



# PNT Integrated Mission Delta

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DSI Assured PNT Summit

Col Andrew Menschner  
May 30, 2024

Highest Overall Classification:

UNCLASSIFIED

SCIMUS VIAM



# Agenda

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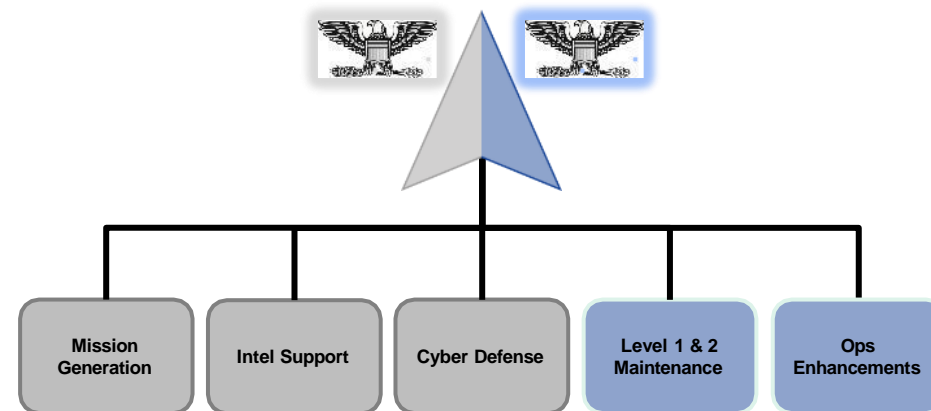
- Integrated Mission (IMD) Delta Purpose
- IMD & Systems Delta Mission Areas & Workload Distribution
- IMD Command Structure
- PNT Delta (Provisional) Units
- Restructuring Process (How We Got Here)
- Successes for the PNT Delta (P) IMD

# Integrated Mission Delta Purpose

**“Over more than two decades, we have optimized to support post-9/11 conflicts and demands; this is not what the nation needs for the coming decades of strategic competition,” -SecAF**



**“It is essential that all elements of readiness - people, training, equipment and sustainment - fall into the same organizational structure, and that we create unity of command around those elements at the lowest possible level.” -CSO**



**Increase Unity of Command for readiness and Unity of Effort for capability development**



# *Integrated Mission Delta Purpose*

- ***Unified Mission Readiness*** (UMR) will strengthen unity of command for readiness and energize unity of effort for capability development by organizing Space Force activities around mission areas rather than functional specialties.
- To achieve UMR, the Space Force will prototype two new types of Deltas: ***Integrated Mission Deltas*** (IMDs) for readiness and ***System Deltas*** (SYDs) for capability development.

## Expected Outcomes

Accountability aligned for full-spectrum readiness  
Leadership and career path agility  
Tighter coupling of MX & enhancement w/ ops needs

# Unity of Effort Across Mission Areas

## Systems Delta (SYD)



**Functions:** Design, Develop, Deliver

**Activities:** Requirements development, source selection, tech maturation, risk reduction, engineering design and development, assembly, integration, test, systems acquisitions, block upgrades, new capabilities

## Integrated Mission Delta (IMD)



**Functions:** Generate, Maintain, Enhance

**Activities:** Force generation, combat training, intelligence support, cyber defense, preventive maintenance, anomaly resolution, operations enhancements, mission planning tools



