

AS / NZ Chapter International Data Link Society 2018 TDL Interoperability Summit

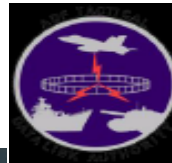


AIR LAND INTEGRATION Challenges, Issues, Lessons Learnt David Johnson



Fact: Global Joint Fires in the next 5-10 years will incorporate different waveforms and emphasize new network enabled platforms such as weapons and unmanned systems.

PRELUDE



ADFTA



VICE CHIEF OF THE DEFENCE FORCE JOINT FORCE AUTHORITY DIRECTIVE 02/2018

ADF TACTICAL DATA LINKS

VCDF/OUT/2018/122

See distribution

References:

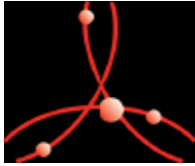
- A. US Chief Information Officer memo of 15 September 2017- Link 16 Software Based Terminals for Operations in Contested Environments (R32805303)
- B. USA-M15-WP06-Plans for the Sunset of L11 of 21 June 2016 (R29195674)
- C. US Joint Capabilities Board memo - Link 16 Mod of 04 January 2017 (R30616278)
- D. VCDF Directive 05/16 IFF Mode 5-TADIL & TBMCS Compatibility (R31212741)
- E. DI(G) CIS 6-6-001—Management of Defence use of the Radiofrequency Spectrum

PURPOSE

1. The purpose of this directive is to provide **direction** on the implementation of **Tactical Data Links 16 and 22 and the retirement of Link 11**. The intended outcome is that Capability Managers, CASG and CIOG have a clear understanding of requirements for the implementation of Tactical Data Links (TDL) capability to maximise the combat effects of an integrated and networked ADF and facilitate development of a Joint Force by design.

BACKGROUND

2. Defence has operated TDLs since the 1970s achieving a degree of interoperability between Navy and Air Force platforms but minimal integration across the entirety of the Joint Force. Current TDLs, particularly Link 16 for Maritime and Air Warfare, underpin the resilience critical to success in the Battlespace and are central to the C4ISR Design for the Joint Force. However, to maintain effectiveness in the context of increased demands on network capacity and survivability in a contested environment, current systems must implement the latest technologies or be replaced (ref A).



GOVERNANCE

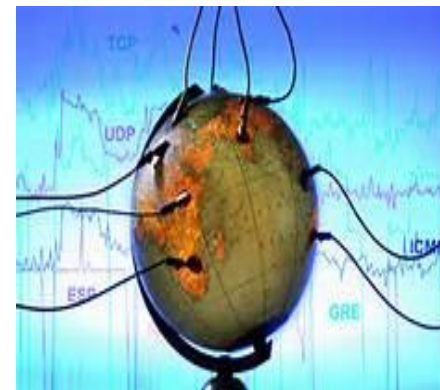


ADFTA

- A Tactical Data Link (TDL) is a US Joint Chiefs of Staff (JCS) approved, standardized communications link for the transmission of digital information.
- JCS has stated “If you are not Link 16 (TDL) capable, you will not be welcomed on the US Battlefield and, in fact, **you will be considered a blue on blue engagement generator** - a threat to friendly and coalition forces.”

What I want to share with you today...

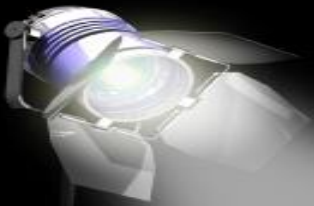
- Air Land Integration and what it really means for TDLs. **(USAF and the first 30 days)**
- Challenges and the top TDL Issues to provide Air Land Integration.
 - How can the land domain be fully integrated into existing and developing TDLs in a joint manner?
 - How can we transition from our legacy TDLs to migrate to a seamless and modern Network Enabled Capability?
- The solution moving forward for TDLs to provide Air Land Integration.





