



*SPACE AND MISSILE SYSTEMS CENTER*

# Space Development Corps

## Developing & Delivering U.S. Space Power

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**Program Executive Officer for Space Development**

**21 October 2020**



# *Space Development Corps*

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## MISSION

Outpace the threat by developing next-generation space warfighting capabilities today!

## VISION

The Development Corps will be the pioneers establishing strategic space advantages through rapid technology maturation, operations prototyping, and program development. We will continue to push the frontier by creating and demonstrating cutting-edge concepts and turning them into production ready programs.



# Developing Next Generation Space Systems

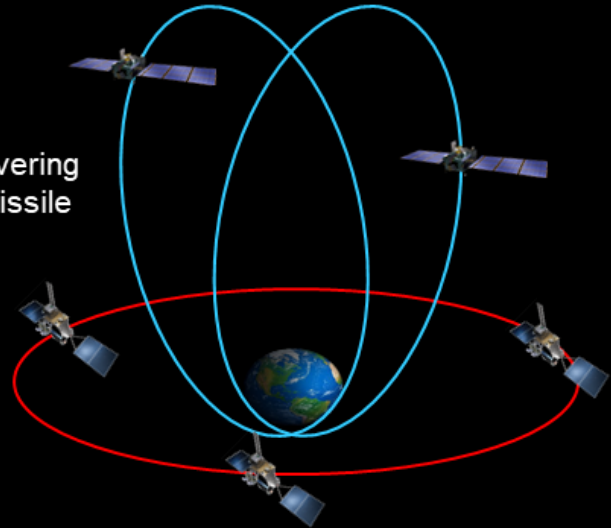
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## Next Gen Overhead Persistent Infrared (OPIR)

Procuring space-based, strategically survivable missile warning satellites to form a new highly resilient Space Warfighting Construct (SWC)-based architecture. Targeting first launches in FY25 (NGG) and FY27 (NGP).

### Next Gen Polar (NGP)

Five vehicle constellation delivering global tactical and strategic missile warning coverage



### Next Gen GEO (NGG)

## Protected Tactical SATCOM (PTS)

Provides robust anti-jam capability, reduced latency, and increased capacity over existing protected tactical comm to tactical users in highly contested theaters in close proximity to adversaries.

Developing a modular payload using Protected Tactical Waveform (PTW); leverage PTES ground infrastructure to support PTS

## Protected Tactical Enterprise Service (PTES)

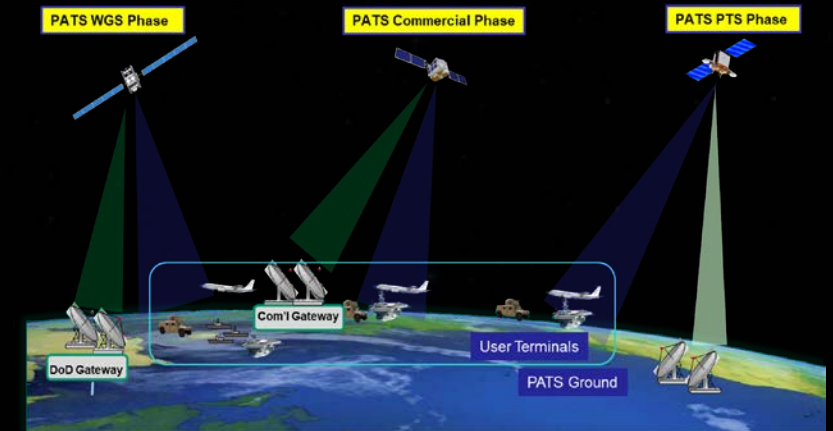
Provides anti-jam protection via Wideband Global Satellite Comm to tactical warfighters currently unable to operate through interference in anti-jam/area denial operational environment



## Evolved Strategic SATCOM (ESS)

Follow-on replacement to the Advanced Extremely High Frequency strategic SATCOM mission, providing worldwide survivable communications for ground, sea, and air assets for Nuclear Command, Control, and Communications.

