PMA - 209
Avionics Architecture Team

Embedded Tech Trends

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24 January 2023

Avionics Architecture Team (AAT)

Leads the development and guides platform implementation of Open Architecture (OA) standards, processes, and best business practices for NAVAIR resulting in DoD hardware and software product lines that increase the portability of applications, reuse of components, and the ability to adapt to changing requirements at a faster rate.

These **standards are complimentary**, designed to work together in the **larger system of systems framework** as dictated by mission requirements:

- **FACE™** : Technical framework standard which defines common software message interfaces for real-time, safety-critical areas that require portability & replaceability (USN/USA/USAF)
- **HOST**: Hardware interface standard that defines chassis configuration, small board computer modules, backplanes, and slot profiles for rapid capability upgrades (USN/USAF/USA)
- **SOSA™**: Business / acquisition practices and technical hardware and software environment standard for sensors and C5ISR payloads (USAF/USA)

"Achievement through Collaboration"

Hardware Open Systems Technologies (HOST) Team

- Hardware Open Systems Technologies (HOST) v5.0 Standard
  - Hardware interface standard that **defines chassis configuration**, small board computer modules, backplanes, and slot profiles for rapid capability upgrades. Managed by the Government
- HOST Open VPX (VITA 65)
  - **Standard** for implementing the 6U and 3U small board computer form factors in various platforms
- HOST Smaller Form Factor (TBD: PC/104, VNX VITA 74, etc)
  - Document the Tier 2 and Tier 3 Specifications to incorporate a **smaller form factor** (i.e. smaller than 3U) to accommodate advancing technology within the same or smaller size/space constraints
- HOST Conformance Process
  - Process to test HOST conformance verification in development
- Aligned with Sensor Open Systems Architecture (SOSA™)

HOST and Digital Systems Engineering Transformation

- The HOST standard is a model based standard on the NAVAL Integrated Modeling Environment.
- The tiered structure aligns with reference modeling for acquisition programs on the IME (in progress).
- Slot / Module Profiles with HOST/VITA and conformance requirements and be leveraged entirely in the IME.
- HOST Wiki is included in the Naval Digital Engineering Body of Knowledge.

The HOST Tiered Approach

TIER I: CORE TENETS (Single Document)

Preserve HOST "openness" by establishing universal requirements that apply to all HOST components regardless of core technology

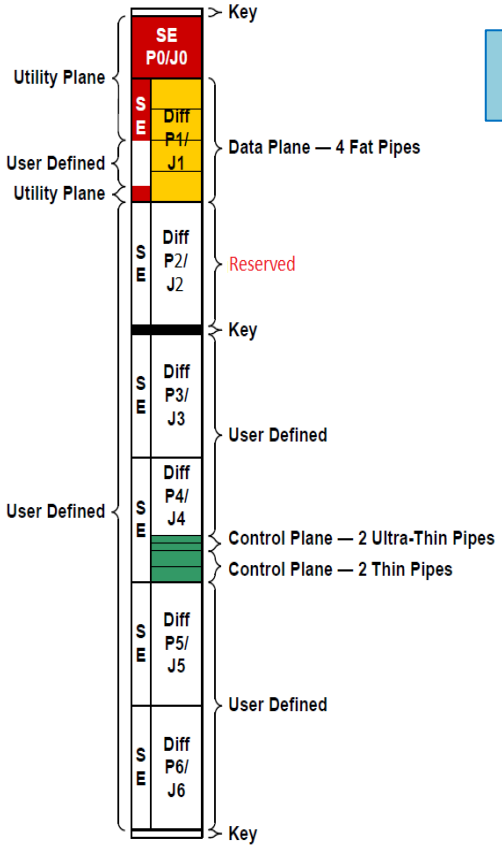
TIER II: CORE TECHNOLOGIES (Document for each core technology chosen)

Define platform agnostic technical requirements for core technologies (Examples are OpenVPX, PC104 and VME)

TIER III: COMPONENT SPECIFICATIONS (Many Documents)

