



NATO-RAMS 2022



One Team, One Mission



5G in Telemedicine & Medical Training The Future of Healthcare For the Remote Warrior

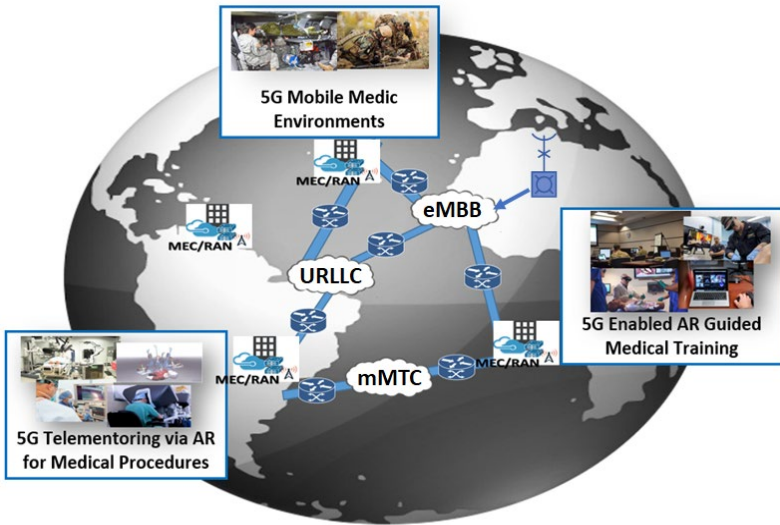
Dr. Paul Young, MD, MPH, MSS, FAsMA
JBSA 5G Executive Telemedicine Investigator

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Office of the Under Secretary of Defense for Research and Engineering (OUSD R & E)



- Champions research, science, technology, engineering, and innovation to maintain US Military tech advantages
- Provides oversight for 12 sites of 5G experiment initiatives
- Supports San Antonio – Electro Magnetic Defense (EMD) Line of Effort #2

Project medical expertise virtually using 5G Telemedicine Technology

- Providing medical care capability at the point of need
- To remote locations
- Collaboratively and on-demand
- Enhancing medical readiness, process/performance improvement for all military medical services

Military Medical Partners:

- US ARMY Virtual Medical Center, BAMC, Ft. Sam Houston, TX
- Virtual Medical Center INDOPACOM, San Diego, CA

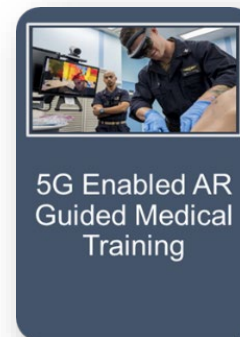




5G in Telemedicine & Medical Training - Objectives

Extend the reach of DoD life saving medical procedures and critical health care expertise by connecting remote sites to 5G Telemedicine services

- OUSD R & E Sets JBSA 5G Initiatives and Programs for the Future (Experiments)
 - Deliver Medical Training & Telementoring on 5G infrastructure through Virtual Operational Medical Centers, Training Platforms, and Internet of Medical Things
 - Remote medical services via Augmented Reality (AR) in 5G environments → Project medical expertise virtually
- Leverage current DoD medical operations & existing DoD telemedicine applications onto 5G Platform
- NSC Spectrum Forward OTA
- Oversight & Guidance from JBSA 5G Medical Steering Committee
 - (Chaired by Dr. Paul Young, MD; Exec Telemedicine Investigator) – Facilitator; 5G oversight & reporting; SME networking; relay program expansion; corporate briefings; membership proposal; relevant forum/site/VTC representation & presentations; feedback; ensure Total Force interests; strategic vision; assess benefits, vulnerabilities, research, equipment, & tech resourcing



The Medical Steering Committee

Extend the reach of DoD life saving medical procedures and critical health care expertise by connecting remote sites to 5G Telemedicine services



Objective 1: 5G Enabled AR Guided Medical Training

Improve capability for rapid, effective, and remote collaborative medical training

- Real-time AR training accessible from a 5G Network Connection
- 20 trainees & one trainer
- Untethered AR/VR Heads-up-Display
- Workstation controls training experience & collects performance data
- Training scenarios: bleeding, penetrating injuries, respiratory distress, & thermal injuries
- Demonstration indoors & outdoors



Partnered with Military Health System Virtual Medical Center at BAMC, Ft. Sam Houston, TX

Objective 2: 5G Telementoring via AR for Medical Procedures

Deliver AR reach-back capabilities with clinical situational awareness for Telementoring

- Real-time communication between a mentee in a remote location & a medical specialist for medical procedure assistance
- Combines data from physiological IoMT sensors, digital medical images, electronic health records high speed video & audio
- Mentee receives instructions via AR
- Demonstration indoors & outdoors



Partnered with Military Health System Virtual Medical Center at San Diego, CA

Objective 3: 5G Mobile Medic Environments

Provide field medics with real-time access to knowledge and expertise to assess, diagnose and treat critical wounds in austere conditions

- Secure mobile medical 5G private network
- Ruggedized advanced biometric sensors
- High-definition audio-visual 2-way communication for reach-back resource support
- Access to electronic medical records including digital image studies
- Optimize point-of-need services



Partnered with Military Health System Virtual Medical Center at BAMC, Ft. Sam Houston, TX



Fully Integrated Solution

Rugged | Mobile | Secure | Affordable



Rugged & Mobile

- Modular, Customizable Configurations
 - ✓ USB, Bluetooth, or Manual Entry
 - Wearable Devices – Biometric Sensors
 - Artificial Intelligence Solutions
 - Mobile Labs
- Connectivity Features
 - ✓ Ethernet, Wifi, Cellular, Satellite
 - ✓ 5G Cell Modem Integration
 - ✓ HD 2-way communications
- Made to be Mobile
 - ✓ Airtight, Watertight, Dust-Resistant
 - ✓ Lightweight, Crush Resistant

Flexible

- Access to Electronic Medical Records incl. digital imaging
- Virtual Triage Command capability

Secure

- Advanced Security Features
 - ✓ Mag Strip or Smart Chip for Authentication
 - CAC Authentication
 - ✓ HIPAA Compliant
 - ATO/ATC

Affordable

- Custom Options & Specifications
- Number of Users Does Not Affect Pricing
- Amount of Data Collected Does Not Affect Pricing



Current Experiment Metrics Gathering and Processes

- 1) Partnerships (incl. international) and inclusion of key medical components into the JBSA MSC to delineate concerns regarding remote operational care.
- 2) Engagements and personnel interviews with Medical Commands along with current civilian entities.
- 3) Medical Resource analysis of capabilities, risks, and vulnerabilities in DoD Medical Treatment Facility assessments for remote care.
- 4) Key indicators or analysis of battlefield casualty management.
- 5) Medical equipment end-user operability in 5G-enabled remote settings.



Partnered with Military Health System Virtual Medical Center at BAMC, Ft. Sam Houston, TX

MSC Future Engagements and Activities Representation





Takeaways

- 5G will improve capability for rapid, effective, and remote collaborative medical training
- 5G telementoring will deliver medical reach-back capabilities and provide field with real-time specialist's expertise
- 5G will Enhance medical readiness and process/performance improvement for all medical services
- 5G will Improve the overall aspects of communications for IoMT
- **5G-enabled Telemedicine will save lives!**

