

White Sands Missile Range (WSMR) Telemetry Modernization

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Outline

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Introduction

The Telemetry support to Army Test and Evaluation Command (ATEC) range customers through Aeronautical Mobile Telemetry (AMT) operations has been impacted due to:

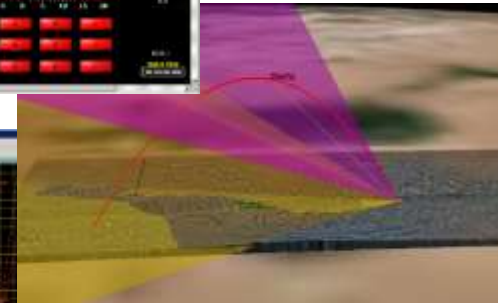
- Equipment obsolescence
- Manpower reductions
- Increasingly complex missions requirements
- Infrastructure limitations
- Spectrum sharing with other users such as the Long Term Evolution (LTE) cellular telephone market
- Advanced Wireless Services -3 (AWS-3) auction





Requirements

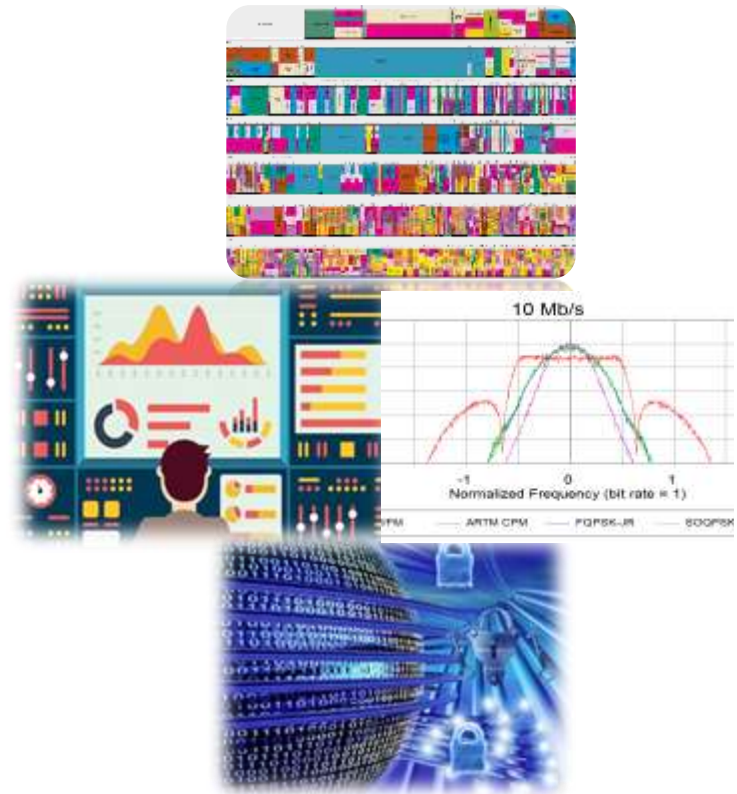
- To collect on-board sensor data from airborne and ground equipment.
- To record system performance parameters such as temperature, spin rate, velocity, health status, etc.
- To collect Time-Space-Position Information (TSPI) data in real time for flight safety.
- To be able to quickly relocate systems due to mission demands.
- To be able to securely and efficiently use available spectrum.
- To be able to reliably acquire accurate data with minimum personnel and equipment.





Needs

- Remote Operability. Support full remote control operations from a central facility.
- Spectrum Availability. Be capable of supporting tri-band (L, S, and C-Bands) telemetry operations.
- Spectrum Efficiencies. Be capable of supporting all approved modulation tiers (0, 1, and 2), and data rates per IRIG-106-15 standards.
- Technology Alignment. To leverage advances in communications' reliability, efficiency, and bandwidth in order to align with the broader DoD TM community. ATEC TM systems must be able to employ Telemetry over Internet Protocol.
- Reliability. Current systems are unreliable because of age and obsolescence.
- Site Versatility. TM systems need to be able to quickly deploy, recover, and redeploy to a wide range of terrain conditions.
- Cybersecurity. To be able to operate remotely in classified and unclassified configurations.





