



Program Executive Office Soldier

Soldier Systems Reference Architecture

Version 1.0

30 January 2024

Distribution Statement A:
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Controlled by: PEO Soldier
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Category: Distribution Statement: A
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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 PEO 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

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Executive Summary

Version 1.0 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 is applicable to the Soldiers platform. PEO Soldier's 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 a modular based design.

1.0 Introduction

PEO Soldier'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 PEO 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 PEO Soldier 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 PEO 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 PEO Soldier equipment. This will allow other Department of Defense (DoD), North Atlantic Treaty Organization (NATO), and Industry partners to understand standards that are in place with the PEO. 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. As illustrated in Figure 1, the Reference Architecture will provide a foundation for the PEO and Project Managers to develop future technical baselines focusing on equipment worn, carried, or consumed by the individual Soldier and his/her duty position. The RA will also work in conjunction with the ASA to define solution specific architecture products in support of PEO Soldier model-based engineering efforts (MBSE).

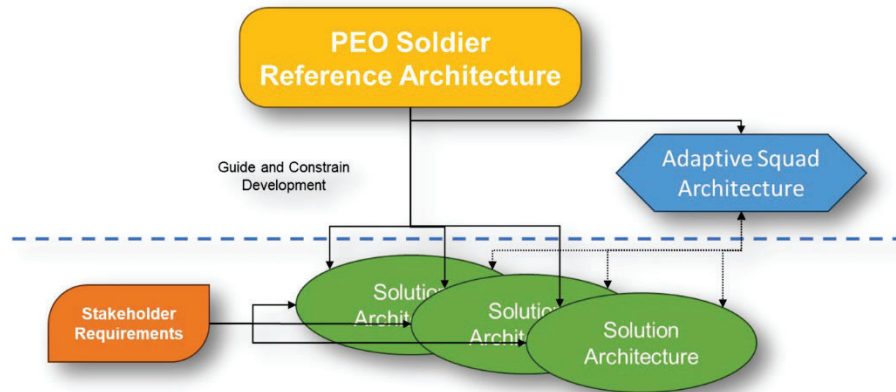


Figure 1 - Reference Architecture in relation to Solution Architectures (modified) (eabok.org, n.d.)

1.2 Interoperability

The Soldier Reference Architecture will directly support efforts to ensure interoperability between PEO Soldier 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 on 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 the reference architecture. The Soldier Systems Reference Architecture will apply to all products being issued by PEO Soldier. Implementation of these standards against existing products will be managed by Project Managers based on direction from PEO Soldier. 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

FED STD 595/20180	Tan 499
FED STD 595/20150	Coyote 498
MIL-PRF-32432A	Military Combat Eye Protection
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-32383/4X	Battery, Rechargeable, Sealed,
	Conformal Wearable Battery
	(CWB), BB-2525
CO-PD-02-02P	Load Carrying Platform
MIL-STD-6090	Cursor on Target, Standard
	messaging
MIL-STD-1913	Accessory Mounting Rail
MIL-DTL-32705	40mm Low Velocity Cartridge
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 PEO Soldier 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 equipped Leader or Integrated Visual Augmentation System equipped Leader. The specific solution architectures will further define these higher-level elements into their unique materiel solutions.