# *PNT Mission Area: SYD and IMD Deltas*

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## **PNT Systems Delta:**

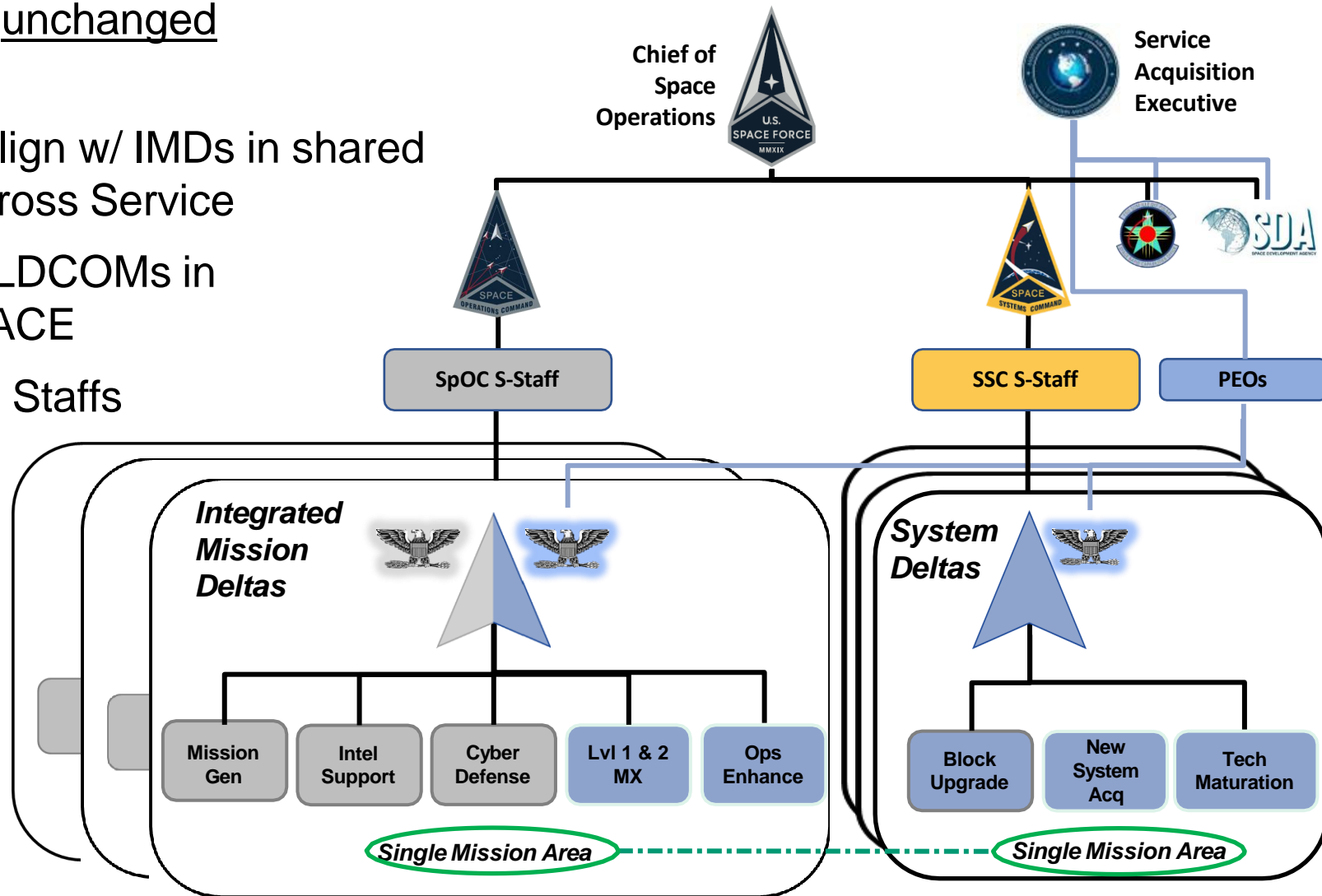
- Military GPS User Equip
- GPSIIF (Follow-on)
- Future development

## **PNT Integrated Mission Delta (P):**

- GPS Satellite Operations:  
2 SOPS / 2 Combat Squadron
- OCX Dev/Transition/Ops:  
Software Engineering Squadron
- PNT System Sustainment:  
Logistics & Ops Sustainment Squadron
- GPS III Launch & Early Orbit Ops/Test:  
Detachment 1

