



**Research, Development & Engineering Command/
Communications-Electronics Research, Development and Engineering Center**

Space & Terrestrial Communications Directorate



S&TCD Technology Transition Overview

Presented by

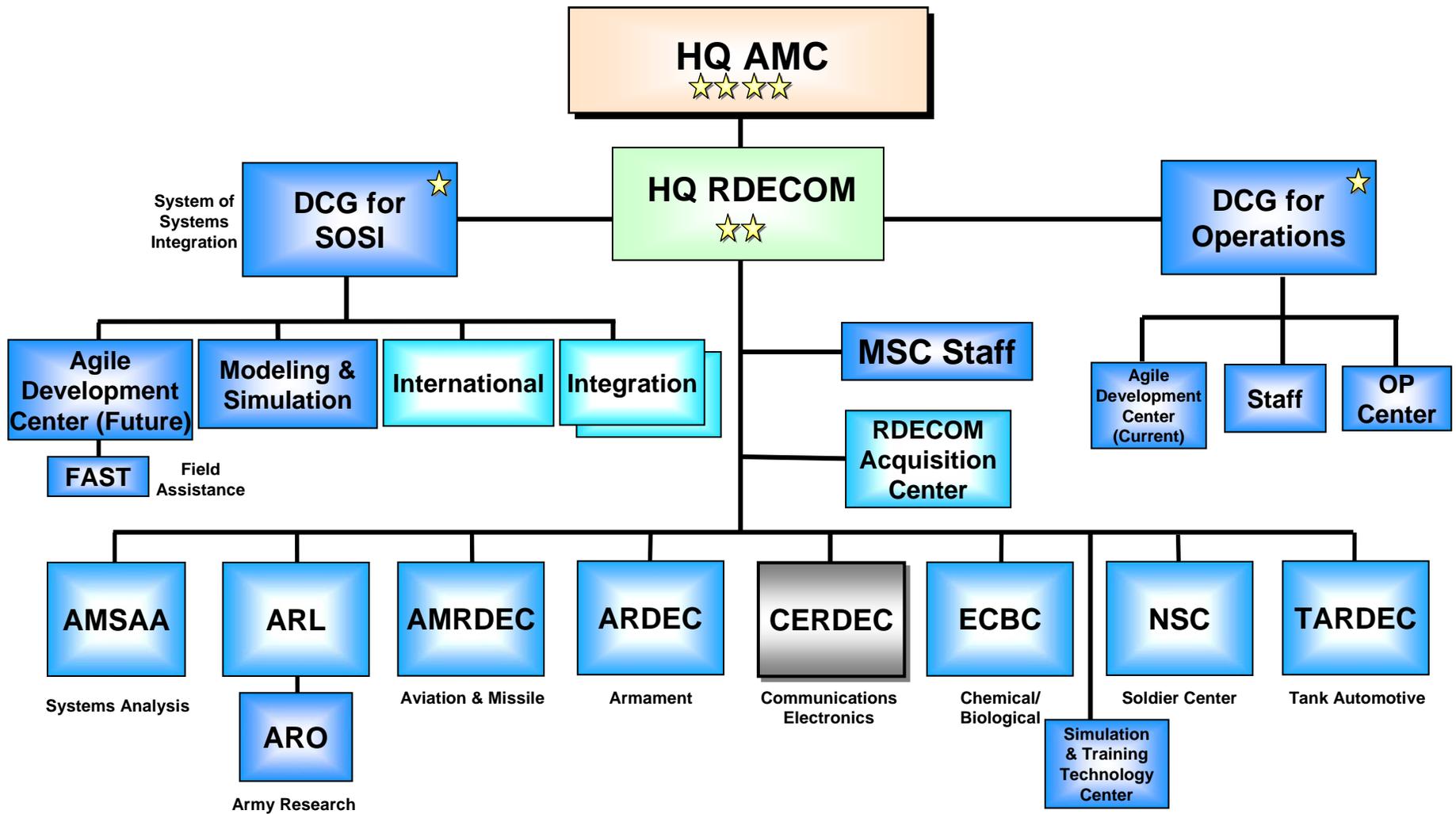
John Pusterhofer

(732) 427-35911 / Fax: (732)427-2150

john.pusterhofer@us.army.mil

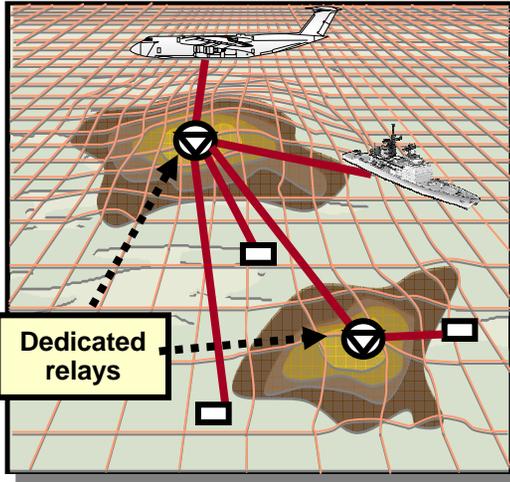


AMC RDECOM ORGANIZATION



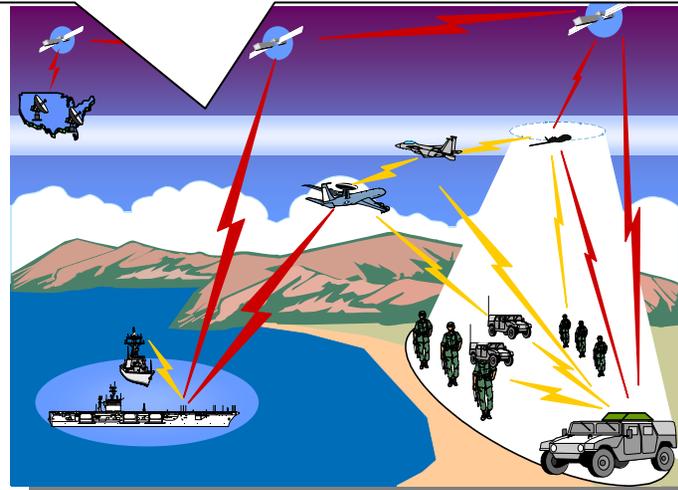


S&T Approach to Future Force Comms



Self-Healing Mobile Network Architecture

- Dynamic ad hoc, self-configuring Mobile Networks
- Efficient, smart bandwidth utilization
- Network aware applications
- Mobile enhancements to commercial protocols