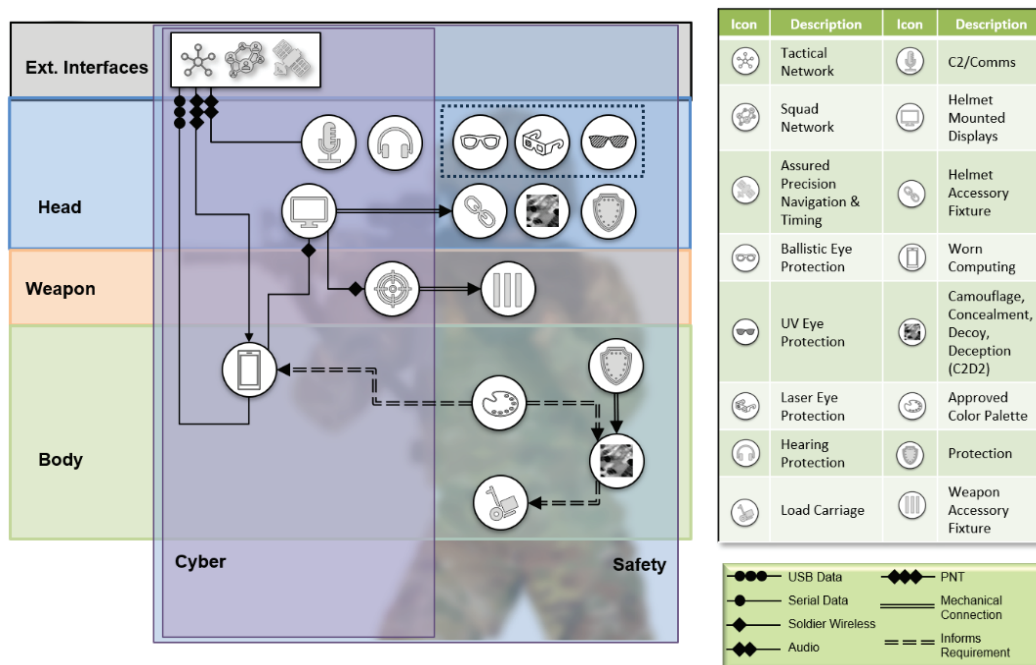


Figure 2 - Reference Architecture Sample - Leader Role

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 flame, 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	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)	Specific document titles and types available after next update.	
Legacy Advanced Combat Helmet (ACH-L)		
Lightweight Advanced Combat Helmet (LW ACH)		
Second Generation Advanced Combat Helmet (ACH Gen II)		
Enhanced Combat Helmet (ECH)		
Personnel Armor System for Ground Troops Helmet (PASGT-H)		
Combat Vehicle Crewman Helmet (CVC-H)		
Advanced Combat Vehicle Crewman Helmet (ACVC-H)		
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 is considered a Critical Safety Item (CSI).

STATUS		ACTIVE	
Function:	Military Combat Eye Protection	Reference Document	MIL-PRF-32432A
Nomenclature:	Authorized Protective Eyewear List (APEL).		
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	To Be Provided
Nomenclature	Universal Prescription Lens Carrier (UPLC)		
Initial Capability Release	2010	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
Nomenclature	Spectacles, Aviator's, Multiple Wavelength Laser Protective, EDU-5/P (With Case)		
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
Nomenclature	Design Criteria Standard – Human Engineering		
Initial Capability Release		Full Capability	
Planned Retirement	N/A	Controlling Office	U.S. Army Combat Capabilities Development Command Aviation & Missile Center
Link	N/A		

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	2019
Planned Retirement	N/A	Controlling Office	Product Manager Soldier 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.

STATUS		ACTIVE	
Function:	Tactical Carrier	Reference Document	N/A
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) Second Generation Modular Scalable Vest (MSV Gen II).	
Initial Capability Release	Legacy	Full Capability	
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) Xenoteria 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	To be provided at next revision
Shooters Cut Torso (Small)	ENHANCED SMALL ARMS PROTECTIVE INSERT SIZE X-SMALL SHOOTERS CUT (FINISHED PRODUCT)	To be provided at next revision

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 solution.

STATUS		ACTIVE	
Function:	Camouflage	Reference Document	
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)	
Initial Capability Release		Full Capability	
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
Nomenclature	Operational Camouflage Pattern		
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	7E8A0175E47B4BE093FD3B343EA26D3E.pdf (dla.mil)		

STATUS	ACTIVE
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Function:	Cloth Flame Resistant/ Operational Camouflage Pattern	Reference Document	MIL-PRF-32635
Nomenclature	N/A		
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://assistca.dla.mil/Transient/B8FDF98F8D174A19A79930683E210E53.pdf		

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 PEO Soldier equipment should do the following:

- a) In general, PEO Soldier 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 or 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 has 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 enables (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.

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
Nomenclature	N/A		
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 Universal Serial Bus 2.x / Nett Warrior Personal Area Network

Universal Serial Bus (USB) 2.x and the Nett Warrior (NW) Personal Area Network (PAN) provides 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 cables 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.