# Service-Level View

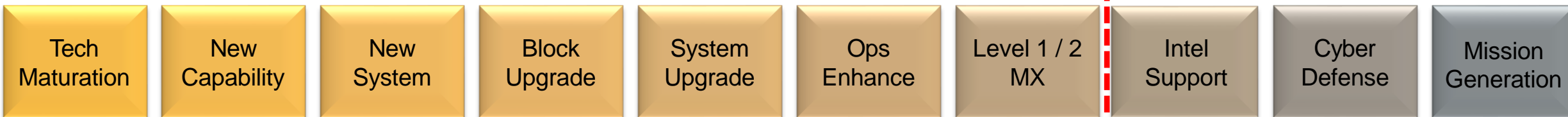
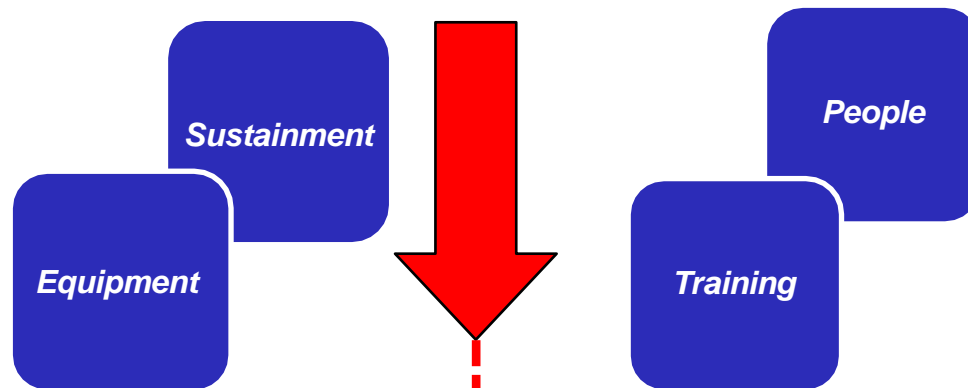
- Chain of acquisition authorities unchanged (SAE ⇒ PEO ⇒ PM)
- Establishes System Deltas to align w/ IMDs in shared mission area—unity of effort across Service
- Rebalances workload across FLDCOMs in advance of USSPACEFOR-SPACE
- Preserves integrity of FLDCOM Staffs



IMDs blend Force Gen w/ Level 1 & 2 MX and Ops Enhancements under SpOC

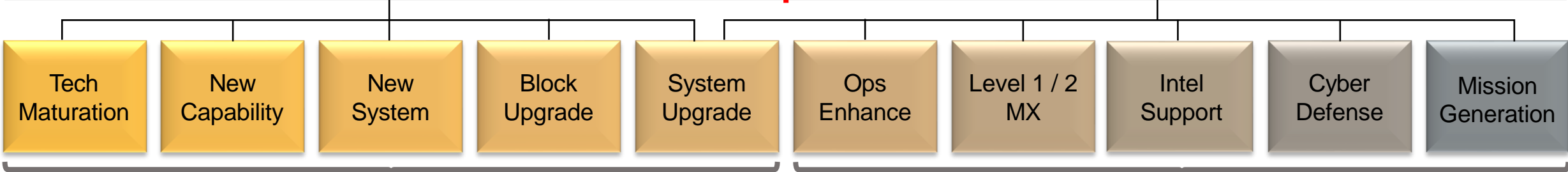
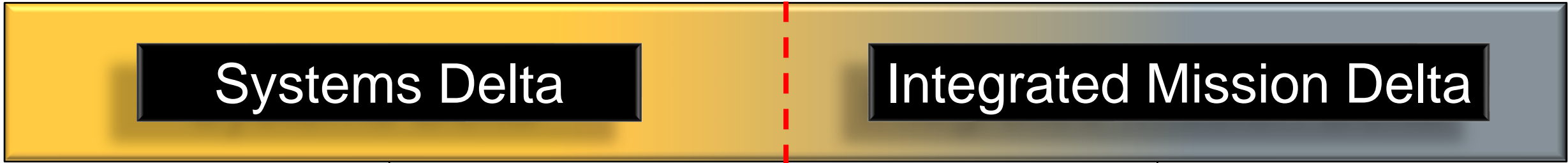
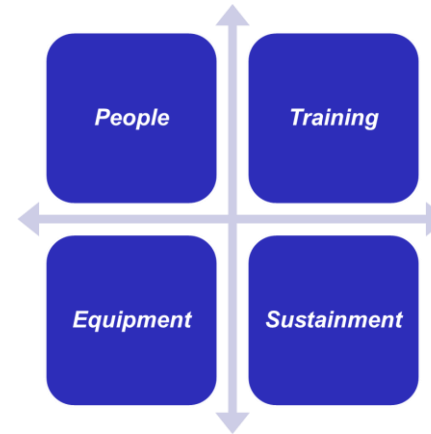
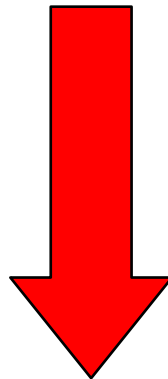
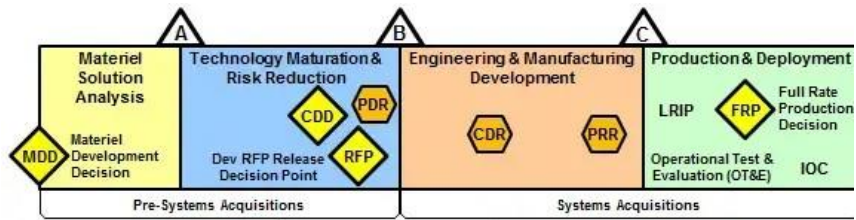
System Deltas continue to perform System Acquisitions under SSC