## Protected Anti-Jam Tactical SATCOM (PATS)



## Air Force & Army Anti-Jam Modem (A3M)

Teaming w/ Army PEO C3T to develop, produce, and field Protected Tactical Waveform (PTW) capable modems



# Priming the Pivot to the New Architecture

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## Unprecedented Access to Innovation



**SpEC**  
USSF's acquisition tool for accelerating innovative prototyping

## Building Responsive Space Access, Expanding the Space Test Ecosystem



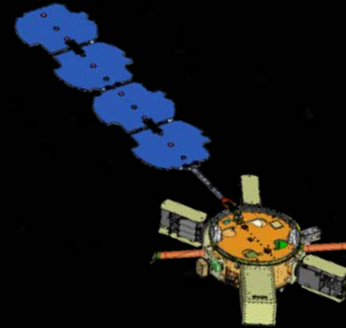
**STP**  
Maximizing space access for S&T experiments, proving out new launch concepts



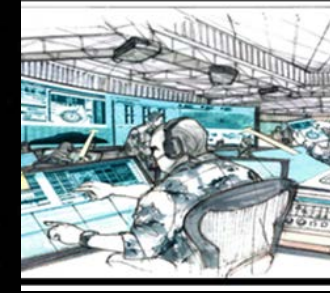
**RALI**  
Pathfinding using emerging commercial small launch vehicle



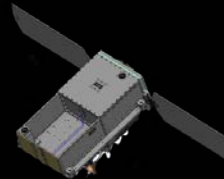
**LDPE/ROOSTER**  
Freight train to GEO... and a common bus for I&P



**Hosted Payload Interface Unit**  
Enabling NSS payloads on untrusted hosts



**RSC**  
The USSF's Prototype Ops Center



**Tetra**  
Small Sat to develop TTP at GEO

## Strategic Partnerships



**QZSS Hosted Payload**  
Pathfinding hosting NSS payloads on allied systems

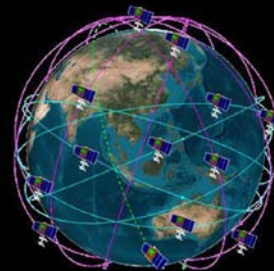


**STPSat-6**  
White House directed partnership with NASA and DoE's NNSA; experiments for AFRL, NRL, USAF

## Investing in More Resilient Architectures



**Blackjack/Casino**  
Enabling rapid tech refresh through pLEO

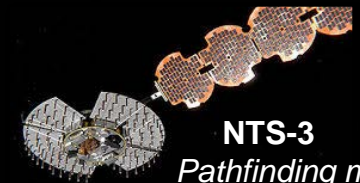


**EO/IW System**  
A scalable, distributed constellation of sensors

## Developing Leap-ahead Capabilities for the Warfighter



**Wide Field of View**  
Maturing OPIR ground algorithms and staring sensor technologies



**NTS-3**  
Pathfinding multi-layer PNT architecture



**OBAC / TAP Lab**  
Exploiting OPIR and EM data to enhance USAF/USSF mission areas

# Our Aimpoint – Space Vision 2030



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# Digital Engineering Ecosystem

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- You'll hear more from the team developing the Digital Engineering Ecosystem for the Space Force after I talk today
- It starts in the Space Development Corps
  - PATS, ESS and Combat Bus will be the foundational flagship programs to use the ecosystem and test its cross-mission schema, standards & interfaces
  - A Digital Engineering Ecosystem is essential to speed innovation and rapid acquisition



# What's Upcoming

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Program Name	Anticipated Solicitation Date	Anticipated Award Date
STS-III Dev Corps Task Order	1Q FY21	2Q FY21
POPS-1 (STEC-14 Follow-on)	2Q FY21	4Q FY21
ROOSTER Risk Reduction	3Q FY21	4Q FY21