Mobile On-the-Move Communications

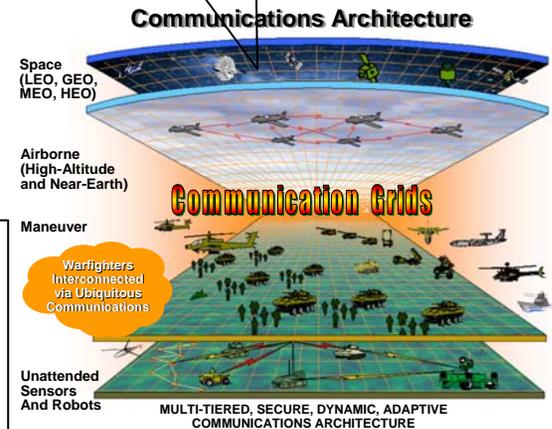
- Communications for dispersed elements
- Emergence of software programmable radios for seamless communications
- High bandwidth, beyond line-of-sight communications via UAV and SATCOM

Horizontal Service-/Echelon-Oriented Architecture

- Stovepipe Systems
- Limited Mobility
- Limited BLOS communications
- Wideband communications at halt
- Relay intensive architecture

Assured Communications via a fully integrated single ubiquitous network

- Shift toward a layered Vertical Information grid
- Information distributed among sensors, warriors, weapons platforms support bases.
- Seamless communication via fully programmable software radios