Understanding Communication Formats





WHAT IS AIR LAND INTEGRATION

A Fusion of Incompatible Data Links and Data Sources

There are various datalinks on the battlefield

LINK16 across C2 aircraft and fighters

SADL across specific aircraft and ground forces

VMF across active duty aircraft and some ground forces

CoT across IP type networks

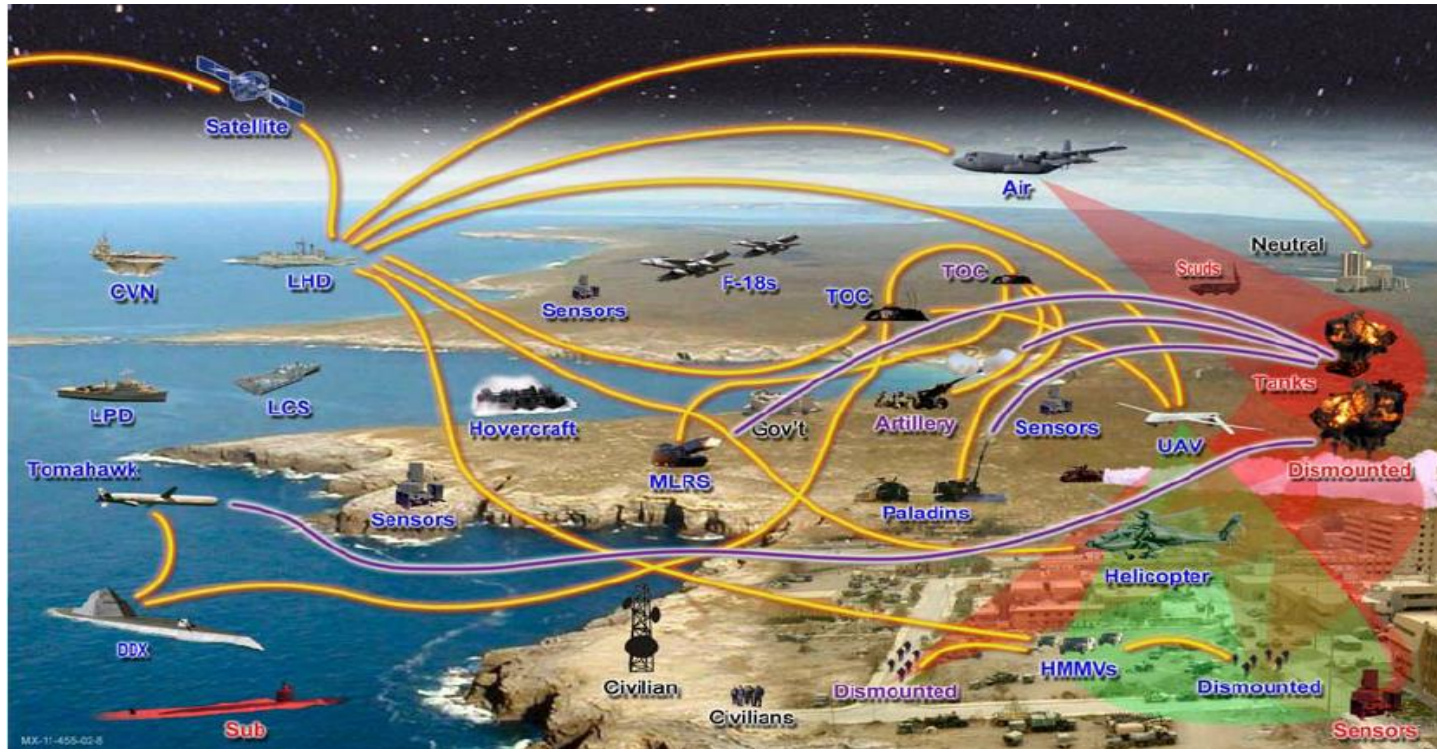
JREAP-C across IP type networks

JREAP-A across SATCOM Networks

Data Links systems are typically big, power hungry and heavy

Gateways bridge the Gap

MODERN BATTLESPACE



Who Needs The Air Picture?

