

NEXT GENERATION SPACE AND MISSILE DEFENSE TECHNOLOGY PANEL

MODERATOR:

Mr. Bob Strider (SES(R))



Vice President - Emerging Programs
PeopleTec Inc.

Panel Members

- **Ms. Sarah Parker**, TDD Deputy Director for Missile Technology, US Army Combat Capabilities Development Command, Technology Development Directorate, Aviation and Missile Center
- **Dr. Sanjay Parthasarathy**, Chief Capability Officer, Space Development Agency
- **Dr. Brian Grantham**, Acting Director, US Army Space and Missile Defense Command, Technical Center
- **Mr. Jason Adam**, Director, Science and Technology Office, NASA Marshall Space Flight Center
- **Mr. Jimmy Jenkins**, Executive Vice President and General Manager, Precision Strike and Defensive Systems Group, AV, Inc.
- **Mr. Bob Richie**, Chief Technology Officer, Solutions and Technology Group, SAIC

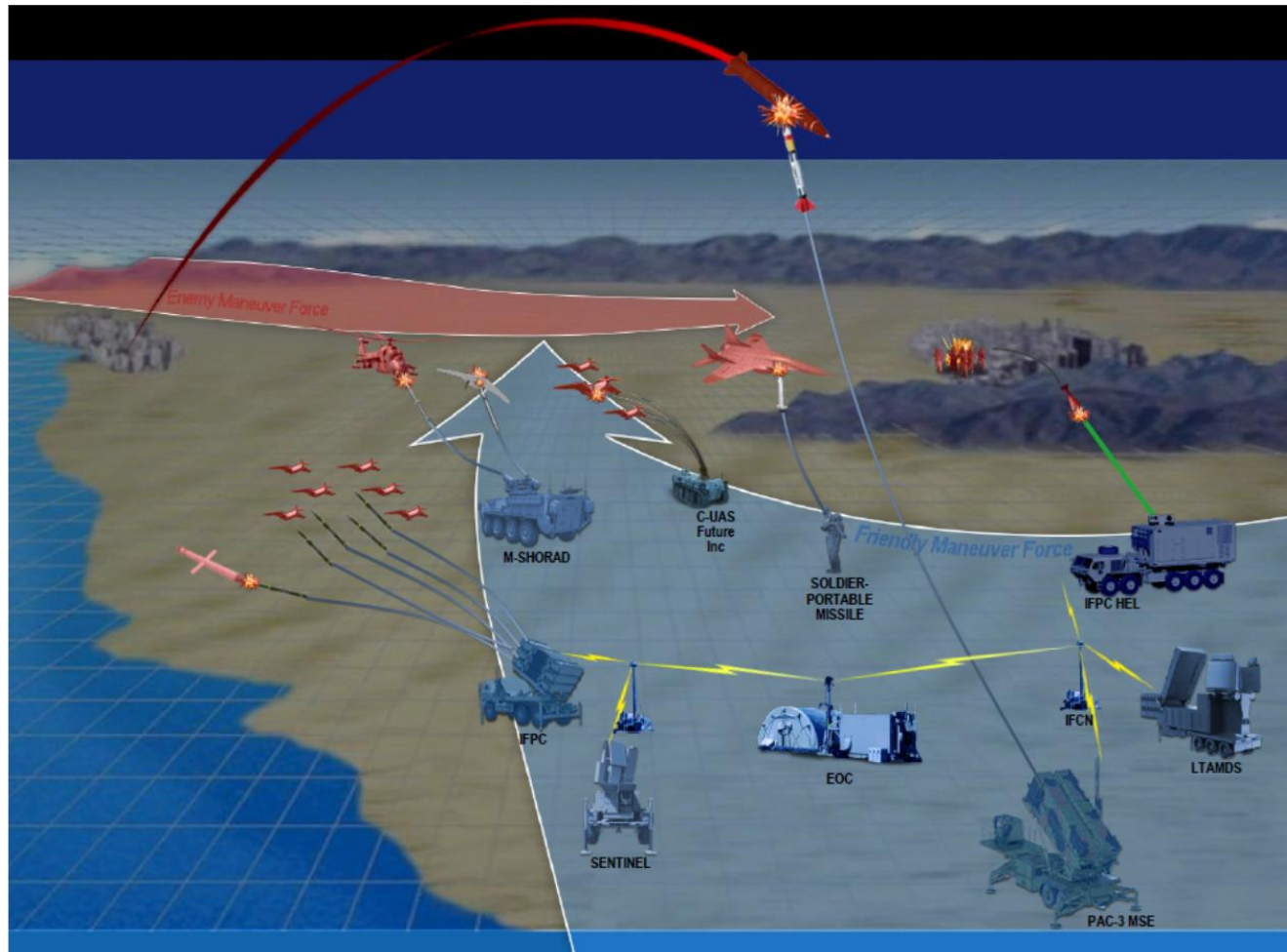
Ms. Sarah Parker



Deputy Director for Missile Technology,
Technology Development Directorate (TDD)
*US Army Combat Capabilities Development Command,
Aviation and Missile Center*

