Information Superiority Battle Command (Network Centric Warfare Environment) What is the US Army doing? Paper 123

Major C.J. Martin
Australian Exchange Officer
Battle Command Battle Laboratory (Gordon)
Comm: (706)791-3069
Email: martinch@gordon.army.mil

Agenda

- Network Centric Warfare
- Introduction to Battle Command Battle Laboratory (Gordon)
- BCBL-G contribution to developing US Army Network Centric Warfare capability
  - Modeling and Simulation
  - Battle Lab Collaborative Simulation Environment (BLSCE)
  - Future Force Concept Experimentation
  - Technology Insertion

Network Centric Warfare

- 1997, VADM Arthur Cebrowski
  - Information and Intelligence architecture built around sensors, information, and engagement grids that would enable new operational concepts of speed of command and self-synchronization.

Military Network Centric Warfare Approach

- An information superiority-enabled concept of operations that:
  - generates increased combat power by networking sensors, decision makers and shooters to achieve shared awareness,
  - increased speed of decision making and command, higher tempo of operation, greater lethality,
  - increased survivability, and
  - a degree of self synchronization

Network Centric Warfare Paradigm

- Shift from platform centric warfare based upon overpowering and destroying enemy forces with the aim of removing courses of action due to a lack of material strength.
- NCW focus on non-tangible collective attributes:
  - Leadership, individual morale, unit cohesiveness, situational awareness, information transport and processing.

BCBL(G) Mission

Provide overall direction, oversight, vertical and horizontal integration of all activities that are focused on providing the means to improve and merge Battle Command and information warfare.

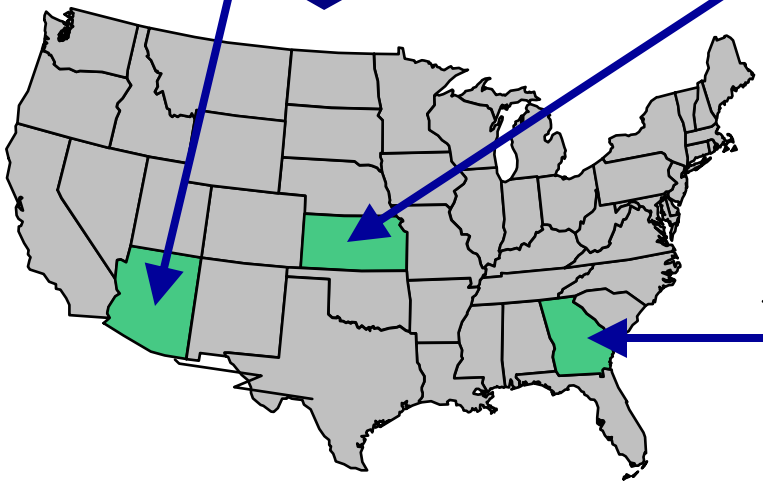
BCBL-G Responsibilities

- Investigate, leverage, and adapt emerging commercial communications and battle command automation technologies, capabilities and concepts that *support* the current and Future Force

Battle Command Triad

FT. HUACHUCA, AZ
FOCUS on :
The "INTEL" of Battle Command
Technology Solutions
Intelligence Capabilities

