

Capability Program Executive – Ground



Soldier Systems Reference Architecture

Version 1.1

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Revision History

This is a living document and will change based on changes to the reference architecture and soldier systems. The Capability Program Executive- Ground (CPE) Engineering Directorate is responsible for the maintenance of this document. This document will be reviewed annually (at a minimum) and updated as required.

Version	Date	Summary of Changes
1.0	30 January 2024	Initial Release
1.1	05 May 2026	Updates

CPE Ground
Soldier Systems Reference Architecture

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Executive Summary

Version 1.1 of the Army Soldier Systems Reference Architecture (RA) is used to guide and constrain architecture and solution development. The Reference Architecture Description provides guidance for the development and a description for future technologies working with existing platforms that are applicable to the Soldiers platform. CPE Ground intent to ensure all organizations responsible for Soldier-borne equipment requirements, research & development, acquisition, assessment, and testing have the same understanding of the Soldier System. This will address common integration issues that may arise due to lack of interoperability or not accounting for a modular based design.

1.0 Introduction

CPE Ground's mission is to rapidly deliver agile/adaptive, leading edge Soldier capabilities to provide combat overmatch today and be more lethal tomorrow. To address this mission the CPE has been establishing the Adaptive Squad Architecture (ASA) and the Soldier/Squad as a Platform (SaaP) operating concept. These provide definition to the system-of systems ecosystem of CPE Ground products. This reference architecture will provide an authoritative source of information about the interfaces, technical standards and other key artifacts that apply to all products within the CPE portfolio. This architecture will also support development and publication of technology roadmaps for identified elements of the architecture.

1.1 Purpose

The purpose of creating the Soldier Reference Architecture is to capture and define the common requirements, as managed by specific Project Managers or Product Managers, that apply to all CPE Ground equipment. This will allow other DoD, NATO, and Industry partners to understand standards that are in place with the CPE. The Reference Architecture will provide a baseline understanding of design elements that will guide and constrain development of specific solution architectures and be incorporated into products to support integration and interoperability efforts. The Reference Architecture will provide a foundation for the CPE and Project Managers to develop future technical baselines focusing on equipment worn, carried, or consumed by the individual Soldier and his/her duty position. This reference architecture adopts a Modular Open Systems Approach (MOSA) to foster competition, enable rapid and affordable capability upgrades, and ensure long-term system relevance and interoperability across the force. Future guidance on MOSA is expected to be late 2026.

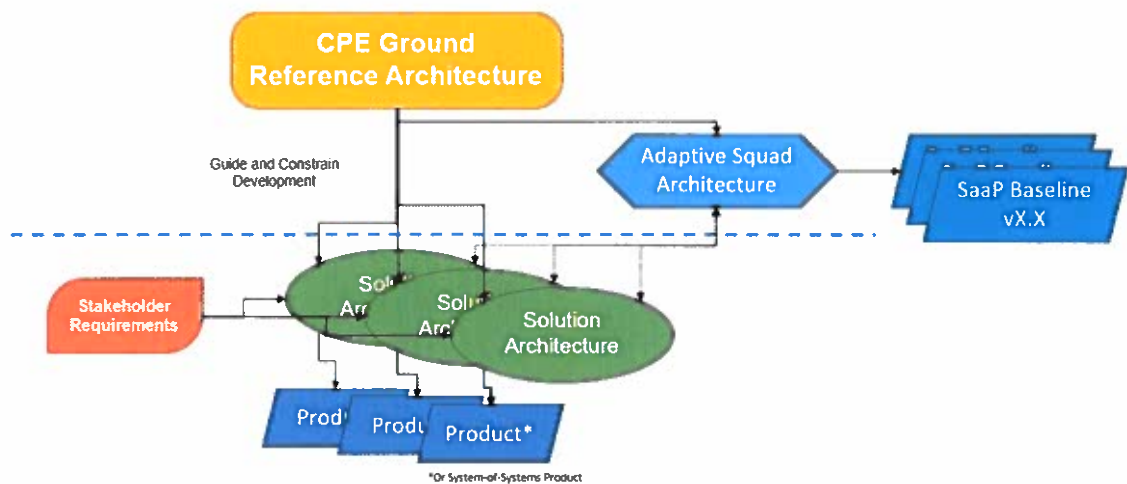


Figure 1 - Reference Architecture in relation to Solution Architectures (modified) (eabok.org, n.d.)

1.2 Interoperability

The Soldier Reference Architecture will directly support efforts to ensure interoperability between CPE Ground products. The architecture elements will support development by leveraging modular designs and integration between products and systems. This focus on interoperability will allow for evolution of specific products and solutions, while simultaneously supporting evolution of the larger system-of-systems in support of the Army modernization strategy.

1.3 Technology Roadmap

The Soldier Reference Architecture will provide insight into future standards that are currently being developed as well as the projected sunset or end of life timelines for existing standards. These timelines can inform direction for most promising areas for research and development that will optimize equipment performance and reduce Size, Weight, and Power (SWaP) burdens.

