Integrating Technology to the Joint Fight

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Deputy Chief of Staff
Warfighting Integration

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The Air Force is engaged in Jointly developing advanced technologies and integrating net-centric warfare by significant investment in resources and people to deliver capability to the Joint Commander.

Requires:
- Persistent sensors and weapons effects.
- Integrating nodes through digital connectivity.
- Enabling capability through advanced applications.
Net-Enabled Capabilities

**OBJECTIVE:**
Shorten the Kill Chain

**EFFECTS:**
- Decision Superiority
- Greater Speed
- Greater Precision

**CAPABILITIES:**
- Global Network Connectivity
- Network-Enabled Platforms/Weapons
- Fused Intel
- Real Time C2 and SA

**Key:** Net-Centric Operations
IP-based routing, shared data, assured service
Joint Mission Area Capability

Attack Operations
- Global Strike
- Interdiction
- TST/TCT Prosecution
- Special Operations
- Offensive Counter-air
- SEAD/DEAD
- Close Air Support
- Information Operations
- Combat Support Operations

Defensive Operations
- National Ballistic Missile Defense
- Homeland Defense
- Counter Space
- Theater Missile Defense
- Cruise Missile Defense
- Defensive Counter Air
- Air Defense Operations

Integration Critical to Improving All Missions
Space & C4ISR CONOPS Effects
From CONOPS

Seamless C3 for all distances and levels of command

Connectivity / Interoperability / Access

Provide timely, actionable information

Low latency – High accuracy

Enable distributed dynamic battle management, planning, control, de-confliction and execution.

Blue Force Situational Awareness

Respond rapidly to emerging targets & events to create decisive effects

Swarming via digital networking

Deter or dissuade by detecting, tracking and identifying all targets - the foundation to execute tasking

Red Force Situational Awareness

Puts CONOPS in Operator and Acquisition Language
# C4ISR Summit 2003 Panel Link to Space & C4ISR CONOPs Capabilities

## WHY FOCUS ON NetOps?

<table>
<thead>
<tr>
<th>S&amp;C4ISR Capabilities</th>
<th>EBO</th>
<th>PBA</th>
<th>Net Ops</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Locate, ID, track, observe</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>2.0 Deploy and employ ISR assets</td>
<td>X</td>
<td></td>
<td>X</td>
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<tr>
<td>3.0 Assess Global Conditions and Events</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4.0 Battlespace Situation Awareness</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5.0 Dynamic Battle Management</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6.0 Exercise S&amp;C4ISR Capabilities</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>7.0 Deceive or defeat ISR capabilities</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>8.0 Attack and defend in the Infosphere</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>9.0 Perform counterspace</td>
<td></td>
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<tr>
<td>10.0 Right information to right decision-maker, at right time</td>
<td></td>
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<td></td>
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<tr>
<td>11.0 Operate, Protect and Defend Info and Info Systems</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12.0 Generate &amp; provide supporting info services</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Source: 7 Oct 02 Final Version S&C4ISR CONOPS*
NetOPs Core Components

C2 Constellation

Sensor’s Forward
Targeting TST/TCT
C2ISR
Special Ops
Logistics
Support WX, Comm

Joint Applications
“Things that run on the network system”

Network Centric Enterprise Services

Joint Connectivity
“The GIG – ConstellationNet, FORCEnet, LANDWARnet”
Constellation Interoperates with Maritime & Ground BMC2 Systems to Provide Joint BMC2
- SIPRNET: Limited connections at all 104 bases
- NIPRNET: Core buildings connected at 67 of 104
- GIG-BE: Complete at 37 AF bases, 10 Gigabits/Sec
- NetOps/Defense: 2 MAJCOMs/25 bases
- SIPRNET: Core buildings connected at all bases
- NIPRNET: Core buildings connected at all bases
- NetOps/Defense: All MAJCOMs and bases
- Integrated NetOps and NetCOP across all domains (Air/Ground/Space)

Five Falconers

Tailored/Functional
1, 2, 11, 14
TACC, CHOC

WOCs, WOCs, WOCs, WOCs, WOCs, WOCs
ConstellationNet (Ground) FY 20

- SIPRNET: All Bases Complete
- NIPRNET: All Bases Complete
Time sensitive targets must be shared, distributed, and integrated horizontally ... to one and all simultaneously.
Envisioned FY 20 Constellation Net (Air & Space)

No IP or Data Link Capability: C-40 AIP
All Source Intelligence indicates that an Al-Qaeda facility is present in the vicinity of FN8646.

Data Gathered from NSA intercepts, Group websites, and space imagery show terrorist activities in the area, but nothing yet conclusive. 0800Z031220.

Incoming SIGINT intelligence from Navy SSN operating in the area indicates active terrorist operations in the vicinity. 0800Z031222.

SIGINT report confirmed by most recent space imagery collection. 0800Z031222.

Information shared between National Agencies & Services at All C2 Levels.
Al-Qaeda facility located – occupants unknown, no other intel available.

Latest Imagery:

PBA Analysis:
Facility used for bomb-making and Leadership meetings.

Nearest sensors:
Global Hawk (20 min ETA)
MC2A on orbit in vicinity
SOF team (2 hours ETA)

CURSOR OVER THE TARGET OPTIONS:
CUE
INVESTIGATE
ID
SHADOW
IO
TARGET

RECOMMENDATION:
GH being retasked,
MC2A moving to support,
and SOF team notified of emerging mission.