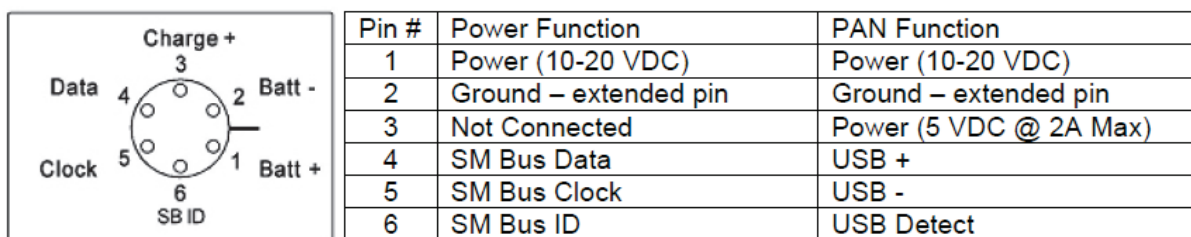


Figure 3 - NW PAN Connector Configuration & Pinouts

STATUS		ACTIVE	
Function:	NW Power and Data Transfer	Reference Document	Interface Control Document Nett Warrior Tactical Capability Suite v3.x/ v4.x
Nomenclature	Nett Warrior PAN		
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 Universal Serial Bus 3.x / Integrated Visual Augmentation System Personal Area Network

The USB interface is used to connect the IVAS Squad Radio using the Squad Radio Cable. It also supports USB 3.1 Gen 1 SuperSpeed data transfer rates (5 Gbps) and offers USB Type A support (cable with a compatible plug connected to the Puck that's terminated with a USB Type A connector) so that other USB devices can be connected. The USB 1 interface is also a dual role data port for data communication. In normal operation, the Puck is the USB host and connected radio is the USB device. When using a cable terminated with a USB Type A connector, the Puck can be connected to a host computer and takes on the role of a USB device; it is used for device updates using the USB Flashing Cable.

STATUS		ACTIVE	
Function:	IVAS Interconnect	Reference Document	IVAS Interface Control Document
Nomenclature	N/A		
Initial Capability Release	2023	Full Capability	TBD
Planned Retirement	N/A	Controlling Office	PdM IVAS
Direct Request to:	Product Manager, Integrated Visual Augmentation System (PM IVAS), Fort Belvoir, VA 22060		

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.

PEO Soldier 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 Secure 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
Nomenclature	ISW		
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

[RESERVED]

2.1.2.9 Digital Situational Awareness Messaging

This standard provides the 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.

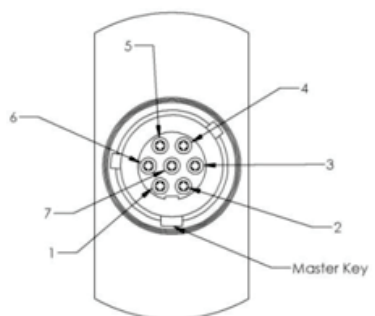
STATUS		ACTIVE	
Function:	Cursor on Target Standard Messaging	Reference Document	MIL-STD-6090
Nomenclature	N/A		
Initial Capability Release	15 JUNE 2022	Full Capability	2024
Planned Retirement	N/A	Controlling Office	DISA
Link			

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 PEO Soldier devices.



Socket	Description	Terminal Markings
1	V+ Battery Voltage	Batt+
2	V- Battery Ground ¹	Batt-
3	Charge+ ²	Charge+
4	<u>SMBus</u> Data	Data
5	<u>SMBus</u> Clock	Clock
6	<u>SMBus</u> ID ('T-pin') ³	SB ID
7	No Connection (N/C) ⁴	N/C

NOTES

1 Requires internal termination of Ground to Shield Ground

2 Charge + shall be input only

3 Safety Signal in accordance with Smart Battery Data Specification
Revision 1.1 Safety Signal Hardware Requirements

4 Shall not be used for any electrical connectivity or for grounding

Figure 4 - SMBus Battery Connector Configuration & Pinout

STATUS		ACTIVE	
Function:	Battery, Rechargeable, Sealed, Conformal Wearable Battery (CWB), BB-2525	Reference Document	MIL-PRF-32383/4X
Nomenclature	CWB		
Initial Capability Release	Legacy	Full Capability	Legacy
Planned Retirement	N/A	Controlling Office	PM SWAR, DEVCOM C5ISR
Link	https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=27926 8		