# What's Upcoming (SpEC)

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Program Name	Requirement Holder	Anticipated Solicitation Date
Track Custody Demonstration (formerly MEO MT)	SMC Development Corps	October / November 2020
MESH-One	SMC Enterprise Corps	December 2020
Space Combat Cloud	SMC Enterprise Corps	December 2020
Commercial Antennas for Satellite Ops (CAS)	SMC Enterprise Corps	April 2021
Long Haul Networking Solution (CYGNET)	SMC Enterprise Corps	3Q FY21
CASINO ISR Demo	SMC Development Corps	TBD FY21
LTRS, Range Management System	SMC Enterprise Corps	1Q FY22
LTRS, Vehicle Situational Awareness Display	SMC Enterprise Corps	1Q FY22
MGUE, Increment 2, Objective C	SMC Development Corps	3Q FY23
MGUE, Increment 2, Handheld Phase II	SMC Development Corps	3Q FY25
Overhead Persistent Infrared (OPIR) Data Exploitation Technology Transition (ODETT)	SMC Development Corps	TBD





# Developing & Delivering U.S. Space Power

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- The Space Development Corps is building upon the successful legacy of SMC space systems, which SMC partnered with industry to develop over the last 60 years
- Together we'll pivot to the new space architecture, and deliver war-winning space capabilities at the speed of need
- Digital engineering initiatives will enable us to more rapidly understand and update the architecture





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# Questions?