# PREVIOUS Distribution of Workload



Readiness Fragmented

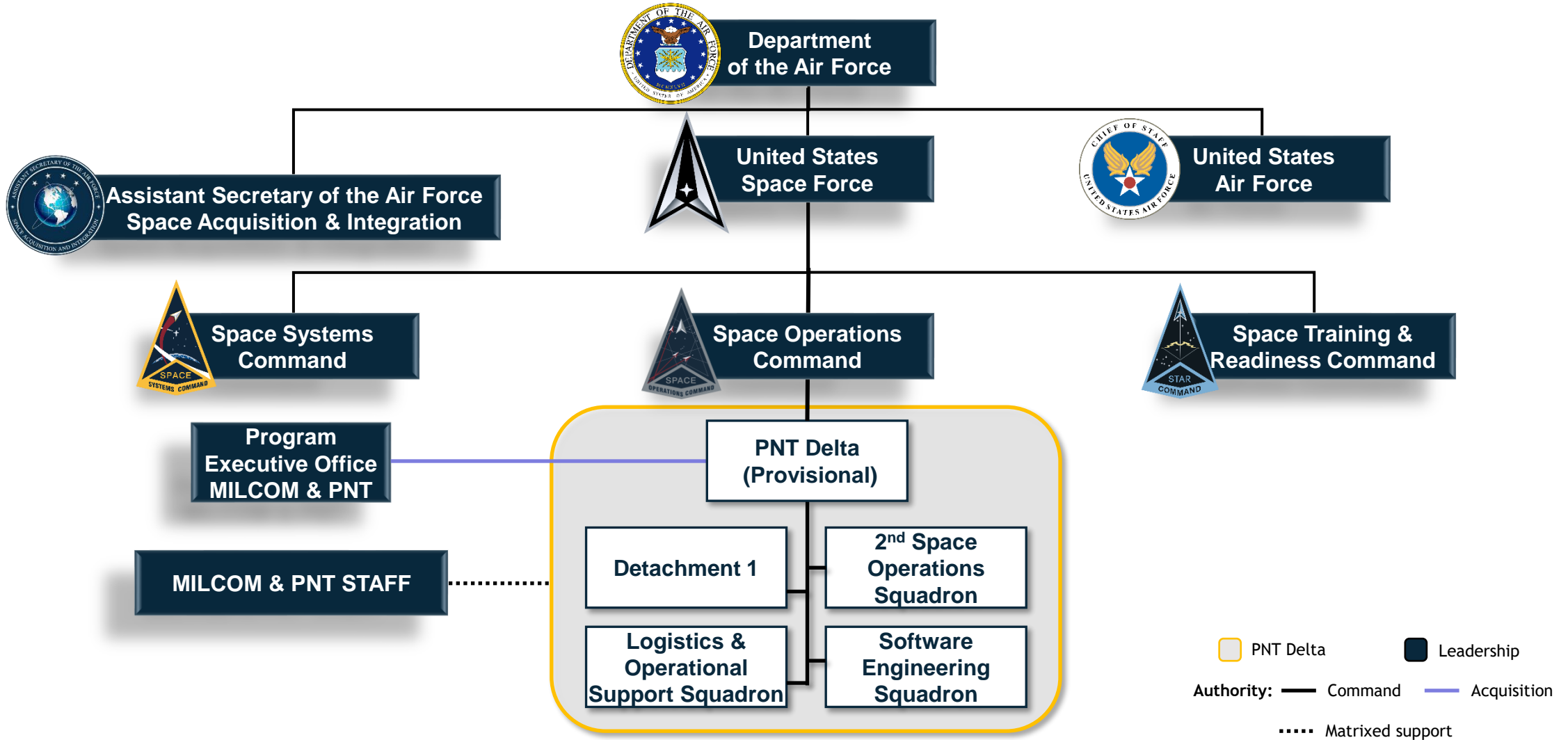
# NEW/CURRENT Distribution of Workload



**Unity of Effort for Capability Development**

**Unity of Command for Readiness**

# PNT IMD (P) Command Structure



# Who We Are



## 2d Space Operations Squadron

Operates the Global Positioning System (GPS) satellite constellation delivering the world's gold standard for positioning, navigation, and timing data to military and civilian users globally.