1.4 Applicability

The Soldier as a System (SaaS) Initial Capabilities Document (ICD) (dated Dec 2006) provides a foundation for development of reference architecture. The Soldier Systems Reference Architecture will apply to all products being issued by CPE Ground. Implementation of these standards against existing products will be managed by Project Managers based on direction from CPE Ground. It is anticipated that new products will implement applicable architecture elements during the initial release. Project Managers will be responsible to define their approach to adapt existing systems to incorporate these standards in a manner balances system-of-systems interoperability with program goals and lifecycle requirements (i.e., cost, schedule, performance, operational life).

1.5 Applicable Reference Documents

AMS-STD-595/20180	Tan 499
AMS-STD-595 /20150	Coyote 498
MIL-PRF-32432A	Military Combat Eye Protection (MCEP) System
SAE EIA 649-C	Configuration Management Standard
MIL-S-29580C	Laser Eye Protection
MIL-STD-1474D	Hearing Protection
MIL-DTL-32439B	Camouflage Pattern
MIL-PRF-32635	Cloth Flame Resistant/ Operational Camouflage Pattern
MIL-PRF-32383/4A(CR)	Battery, Rechargeable, Sealed, Conformal Wearable Battery (CWB), BB-2525
MIL-PRF-32383/7	Battery, rechargeable, sealed, small tactical universal battery (STUB), BB-251x/U and BB-252x/U
CO-PD-02-02P	Load Carrying Platform
MIL-STD-6090	Cursor on Target (CoT) Message Standard
MIL-STD-1913	Accessory Mounting Rail
MIL-DTL-32705	Cartridge, 40 Millimeter, HEDP – M433E1 Loading, Assembling, and Packing
MIL-DTL-71186B	M4A1 Carbine

2.0 Architecture Overview

The Reference Architecture functions as the starting point for defining the interfaces and interoperability opportunities for Soldier Systems. The architecture will be focused on the equipment produced and managed by CPE Ground organizations. The intent will be to define the standards, interfaces and technical artifacts that provide an entry point for integration with soldier equipment in the future:

- Define approaches to centralized processing and power.
- Enable wireless communications across the squad.
- Provide the tools and processes to address integration issues and more accurately identify the problems associated with Soldier load.

A properly defined Reference Architecture should be solution agnostic. As illustrated in Figure 2 below, the architecture should be applicable for a Nett Warrior Leader or Soldier Borne Mission Command (SBMC). The specific solution architectures will further define these higher-level elements into their unique materiel solutions.

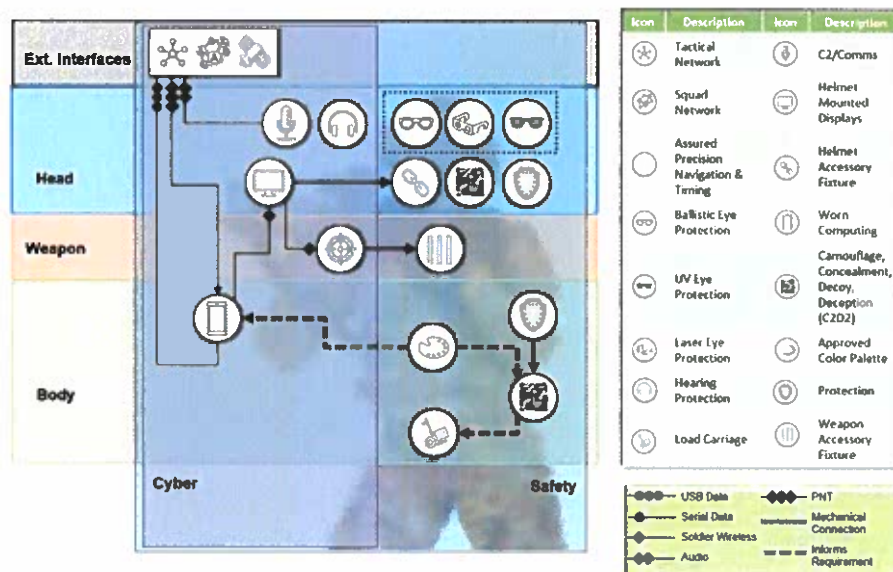


Figure 2 - Reference Architecture Sample - Leader Role

2.1 Architecture Elements

Building from the SaaS ICD, the Soldier Systems Reference Architecture will be structured around the Head, Body, and Weapon sub-systems. These sub-systems will provide a basis to organize architecture elements even as some items will cross multiple boundaries.

2.1.1 Head Subsystem

The head subsystem includes the following architecture elements: the combat helmet ensemble, eye protection, hearing protection, command, and control (communication enablers), helmet mounted displays, and other helmet mounted accessories. Together, the architecture elements of the head subsystem protect Soldiers from common battlefield threats, enable mission critical functions, and contribute holistically to Soldier capability. The base combat helmet serves as the chassis to which most other head subsystem elements attach. The structure of the base combat helmet also protects from flames, small arms projectiles, fragment hazards, and blunt impact.

