Joint Tactical Networking Center Overview

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DoD Waveform Standards
20 September 2017

JTNC Overview

- The JTNC supports the DoD goal of ensuring interoperable, secure, and affordable waveforms and wireless communications products by recommending standards, conducting compliance and certification analyses, and maintaining the DoD Waveform Information Repository (IR).

  – JTNC Core Functions
    - DoD Waveform Standards & Software Communications Architecture
    - DoD Waveform Compliance and Certification
    - DoD Waveform IR Management & Configuration Control
    - Technical Advisor to JTNC Board of Directors

JTNC Non-Core/Reimbursable Functions

- JTNC provides additional related services on a reimbursable basis such as:
  - Technical analysis of non-joint networking applications
  - Science & Technology project support
  - Waveform technology transition support
  - Request for Proposal/contracting support
  - International programs/project support
  - Service-unique waveform support
  - Joint networking application & Electronic Warfare system integration
  - Coalition waveform support

Mission & Vision

Chartered Mission

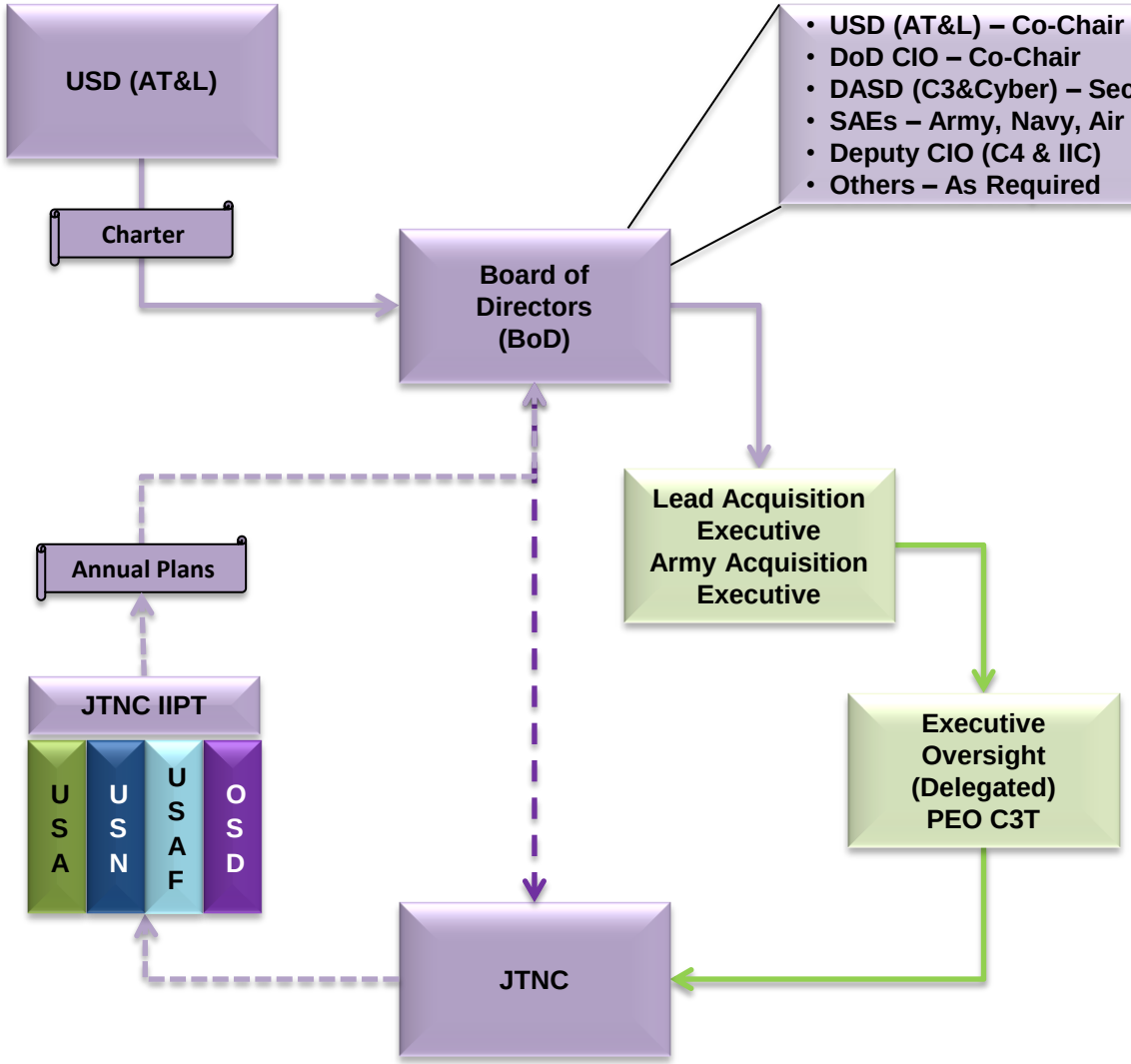
To ensure interoperable, secure, and affordable waveform and wireless communications by recommending standards, conducting compliance and certification analyses in accordance with DoD policies, and maintaining a DoD Waveform Information Repository (IR)