## Logistics & Operations Support Squadron

Provides sustainment support, delivering updates and modifications to improve operational capabilities of fielded systems.



## Software Engineering Squadron

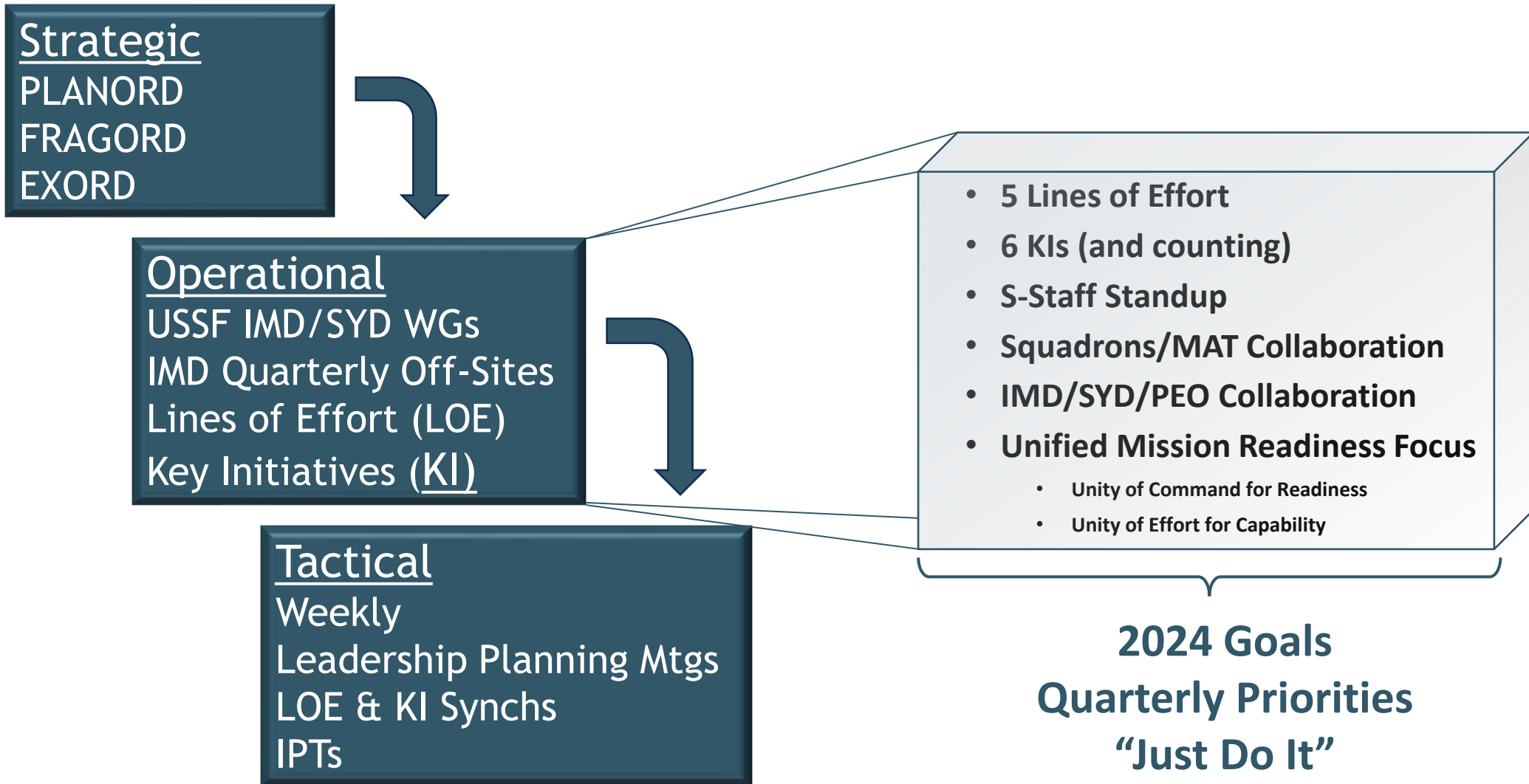
Responsible for development and fielding of the next generation software for all modernized and legacy GPS satellites, laying the groundwork for the future of GPS operations.