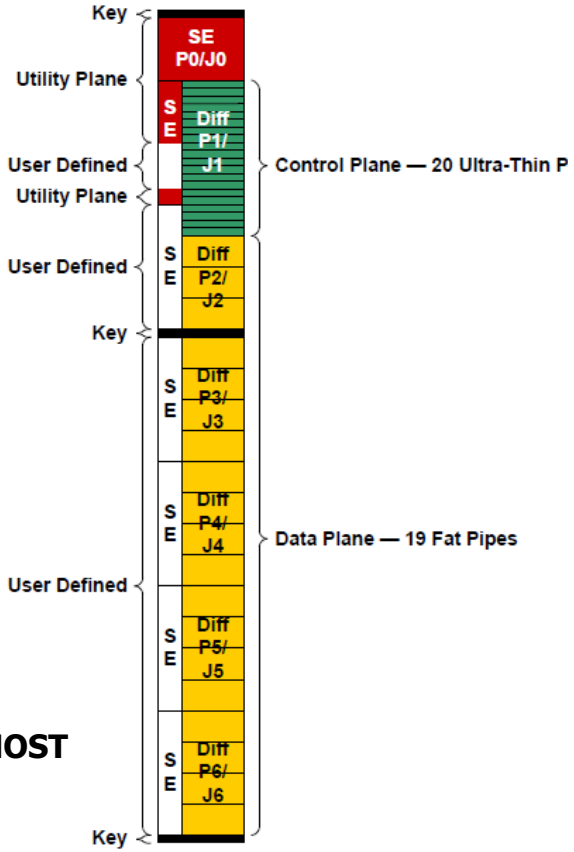
These are component level documents that will guide H/W development to facilitate modular components, Tier III reuse, and upgradeability

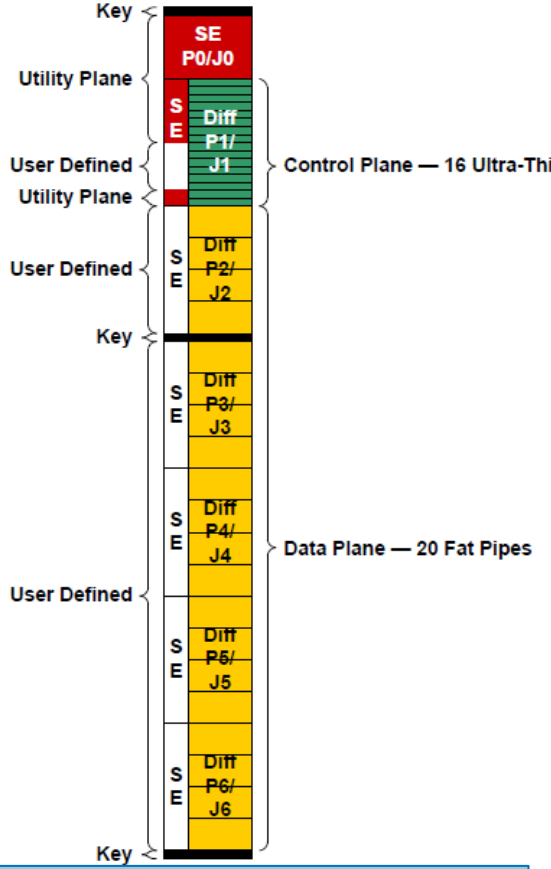
HOST Use of VPX (6U)