STATUS		ACTIVE	
Function:	Base Combat Helmet (Chassis)	Reference Document	See table below
Nomenclature:	*NOTE: See Table below		
Initial Capability Release	2010 (URS)	Full Capability	N/A
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link	N/A		

Helmet Nomenclature	Document Title	Document Type
Advanced Combat Helmet (ACH)	AR/PD 10-02 Rev A/ HELMET, ADVANCED COMBAT (ACH)	
Legacy Advanced Combat Helmet (ACH-L)		
Lightweight Advanced Combat Helmet (LW ACH)		
Second Generation Advanced Combat Helmet (ACH Gen II)	AR/PD 19-01/ SOLDIER PROTECTION SYSTEM (SPS) NEXT GENERATION INTEGRATED HEAD PROTECTION SYSTEM (NG IHPS) HELMET	
Enhanced Combat Helmet (ECH), Personnel Armor System for Ground Troops Helmet (PASGT-H)		
Combat Vehicle Crewman Helmet (CVC-H) Combat Vehicle Crewman Helmet		
Advanced Combat Vehicle Crewman Helmet (ACVC-H)	AR/PD 17-02/ SOLDIER PROTECTION SYSTEM (SPS) INTEGRATED HEAD PROTECTION SYSTEM (IHPS) HELMET	
First Generation Integrated Head Protection System (IHPS Gen I),		
Next Generation Integrated Head Protection System (NG IHPS)		

2.1.1.1 Helmet Ensemble

The combat helmet ensemble architecture element includes several sub elements: the base combat helmet (the chassis), the retention system, the suspension system, the cover, and enabler attachment features. Each of the sub elements of the combat helmet ensemble are critical safety items.

2.1.1.1.1 Retention & Suspension Systems

The retention system provides the means to attach the base combat helmet to the Soldier with two critical interfaces (helmet attachment and Soldier attachment). The suspension system also has two critical interfaces (helmet attachment and Soldier attachment), and it provides comfort, moisture management, and protection from a wide range of non-penetrating helmet impacts.

STATUS		ACTIVE	
Function:	Retention System	Reference Document	N/A
Nomenclature:	Universal Retention System (URS), Improved Retention System (IRS), IHPS Retention System (IHPS RS)		
Initial Capability Release	2010 (URS)	Full Capability	N/A
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link	N/A		

Status		ACTIVE	
Function:	Suspension System	Reference Document	N/A
Nomenclature:	ACH/ECH Suspension System, IHPS Suspension System, CVC-H Liner, ACVC-H Liner		
Initial Capability Release	2006 (ACH Suspension System)	Full Capability	N/A
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link	N/A		

2.1.1.1.2 Helmet Cover

The cover interfaces with the base combat helmet and many other attached enablers. The cover increases the lifecycle of the base helmet and enhances signature management capabilities for the helmet.

STATUS		ACTIVE	
Function:	Cover	Reference Document	N/A
Nomenclature:	ACH/ECH Cover, IHPS Gen I Cover, NG IHPS Cover		
Initial Capability Release	2001 (ACH Cover)	Full Capability	N/A
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link	N/A		

2.1.1.1.3 Helmet Enabler Attachment Features

[RESERVED]

2.1.1.2 Eye Protection

Soldier eye protection provides protection from dust, flying debris, and ballistic hazards in both training and battlefield scenarios while maintaining compatibility with other Soldier equipment. Eye protection systems must meet specification requirements for Military Combat Eye Protection and are considered a Critical Safety Item (CSI).

STATUS		ACTIVE	
Function:	Military Combat Eye Protection	Reference Document	MIL-PRF-32432A
Initial Capability Release	Legacy	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=279115		

STATUS		ACTIVE	
Function:	Eye Protection	Reference Document	UPLC To Be Provided
Initial Capability Release	2010 (MCEP)	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link			

2.1.1.3 Laser Eye Protection

The eye protection architecture element is a critical safety element, and it includes spectacles and goggles with a variety of features including the ability to interface with prescription lenses. Different elements of the eye protection ensemble and increase situational awareness, increase recognition through enhanced contrast, protect eyes from lasers or ultraviolet light as well as provide protection from dust, flying debris, ballistic hazards, and other eye threats.

STATUS		ACTIVE	
Function:	Laser Eye Protection	Reference Document	MIL-S-29580C
Initial Capability Release	Legacy	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=71217		

2.1.1.4 Hearing Protection

The hearing protection architecture element is a critical safety element that protects Soldier hearing. It includes passive in and over ear solutions as well as active solutions with situational awareness enhancements or ability to interface with command and control (communication) systems such as tactical radios.