Chartered Vision

Interoperable, secure, and affordable waveforms and wireless communications in support of Service, Multi-Service, and Coalition forces

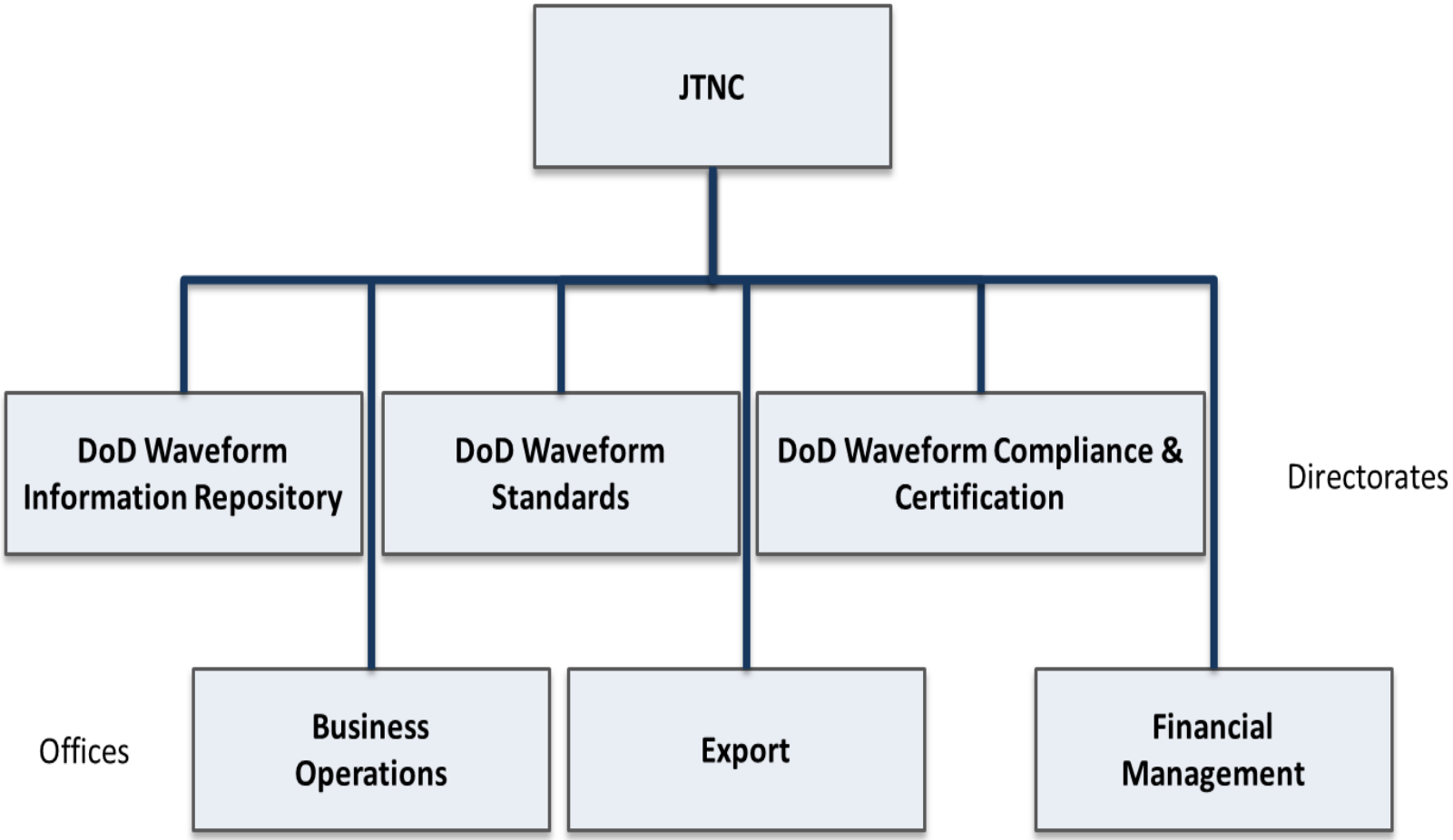
JTNC Vision and Mission Approved in the 29 March 2016 Updated Charter