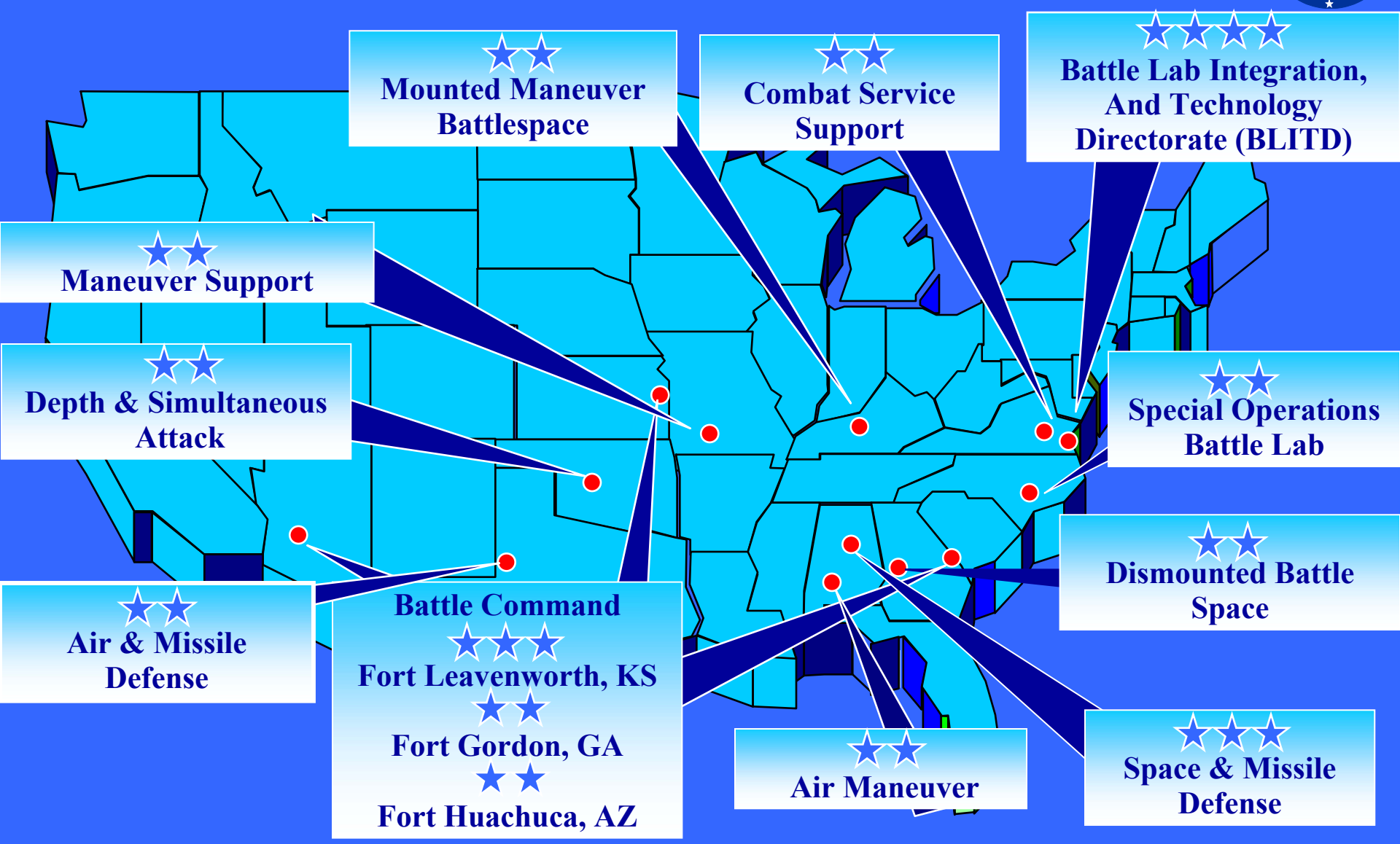
FT. LEAVENWORTH, KS
FOCUS on :
The "ART" Of Battle Command
(C2) Rqmts
Desired Capabilities
CP Structure / Organizations



FT. GORDON, GA
FOCUS on :
The "MEANS" of Battle Command
Technology Solutions
C2 Standardization
Information Systems
Networks / Protocols

Fort Gordon BCBL(G) is the TRADOC executive agent for the "means" of BC and technical integration of Information Networks (Army & Joint)

Army Battle Laboratories



Modeling and Simulation

- Developing communications and networking models and simulation that accurately portray the network effects is critical to the achievement of Network Centric Warfare.

NPST Mission and Vision

MISSION:

- To provide a Network Management, Planning & Simulation toolset that models and predicts network performance within Future Force experiments.
- To provide Warfighter Signal Staff with a toolset that allows the staff to plan, monitor and maintain the health of the network in support of the Commander's scheme of maneuver during Future Force experimentation.

TRANSITION VISION

- Transition proven NPST functionality to WIN-T, JTRS, & FCS Network Management programs of record.