STATUS		ACTIVE	
Function:	Hearing Protection	Reference Document	MIL-STD-1474E
Initial Capability Release		Full Capability	
Planned Retirement	N/A	Controlling Office	U.S. Army Missile Command
Link	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=36905		

2.1.1.5 C2/Communication (Voice)
[RESERVED]

2.1.1.6 Helmet Mounted Display Interface

STATUS		ACTIVE	
Function:	Display Mount	Reference Document	A3309688B
Nomenclature:	INTERFACE CONTROL DOCUMENT FOR ENHANCED NIGHT VISION GOGGLE BINOCULAR (ENVG-B) HELMET MOUNT ASSEMBLY		
Initial Capability Release	2016 (IHPS NVD Bracket Assembly)	Full Capability	2022
Planned Retirement	N/A	Controlling Office	Product Manager Maneuver Sensors (PdM SMS)
Link			

2.1.2 Body

The body subsystem includes the following architecture elements: tactical carrier, protective inserts, extremity protection, concealment (camouflage, signature management, and approved colors), and load management. The body subsystem is competitive trade space with missions to protect, conceal, carry, and more. Together, the architecture elements of the body subsystem protect Soldiers from common battlefield threats, enable mission critical functions, and contribute holistically to Soldier capability.

2.1.2.1 Tactical Carrier

The tactical carrier architecture element is a critical safety element that provides the basic means to wear ballistically protective inserts as well as interface with other Soldier needs such as load management, magazine carriage, communications, and more. This element includes a wide variety of technical solutions in a complicated trade space.

The Tactical carrier is a modular armor platform engineered to balance ballistic protection, mobility, and loadbearing capability. Its architecture typically integrates lightweight ballistic materials, such as UHMWPE plates, within a durable outer shell. The carrier uses a MOLLE/PALS webbing system for configurable attachment of mission specific pouches and accessories. Ergonomic features like adjustable shoulder straps, E-Doff release, a structured cummerbund, and breathable padding ensure comfort and stability during extended wear. The result is a versatile protective system adaptable to diverse operational environments.

STATUS		ACTIVE	
Function:	Tactical Carrier	Reference Document	N/A
Initial Capability Release	Legacy	Full Capability	
Nomenclature	Outer Tactical Vest (OTV), First Generation Improved Outer Tactical Vest (IOTV Gen I), Second Generation Improved Outer Tactical Vest (IOTV Gen II), Third Generation Improved Outer Tactical Vest (IOTV Gen III), Fourth Generation Improved Outer Tactical Vest (IOTV Gen IV), Fifth Generation Improved Outer Tactical Vest (IOTV Gen V), Female Improved Outer Tactical Vest (F-IOTV), Soldier Plate Carrier System (SPCS), First Generation Modular Scalable Vest (MSV Gen I), and Second Generation Modular Scalable Vest (MSV Gen II).		
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link			

2.1.2.2 Protective Inserts

The protective inserts architecture element is a critical safety element that interfaces with the tactical carrier element to provide the Soldier with protection from blast, fragments, small arms threats and more.

STATUS		ACTIVE	
Function:	Protective Inserts	Reference Document	N/A
Initial Capability Release	Legacy	Full Capability	N/A
Nomenclature	Small Arms Protective Insert (SAPI), Enhanced Small Arms Protective Insert (ESAPI), Xensoteria Small Arms Protective Insert (XSAPI), Vital Torso Protection (VTP) System		
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link			

Type of Insert	Document Title	Document Type
Standard Cut Torso (All 8 Sizes)	ENHANCED SMALL ARMS PROTECTIVE INSERT	DWG No. 2-6-0588-Rev A7 (X-Small)
		DWG No. 2-6-0589-Rev A7 (Small)
		DWG No. 2-6-0590-Rev A7 (Medium)
		DWG No. 2-6-0591-Rev A7 (Large)
		DWG No. 2-6-0592-Rev A7 (X-Large)
		DWG No. 2-6-0593-Rev A7 (Small Long)
		DWG No. 2-6-0594-Rev A7 (Small Short)
		DWG No. 2-6-0595-SC-Rev A7 (X-Small Short)

Shooters Cut Torso (All 8 Sizes)	ENHANCED SMALL ARMS PROTECTIVE INSERT SHOOTERS CUT	DWG No. 2-6-0588-SC-Rev A1 (X-Small) DWG No. 2-6-0589-SC-Rev A1 (Small) DWG No. 2-6-0590-SC-Rev A1 (Medium) DWG No. 2-6-0591-SC-Rev A1 (Large) DWG No. 2-6-0592-SC-Rev A1 (X-Large) DWG No. 2-6-0593-SC-Rev A1 (Small-Long) DWG No. 2-6-0594-SC-Rev A1 (Small-Short) DWG No. 2-6-0595-SC-Rev A1 (X-Small-Short)
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2.1.2.3 Extremity Protection

The extremity protection architecture element is a critical safety element that provides protection to the shoulder, groin, joints, or other specific extremity not otherwise protected through the tactical carrier or protective insert architecture elements. The technical solutions for this architectural element provide protection from flame, blast, fragments, small arms, and more based on Soldier needs and specific technical solutions.

STATUS		ACTIVE	
Function:	Camouflage	Reference Document	
Initial Capability Release		Full Capability	
Nomenclature	Torso and Extremity Protection (TEP), Blast Pelvic Protector (BPP), Ballistic Combat Shirt (BCS), Ballistic Combat Trouser (BCT), Deltoid and Axillary Protection System (DAPS), Protective Undergarment (PUG), Protective Overgarment (POG)		
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Protective Equipment
Link			

2.1.2.3 Camouflage

Concealment through camouflage is a centerpiece for Soldier force protection. The enemy cannot attack what they cannot see. Concealment is an important combat force multiplier and an essential part of the Soldier force protection concept, which also includes situational awareness and effective personal protective equipment.