## Detachment 1 Launch Operations

Manages, plans, and executes all activities from the satellite leaving the factory through launch and on-orbit check-out, handing the operations over to 2SOPS once the satellite meets operational acceptance criteria.

# PNT Delta (P) - How We Got Here



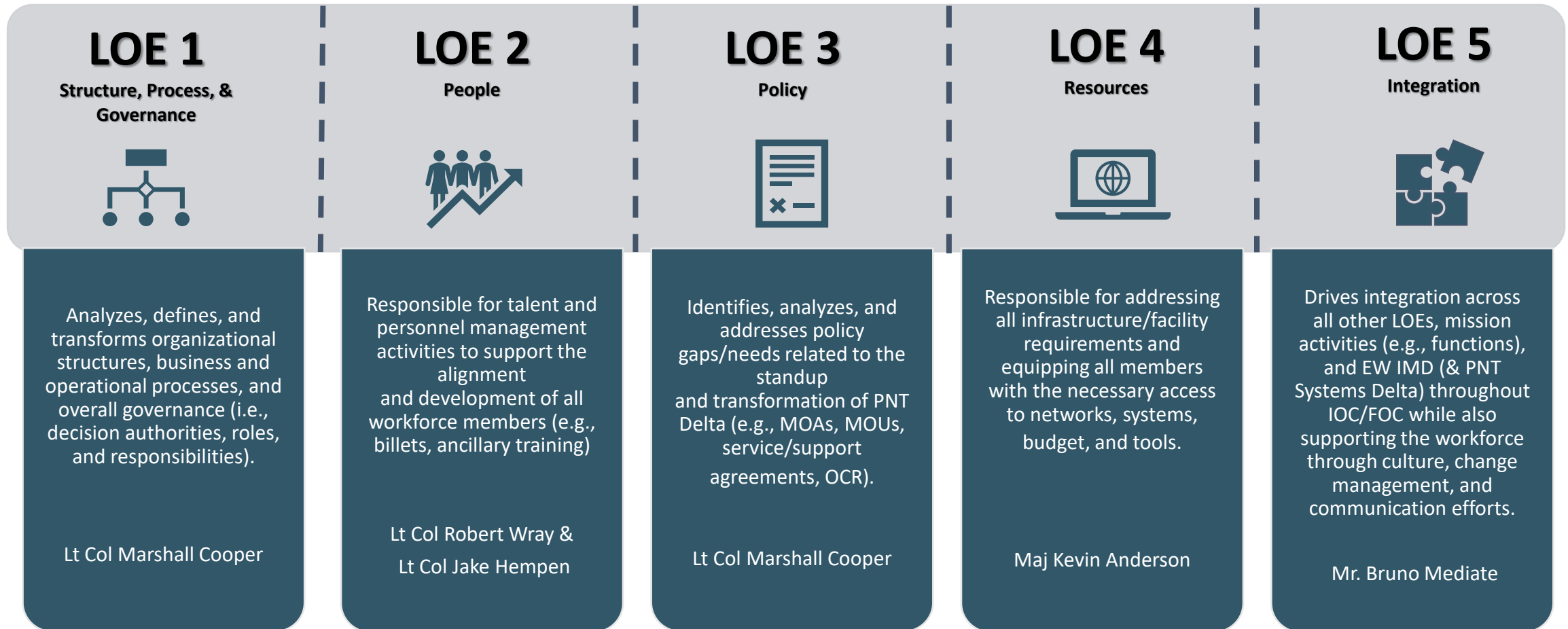
# Best Practice: IOC & FOC

Thanks to the hard work of each LOE Champion, PNT Delta (P) accomplished all DOTmLPF-P IOC criteria by 9 Nov 23!

DOTmLPF-P	IOC Criteria	FOC Criteria
Doctrine	<ul style="list-style-type: none"> <li>N/A due to responsibility over doctrines owned by STARCOM</li> </ul>	<ul style="list-style-type: none"> <li>N/A due to responsibility over doctrines owned by STARCOM</li> </ul>
Organization	<ul style="list-style-type: none"> <li>Org structure in compliance with CSO PLANORD ✓</li> <li>DIRLAUTH with Systems Delta and PEO staff (signed memo that enables coordination) ✓</li> <li>Staff functions initiate collaboration/coordination with one another and PNT IMD ✓</li> </ul>	<ul style="list-style-type: none"> <li>Org structure based on CSO PLANORD but modified to meet desired outcomes</li> <li>Governance structure with external organizations established (e.g., Systems Delta, interface w/ Civil, etc.)</li> <li>Unified processes (e.g., across 4 squadrons, S Staff)</li> <li>Authorities for every level are clearly defined (e.g., Det, Squadrons, PEO)</li> </ul>
Training	<ul style="list-style-type: none"> <li>Staff will be aware of what organizations they must interact with for mission and administrative purposes ✓</li> <li>Stakeholders/partners external to PNT IMD (e.g., Civil, NGA, FAA) will understand impacts of PNT IMD standup ✓</li> </ul>	<ul style="list-style-type: none"> <li>Updated training for updated responsibilities and processes are developed and conducted for assigned personnel</li> <li>Stakeholders/partners external to PNT IMD (e.g., Civil, NGA, FAA) have defined engagement/coordination processes</li> </ul>