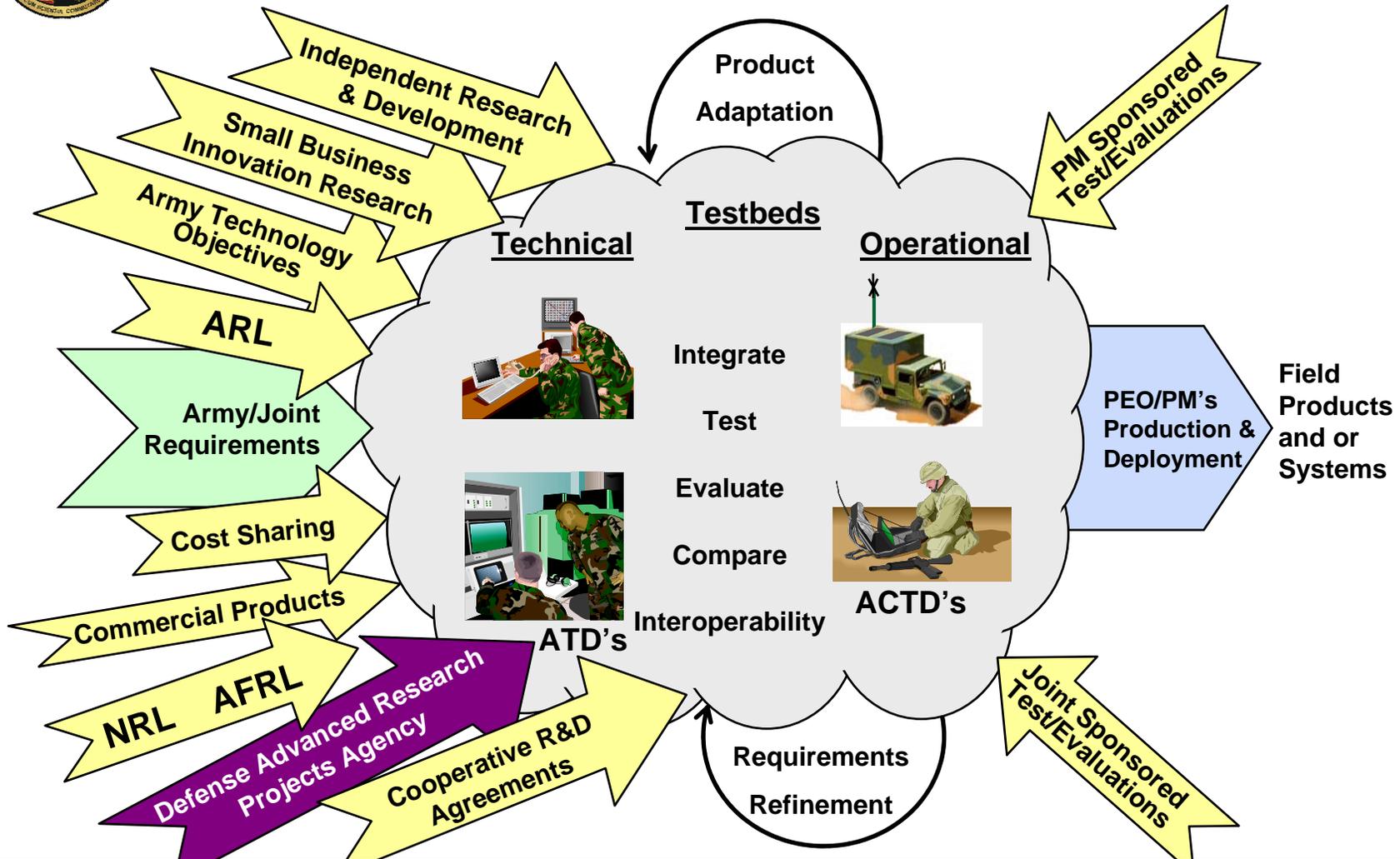
Current

04 13

2013 +



Continuous Evolutionary Development



Strategy =

Adopt

*Adapt
Modify*

*Develop and/
or Influence*



Major Communication Thrusts

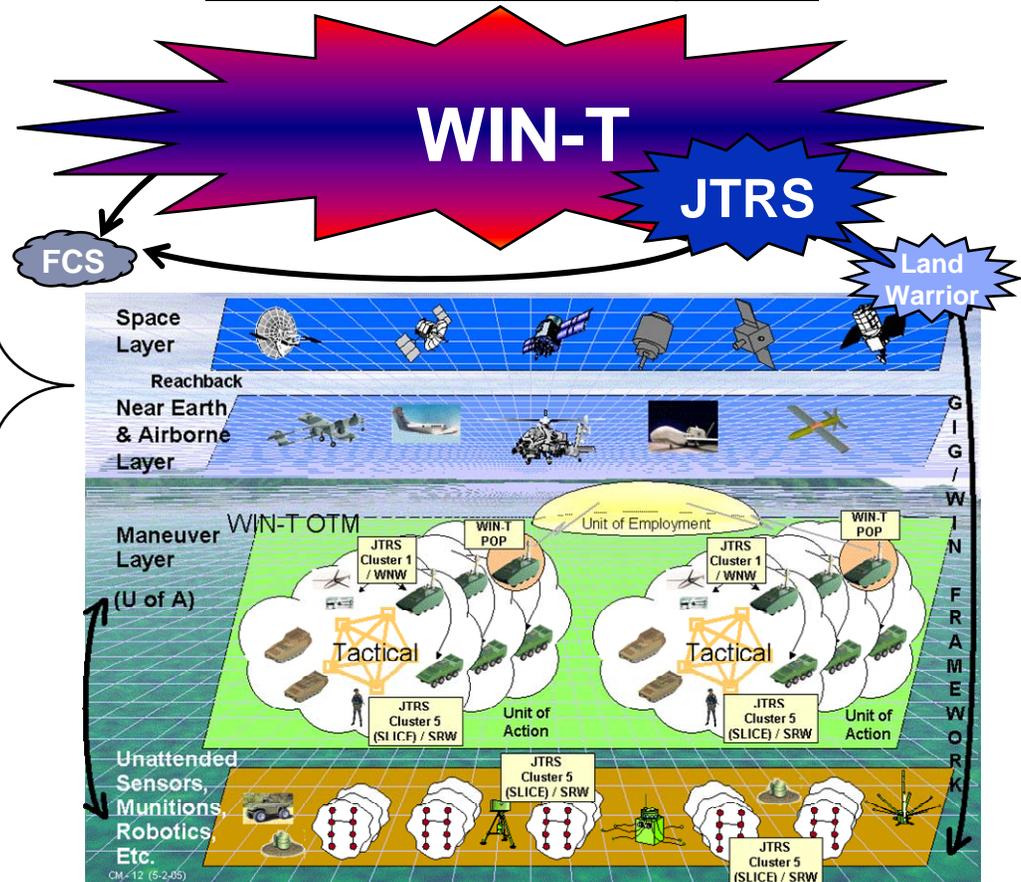
Connectivity

Capacity

Security

- Mobile Networking
- Reachback/Range Extension (SATCOM & UAV)
- Antennas
- Network Protection/ Information Assurance
- Soldier and Unattended Devices (Comms)
- Wireless Transport
- NETOPS

Future Force Comms Systems





Major S&T 6.2 / 6.3 Communications Programs

Connectivity

Capacity

Security

✓ Mobile Networking

✓ Reachback/Range Extension (SATCOM & UAV)