Governance and Resourcing



- JTNC BoD established to address waveform issues within DoD
- AAE is Lead Acquisition Executive for the JTNC
- Executive oversight of JTNC delegated to PEO C3T
- JTNC Management Plan approved annually by BoD
- Resourcing per annually updated Tri Military Department Resource Plan
- Other resourcing in accordance with approved non-core functions on a reimbursable basis

Organizational Structure



DoD Waveform Standards

JTNC Chartered Core Functions

- **DoD Waveform Standards**
  - Provides a validated open systems reference architecture that separates waveform/network manager from the radio set
  - Permits common waveform software to be deployed across multiple vendor's radio sets

- **DoD Waveform Compliance and Certification (C&C)**
  - Perform technical analysis of candidate Waveform IR products that results in preliminary characterizations of Waveform IR products regarding whether they meet government standards and policies for secure interoperability.
  - Perform technical analysis of Waveform IR products for certification. This analysis will result in comprehensive characterization of Waveform IR products as to whether they meet DoD standards and policies for interoperable and secure joint tactical networking.

- **DoD Waveform IR**
  - Provides a cyber-hardened, DoD-wide waveform library and controlled access for waveforms and associated network managers, operating environment software, models, architectural standards and Application Program Interfaces (APIs)
  - Protects and distributes artifacts based on legal agreements between government and software developers

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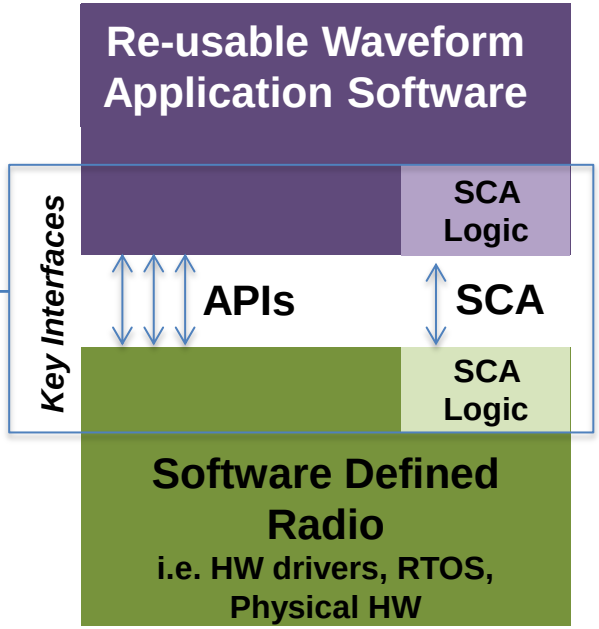
DoD Waveform Standards

- **Software Communications Architecture (SCA)**
  - **Open architecture framework**
  - **Defines a standard way for radios to instantiate, configure, and manage waveforms applications running on their platform**
- **Application Programming Interfaces (APIs)**
  - **Suite of interface specifications**
  - **Define the key software interfaces that allow the waveform application software and radio platform software to interact**



- **Benefits of SCA & APIs**
  - **Facilitates re-use of government owned waveform applications**
    - **Reduces cost to port waveform vs. developing new waveform**
  - **Scalable for different missions and different form factors**
  - **Modular design enables rapid integration of performance improvements and cybersecurity enhancements**

SCA and APIs enable Interoperability, Security, and Affordability for the Services' Radio and Waveform Acquisition Programs

SCA & APIs: Consensus Based Standards

- **JTNC Interface Control Working Group collaborates with multiple organizations to evolve the SCA & APIs and align with industry standards in support of DoD acquisitions**
  - Joint Services
  - Other Government
  - Industry
  - Standards Organizations
  - Non-U.S.

Open business model encourages contributions from across the community and allows shared risk, maximizes reuse and reduces total ownership costs

DoD Policy on IT Standards

DoDI 8310.01, IT Standards in the DoD, 2 Feb 2015

"Program managers and developers will use IT standards in the DoD IT Standards Registry (DISR) for IT system development, acquisition, and procurement to promote interoperability, information sharing, reuse, portability, and information security."

"IT system development, acquisition, and procurement must conform to all applicable mandatory standards profiles in the DISR or derived from the DISR."

DoDI 4630.09, Communication Waveform Management and Standardization, 15 Jul 2015

"Establishes policy, assigns responsibilities, and provides procedures for: Management, standardization, and reuse of DoD software communication waveforms as outlined in Reference (b) and the Joint Tactical Networking Center Charter (Reference (d))."