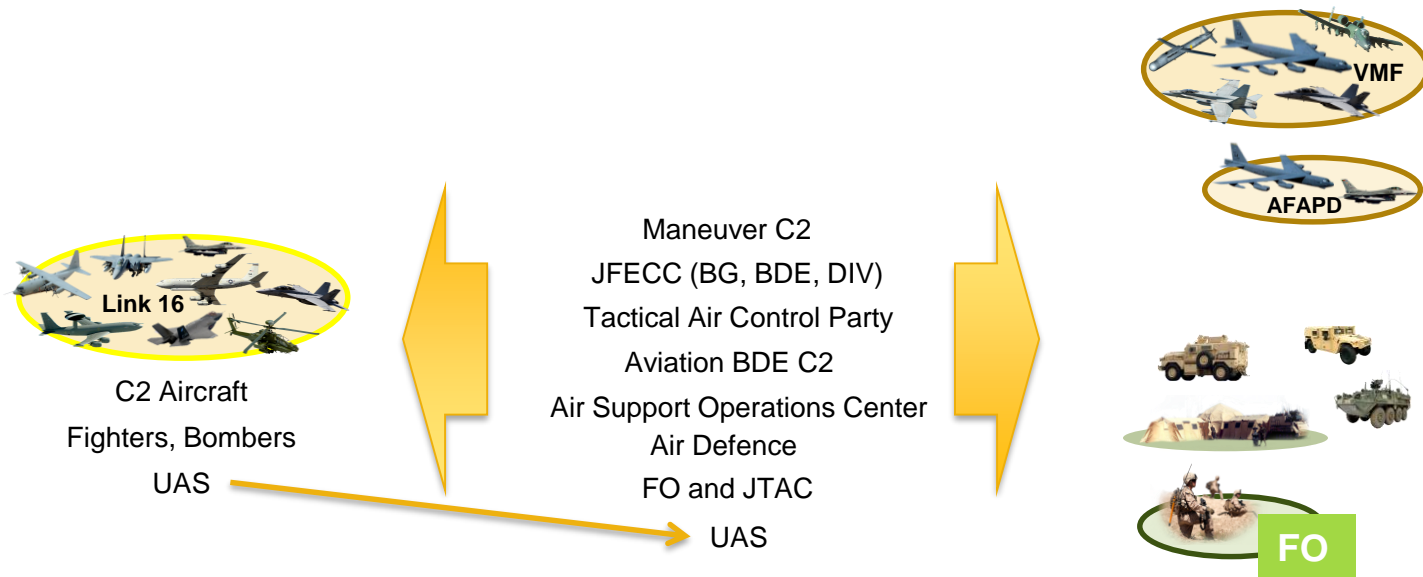


C2 Aircraft
Fighters, Bombers
UAS

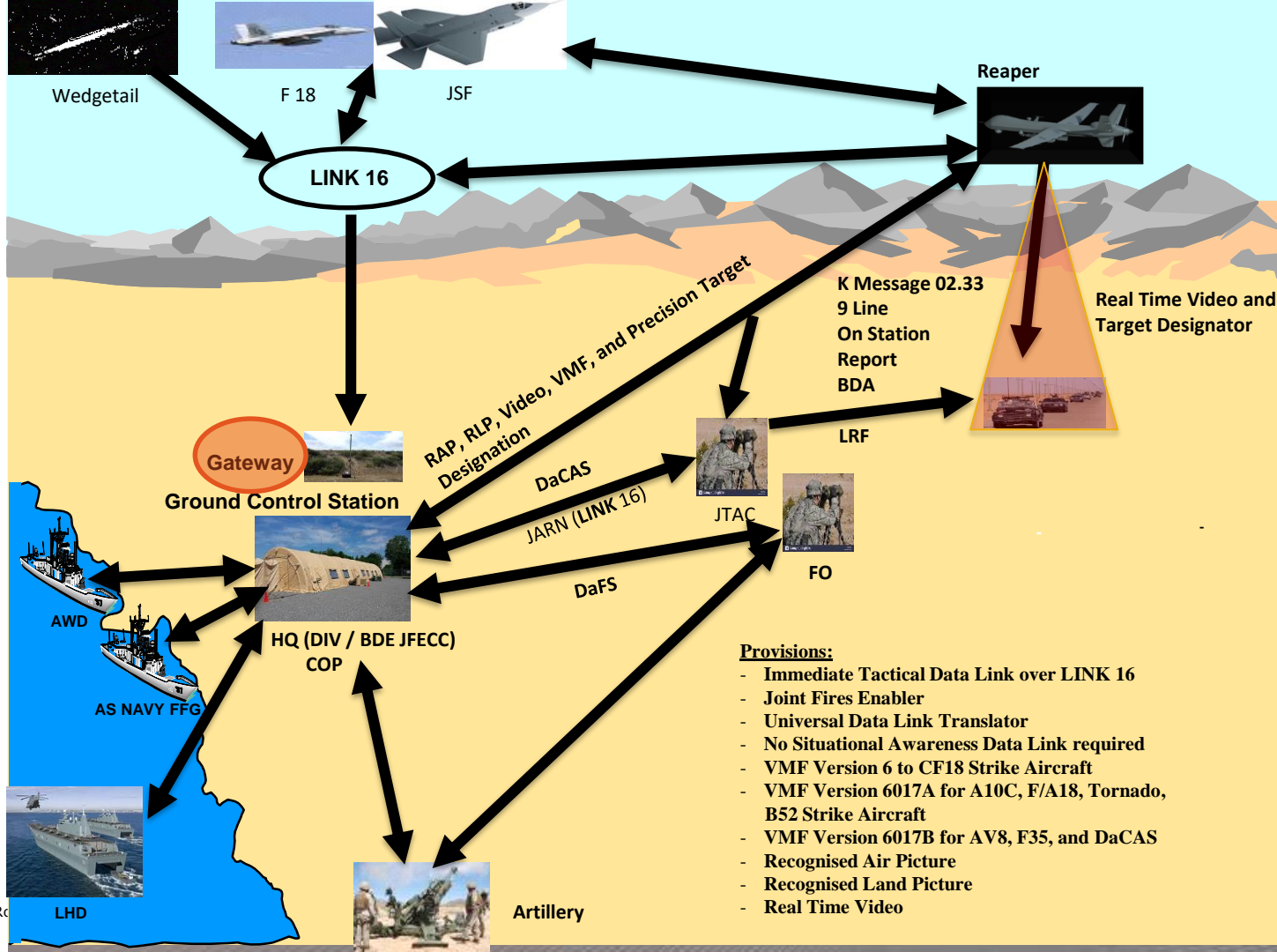


Maneuver C2
Joint Fires and Effects Coordination Centres (JFECC) (BG, BDE, DIV)
Tactical Air Control Party
Aviation BDE C2
Air Support Operations Center
Air Defence
Forward Observer (FO) and Joint Terminal Attack Controller (JTAC)

Who Needs Both Air and Land Picture?