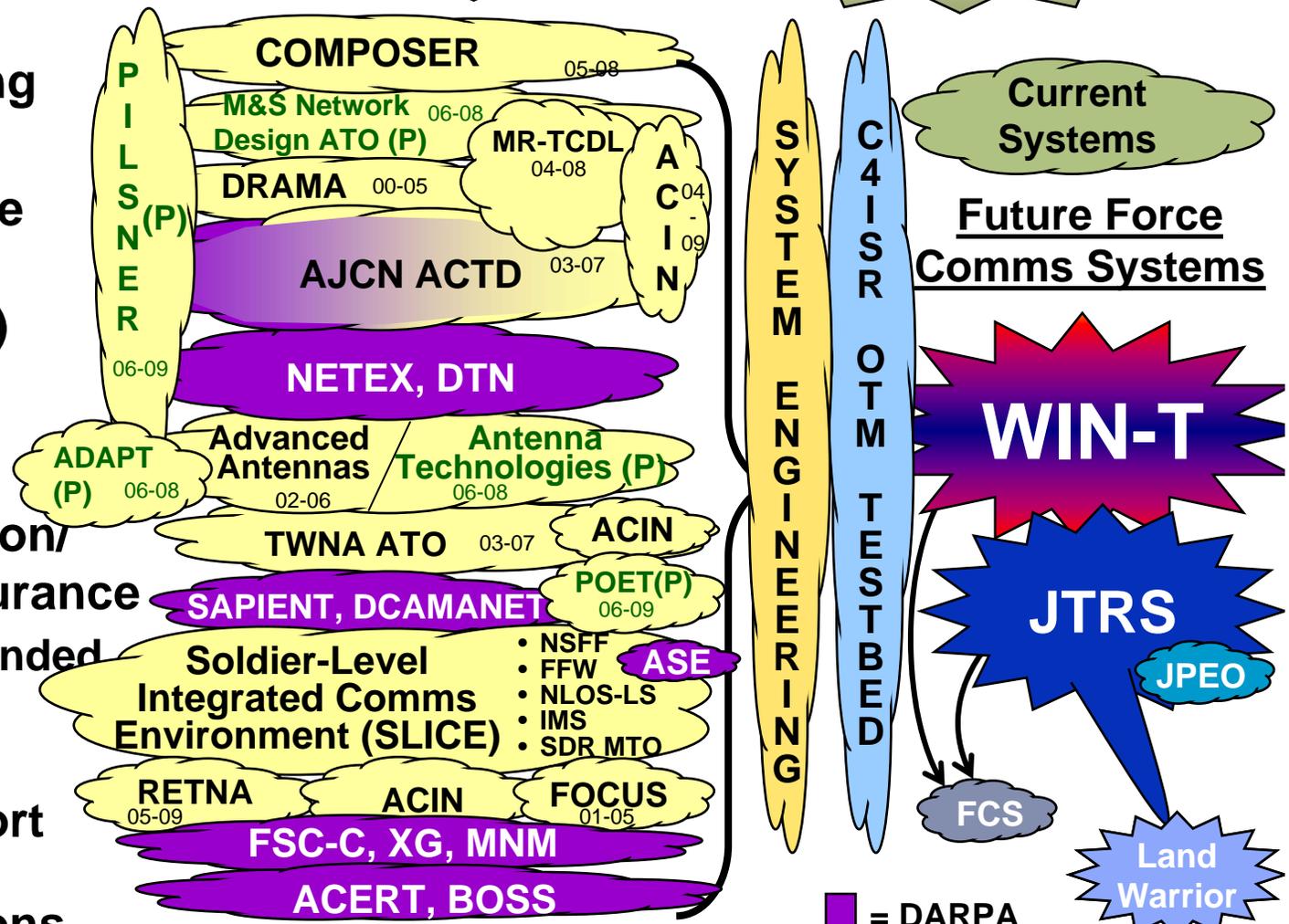
✓ Antennas

✓ Network Protection/ Information Assurance

✓ Soldier and Unattended Devices (Comms)