Payload Profile: SLT6-PAY-16U20F-HOST

OpenVPX Profile
Switch Profile: SLT6-SWH-20U19F

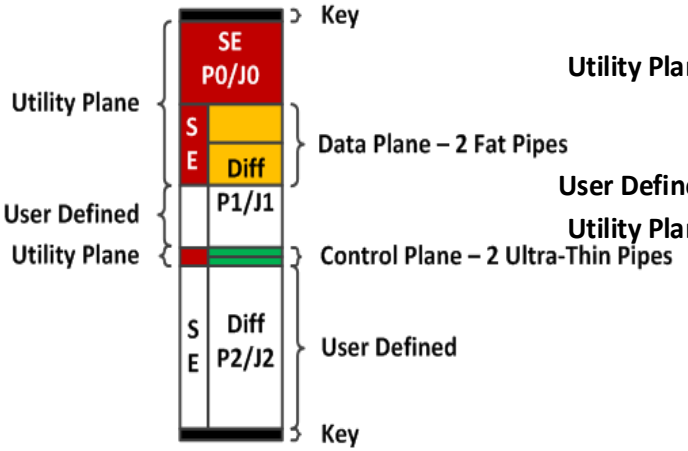


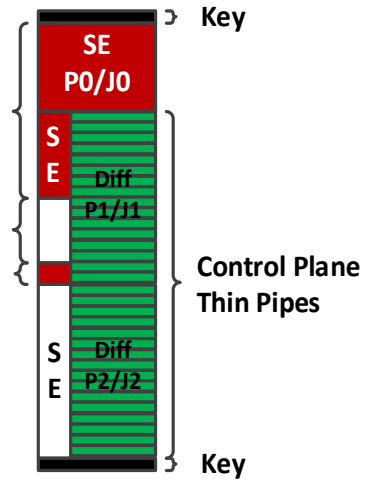


OpenVPX Profile
Switch Profile: SLT6-SWH-16U20F

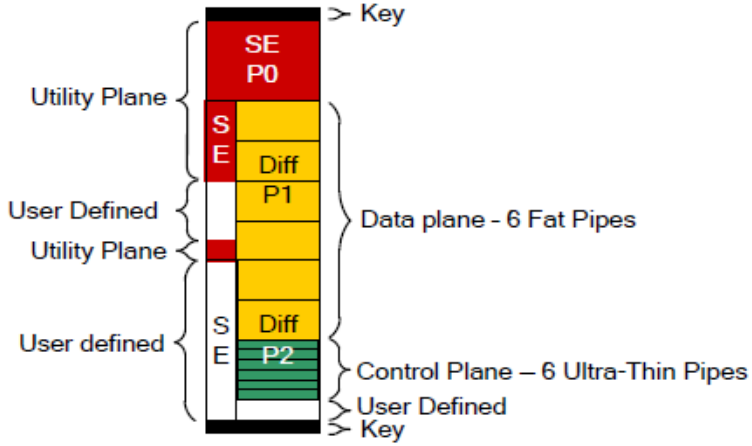
HOST Use of VPX (3U)

Payload Profile: SLT3-PAY-2F2U-HOST





OpenVPX Profile
Switch Profile: SLT3-SWH-6F6U



Switch Profile: SLT3-SWH-32U-HOST

HOST updates included in version 5.0

- Add flow through cooling: water / air
- Add XMI / PCI restrictions
- Elimination of user defined discretes
- Elimination of previously defined deprecated profiles
- Documentation on Wiki Type site via NAVAL Lift Portal

HOST 5.0 slot profile commonality

3U Slot Profiles

Slot Profile Designation	HOST 5.0	SOSA V2 SS1	CMOSS
SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16	X	X	X
SLT3-PER-1F-14.3.2	X		
SLT3-PAY-1F1U1S1S1U1U1K-14.6.14-n	X	X	
SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-n	X	X	X
SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-n	X	X	
SLT3-PAY-2U2U-14.2.17	X	X	X
SLT3-SWH-4F1U7U1J-14.8.7-n	X	X	X
SLT3-SWH-6F1U7U-14.4.14	X	X	X
SLT3-SWH-6F8U-14.4.15	X	X	X
SLT3x-TIM-2S1U22S1U2U1H-14.9.2-n	X	X	X
PAY-1F1F2U5S-HOST	X		

6U Slot Profiles

Slot Profile Designation	HOST 5.0	SOSA V2 SS1	CMOSS
SLT6-PAY-4U2U-10.2.8	X	X	
SLT6-SWH-16U20F-10.4.2	X		
SLT6-PAY-4F1Q1H4U1T1S1S1TU2U2T1H-10.6.3-n	X	X	
SLT6-PAY-4F2Q1H4U1T1S1S1TU2U2T1H-10.6.4-n	X	X	X
SLT6-PAY-4F1Q1H4U1T1S1S1TU2U2T2H-10.6.5-n	X	X	
SLT6-SWH-14F16U1U15U1J-10.8.1-n	X	X	X

HOST Conformance

- The HOST documentation has defined a Verification Authority
- The VA is not certified currently. Any company can take the Hardware Verification Matrix and develop Test Procedures to comply with the standard.
- FY23 is focusing heavily on the Conformance Paradigm for HOST

Questions?