STATUS		ACTIVE	
Function:	Camouflage Pattern	Reference Document	MIL-DTL-32439B
Initial Capability Release	Legacy	Full Capability	
Planned Retirement	Review on 05 OCT 25	Controlling Office	U.S. Army Combat Capabilities Development Command Soldier Center/DLA
Link	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=279259		

STATUS		ACTIVE	
Function:	Cloth Flame Resistant/ Operational Camouflage Pattern	Reference Document	MIL-PRF-32635
Initial Capability Release	Legacy	Full Capability	
Planned Retirement	Review on 7 Oct 2024	Controlling Office	U.S. Army Combat Capabilities Development Command Soldier Center/DLA
Link	https://quicksearch.dla.mil/qsSearch.aspx		

2.1.2.3.1 Signature Management

Spectral Reflectance is captured in MIL-DTL-32439B, 3.7 covering wavelength and pattern ratio.

2.1.2.3.2 Approved Colors

The Color Standard AMS Standard 595 issued by the US Government General Services Administration (GSA/SAE). The standard defines a color index system used by, but not limited to, government activities in a format suitable for color identification, color selection, color matching and quality control inspection. In accordance with PEO

Soldier memo dated 27 Oct 2015, SUBJECT: Maintenance Information Message Providing Color and Camouflage Guidance for Individual Soldier Equipment, to preserve the effectiveness of the camouflage pattern CPE Ground equipment should do the following:

- a) In general, PEO Soldier/CPE Ground is moving away from producing any individual equipment utilizing the color black. Recent PEO Soldier testing has shown that the color black is a signature offender that reduces the effectiveness of the camouflage pattern and hampers and/or defeats efforts to make equipment inconspicuous in a field environment.
- b) Whenever possible, all items that have the potential to be worn on carried by the Soldier in a combat environment, should be produced in the Operational Camouflage Pattern. This also includes any case, pouch, or ancillary item that as MOLLE clips included in its design and is intended for use in conjunction with MOLLE.
- c) For those items worn or carried by the Soldier in conjunction with the uniform, but cannot incorporate the Operational Camouflage Pattern, items should be produced in earth tone colors not darker than Coyote 498 but not lighter than Tan 499 wherever possible. Selection of specific equipment color within this range will be at the discretion of the individual PM. This includes but is not limited to all items associated or supporting Operational Clothing and Individual Equipment, Load Carriage and Individual Weapons and associated enablers (i.e., solid plastics or metal items such as flashlights, canteens, plastic cases, buckles, buttons, clips, snaps, brackets, fittings, sighting, fire control subsystems, Night Vision Devices, laser rangefinders, etc.)
- d) Individual Weapons: Color of individual weapons will be within the color range specified in para c above and at the discretion of the portfolio PM.
- e) It is recommended that all ground based organizational equipment (such as ammo cans, gas cans, equipment cases, bags, etc.) should be produced in earth tone colors on the darker side of the spectrum mentioned in para c above, but not darker than Coyote 498 and in a flat dull finish whenever possible.
- f) The standard and all related color media may be obtained from www.sae.org or SAE International Customer Service, 400 Commonwealth Drive, Warrendale PA 15096. <http://www.sae.org/>

2.1.2.4 Load Carriage

2.1.2.4.1 Modular Lightweight Load-Carrying Equipment (MOLLE)

The MOLLE system is designed to provide an ergonomically designed individual load-carrying system that will minimize the burdens of weight, improve overall system compatibility, and minimize physiological threats to the marine/soldier such as fatigue and heat stress.

STATUS		ACTIVE	
Function:	Load Carrying Platform	Reference Document	CO-PD-02-02P
Initial Capability Release		Full Capability	
Planned Retirement		Controlling Office	DLA Troop Support, 700 Robbins Avenue, Philadelphia, PA 19111-5096
Link	N/A		

2.1.2.5 USB 2.x / Nett Warrior Personal Area Network

USB 2.x and the Nett Warrior (NW) Personal Area Network (PAN) provide power, control, and data transfer throughout the Nett Warrior system. Connections are made between each component via a universal interconnect cable with adapters used when necessary for commercial components. Each standard interconnect cable consists of USB 2.0/1.1 data pair and a NW power bus consisting of a nominal 16-volt power, regulated 5-volt power, ground, and status monitoring lines.