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
Nomenclature	N/A		
Initial Capability Release	2018	Full Capability	TBD
Planned Retirement	N/A	Controlling Office	Product Manager Soldier Precision Targeting Devices (SPTD)
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:	Interface Control Document for Software Protocol	Reference Document	TBD
Nomenclature	N/A		
Initial Capability Release	FY25	Full Capability	TBD
Planned Retirement	N/A	Controlling Office	DEVCOM C5ISR
Link			

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	N/A
Planned Retirement	N/A	Controlling Office	Universal Serial Bus Implementers Forum (USB-IF).
Link	https://www.usb.org/document-library/usb-power-delivery		

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 PEO Soldier is responsible to provide a standardized interface for mounting accessories for small arms weapons.

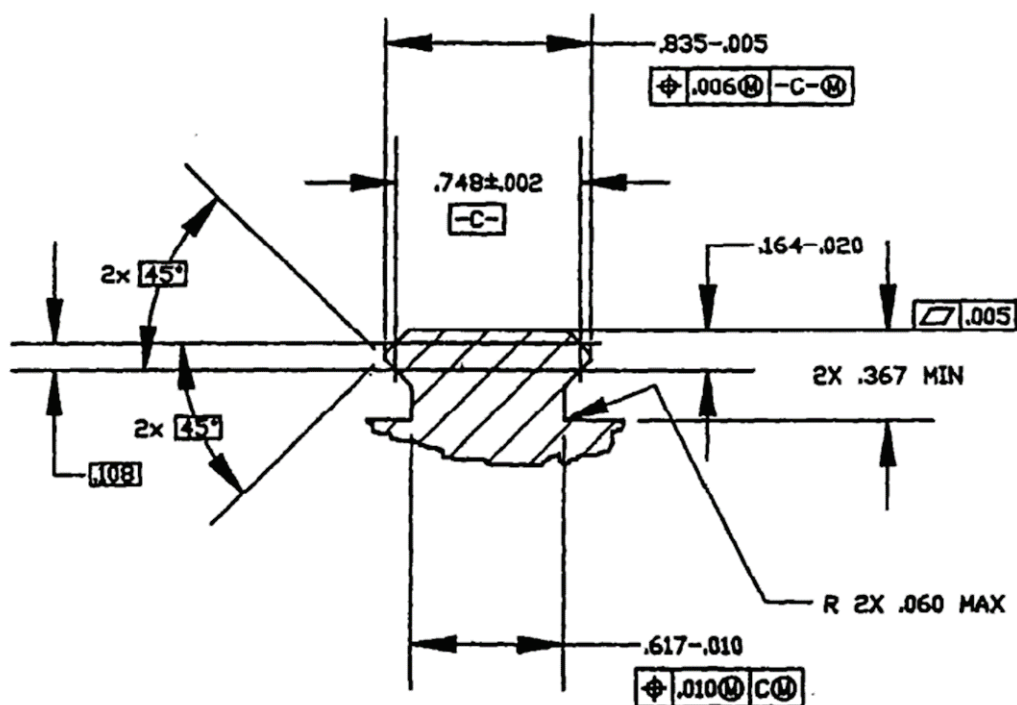
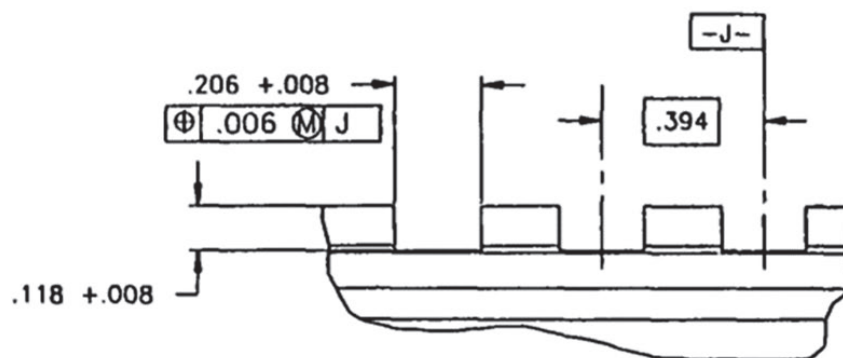