BATTLE LAB COLLABORATIVE SIMULATION ENVIRONMENT (BLCSE)

- TRADOC Battle Labs & Branch proponents digitally networked & integrated.
  - Enable collaboration, routine virtual teaming (voice, VTC, whiteboard, & TKN)
  - Enable distributed M&S, link Warfighting simulations and experiment events
  - Deployable network for experimentation / integrating virtual & live Force play
  - Gateway for Joint experimentation / link to DCEE and other Service labs
  - Gateway to technology base (CECOM, SPAWAR, ROME Lab, etc) & industry

- Integrated environment to support development of systems-of-systems combined arms capabilities across the Army and in support of Joint operations, optimized for Future Force Development:
  - Validate / refine O&O, OA/SA, MNS, ORDs
  - Get at KOC (Deployability, C4ISR, NetFires, LOS/NLOS, Mounted/Dismounted Ops)
  - Bridge capability gaps between Current, Stryker, Future Force

Enabling Network-Centric Experimentation within TRADOC

And

Execution of BLCSE NOSC Functions

Are Key Roles For SIGCEN

TRADOC's Objective (BLCSE) Network Concept (FY04)

SIPRNET

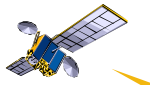
JBC

DISN LES
Joint / Strategic Network Gateway

Industry Players

BLCSE NOSC
BCBL(Ft Gordon)

DOD Teleport Prototype



BLCSE Deployable Assets

2 - Mobile Nodes
5 - Transit Case Nodes

Ku-band VSAT Terminals

Ft Gordon

N x PRI

PRI Network

N x PRI

OC 12

NETWORK SERVICES :