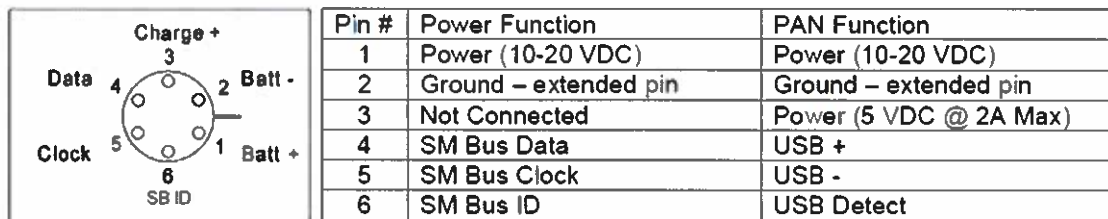


Figure 3 - NW PAN Connector Configuration & Pinouts

STATUS		ACTIVE	
Function:	NW Power and Data Transfer	Reference Document	Interface Control Document Nett Warrior Tactical Capability Suite v3.x/ v4.x
Initial Capability Release	2014	Full Capability	2014
Planned Retirement	N/A	Controlling Office	PM SWAR, PdM SMS, Nett Warrior
Link	N/A		

2.1.2.6 [RESERVED]

2.1.2.6.1 USB 3.x / USB-C

[RESERVED]

2.1.2.7 Intra-Soldier Wireless (ISW)

Intra-Soldier Wireless (ISW) is a secure high bandwidth wireless personal area network technology (WPAN) that provides on-body wireless networking capability. ISW uses the unregulated Ultra-Wideband (UWB) spectrum with limited transmission power, making it inherently a low probability of detection (LPD), low probability of intercept (LPI) system. It is designed to operate in congested spectrum environments making it jam resistant (AJ) as well. ISW is FCC certified and compliant with the ECMA 368 Wi-Media standard. It uses an Army owned networking protocol called SolNet (Soldier Network). The ISW hardware is a subsystem embedded in a host system and forms an on-body network from two (2) to fourteen (14) devices. ISW has been tested to support high density WPAN conditions of fifteen (15) Soldiers, each with multiple devices running independent on-body networks, within a 25 square foot area.

CPE Ground coordination with NSA (NSA Memorandum CATS 2016-9843), NSA requires National Institute of Standards and Technology (NIST) Federal Information Processing Standard Publication (FIPS) 140-2 certification with at least security Level 2 to protect Sensitive But Unclassified (SBU) data at the Tactical Edge. The Gen I ISW AES 128-bit encryption modules were NIST Certified in 2019, and the ISW Gen II AES 256-bit encryption were NIST certified in 2022. We are working with NSA to certify the Gen II modules certified to support Secret And Below (SAB) data protection requirements.

STATUS		ACTIVE	
Function:	Intra-Soldier Wireless.	Interface Control Document Title	Multiple Core documents listed below
Initial Capability Release	2019	Full Capability	2022
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Maneuver Sensors
Link			

Document Number	Document Title	Topic Area
A3309770	ISW Embedment guide	Core
A3309771	ISW Protocol Specification	Core
A3309772	ISW LOW-POWER SERIAL ICD	Core
A3309773	ISW SIMPLIFIED PARALLEL BUS ICD	Core
A3309774	ISW USB INTERFACE CONTROL DOCUMENT	Core
A3309775	ARC4 SSS ISW MANAGER ICD	Core
A3309778	ISW CONNECT ICD	Core
A3309776	ISW SOLNET PROTOCOL	Core
A3309776-1	ISW SOLNET PROPERTY DESCRIPTOR SPECIFICATION	Core
A3309777	ISW OBSERVER SESSIONS SPECIFICATION (in-progress)	Core

2.1.2.8 Legacy Serial

This standard defines the electrical characteristics of digital interface circuits used in military communication systems. It covers both balanced and unbalanced configurations, standard for legacy serial interfaces like RS-232 and RS-422.

STATUS		ACTIVE	
Function:	Electrical Characteristics of Digital Interface Circuits	Reference Document	MIL-STD-188
Initial Capability Release	30-SEP-1985	Full Capability	25-SEP-2024
Planned Retirement	N/A	Controlling Office	US Army Combat Capabilities Development Command, C5ISR Center
Link:	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=35573		

2.1.2.9 Digital Situational Awareness Messaging

This standard provides the Department of Defense (DoD) and other agencies with a joint interoperability standard, Cursor on Target (CoT). The CoT standard includes the CoT core Event schema, subschemas, elements, attributes, and protocol standards. These standard components are essential for the design, development, test,

certification, fielding, and continued operation of CoT enabled automated tactical data systems (TDSs) which support the requirement to exchange timely, critical, command and control information across joint boundaries.

STATUS		ACTIVE	
Function:	Cursor on Target Standard Messaging	Reference Document	MIL-STD-6090
Initial Capability Release	15 JUNE 2022	Full Capability	2024
Planned Retirement	N/A	Controlling Office	DISA
Link			

2.1.2.10 Soldier Tactical Power

Soldier Tactical Power provides the Soldier-specific materiel solutions under the Small Unit Power CDD, which includes central energy storage devices (i.e., batteries), power generation for the Soldier & Squad (i.e., generator), power management for the squad (i.e., scavengers), and recharge capability for the dismounted and mounted Squad and Platoon (i.e., charger).