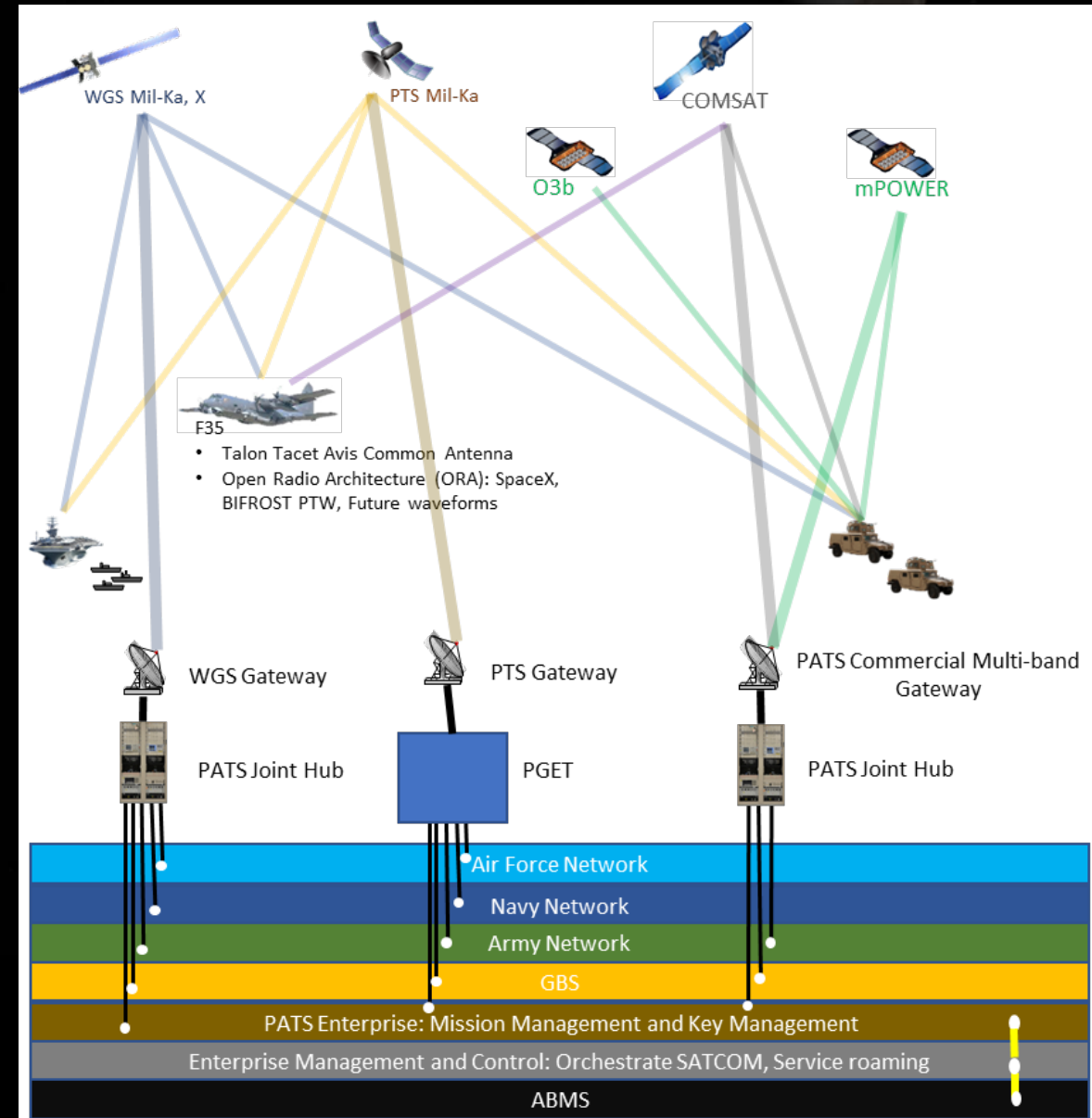


# Protected Tactical

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**PATS digital engineering allows for multiple teams / vendors to build out architecture simultaneously using ASOT**

- **SMC** – building satellites / enterprise ground system
  - PTS payloads from multiple contractors
  - PTW modem from multiple contractors
- **LCMC** – building ABMS RadioOne
- **Navy** – building WAMS
- **F35 JPO** – building 5<sup>th</sup> Gen ORA
- **Int'l Partners** – conducting proof of concept demos
- **Commercial vendors** – collaborating on future COMSATCOM phase



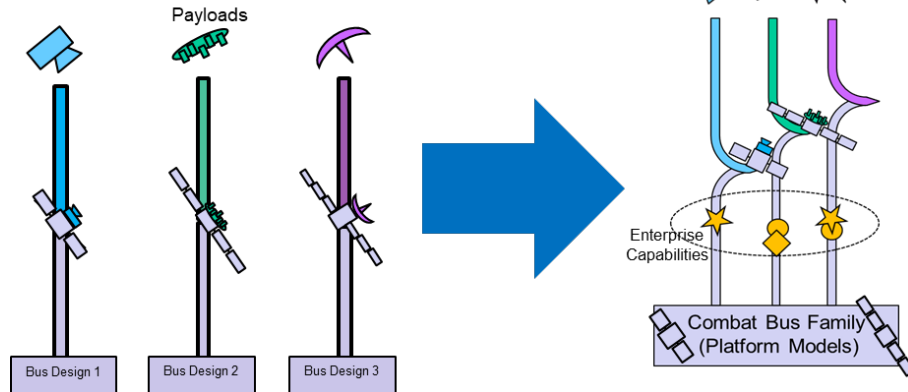
ASoT – Authoritative Source of Truth  
ORA – Open Radio Architecture  
PTS – Protected Tactical SATCOM  
PTW – Protected Tactical Waveform  
WAMS – Wideband Anti-Jam Modem System



# Common Bus

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today's problem/opportunity:  
5+ MEO/GEO programs, 5 unique  
buses, 15+ years, \$30+B



## Combat Bus

- Proliferated enterprise capabilities – *build architecture for 2030 Space Vision: C2, servicing, resiliency, crosslinks, survivability, data transport*
- Integrated space combat capability – *deny enemy advantage*
- Rapid payload & bus innovation – *outpace adversary w/ industry competition*
- Modular space vehicle integration – *accelerate capability on orbit*
- Continuous production agility – *drive flexibility and affordability*

## Rapid On-Orbit Space Tech Eval Ring (aka LDPE)

- Each platform includes a propulsive bus + integrated prototypes (hosted and/or separable)
- Provides more frequent and lower-cost access to space, enabling faster tech maturation and risk reduction across the enterprise
  - Test new elements of the architecture cost-effectively before making major investments (payload mission utility, command and control, and routing data for processing)
  - Uncover hidden requirements that typically reside in CONOPS
- ROOSTER built on the success of AFRL's 2018 EAGLE experiment; first two vehicles launch in 2021!