✓ Wireless Transport

✓ Network Operations



Technology to the Warfighter Quicker



Emerging New Areas of Emphasis

Connectivity

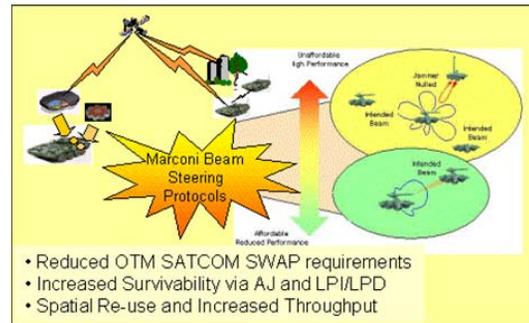
Capacity

Security

System Engineering

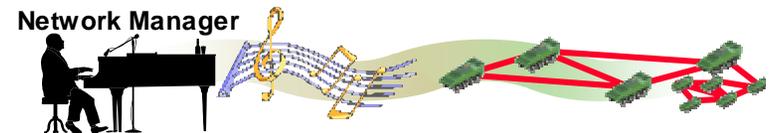
Directional Networking

– Directional Antennas

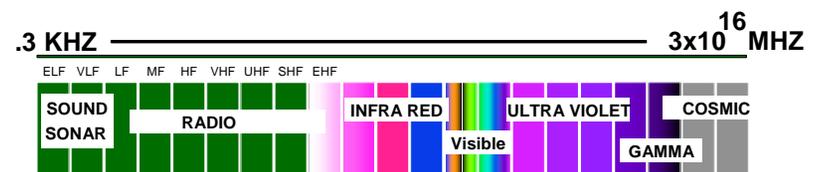


- Data Links
- WIN-T/SATCOM

Automated Network Planning

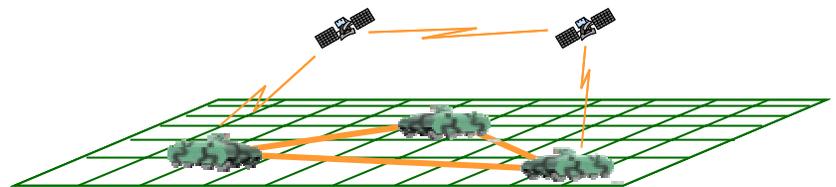


Spectrum Efficiency



SATCOM & Data Link

Networking



Complex Environment
(eg, Tunnels, Caves, In Building)



Space & Terrestrial Communications Directorate

Primary Focus Areas

Connectivity

Reachback / Range Extension

- AJCN ACTD
- Airborne Communications Extender
- Turbo Coding Technology
- UAV Comm Payloads
- SATCOM Networking
- HF Beyond Line-of-Sight
- Vertical Handoff Management

Mobile Networking

- PILSNER ATO (P)
- DARPA - FCS Comms
- Directional Networking
- Quality of Service
- Dynamic Mobile Routing
- IP Voice
- IPv6 Integration
- Reliable Multicast
- Modeling & Simulation
- Automated Decision Aides
- Network Management
- Spectrum Management

ATD / ACTD's

- NSFF
- AJCN

Soldier and Unattended Devices

- SLICE ATO - Soldier Radio Waveform
- Software Defined Radio MTO
- Sensor Networking
- Terrestrial PCS
- Radio on a Chip
- Ultra Wide Band
- Breadcrumbs
- Subterranean & Urban Communications
- DARPA - NETEX

Antennas

- Advanced Low Cost Phase Shifter MTO
- JTRS Multiband
- Low Cost Phased Array
- Body Borne
- Modeling & Simulation
- Directional
- ADAPT ATO (P)
- AT ATO (P)

Capacity

Current Force

- Brigade Subscriber Node
- Network Operation Center - Vehicle
- Information Assurance Management Assemblage
- At the Quick Halt SATCOM
- Battlefield VTC
- Adaptation of Commercial Technologies
- Joint Network Node

Information Assurance

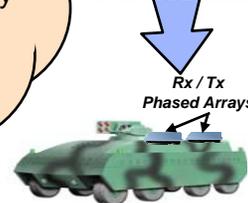
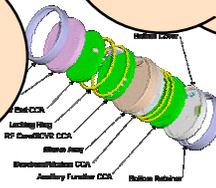
- TWNA ATO
- COMSEC
- TRANSEC
- HAIFE
- Trusted Guards
- Secure WLAN
- Secure GSM
- DARPA IA
- POET ATO (P)

Security

Wireless Transport

- RETNA ATO
- JTRS Radio Enhancements
- Laser Communications
- Modeling & Simulation
- Wideband Gap Power Amplifier
- EMI Noise Suppression
- All Digital Transceiver
- Wireless LAN
- Bluetooth
- Compression Technologies
- DARPA - XG
- DARPA - MNM
- Wideband PA

ACIN



SiC High Power Amplifier

Space and Terrestrial Communications Directorate

Developing Technologies for Today and Tomorrow

