



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

9 Sep 2003

MEMORANDUM FOR JTRS/JPO

FROM: HQ USAF/XOR

SUBJECT: Joint Tactical Radio System (JTRS) Wideband Networking Waveform (WNW) Requirements

The Air Force has developed a preliminary list of minimum capabilities to support your efforts to develop the JTRS Wideband Networking Waveform (WNW) for joint service implementation (atch). We are providing this initial list as minimum essential requirements for the Air Force's airborne network. We are confident the other services will have similar needs when it comes to fixed-wing aviation as well as for future sensor and weapons capabilities. We derived these capabilities from multiple sources to include the overarching *Multi Command and Control Functionality Mission Need Statement* validated by the JROC in Nov 03 and two draft Capability Development Documents: *Tactical Data Link (TDL) Transformation CDD* and *Multi Platform-Common Data Link System CDD*, now in joint coordination.

We want to ensure the JTRS WNW Network Manager (JWNM) requirements are fully addressed and suitable to support fast moving aircraft entering and departing dynamic operational environments with connections to slower ground and naval forces. We also need to establish WNW linkages to Network Centric Enterprise Services.

In an effort to better develop requirements for WNW, we recommend a joint forum at the earliest possible date to discuss whether or not the current Cluster 1, WNW Spiral 1 development effort should continue with its limited defined attributes. We also request you update the specifications contained in the WNW Functional Description Document to reflect the attached requirements. We will seek JROC approval for these changes to Annex E of the JTRS ORD at the earliest opportunity.

Please direct any questions to our POC, Lt Col Eugene Hauck at DSN 329-0157, clarence.hauck@pentagon.af.mil. The AFC2ISR Center POC is Lt Col Chris Moore, DSN 575-3553, christopher.moore@langley.af.mil.

smg
STEPHEN M. GOLDFEIN, Brig Gen, USAF
Director, Operational Capability Requirements
DCS, Air and Space Operations

Attachment:

USAF Airborne Wideband Network Capabilities-Based Requirements

cc:

OASD NII

JS/J6T

HQ Army/G8/FDE (AMD)

OPNAV/N 62

CG Marine Corp Combat Development Command

SAF/AQI

AF/XIC/XII

AFC2ISRC/CC

AFC2ISRC/SC

AFC2ISRC/SCW

AFCA/GCL

AFFMA/CC

USAF Airborne Wideband Network, Capabilities-based Requirements

Small Tactical Aircraft

Performance (Source: TDL-T CDD(draft))

Number of airborne platforms - 2 to 200 (More possible with reduced throughput)

Maximum range - 300 miles.

Access - Network join time - < 5 seconds

Low latency - < 2 msec @ 100 nm, 6 ms @ 200 nm, 30 ms @ 300 nm

Total network throughput - 10 Mbit/sec

Individual user throughput - 2 Mbit/sec at 100 nm

Single platform rate - 2Mbit/s@ 100 nm, 500Kbit/s @ 200 nm, 220Kbit/s @ 300 nm

Able to handle aircraft to aircraft communication or aircraft to weapons - < 4800 Knots Vc.

Full duplex - Simultaneous transmit and receive

Security (Source: TDL-T CDD(draft))

Capability for low probability of detection and intercept and use on low observable aircraft.

Multiple levels of security - More than 4

Suitable for LO aircraft; AJ characteristics classified

Affordability(Source: TDL-T CDD(draft))

No new cabling or minimum use of it.

Maximum use of existing antenna

Since MIDS & ARC-210 are current platform planning A kit designs, be able to fit inside and operate inside these shell containers. Weight, space, cooling, back plane throughput

Spectrum Allocation (Source: TDL-T CDD (draft))

Utilize spectrum that permits the widest number of platforms with the most throughput.

Cross frequency band usage.

Interoperability with Global Grid (Source: TDL-T CDD (draft))

Able to run/interoperate on commercial IPV4 or IPV6 network stack architectures.

Able to run unmanaged (un-optimized) or network controlled

Fully distributed, real-time; no single point of failure; flat net; ease of use

Co-exist and fully interoperate with Link 16 inside the same line replaceable unit

Flexibility (Source: TDL-T CDD (draft))

Completely dynamic

Wide Body Aircraft

Multi Point Support Requirements (Source: MP-CDL System CDD (draft))

Broadcast Hub to Spoke: 40Mbps(T), 120Mbps (CDL 137Mbps waveform)(O), 240Mbps (CDL 274Mbps waveform)(O)

Spoke to Hub: 1.5Mbps(T), 10Mbps (CDL 137Mbps waveform)(O), 40Mbps (CDL 274Mbps waveform)(O)

Jamming Environment Throughput: 1.5 Mbps (T), 10Mbps (O)

Multipoint data dissemination capability must support 30(T), 50(O) network platforms

Air-to-Air, Point-to-Point Support Requirements (Source: MP-CDL System CDD (draft))

Return Link: 274Mbps(T), 2 x 274Mbps(O), 4 x 274Mbps

Forward Link: 68Mbps(T), 274Mbps(O), 2 x 274Mbps(O)