnel and soldier load. New materiel solutions must strive for interoperability with other systems, draw from the same power source (connectivity), and be compatible with other equipment in the Soldier's load.

b. SaaS requirements development process.

(1) The concept of SaaS must begin with the establishment of a process that will support the development of Operational Concept(s) to derive Soldier system requirements (see fig 4-1). This begins with the various proponent centers receiving Soldier feedback in the form of comments, Lessons Learned, Joint Readiness Training Center Muddy Boots Council, etc. Each proponent center SaaS cell, consisting of Combined Arms Training Directorate, Directorate of Combat Developments, Battle Labs, and other major divisions of the proponent center, will conduct a total DOTMLPF analysis to determine the proponent Soldier mission need, and identify and validate capability requirements to satisfy that need. Each TRADOC school and center remains responsible for developing and maintaining its own operational architecture, TTPs, and Soldier tasks specific to each individual MOS, and maintaining current documentation. They will also develop Initial Capabilities Document (ICD) (if required) and CDD, IAW the latest version of Chairman of the Joint Chief of Staff Instruction (CJCSI) 3170. These requirement documents will pass to the SaaS ICT for review.

(2) The SaaS ICT (fig 4-2) is a formal organization chartered by HQ, TRADOC to oversee the development and establishment of SaaS Concepts and requirements.[18] The CG, USAIC is the CG TRADOC's Executive Agent for the ICT and is charged with developing a SaaS Operational Architecture and Strategic Vision within the Soldier community to monitor, leverage, and integrate common Soldier requirements. Each TRADOC proponent is represented on the SaaS ICT and will provide continuous monitoring and integration of new and developing Soldier Systems DOTMLPF requirements and components with a holistic view. The SaaS ICT will be the overall keeper of the SaaS Concept, metrics, operational architecture, and Force Operating Capabilities, as well as the body that will determine and produce CDDs for Soldier Systems. The ICT will coordinate these efforts directly with HQ TRADOC.

(3) The SaaS ICT will also review and update all Soldier requirements (as required) to ensure requirements are compatible and fully integrated with SaaS Concepts, Operational Architecture, and Metrics. Once the SaaS ICT reviews these requirements, they are forwarded through the ICT Executive Agent to CG, TRADOC for approval.

[18] TRADOC Soldier as a System Integrated Concept Team Charter, dated 18 June 2002.

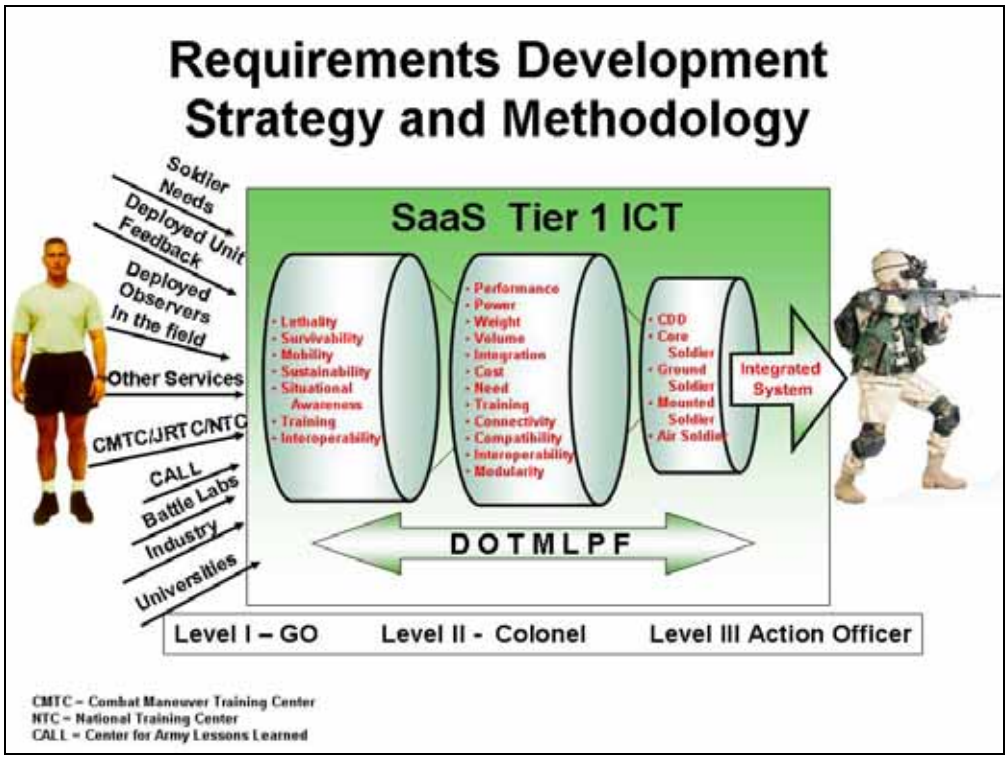

Figure 4-1. Requirements development strategy and methodology

(4) The U.S. Army Research, Development, and Engineering Command representative will serve on the ICT, as required, and provide council on issues of technical integration and synchronization of future technologies from a systems-of-systems perspective. The PEO-Soldier representative will serve on the SaaS ICT, as required, and provide council involving issues requiring materiel solutions. The purpose of this joint effort between the combat and materiel development communities is to:

(a) Reduce program risk by ensuring that force and materiel developers can either meet, or plan to meet, proposed requirements early on.