Figure 5: Accessory Mounting Rail Profile Source MIL-STD-1913 Change 1



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 6: Recoil Groove (Source: MIL-STD-1913)

STATUS		ACTIVE	
Function:	Accessory Mounting Rail	Reference Document	MIL-STD-1913
Nomenclature	Dimensioning of Accessory Mounting Rail for Small Arms Weapons		
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
Nomenclature	Cartridge, 40 Millimeter, HEDP – M433E1 Loading, Assembling, and Packing		
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=284927		

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
Nomenclature:	Carbine, 5.56 Millimeter: M4A1		
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=113506		

Appendix A. Acronyms

Acronym/ Abbreviation	Definition
ACH	Advanced Combat Helmet
ACH Gen II	Second Generation Advanced Combat Helmet
ACH-L	Legacy Advanced Combat Helmet
ACVC-H	Advanced Combat Vehicle Crewman Helmet
AES	Advanced Encryption Standard
AJ	Anti-Jam
APEL	Authorized Protective Eyewear List
ASA	Adaptive Squad Architecture
BPP	Blast Pelvic Protector
BCS	Ballistic Combat Shirt
BCT	Ballistic Combat Trouser
C2	Command and Control
C2D2	Camouflage, Concealment, Decoy, Deception
CDD	Capability Development Document
CoT	Cursor on Target
CSI	Critical Safety Item
CVC-H	Combat Vehicle Crewman Helmet
CWB	Conformal Wearable Battery
DAPS	Deltoid and Axillary Protection System
DAPS	Dismount Assured PNT System
DoD	Department of Defense
DLA	Defense Logistics Agency
ECH	Enhanced Combat Helmet
ENVG-B	Enhanced Night Vision Goggle – Binocular
ESAPI	Enhanced Small Arms Protective Insert
FIPS	Federal Information Processing Standard Publication
F-IOTV	Female Improved Outer Tactical Vest
GSA	General Services Administration
HEDP	High Explosive Dual Purpose
ICD	Initial Capabilities Document
ICD	Interface Control Document
IHPS Gen I	First Generation Integrated Head Protection System
IHPS RS	IHPS Retention System
IOTV	Improved Outer Tactical Vest

IRS	Improved Retention System
IVAS	Integrated Visual Augmentation System
LPD	Low Probability of Detection
LPI	Low Probability of Intercept
LW ACH	Lightweight Advanced Combat Helmet
MBSE	Model-based systems engineering
mm	millimeter
MOLLE	Modular Lightweight Load Carrying Equipment
MSV	Modular Scalable Vest
NSA	National Security Agency
NATO	North Atlantic Treaty Organization
NG IHPS	Next Generation Integrated Head Protection System
NIST	National Institute of Standards and Technology
NW	Nett Warrior
OTV	Outer Tactical Vest
PAN	Personal Area Network
PASGT-H	Personnel Armor System for Ground Troops Helmet
PD	Product Director
PD	Power Delivery
PdM	Product Manager
PEO	Program Executive Officer
PM	Program Manager
PNT	Precision Navigation and Timing
POG	Protective Overgarment
PUG	Protective Undergarment
RA	Reference Architecture
SaaP	Soldier/Squad as a Platform
SaaS	Soldier as a System
SAB	Secret and Below
SAPI	Small Arms Protective Insert
SBU	Secure but Unclassified
SPCS	Soldier Plate Carrier System
SPE	Soldier Protective Equipment
SL	Soldier Lethality
SMBus	System Management Bus
SMS	Soldier Maneuver Sensors
SolNet	Soldier Net

TDS	tactical data systems
TEP	Torso and Extremity Protection
UPLC	Universal Prescription Lens Carrier
URS	Universal Retention System
USB	Universal Serial Bus
UWB	Ultra-Wideband
VTP	Vital Torso Protection
XSAPI	Xenosoteria Small Arms Protective Insert
WPAN	Wireless Personal Area Network