Strategic Vision

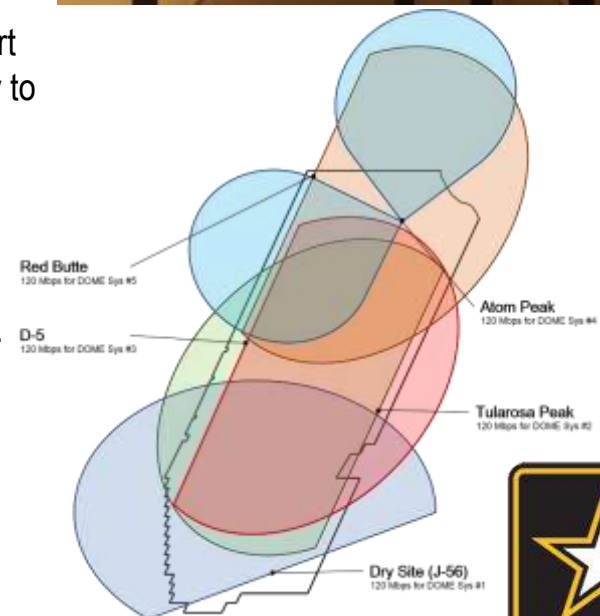
Remote Operations. All fixed and mobile sites will be remotely operated with a robust health and status check capability. Persistent communication capability will minimize set-up/take-down costs associated with driving to remote sites.

Mobile Operations. Highly mobile, minimally-manned systems based on a common configuration will be able to provide effective TM support wherever required.

Communications. Robust communications capable of expanding to support increasing data rates associated with more complex missions. Ability to communicate on all authorized frequencies/modes in both classified and unclassified conditions without requiring a waiver.

Reliability. Life-cycle equipment replacement/repair plan designed to maximize availability while minimizing repair costs and obsolescence.

WSMR Telemetry will take an evolutionary approach toward capability growth, eventually developing a **coupled telemetry sensor array (a.k.a. WSMR Dome)** that provides a persistent and cooperative capability to compliment our existing infrastructure.





Execution Plan

AWS-3 auction

- Spectrum Efficiency
- LTE Interference Mitigation
- Dynamic Frequency Management and Assessment Tools
- Test Bed

Enterprise Acquisition (Telemetry System Modernization) to address major shortfalls

- Remote Control Capability
- Telemetry over Internet Protocol (TMoIP)
- Equipment Reliability
- Cybersecurity
- Test Equipment

Close linkage with spectrum and telemetry modernization efforts

- Test Network Modernization
- Future Wireless

Supplemental TDAPs

- Facilities modifications
- Systems Integration
- Expanded Fiber Optics
- Telemetry Data Center
- Life cycle mobile instrumentation refresh
- Life cycle Equipment refresh
- MW replacement (TDAP: Wireless Point to Multi-Point)
- V&V System-Level Testing of C-Band capability