(b) Have both the combat and materiel developers present a viable and jointly agreed upon strategy to Army decision makers that is fully integrated with SaaS architecture, as well as Army Operational Concepts.

(c) Provide guidance to science and technology (S&T) efforts in the form of force operating capabilities required, but not yet developed.

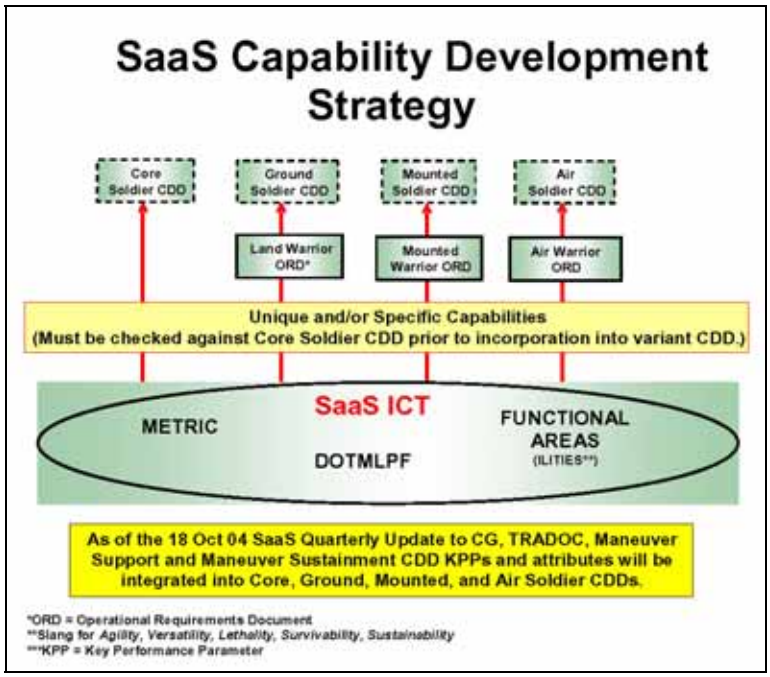

Figure 4-2. SaaS capability development strategy

c. Documenting and integrating Soldier requirements.

(1) The second element of the SaaS Concept is a full DOTMLPF documentation of SaaS concepts and requirements. This is critical to the development and establishment of a Soldier Modernization Strategy for the Army. For Soldiers to have the required capabilities to fight and win, DOTMLPF issues and requirements must be identified and addressed.

(2) Figure 3-4 shows the Army's SaaS documentation strategy, beginning with the Army's capstone concept, TRADOC Pam 525-3-0, supporting approved objective force concepts such as the UA (now BCTs), UE (now Division, Corps, and Army), and the newly approved ACS with its subordinate Operating and Functional concepts. It is anticipated that each supporting concepts of ACS will have associated documents that defines how that supporting concept operates. The figure shows the SaaS Concept will focus on and respond to Soldier mission needs for each supporting concept, the previously approved UA O&O plan, and future concept capability plans. The SaaS requirements strategy will support the Army transformation through the identification, design, and implementation of a limited number of requirements that will respond to the needs of Soldiers of the current and FCF (see fig 4-4). This requirements strategy will include the development of CDDs that are general in nature and will reduce the number of requirements that require staffing. The SaaS Mission Needs Statement (MNS) dated 4 October 2002 (now called ICD), defines, in broad terms, the capabilities needed by **all** Soldiers to perform their duties, as well as both individual and collective tasks, and eliminates the need for the development and approval of a Soldier MNS for each new Soldier requirement generated.

(3) The basic combat training portion of IET is the basis for the Core Soldier System which will become the foundation that provides guidance and strategy for the development of fully integrated materiel systems for all Soldiers. It specifies Metrics, key performance parameters, and Objective and Threshold Requirements that are applicable to all Soldiers, regardless of MOS. The Soldier capabilities developed in this document will be common and applicable for all, and will define the requirements of a core system for all FCF Soldiers. This document will set the minimum acceptable modernization standards and capabilities for all Soldiers.