materiel	<ul style="list-style-type: none"> <li>Resources/budget accessible to IMD ✓</li> <li>Key personnel have network/tool access to accomplish mission processes ✓</li> </ul>	<ul style="list-style-type: none"> <li>Resources/budget aligned to IMD</li> <li>All personnel have network/tool access to accomplish mission processes</li> </ul>
Leadership	<ul style="list-style-type: none"> <li>Leaders are prepared to engage with staff on career development topics ✓</li> </ul>	<ul style="list-style-type: none"> <li>Leaders are proactively engaging staff on career development topics</li> </ul>
Personnel	<ul style="list-style-type: none"> <li>Personnel billets aligned to IMD ✓</li> <li>Leaders identified for S-Staff and assuming roles ✓</li> </ul>	<ul style="list-style-type: none"> <li>Personnel billets appropriately aligned within IMD sub-units</li> <li>Have an approved OCR</li> </ul>
Facilities	<ul style="list-style-type: none"> <li>Personnel have, at minimum, temporary access to needed facilities to perform mission processes ✓</li> </ul>	<ul style="list-style-type: none"> <li>Personnel have permanent access to needed facilities to perform mission processes (i.e., facilities that house Command team and S Staff; collocated facilities for all sub-orgs)</li> </ul>
Policy	<ul style="list-style-type: none"> <li>Official guidance approved (e.g., Policy Letter, SFI, MD) ✓</li> </ul>	<ul style="list-style-type: none"> <li>Official guidance approved for codification (e.g., PAD, OCR, SFI, MD)</li> <li>Support agreements (e.g., MOUs/MOA) established with all key stakeholders/orgs (e.g., resource alignment, shielding from requirements levied down from SSC/LA AFB)</li> </ul>
Misc.	<ul style="list-style-type: none"> <li>Unit patch developed ✓</li> <li>Identity/branding artifacts developed ✓</li> </ul>	<ul style="list-style-type: none"> <li>TBD</li> </ul>