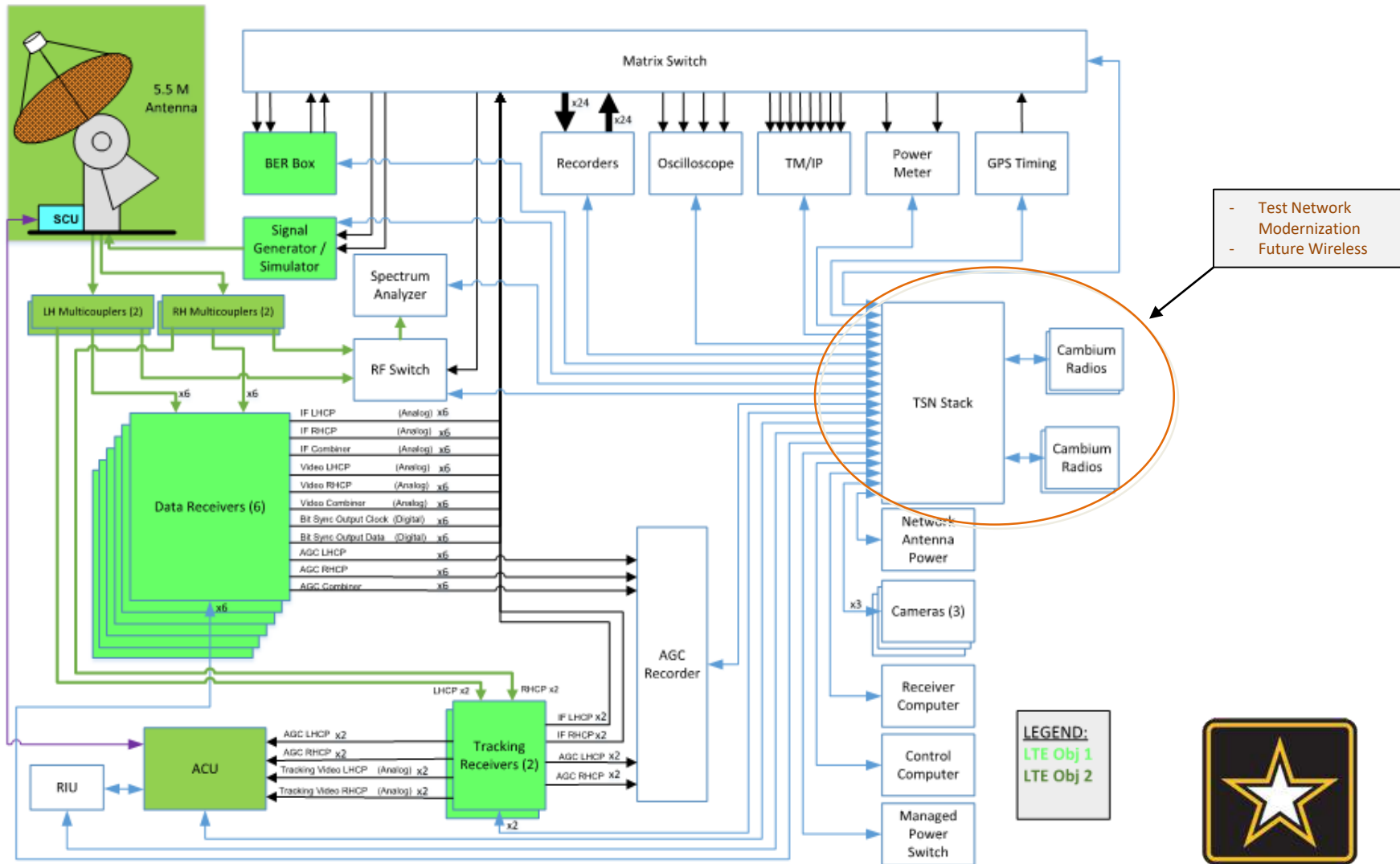
S&T: WSMR DOME

- Increased operational and maintenance efficiency
- Remote control facilitation
- Expandable architecture
- Can be used for frequency monitoring





Execution Plan Cont.