(4) Specific Soldier requirements will be developed leveraging the Core Soldier System. As a minimum, these specific Soldier requirements will address the needs of the Ground, Air, Mounted, Maneuver Support, and Maneuver Sustainment Soldiers. Other specific Soldier needs will be addressed as they are identified. Currently, approved Soldier programs, such as Land and Air Warrior, will remain in effect until the need for revision, after which they will become Soldier System CDDs.

d. The Army must continue with research and development to find ways to make equipment lighter, more durable, less expensive, and maintenance free to the fullest extent possible. The Army relies on S&T development to provide Soldiers with the "art of the possible." New materiel solutions must be compatible, provide connectivity, and be interoperable, modular, and integrated with other key systems. The new materiel solutions must embed training.

4-6. Leadership and Education. Leader development and education applies to officers, noncommissioned officers and Soldiers. Leader development is enhanced with SaaS. Officers and noncommissioned officers can better train their Soldiers, through the use of ET in new materiel Soldier systems solutions, using live, virtual, and constructive simulation techniques. At any time, individual Soldiers may find themselves in a situation where they become leaders. Soldier as a System facilitates ease of transition to leadership responsibilities due to the integration, interoperability, connectivity, and compatibility of future Soldier systems.

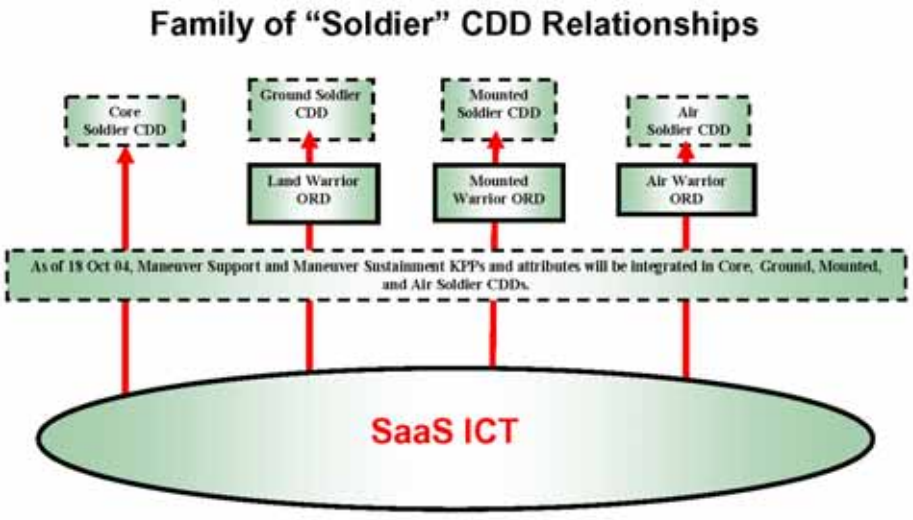

Figure 4-3. Family of Soldier CDD relationships

4-7. Personnel. Soldiers are the Army's most important resource for accomplishing missions and winning wars. The highly complex and sophisticated nature of the digitized battlefield will require multi-trained Soldiers, capable of executing an array of interrelated tasks, previously performed by someone else, or brought about by advanced technologies. As a result, Soldiers must excel at critical thinking and be able to adapt to a variety of situations. Soldiers must maintain a high level of proficiency with their basic combat skills, yet be able to leverage the technologies that increase our lethality on the battlefield. They must also possess higher-order cognitive skills that enable them to adjust and adapt to rapidly changing operational situations and conditions. Soldiers will also require enhanced endurance and stamina to fight effectively under all environmental conditions, in all operational environments. In a threat-based analysis, every consideration is given to the impact or potential danger to the Soldier. Changes in personnel strength may seem a viable alternative, with the increased capability of future Soldier Systems, however, we should continue to field new technology to increase capability and provide the Army with the new materiel solution.

4-8. Facilities.

a. New materiel solutions directly impact facilities. As new equipment is fielded, Soldiers need a place to store and maintain the equipment. Overcrowding of Company Operation Facilities (COF) becomes a hindrance to Soldiers, their unit, and the organized, efficient operation in a COF. This also causes leadership concerns with Soldier responsibility, accountability, and security of sensitive or expensive items.

b. New equipment costs mandate that we provide better Soldier equipment facilities for storage, security, maintenance, management, and deployment capability. Company Operation Facilities currently under construction must be modified to accommodate the fielding of new equipment to Soldiers and units. These facilities must provide adequate and secure storage, provide workspace, and serve as a secure marshalling and deployment area for our Soldiers, while protecting them from the elements. Range and simulation center facilities must be modified or constructed to accommodate the capabilities of new weaponry and maximize realistic training. Conducting a thorough training analysis and evaluation of required tasks, conditions, and standards can identify shortfalls in existing facilities. Consideration must be given to the physical storage of new equipment in order to maintain regulatory requirements for physical security.

c. We must also look to future needs when considering facility construction and upgrades. The need to charge batteries, download training programs and operational data packages internal to the facility, and address environmental considerations are all challenges to future facilities.