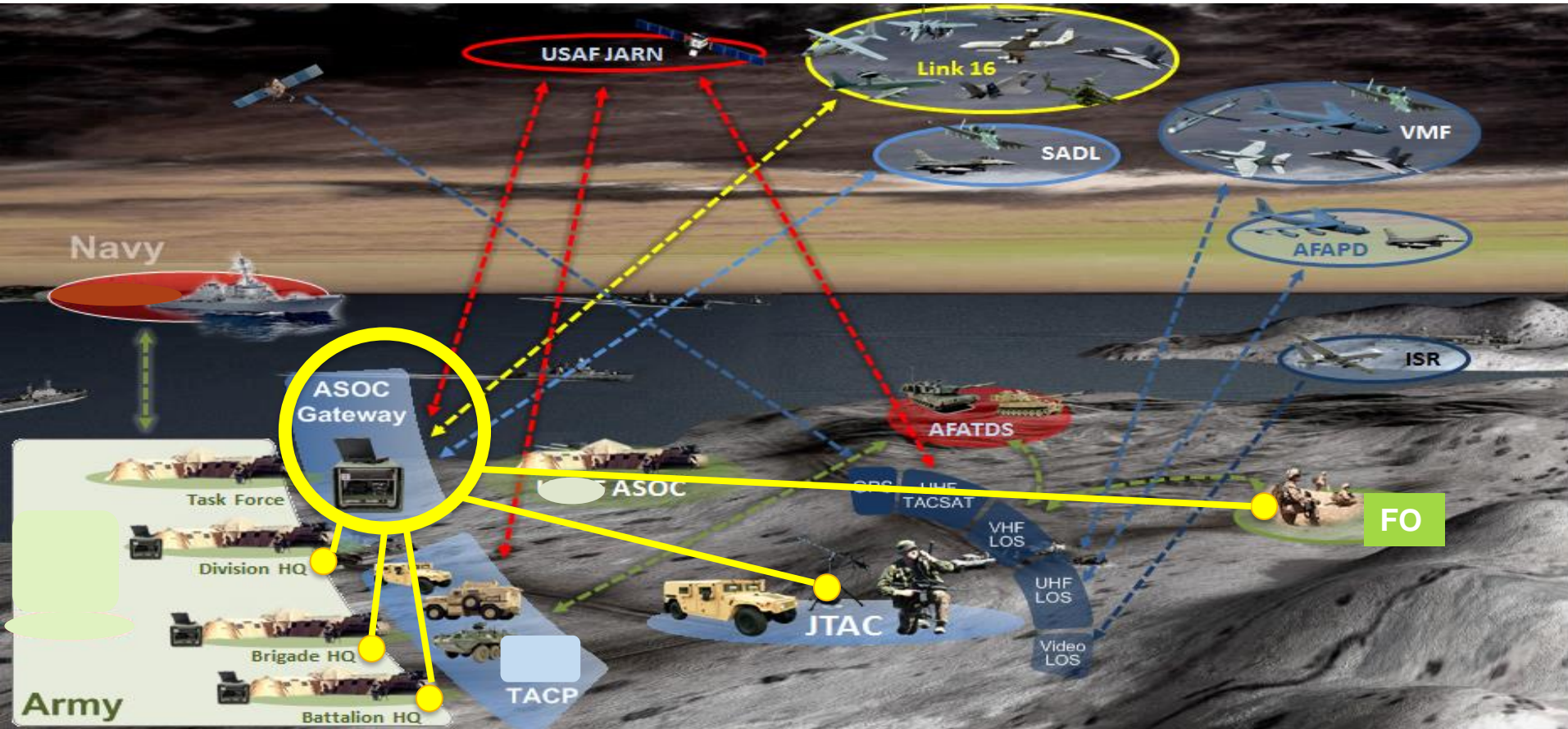


But SAT, ground and air operate on different networks!



- Provisions:**
- Immediate Tactical Data Link over LINK 16
 - Joint Fires Enabler
 - Universal Data Link Translator
 - No Situational Awareness Data Link required
 - VMF Version 6 to CF18 Strike Aircraft
 - VMF Version 6017A for A10C, F/A18, Tornado, B52 Strike Aircraft
 - VMF Version 6017B for AV8, F35, and DaCAS
 - Recognised Air Picture
 - Recognised Land Picture
 - Real Time Video