Next Generation Defensive Fires Capabilities

Ms. Sarah Parker



S&T Efforts Support Army Modernization for Fire Control, Interceptors, and Radars

FUTURE CAPABILITIES:

- Critical Air and Missile Defense component technologies *essential* to maintain threat overmatch
 - Advanced Propulsion
 - Advanced Sensing
 - Novel Lethality Mechanisms
 - Decreased SWAP-C
- Sensing capabilities
 - Enable defeat of advanced / emerging Air and Missile threats in an Electronic Attack (EA) environment
 - Protect Army maneuver forces and critical assets
 - Increase survivability
- Counter UAS (Fixed Site and Mobile)
 - Increase range
 - Reduce reaction time
 - Increase lethality
 - Decrease Cost
 - Increase magazine depth
 - Improve reliability while reducing sustainment burden

Future S&T Capabilities Aligned with Defensive Fires Priorities

Dr. Sanjay Parthasarathy



Chief Capability Officer
Space Development Agency



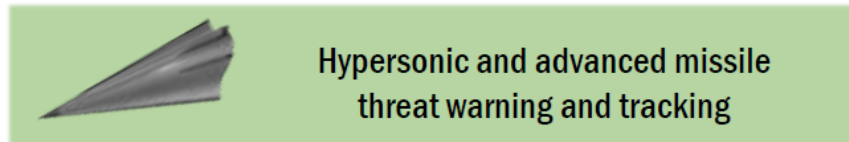


SDA's REMIT AND THE USSF ORGANIZATIONAL TRANSFORMATION

Dr. Sanjay Parthasarathy.

SDA rapidly acquires and fields - via 2-year tranches – a multi-vendor, networked pLEO architecture that enables:

- detection, tracking, and identification of missile threats,
- distribution of targeting solutions directly to warfighters, and
- missile kill chain closure at a currently unattainable pace.



Requires:

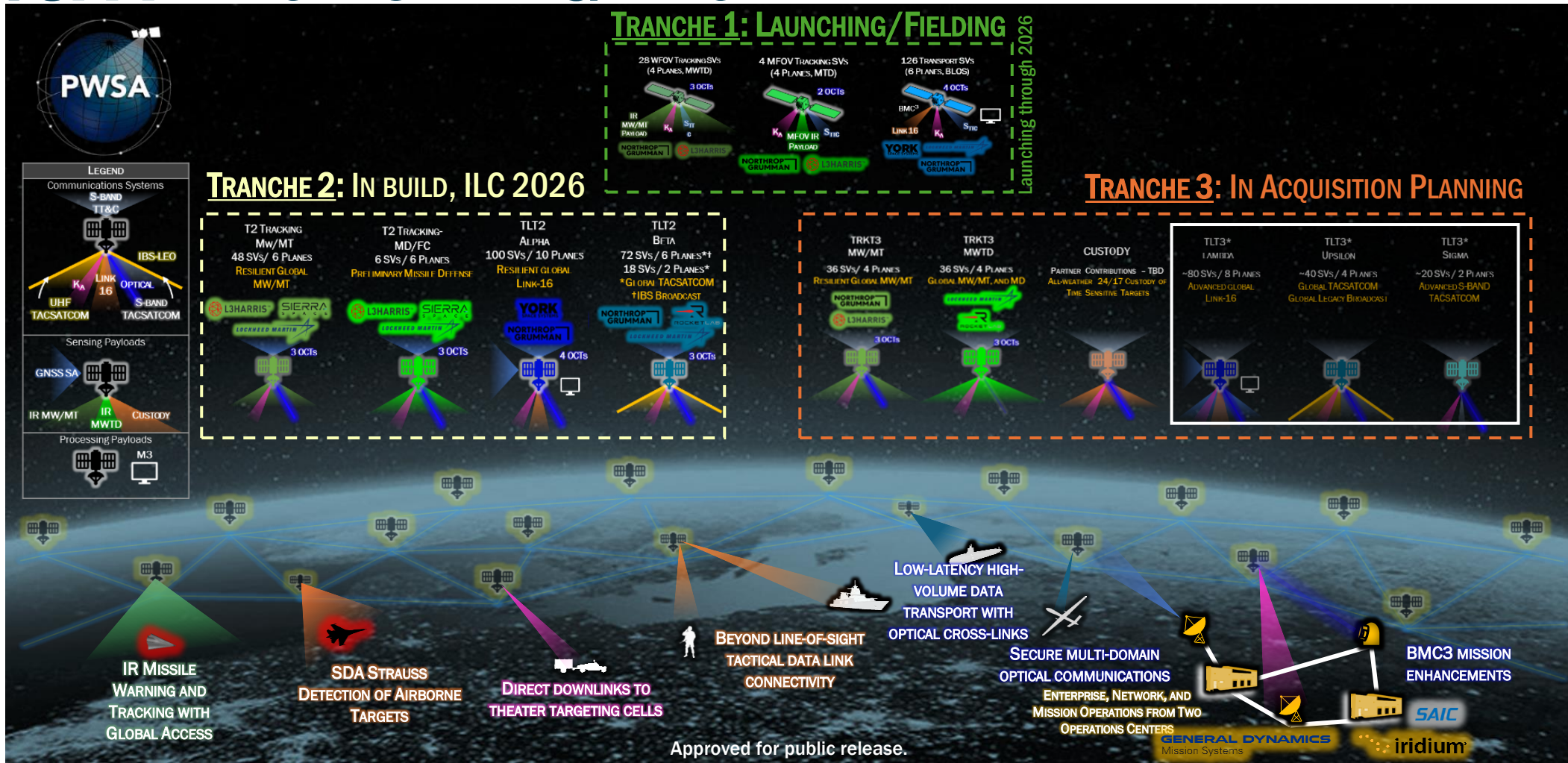
- Advanced Sensors
- Tactical Communications
- Resilient and Dynamic Networking
- Enterprise Connectivity for Kill Chain closure

USSF Portfolio Acquisition Executive (PAEs) Structure



Dual hatted PAE for MWT and SDA Agency Director

PWSA TRANCHES AT A GLANCE



TRACKING LAYER (MW/MT) EVOLUTION

Initial Operational MW/MT (2027*)

T1 = 28 MW/MT SVs, 4 planes

Minimum Viable Capability (MVC)

- Global Coverage: 85% (Mono)
- Polar Coverage: 95% (Mono)/ 75% (Stereo)

Projected Coverage (optimization in work):

- Global Coverage: ~82% (Mono)
- Polar Coverage: ~97% (Mono), ~75% (Stereo)

PWSA 2D Track Data to RTS

Near-Global Operational MW/MT (2028*)

T1 + T2 = 76 MW/MT SVs, 10 planes

Geographic diversity from mixed inclinations

Minimum Viable Capability (MVC)

Global Coverage: 98% (Mono), 95% (Stereo)

Projected Coverage (optimization in work):

- Global Coverage: ~97% (Mono), ~84% (Stereo)

PWSA 2D Track Data to RTS

Global Persistent Operational MW/MT (2030*)

T2 + T3 = 120 MW/MT Capable SVs, 14 planes

Geographic diversity from mixed inclinations

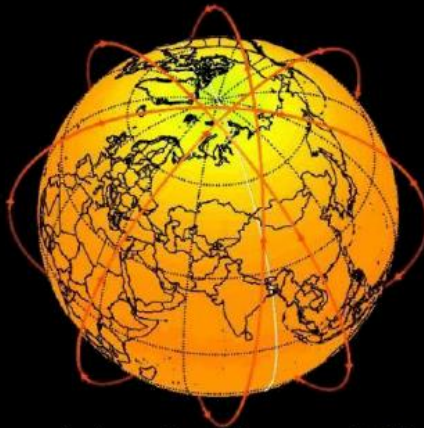
Minimum Viable Capability (MVC)

Global Coverage: 99% (Mono), 95% (Stereo)