Appendix A
References

Section I
Required Publications

Joint Publication 3-0
Doctrine for Joint Operations
Joint Publication 4-02
Doctrine for Health Service Support in Joint Operations

TRADOC Pam 525-3-0
The Army in Joint Operations – The Army's Future Combat Force Capstone Concept

TRADOC Pam 525-66
Force Operating Capabilities

Section II
Related Publications

CJCSI 3170.01E
Joint Capabilities Integration and Development System

Field Manual 7-15
The Army Universal Task List

TRADOC Pam 525-3-90
Objective Force Maneuver Units of Action

Glossary

Section I
Abbreviations

ACS	Army Concept Strategy
ART	Army tactical task
ASPG	Army Strategic Planning Guidance
AUTL	Army Universal Task List
BCT	Brigade Combat Team
BOS	Battlefield Operating System
C2	command and control
C4I	command, control, communications, computers, and intelligence
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CDD	Capability Development Document
CG	Commanding General

CJCSI	Chairman of the Joint Chief of Staff Instruction
COF	Company Operation Facilities
CSA	Chief of Staff, U.S. Army
CSS	combat service support
CTC	combat training center
DOTMLPF	Doctrine, Organizations, Training, Materiel, Leadership and Education, Personnel, and Facilities
ET	Embedded Training
FCS	Future Combat Systems
FCF	Future Combat Force
IAW	in accordance with
IET	initial entry training
ICT	Integrated Concept Team
ICD	Initial Capabilities Document
JV	Joint Vision
LW	Land Warrior
MNS	Mission Needs Statement
MOS	military occupational specialty
O&O	organizational and operational
PEO	Program Executive Office
POI	program of instruction
RSTA	reconnaissance, surveillance, and target acquisition
S&T	science and technology
SaaS	Soldier as a System
STAR	System Threat Assessment Report
TRADOC	U.S. Army Training and Doctrine Command
TSP	Training Support Package
TTP	tactics, techniques, and procedures
UA	Unit of Action
UDOP	User Defined Operational Picture
UE	Unit of Employment

Section II
Terms

Command and control (C2)
This operational element is defined as the Soldier Systems' ability to direct, coordinate, and control personnel, weapons, and equipment, supported by knowledge and understanding of the current situation, which promotes timely, relevant, and accurate assessment of friendly, enemy, and other operations within the battle space in order to facilitate decision-making.

Core Soldier
A Soldier that successfully completes basic combat training and is provided the clothing and individual equipment necessary to accomplish those basic combat training tasks.

Soldier lethality
The ability of the Soldier Systems to destroy, neutralize, suppress, or bring desired effects on a threat, through the employment of organic and/or coordinated use of non-organic weapon systems.

Soldier mobility
The quality or capability that permits Soldier Systems to move from place to place or perform individual tasks in a timely fashion, while retaining the ability to fulfill their primary mission. Air crewman, combat vehicle crewman, and other Soldiers have to be mobile within their combat platforms or duty stations to reduce human factors constraints and improve man-machine interface.

Soldier
Soldiers are typically classified as Army service members. Other services normally do not call their service members Soldiers (that is, Airmen, Sailors, or Marines).

Soldier mission
I, _____, stand ready to deploy, engage, and destroy the enemies of the United States of America.

Soldier as a System (SaaS)
An integration concept (as opposed to an operational concept) that will provide a means to ensure Soldier DOTMLPF issues are addressed in a holistic manner, resulting in a fully integrated Soldier system.

Soldier survivability
The degree to which a Soldier System is able to avoid or withstand a natural and/or manmade hostile environment, without suffering an abortive impairment to accomplish its designated mission.

Soldier sustainability
The ability of the Soldier System to sustain operations and be logistically supported in order to accomplish its assigned tasks or mission.

Soldier interoperability
(1) The ability of Soldier Systems to provide services to, and accept services from, other systems, units, or forces, and to make use of the services, units, or forces and use the services so exchanged to enable all Soldier Systems to operate effectively together.

(2) A condition is achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between users, both horizontally and vertically.

Soldier System
The Soldier System consists of the individual Soldier and those items and equipment that the Soldier wears, carries, or consumes. It includes all items in the Soldier's load and those items of

equipment to accomplish unit missions (for example, crew-served support weapons, inter-unit radios) that the Soldier must carry.

Soldier System architecture
The technical design, arraignment, and assembly of systems (or subsystems) that are compatible with, and provide a capability for, the Soldier (human), to perform individual tasks and unit missions, in order to fulfill Army operational concepts.

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OFFICIAL:

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