TRADOC KNOWLEDGE NETWORK (TKN)
HIGH QUALITY VTC (POLYCOM)
SECURE VOICE OVER IP
NETWORK MGT / BANDWIDTH INSTRUMENTATION

NIPRNET

DREN II Network

SDREN

DS3 Ft Rucker

DS3 Ft Leavenworth

OC3 Ft Knox

DS3 Ft Benning

DS3 Ft Sill

OC3 RDE Command

JFCOM DCEE Network / Federation

DS3 Ft Lee

DS3 Ft Bliss

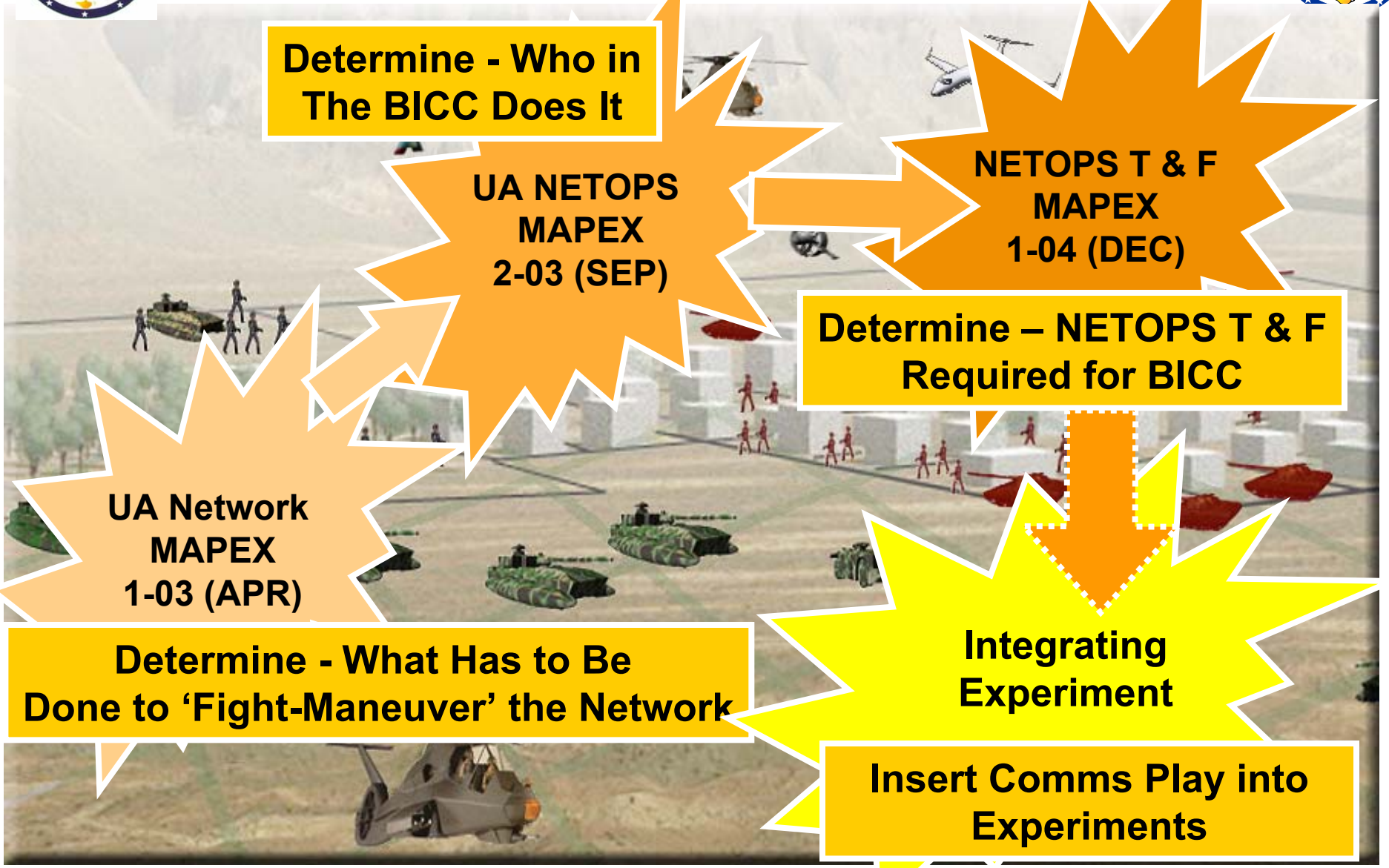
DS3 Ft Monroe

DS3 Ft Leonard Wood

Future Force Concept Experimentation

- Future Force is conceptually a Network Centric Enterprise in which success in combat is linked to the "goodness" of the network and the reliability of pertinent information getting to the right user at the right time
- Experimentation provides insights for Future Combat Systems and Future Force Issues including the Network.

BCBL(G) UA Network Campaign Plan



Determine - Who in The BICC Does It

UA NETOPS MAPEX 2-03 (SEP)

NETOPS T & F MAPEX 1-04 (DEC)

Determine – NETOPS T & F Required for BICC

UA Network MAPEX 1-03 (APR)

Determine - What Has to Be Done to 'Fight-Maneuver' the Network

Integrating Experiment

Insert Comms Play into Experiments

Future Force Experimentation Key Insights

- Ultra-reliable situational awareness via the Common Operational Picture relies on Joint, Interagency and Multinational Communcations Systems.
- Requirement for Dedicated All Weather Communications Relay platforms.
- Requirement for Higher level of Networking skills for all soldiers.
- Requirement for Network Planning and Simulation Tool.

Technology Insertion

- 1st Stryker Brigade Combat Team Beyond Line of Sight Communications Capability

1SBCT Ground Segment

- Ground segment consists of Very Small Aperture Terminals (VSAT)
- Operates in Ku band (11-14 GHz)
- Reference Terminals use 2.4m flyaway
  - 9 transit cases for antenna
  - 3 transit cases for electronics
- Traffic Terminals use 1.5m flyaway
  - 3 transit cases for antenna
  - 2 transit cases for electronics
- Both use 16W solid state PA and LNB.

Ground segment provides outstanding mix of mobility, reliability and performance to provide wideband comms to the tactical warfighter.

1SBCT TDMA Services

- 1SBCT TDMA network provides internal broadband services
  - Red VoIP to all sites
  - Black VoIP to select sites for in-band orderwire
  - Data pull from Bde Web server
  - Supports 10 node BVTC conference

- External linkage currently provided by 4th ID

- Optionally, data services could be provided by Camp Doha
  - Better reliability
  - Less congestion
  - Less latency