Rationale: Established Mission Priorities
Initial Service Efforts

TODAY:
PROGRAM SPECIFIC SOLUTIONS

DCGS - AR
DCGS - AF
DCGS-N
JSIPS / GCCS / TES
RAINDROP
PTW

CONSOLIDATED SYSTEMS

DCGS 10.2 Interoperability
Precise Geopositioning

TRANFORMATIONAL JOIN C2 CAPABILITIES

FORCENET

C2 CONSTELLATION

LAND WAR NET

ISR FUSION

AIM POINT MENSURATION

COMMANDER'S DECISION
Network Centric Collaborative Targeting (NCCT)

JMC2A Key Capabilities

Sensors Forward Integrator for Joint Ops

Initial Strike Globally
Support Follow-on
Real-time Battle Management
C2 on Board

UAV Control

Focused AMTI for CMD
Spec Caps

MTI target cueing
to Shooters

Enhanced SAR (10x)

Improved GMITI (5-10x)
Wide Area Surveillance

DJC2

Integrated ISR
- Common Operationalized Picture
- Predictive Battlespace Awareness

On-scene AOR-wide BMC2
- ATO Execution
- Dynamic Re-tasking
- Efficient TCT Ops
- Improved Combat ID

AOC APPS & TOOLS

Joint Deep Strike Ops
- Joint C2
- CSAR/SCF Support

Joint and Combined Connectivity

C2 and Intel Reachback

UAV Control

Global Hawk

Joint and Combined Connectivity

Rivet Joint

JSTARS

Space Connectivity

Enhanced SAR (10x)
Advanced Tactical Targeting Technology (AT3)

Sensors Forward - Immediate location of SAM threats

Long standoff range
Very short on-time
Threat Moves

AT3 GOAL: 50 meter CEP @ 50 nm standoff within 10 seconds
Elements to Develop Joint Net-Centric Warfare

Vision
- Level 1
  - 2

Requirements
- OSD or Service

CONOPS
- Service Plan
  - Architectures
- Joint Network Design

Waveform Development
- Global Frequency Plan

Build Terminals
- Integrate onto Platforms with Applications

Test, Evaluation and Certification
- Field with TTP Manuals

Capability

DARPA, Industry, NSA

AFFMA

JTRS Program

ACC, AMC, AFSOC, ASC

DT, OT, Joint

Inexpensive

Seed Study Money

10's of Millions

WF's 50 Mi@

$2 B

8-40 B

100 Mils

10
Tactical Node Connection: Joint Tactical Radio System

- Chassis
- Channel Slots
- Power Amplifier
- Crypto
- Connections
- Cooling
- Power Supply
- Back Plane
- Antennas

- FAB-T
- MIDS - JTRS
  - Fighters
  - Bombers
  - Special Ops

- Airborne Maritime
  - Fixed (AMF)
- C2ISR Aircraft
  - Ships
  - Ground Stations
- Cluster 1

- Cluster 2/5 Handheld/Manpack

- Vehicular Rotary Wing
<table>
<thead>
<tr>
<th>Level</th>
<th>Computer Equivalent</th>
<th>Example</th>
<th>What You Get</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Using Computer as a Word Processor</td>
<td>Link 16 Ground Track from Link 16</td>
<td>Legacy IER, JTRS Policy Compliance</td>
</tr>
<tr>
<td>1*</td>
<td>Send/Receive Word Documents from Net</td>
<td>Link 16 Ground Track from G16</td>
<td>Legacy IER, M2M G16 Connected</td>
</tr>
<tr>
<td>2*</td>
<td>Internet Explorer on Desktop</td>
<td>Desktop Capability (e.g. E-mail, NPR/ SIPR, etc.)</td>
<td>Man-in-the-loop G16 Connected</td>
</tr>
<tr>
<td>3*</td>
<td>“Sharing” a Word Document with your workgroup</td>
<td>Intra flight Sensor Data Sharing</td>
<td>Integrated M2M targeting collaboration</td>
</tr>
<tr>
<td>4*</td>
<td>Some Level of Bill Gates’ House</td>
<td>Target Video</td>
<td>Fully integrated M2M Network enabled data exchange</td>
</tr>
</tbody>
</table>

Platforms: B-1, A-10, F-15 etc. AC-130, Tankers E-10, F-35, UCAV
A Coalition JEFX 04
Wringing Out Joint NetOPs

JEFX ... Delivering Integrated Capability to the Joint Warfighter
Integrating JBMC2 with NCW

**SPACE**
- SPINF
  - WGS
- SBIRS
  - DSP 22, DSP 23
  - S 1, S 2, S 3, S 4, S 5, S 6, S 7
- CCIC2S
  - AEHF
  - Inc 2
  - TSA1, MUOS, TSAT

**AIR**
- MC2A
  - BSL 8
  - RSIP
  - IDG
  - MIDS
  - SIAP
  - FAB
  - JTRS
  - 40/45
  - NCCT
  - AMP
  - C-130
  - AT
  - DCGS

**GROUND**
- CAOC
  - TACC 10.1
  - 10.1
  - TDL
  - JTRS
  - Gen2
  - Gen3

**INVESTMENTS**
- FY04
- FY05
- FY06
- FY07
- FY08
- FY09
- FY10
- FY11
- FY12
- FY13

AFCDI PROPRIETARY
Air Force is fully committed to co-developing integrated capabilities delivering Joint effects by significant investment in time, resources, and people to advance Joint Net-Centric Capability.

Sum of all Wisdom: Placing the Cursor over the Target, the Operator Doesn’t Care Where the Info Came From.