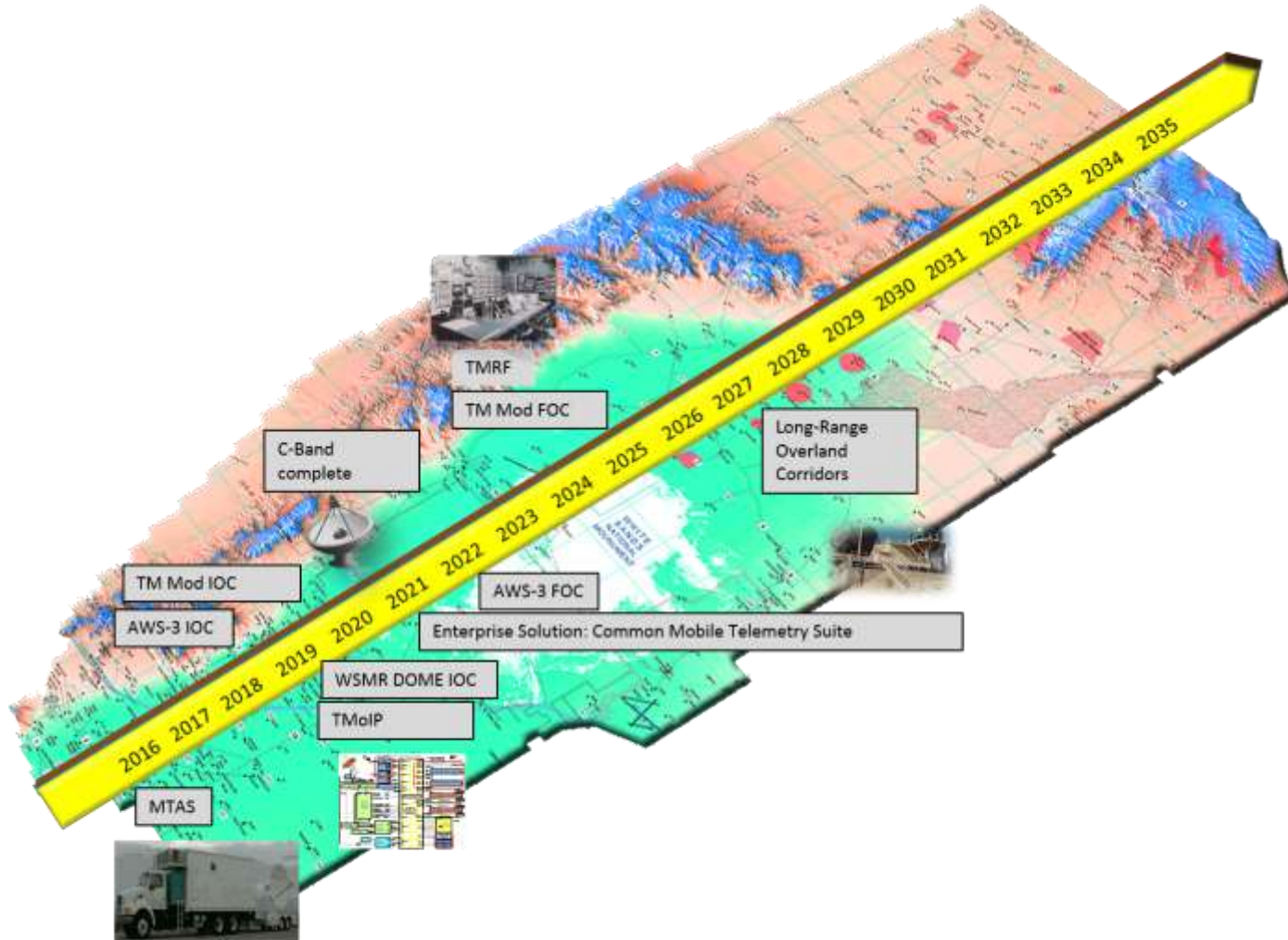
Interdependencies

- Future communications capability dependent on Test Network Modernization and Future Wireless:
 - TMoIP
 - Increase network bandwidth
 - Wireless
 - MW Waiver
- Remote Classified: Concept of Operations dependent on Information Assurance doctrine (i.e. Cross Domain Solution)
- Safari requirement dependent on Overland Corridor strategy and the network capabilities between ranges.





Telemetry Road Map





Questions?