"Applicable DoD waveforms include, but are not limited to, communication protocols used in tactical (e.g., tactical data links (TDL), tactical networking waveforms, line of sight waveforms, and satellite communication waveforms) and strategic environments. This instruction applies to new waveform developments and modifications to existing waveforms."

DoD Waveform Compliance & Certification (C&C)

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Waveform Analysis Process

- The JTNC provides a technical analysis concentrating on a candidate waveform's interoperability, security, and affordability attributes, and provides a recommendation for the disposition of the waveform to the DoD CIO.
- The JTNC evaluates waveforms against waveform specifications (explicit requirements) and relevant DoD and commercial standards (implicit requirements) through a systematic repeatable process.
- The analysis verifies the waveform's current maturity level, including the adequacy and completeness of the software code, tests performed, and associated documentation.
- Analysis information allows the waveform sponsor, Service, or program office implementing the waveform to consider identified issues based on their operational requirements, and to conduct an informed risk assessment on the reuse of the waveform for their specific application.

Waveform Analysis Process: Providing inputs to the DoD CIO on the technical feasibility and maturity of the waveform per DoDI 4630.09

Technical Analysis for Compliance & Certification

- Conduct Technical Analysis for Compliance & Certification (TACC) on Programs of Record (PoRs) and/or Non-Developmental Item (NDI) vendors developing software-definable tactical wireless devices.
  - Establishes a framework for DoD waveform and wireless communication software reuse
    - Provides risk analysis of test results for SDRs to ensure security, interoperability, and affordability
  - Decreases waveform Life Cycle Costs
    - Mitigates risks for Services seeking to procure and field SDRs executing DoD Waveform(s)
  - Facilitates competition among tactical communication SDR developers
    - Provides competitive advantage to PORs and NDI vendors for potential procurement opportunities
  - Provides feedback to independent vendors investing R&D funds towards capabilities focused on military modernization

TACC: Instituting a proactive radio market by aligning with the USD(AT&L) "Better Buying Power"

CCEP & JTEL

- NSA Commercial COMSEC Evaluation Program (CCEP)
  - NSA enters into a direct business relationship with a commercial vendor to develop an Information Assurance (IA) product using vendor funds
  - Requires a government business case or sponsor to support NSA evaluation resources

CCEP: Evaluate those products that best provide for widespread availability of quality, inexpensive, secure communications systems for use by the U.S. Government.

- JTNC Test and Evaluation Laboratory (JTEL) serves as the test authority for SCA & APIs
  - Support Application/Waveform (WF) and Operating Environment (OE) Testing based on the DISR Standards
  - Provide SCA and API Compliance Verification Reports to the JTNC Director for consideration

JTEL: Verification of conformance to established DoD Standards on Open Systems Architecture and Key Modular Interfaces.

DoD Waveform Information Repository (IR)

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DoD Waveform IR

- Per the JTNC Charter, DoD Waveform IR shall:
  - Be recognized by DoD as the “DoD Waveform IR” and facilitate the reuse of government owned waveforms
  - Ensure that submissions are free of commercial or restricted Intellectual Property Limitations
  - Confirm that all software cataloged has appropriate Government Purpose Rights or a special license for reuse
  - Configuration Management (CM) on the repository's contents, quality assurance, and facilitation of access to the repository by users
- DoD Waveform IR is “Cyber Hardened” for improved Security Posture
  - Catalogue decoupled from Waveform storage
  - Push vs Pull Model
  - Language upgrades
- www.dodir.mil (CAC Protected)

Export & International

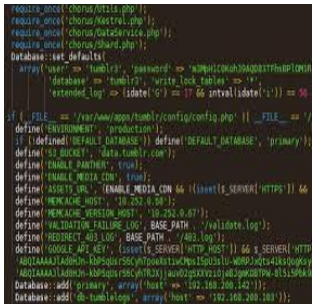
Export / International

SDR technology is changing rapidly, leading to new exportability challenges

Past
Hardwired radio

- Export of **Complete System**

Present
Software Defined Radio



- Export of waveform capability on a US SDR platform **(Complete System)**
- Export of waveform software only
- Export of SDR development environments only
- Export of DoD capability on Non-DoD platforms
- Export of commercial variants of DoD capabilities
- Export of systems with DoD capability using commercial cryptography

Export Activities:

- Support DoD CIO and the Services in providing waveform and SDR export recommendations
- Support the development of the DTSA DoD SDR & Waveform Export Policy
- Publish waveform Exportability Reports that analyze export potential, and promote the integration of international acquisition and exportability considerations into program documentation

International Activities:

- Support the Services in secure coalition communication interoperability activities (OCF)

Contact Information

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