Taking the Technical Initiative

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Delivering Next-Gen Tactical C3

• Current Situation
  – Army actively ‘right sizing’ the force structure and budgets
  – PEO C3T adapting and simplifying our integrated tactical C3 baseline

• Moving Forward
  – Future integrated tactical C3 solutions must adapt to pace of commercial technical change to assure operational dominance

Objective: Collaborate with Industry and S&T community to accelerate innovations to meet Next-Gen warfighter demands
Next-Gen Mission Command

Operational Intent: **MC Anywhere, Anytime, with Any Team, on Any Device** - Warfighting capabilities and supporting network that perform in a similar fashion wherever (CP, Platform, dismount, garrison), whenever (across full range of operations) they need it, with whoever (JII/M) is required, on whatever device (commercial enhanced thru mil spec) is available.

**Capability Thrust Areas**
- ‘Un-Clutter the TOC’
- One Tactical Computing Environment
- Unified MC User Experience
- Rich Staff *thru* Soldier Collaboration
- Virtual MC Staff Capabilities

**Mid-Term Technology Opportunities**
- Network Aware Apps
- Organic User Interfaces
- Siri-Like MC Digital Assistants
- Open App Development Platform
- Rich Web Apps via 3rd Party Tactical App Store

**Long-Term Technology Opportunities**
- JARVIS-like Virtual Staff Capability
- Futuristic Glass interfaces
- Holographic Projections for Rehearsal
- Gamification of MC/SoS Training
- Cloud-Augmented Tactical MC / Big Data

...2020...
Operational Intent: **Seamless On Demand Networking** – Flexibility to attach or detach (with limited/no planning) to whatever tactical/strategic/commercial network is available (with appropriate levels of service and security) to achieve their mission.

**Capability Thrust Areas**
- Network(ing) Convergence
- Service-Tiered Transport
- Secure Wireless TOCs
- Spectrum Efficiency
- Integrated, Threat-Adaptive Comms/EW

**Mid-Term Technology Opportunities**
- Secure 4G Cellular (LTE-A, LTE-Direct)
- Spectrum-efficient radio waveforms
- Multi-band antennae
- White space radios/techniques (DSA)
- Secure WiFi solutions

**Long-Term Technology Opportunities**
- Intelligent network caching
- Directed beam comms
- Smart Jamming on tactical radios
- Protected/AJ Comms strategies
- Power-efficient comms ckt/WF design

...2020...
Operational Intent: *Fighting through the Attack* – Improving tactical capability to defend against malicious cyber attacks, execute integrated offensive/defensive cyber ops, and, as required, operate in a degraded mode to adapt to the threat.

**Capability Thrust Areas**
- Tactical IA Simplification
- Single Soldier Identity
- Strong Tactical Authentication
- Distributed Cyber Ops
- Integrated Offensive/Defensive Cyber Ops

**Mid-Term Technology Opportunities**
- Next-Gen Firewalls w/Granular Traffic Ctrl
- Two-Factor authentication
- Hierarchical SDLM/SIEM
- Strong, adaptable TD policies/rulesets
- Cyber (Off/Def) Computing Environment

**Long-Term Technology Opportunities**
- Certificate-based single identity service
- Biometric ID
- Cloud-based Tactical Cyber store/analysis
- Tactical Cyber Staff Virtual Assistant
- Single Tactical Cyber Ops Dashboard

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Operational Intent: *Transparent Operations* - Integrated LWN NetOps capability that supports the network from dismounted soldier to the strategic infrastructure; transparent to the network users; simple and tailorable for the echelon, skills and responsibilities of the S6/network operators.

**Capability Thrust Areas**

- Dynamic network/apps reconfiguration
- Self-service network provisioning and initialization
- Distributed NetOps (‘S6 in Sanctuary’)
- Signal and Commander’s NETCOP
- Integrated NetOps and Cyber operations

**Mid-Term Technology Opportunities**

- OTA/OTN reconfig and rekeying tools
- Dynamic UTR tools
- Real-time QoS management tools
- S6 NetCOP tools
- Soldier radio net spectrum & health tools

**Long-Term Technology Opportunities**

- Cloud-based network planning/provisioning
- Automated remote asset management tools
- Tactical PKI
- Secure remote access technologies
- Integrated Cyber – NetOps execution tools
Integrating the Tactical SoS

- Game changing commercial technologies are increasingly commercially available
  - Continuous, selective injection of innovative solutions is required to keep pace with our adversaries

- Maximizing Next-Gen technology requires integration in a flexible SoS architecture
  - Minimizing SWAP-C critical to Platform Integration

Outcome: Delivering innovative, integrated tactical SoS solutions adaptable to the regional COCOM and warfighter’s evolving mission needs