# Best Practice: Lines of Effort

Thanks to the hard work of each LOE, PNT Delta (P) accomplished all DOTmLPF-P criteria to achieve IOC by 9 Nov 23!



# Best Practice: Key Initiatives

## Actively Working Four Key Initiatives At All Times

  	KI 1	Push Operations Into Acquisitions	Operator Involvement in Critical Program Decisions	
	KI 2	Align Maintenance, Cyber and Product Support Activities	Reorganize Staff, Squadron, and Detachment Functions	
	KI 3	Redefine Process for Maintaining Technical Baseline	Synchronize Efforts with Systems Delta and PEO	
	KI 4	Dedicate Residual GPS Satellites for Test, Training and Tactics Development	Develop Off-Line Operations Capability for OCX Test, Advanced Training, and Tactics Development	
	KI 5	IMD & SYD Integration	Improve Delivery & Combat Capability with Ops/Acq Feedback Loop	
	KI 6	Minimize Transition Risk	Leverage IMD Ops/Acquisition/Sustainment Structure to Further Reduce OCX Transition Risk	

# Alternate Mode Flex Power (AMFP) is on!

- PNT IMD & PNT SYD collaborated in laboratory & live sky testing, control system upgrades, operator training, & TTP development
  - M-Code power will increase further when OCX is fielded & additional SVs are launched
- Provides early use of Military Code to users via global broadcast
  - Constellation still provides a boosted Y-Code signal for legacy GPS User Equipment
- M-Code services may expand fielding of M-Code capable receivers
  - Delivers the best possible means of navigation to accomplish Warfighter missions



Military GPS User Equipment (MGUE) Inc 1 receiver using 7 M-Code satellites in CENTCOM

Army Accelerating M-Code Capable Receiver Purchases

# Record-Setting Accuracy

37 Satellites • 31 Set Healthy  
Baseline Constellation: 24 Satellites

Satellite Block	Quantity	Average Age (yrs.)	Oldest
GPS IIR	7	22.1	26.6
GPS IIR-M	7	16.6	18.4
GPS IIF	11	10.1	13.8
GPS III	6	3.4	5.2

*As of 4 March 2024*

## GPS Signal in Space (SIS) Performance

1 Jan - 7 Mar 24

Average URE*	Best Day URE	Worst Day URE
41.5 cm	26.5cm 27 Mar 24	63.7 cm 20 Jan 24

\*All User Range Errors (UREs) are Root Mean Square values



(URE trend 1Q2024)

Constellation Performance improved 45% from 2023 URE Average (51 cm)



# *Other IMD Successes*

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## **2 SOPS involvement in OCX Factory Qualification Test**

- Met CSO objective of putting system into operator hands well prior to formal ops acceptance
- Allows Development Team to assess operational issues in near-real time and ensures system meets operator needs prior to delivery
- Will be standard for operator engagement in all PNT acquisition decisions moving forward

## **Consolidated Tech Order Development**

- Established PNT Delta (P) S4/6 as office responsible for tech orders & initial ops training
- TO Development and Sustainment under one Delta allows for unified direction and seamless transition of programs

## **PNT Mission Area Intelligence**

- PNT Delta (P) S2 provides dedicated focus on 2 SOPS priority intelligence requests
- Improved NAVWAR execution and support to USSPACECOM in first weeks of activation
- Early example shows power of dedicated support: 2-3 hour resolution vs 3-4 day

# The PNT Delta (P) Team