2.1.2.10.1 System Management Bus (SMBus) Power Source

Soldier borne computing systems and associated equipment draws power from a system management bus (SMBus) compatible battery. These batteries are considered smart batteries and can communicate their status with power consumers and battery chargers. This data exchange is based on SMBus communication standards. The referenced documents below include a SMBus compatible battery and its associated connector configuration, and the specific messaging used by CPE Ground devices.

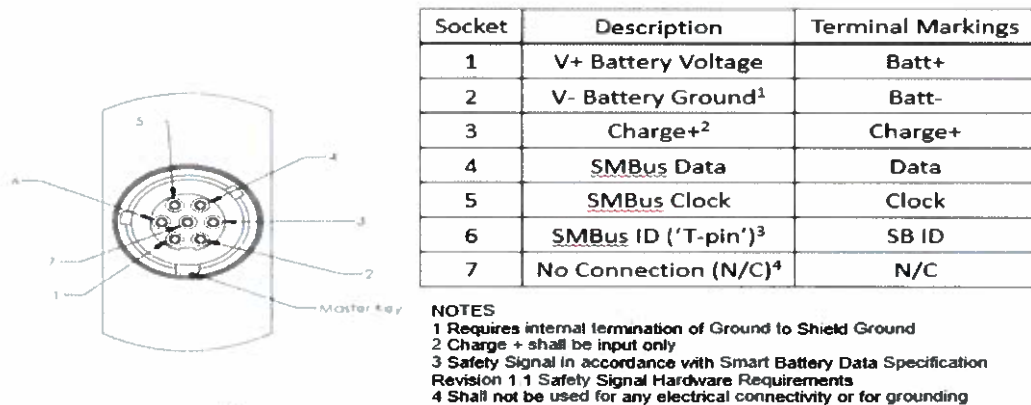


Figure 5 - SMBus Battery Connector Configuration & Pinout

STATUS		ACTIVE	
Function:	Battery, Rechargeable, Sealed, Conformal Wearable Battery (CWB), BB-2525	Reference Document	MIL-PRF-32383/4X
Initial Capability Release	Legacy	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	PM MBCT Enablers, DEVCOM C5ISR
Link	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=284838		

Status		ACTIVE	
Function:	Integrated Soldier Power & Data System-Core (ISPDS-C) to End User Device (EUD) Communications Interface Control Document (ICD)	Reference Document	ISPDS-C_EUD_ICD_092122018
Initial Capability Release	2018	Full Capability	TBD
Planned Retirement	N/A	Controlling Office	PM MBCT Enablers
Link	TBD		

2.1.2.10.2 USB Power Delivery (USB PD) Power Source

The latest versions of the Universal Serial Bus (USB) standards included provisions to provide system power at level above previous standards. These new power levels are sufficient to power electronics systems up to and including commercial laptops. This new subset of the USB standard is the USB Power Delivery (PD) standard. USB PD is new to commercial products and emerging in some Soldier borne equipment and power sources. The standards below represent the industry standard for USB PD and the added capability for the Army beyond standard USB PD messaging.

STATUS		ACTIVE	
Function:	Universal Serial Bus Power Delivery Specification	Reference Document	USB_PD_R3_1 v1.8 2023-04
Initial Capability Release	N/A	Full Capability	3/24/2026
Planned Retirement	N/A	Controlling Office	Universal Serial Bus Implementers Forum (USB-IF).
Link	https://www.usb.org/document-library/usb-power-delivery		

https://www.cto.mil/wp-content/uploads/2025/05/API-Tech-Guidance-MVCR-2-2025_0516-Cleared.pdf

2.1.3 Weapon

2.1.3.1 Accessory Mounting Rail

Soldiers require the ability to detect, identify, and employ lethal and non-lethal effects to designated threats. These capabilities should serve under all potential conditions a soldier may encounter in all climatic environments and all types of operational environments. To support these requirements CPE Ground is responsible for providing a standardized interface for mounting accessories for small arms weapons.

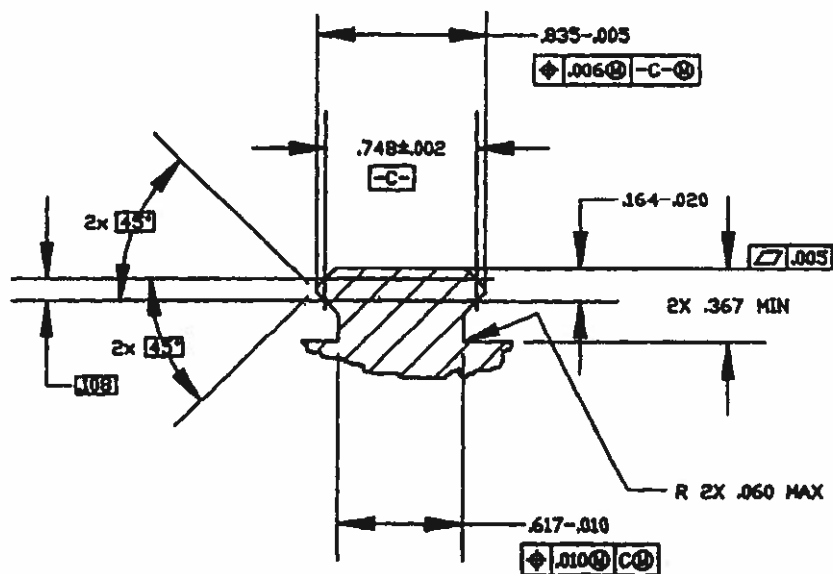
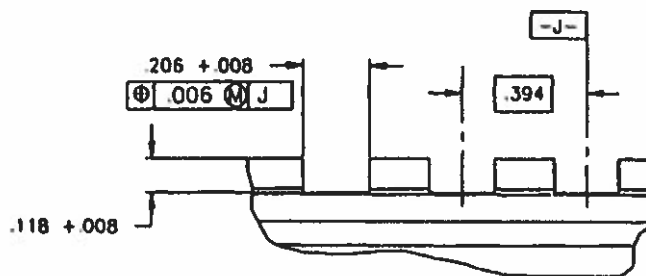