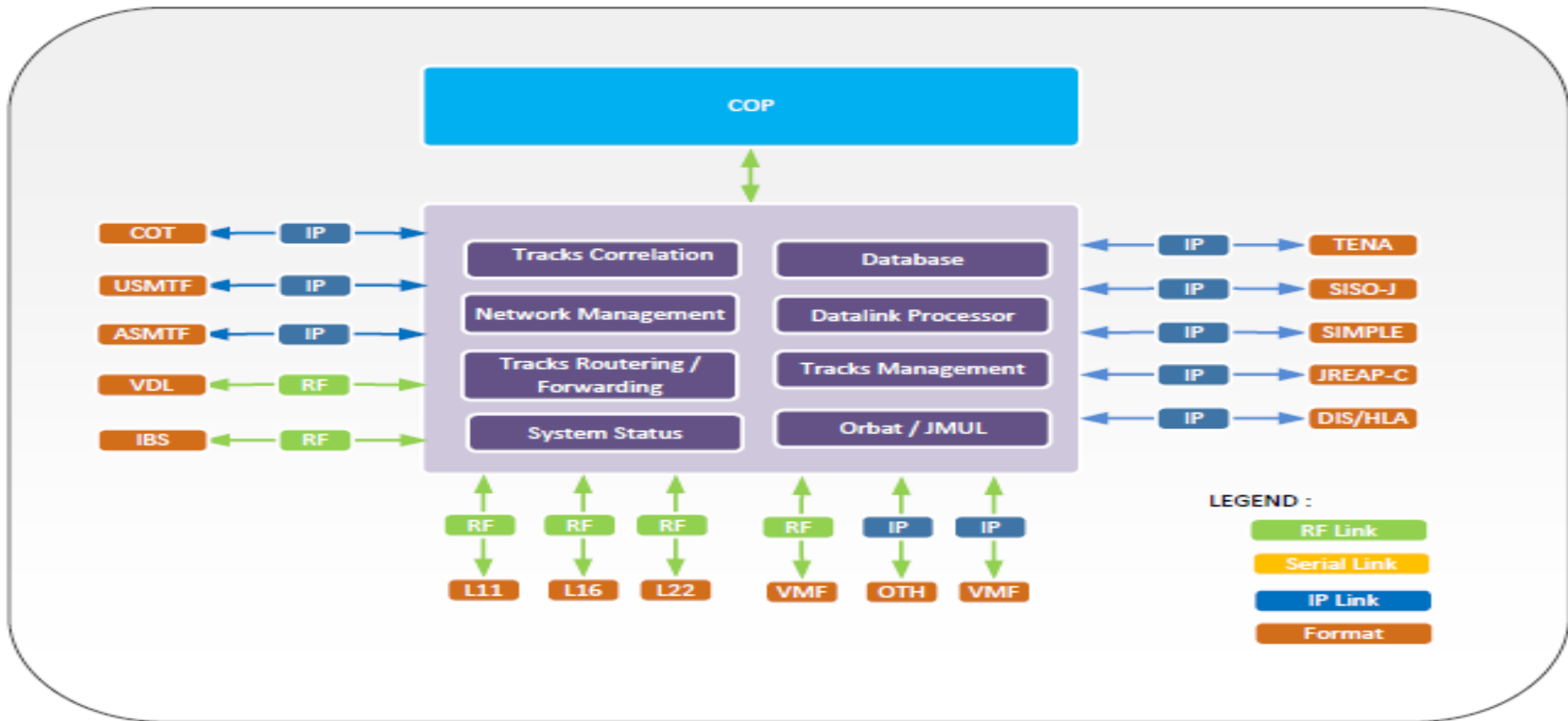
The Networks for Air and Land



The Gateway Evolution is the Solution

- Small Form Factor terminals in a “deployable” or “mobile” tactical gateway have changed the game by being 90% smaller and 90% lighter.
- Essentials:
 - Designed for each force element;
 - Data Link Processor to provide Joint Fires to meet Air Land Integration needs;
 - No special cooling or fans so it is Desert sand Friendly;
 - Performs MIL-STD-6020 – Translation and forwarding of Blue Force tracking
 - Innovative translation and forwarding of target tracks and attack messages to/from attack platforms outside of MIL-STD-6020
 - Translate and forward across LINK16, VMF, CoT, JREAP-C and JREAP-A
 - C2 certified for LINK16 operations (Minimum Implementation Certification for Close Air Support)
 - LINK16 to VMF certified for translation and forwarding

Joint Command and Control Gateway



Solutions Provided

Operations Centers :

- Participate in SATCOM S/A, LINK16, VMF, SADL, CoT, JREAP-C : **One Fused Picture**
- Ability to datalink forward between ground units forward and the Recognized Air Picture

C2 Vehicles

- Fuses the Ground and Air Picture for real time view of the battlespace

Air Defence / Airspace management assets

- Manage Airspace in real time
- Monitor Air Defense zones for hostile aircraft

FO / TACP //JTAC vehicles

- Control airstrikes via LINK16, Deconflict with VMF provided Ground Picture
- Manage Small Diameter Bomb deployments
- Forward air picture to Joint Air Request Net users that are already getting the ground picture

Army Aviation C2

- Translate / Forward ground and Air Picture to ARH / Apache and ground VMF Network
- Forward ARH / Apache Targets to Ground network
- Receive targeting messages from ground network for passage to ARH / Apache

Summary

- One of the biggest challenges is that increasingly, all of the military's networks have to function together to ensure critical information needed by the warfighters flows seamlessly between different networks.
- “Deployable” or “Mobile” Gateway solution designed to meet the needs of today's light agile forces that want to see both the ground and air picture in real time.
- Provides Situational Awareness and Command and Control to fuse the RAP and RLP to provide an essential COP for a Joint Force by design.

QUESTIONS



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