TDMA Equipment

Master 2.4m antenna – Camp DOHA

Bde Main 2.4m antenna

Traffic Terminal 1.5m antenna

Master Reference Terminal Electronics

Traffic Terminal Electronics

Conclusion

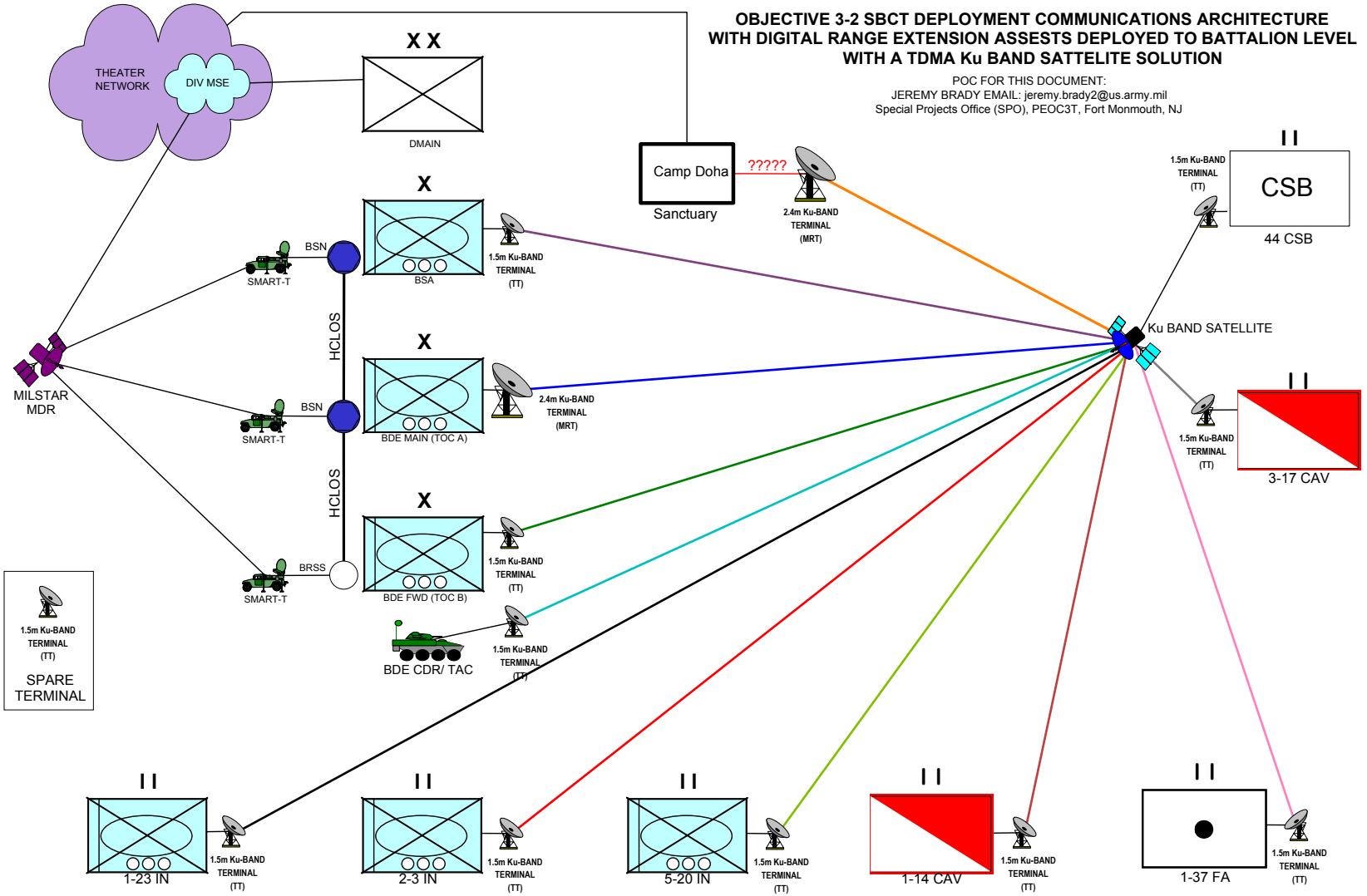
- Introduction to Battle Command Battle Laboratory (Gordon)
- Network Centric Warfare
- BCBL-G contribution to developing US Army Network Centric Warfare capability
  - Modeling and Simulation
  - Battle Lab Collaborative Simulation Environment (BLSCE)
  - Future Force Concept Experimentation
  - Technology Insertion

Questions/Comments ?