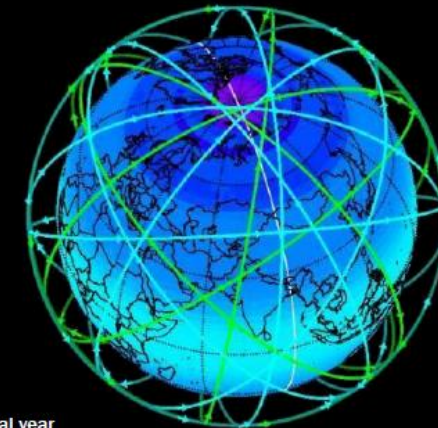
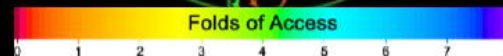
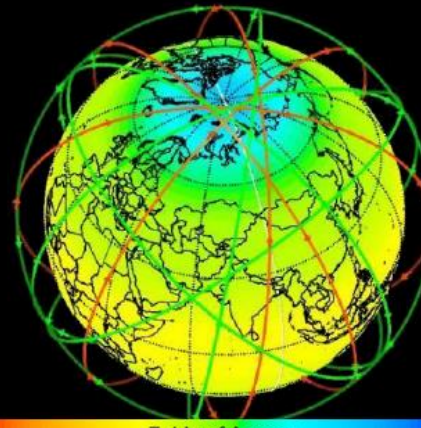
Projected Coverage (optimization in work):

Global Coverage: ~100% (Mono), ~100% (Stereo)

PWSA 2D Track Data to RTS



Average access heat maps show 24-hr average projected coverage.
3D tracking requires at least stereo (2-fold) persistent coverage.



* Operational year

Constellation Colors:

T1 T2 T3

THE PWSA TRACKING LAYER WILL PROVIDE GLOBAL PERSISTENT COVERAGE FOR MW/MT. WHEN COMBINED WITH ARCHITECTURES IN OTHER ORBITALS REGIMES (E.G. MEO), THE WARFIGHTER IS PROVIDED WITH UNPRECEDENTED MW/MT CAPABILITY.

BUSINESS MODEL AND COMMERCIAL SPACE

SDA's business model supports the use of commercial space technologies and capabilities and commercially owned and operated services to develop, augment and improve the PWSA



Spiral Development

SDA Incorporates new technologies and capabilities **every two years**



Competitive Marketplace

SDA predictably solicits for new capabilities through competitive solicitations



Interoperability

Development of **standards** and **open systems architecture**



Affordability

Acquisition of **commercial commoditized spacecraft** and purchasing at scale to drive down cost



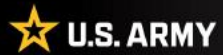
SDA Business Model is aligned with USSF – and DoD-level Commercial Space Integration Strategies and USSF International Partnership Strategy

Dr. Brian Grantham



Acting Director

US Army Space and Missile Defense Command Technical Center



TECHNICAL CENTER RESEARCH AND TECHNOLOGY

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Dr. Brian Grantham

Science & Technology and Test & Evaluation expertise enabling warfighter dominance today and in the future.

• Space Integration & Interdiction

- Ground-Based Space and Autonomy System Development
 - Fusing protection technologies, artificial intelligence and machine learning, and legacy systems
 - Enabling freedom of maneuver for multidomain operations
- Multi-Function Radio Frequency Technology Development
 - Electromagnetic dominance, advanced signal-processing, enhanced sensor synergies, photonic/quantum sensing, and electromagnetic force multiplying
 - Applications to a wide assortment of Army missions (e.g., satellite communications, etc.)



Providing scientific and engineering expertise, space surveillance, and test support to continuously transform space-enabled, missile defeat, and related technologies, resulting in capability overmatch.



TECHNICAL CENTER RESEARCH AND TECHNOLOGY

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Science & Technology and Test & Evaluation expertise enabling warfighter dominance today and in the future.

- **Directed Energy**

- High-Energy Laser Technology Development
 - High-Energy Laser sources, beam control, and lethality modeling
 - Defense against rocket, artillery, and mortar; unmanned aerial systems; and cruise missiles
- HPM Technology Development
 - HPM sources, systems, and lethality modeling
 - Defense against unmanned aerial system swarms; cruise missiles; and improvised explosive devices



Providing scientific and engineering expertise, space surveillance, and test support to continuously transform space-enabled, missile defeat, and related technologies, resulting in capability overmatch.