Figure 6: Accessory Mounting Rail Profile Source MIL-STD-1913 Change 1



Note

1. Groove dimensions apply to all grooves. The number of grooves are dependant on application.
2. Center to center dimension applies between adjacent grooves.

Figure 7: Recoil Groove Source: MIL-STD-1913

STATUS		ACTIVE	
Function:	Accessory Mounting Rail	Reference Document	MIL-STD-1913
Initial Capability Release	Legacy	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	Combat Capabilities Development Command Armaments Center
Link	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=115317		

2.1.3.2 Optical Center Line Over Bore

To ensure alignment of image intensifier (I2) and non-visible spectrum imagers with the primary day sighting system, all devices intended to mount on the 12 o'clock rail of a weapon shall have an optical center line of 1.5 +/- 0.1 inches from the top of the rail.

2.1.3.3 40mm Low Velocity Ammunition

To support development, optimization, and integration of pouches for 40mm low velocity grenades, the top-level drawing 13014961 of the M433 HEDP cartridge shall be used as a representative sample for weight and sizing.

	STATUS	ACTIVE	
Function:	40mm Low Velocity Cartridge	Reference Document	MIL-DTL-32705
Initial Capability Release	Legacy	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	Combat Capabilities Development Command Armaments Center
Link	https://assistca.dla.mil/online/doc_analysis/doc_info_general.cfm?ident_number=284927&scope=6d343333		

2.1.3.4 30 Round Magazine for 5.56x45mm Cartridges

To support development, optimization, and integration of pouches for 30 round magazines, the top-level drawing 13058014 of the M4A1 magazine shall be used as a representative sample for weight and sizing.

	STATUS	ACTIVE	
Function:	M4A1 Carbine	Reference Document	MIL-DTL-71186B
Initial Capability Release	Legacy	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	Combat Capabilities Development Command Armaments Center
Link	https://assistca.dla.mil/online/doc_analysis/doc_info_general.cfm?ident_number=113506&scope=6d344131		

2.1.3.5 20 Round Magazine for 6.8x51mm Cartridges

To support development, optimization, and integration of pouches for 20 round magazines, the top-level drawing xxxxx of the M-7 magazine shall be used as a representative sample for weight and sizing.

STATUS		ACTIVE	
Function:	M7 Rifle	Reference Document	PD-XM7
Initial Capability		Full Capability	20 April 2023
Release	N/A	Controlling Office	PM SL, PdM SW
Planned Retirement			
Link			

3.0 Acronyms

Acronym/ Abbreviation	Definition
CPE	Capability Program Executive
PM	Program Manager
RA	Reference Architecture
RCVR	Receiver
RF	Radio Frequency
RFC	Request For Comment
RMF	Risk Management Framework
SA	Situational Awareness
SCRM	Supply-Chain Risk Management
SEP	System Engineering Plan
SolNet	Soldier Net
SoS	System of Systems
SoSA	System of Systems Architecture
SoSE&I	System of Systems Engineering & Integration (Directorate)
SRD	System Requirements Document or System Requirements Definition
SS	System Survivability
SSE	System Security Engineering
StdV	Standards View
STRI	Simulation, Training, and Instrumentation
SV	Systems View
SWaP	Size, Weight, and Power
SysML	OMG Systems Modeling Language TM
T&E	Test and Evaluation
TAI	Temps Atomique International
TLS	Transport Layer Security
TR	Tactical Radios
TRADOC	U.S. Army Training and Doctrine Command
TSN	Trusted Systems and Network
TTRA	Technology Targeting Risk Assessment
TLS	Transport Layer Security
UAF	Unified Architecture Framework

UARC	University Affiliated Research Center
UE	User Equipment
Unicode	Universal Coded Character Set
UPDM	Unified Profile for the Department of Defense (DoD) Architecture Framework (AF) (DoDAF) and the Ministry of Defense (MOD) AF (MODAF)
URL	Uniform Resource Locator
USB	Universal Serial Bus
USD (AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
UTC	Coordinated Universal Time
VOLT	Validated On-Line Threat