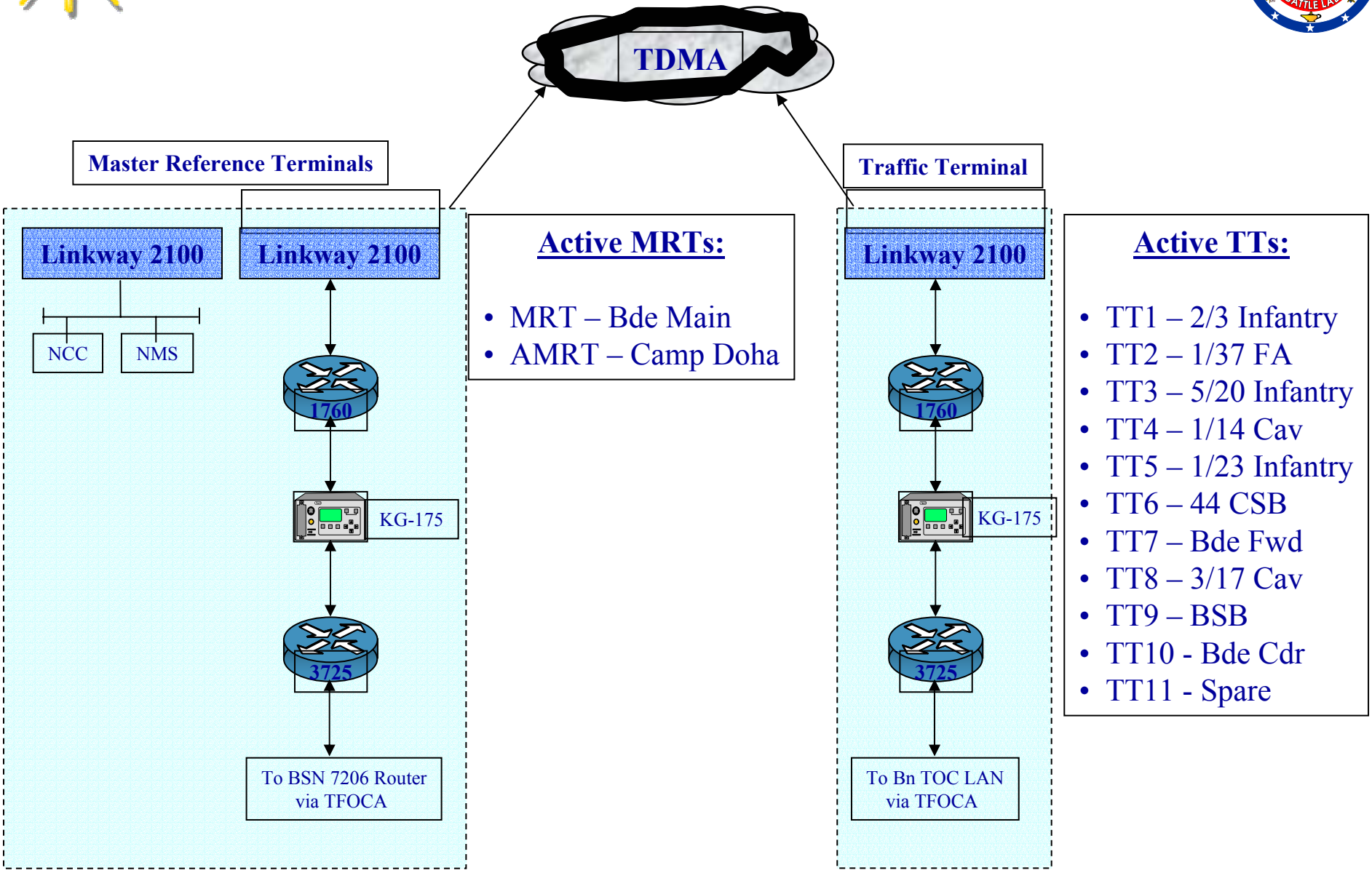
Backup Slides

OBJECTIVE 3-2 SBCT DEPLOYMENT COMMUNICATIONS ARCHITECTURE WITH DIGITAL RANGE EXTENSION ASSESTS DEPLOYED TO BATTALION LEVEL WITH A TDMA Ku BAND SATTELITE SOLUTION

POC FOR THIS DOCUMENT:
JEREMY BRADY EMAIL: jeremy.brady2@us.army.mil
Special Projects Office (SPO), PEOC3T, Fort Monmouth, NJ



1st SBCT TDMA Network Topology



Active MRTs:

- MRT – Bde Main
- AMRT – Camp Doha

Active TTs:

- TT1 – 2/3 Infantry
- TT2 – 1/37 FA
- TT3 – 5/20 Infantry
- TT4 – 1/14 Cav
- TT5 – 1/23 Infantry
- TT6 – 44 CSB
- TT7 – Bde Fwd
- TT8 – 3/17 Cav
- TT9 – BSB
- TT10 - Bde Cdr
- TT11 - Spare