Mr. Jason Adam



Director, Science and Technology Office
NASA Marshall Space Flight Center





ENSURING AMERICAN SPACE SUPERIORITY – The White House

Leading the world in space exploration and expanding human reach and American presence in space:

- Artemis missions for lunar landing by 2028
- Moon Base elements starting in 2030
- Enhancing launch and exploration capabilities – moving towards commercialism

Developing and deploying advanced capabilities and approaches to enable the next century of space achievements:

- Optimizing space research-and-development investments
- Deploying nuclear reactors on the Moon and in orbit
- Improving high-value space and Earth weather forecasting and operations
- Establishing ground, space, and lunar infrastructure and standards



NASA's Response to Executive Order -- Ignition

(www.nasa.gov/ignition)



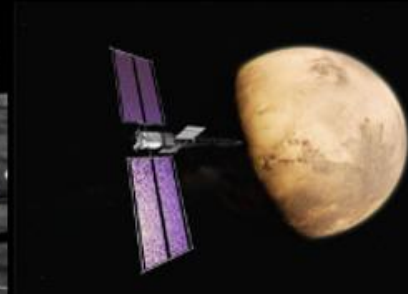
Artemis missions for lunar landing
by 2028



Increasing Launch Vehicle and In-
Space Transport Capabilities



Moon Base elements starting
in 2030



SR-1 Freedom NEP
Demonstration Mission

**Enhancing launch and exploration capabilities –
moving towards commercialism**

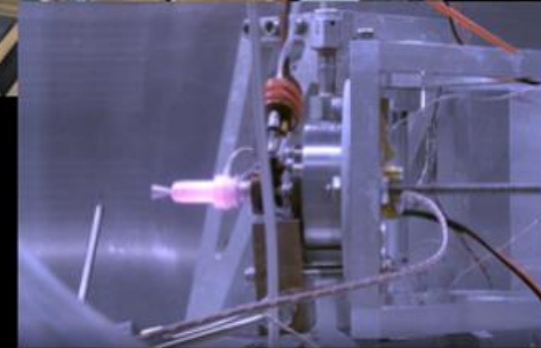
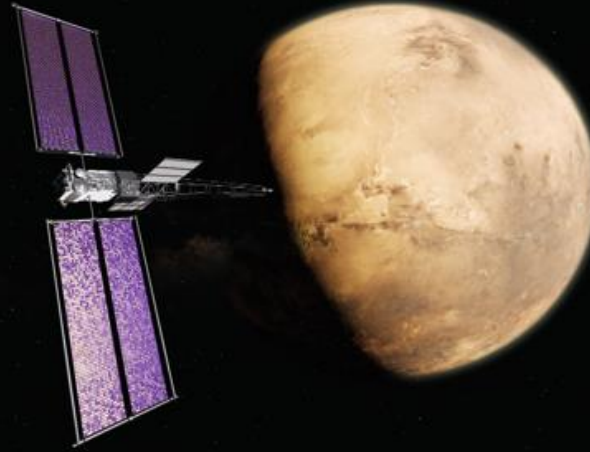


Advancing Propulsion Capabilities



SR-1 Freedom
Space Reactor-1 Freedom

InRoDES
Integrated Rotating Detonation
Engine System



GPDM
Green Propulsion Dual Mode

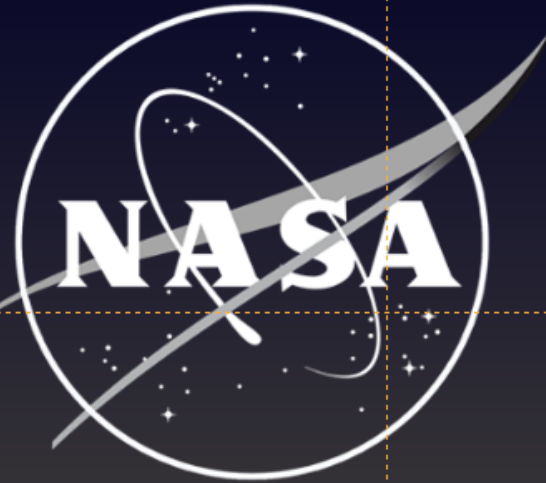


Communication Networks: UNNO

Unified Network & Navigation Operations

- consolidating the Near Space Network (NSN) and Deep Space Network (DSN) operations
- SAM.gov RFI Open through August 15





Mr. Jimmy Jenkins



Executive Vice President and General Manager
Precision Strike and Defensive Systems Group
AV, Inc

AV Is Delivering Innovation Across All Defense Domains



Dr. Bob Richie



Chief Technology Officer
Solutions and Technology Group
SAIC



SPEED TO MISSION ADVANTAGE

- Resilience and Adaptability through MOSA
- Advanced Sensing and Threat Detection
- Embed AI, Quantum and Emerging Tech



BOB RITCHIE

Senior Vice President and Chief Technology Officer
SAIC



QUESTIONS