2019 WInnComm-Europe Conference

NATO's perspective on tactical interoperability

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v03

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Outline

- Introduction

- Recap: why we need interoperable waveforms in the tactical domain

- NATO activities in support of interoperable WFs development

- NATO's Waveform Policy

- NHQC3S' views on the way-ahead for the engagement with WInnF

Introduction – NHQ C3 Staff

- Provides advice and coordination on C4ISR capabilities

- Executive arm of the NATO C3 Board

- Drives a number of specific areas with the nations including **Communications Interoperability**

  →helps nations improve secure communications

  →includes **Tactical WF Interoperability**

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Introduction – NCI Agency

Inter alia, provides unbiased technical support to the NHQC3S via its PoW in several topic areas including **Waveform Interoperability**:

- Providing technical support to the NATO LOS Comms CaT
- Following and **facilitating interoperable waveform development efforts** with nations and industry
- Supporting NBWF Ed. 2 development

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Recap: why we need interoperable WFs

- Force composition is more granular
- Increased mobility of forces
- Higher information exchange requirements
- Increased threat levels
- Interoperability via loan equipment not always possible
- Interoperability via GWs not ideal with high-tempo operations

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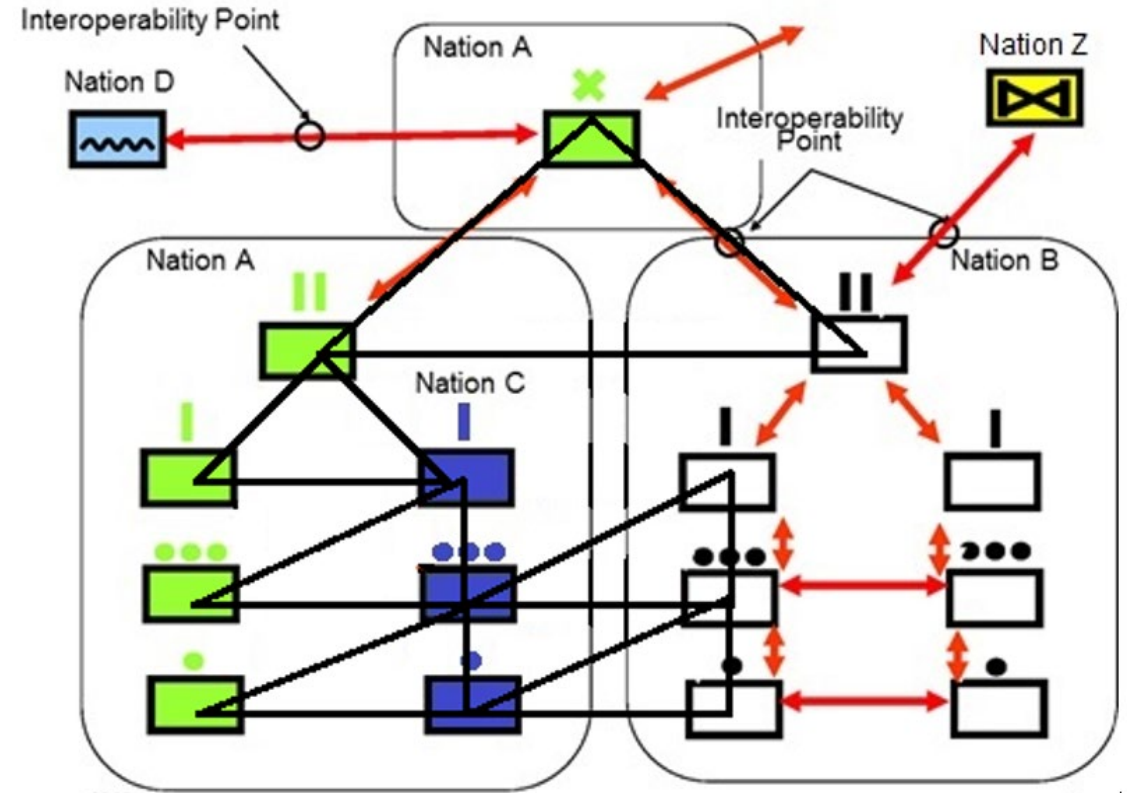
NATO activities in support of interoperable WF development

- Supporting the *coalition of the willing* for **NBWF Ed. 1 implementation**

- Supporting **NBWF Ed. 2 development**

- Promoting the establishment of a ***WF repository*** to facilitate WF implementation

- Common interests with the **EU/EDA**

- Engaging with **WInnF**

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NCI Agency activities in support of interoperable WF development

- NCI Agency supports NHQC3S activities
- **NBWF Ed. 2** aimed at becoming a NATO standard
  - Similar network functionalities as NBWF Ed. 1
  - With EPM capability against specific EW threats (& other features)
- **NBWF Ed. 2 Tiger Team** established by a subset of the LOS Comms CaT Nations:
  - To consolidate NBWF Ed. 2 **user requirements**
  - To define and specify **EW Threats**
  - To develop **Ed. 2 specifications**
- NCI Agency is supporting the Tiger Team work
  - Defining and documenting the EW Threat Environment in tactical operations

NCI Agency activities in support of interoperable WF development – EW Threat Study

- The EW Threat document presents the EW Threats to tactical military radio communication systems potentially face by NATO coalition land operations in the bands
  - **VHF** (30-88 MHz)
  - **NATO UHF** (225-400 MHz)
  - Does not include: HF radio systems, Link 16, SHF SATCOM, or other commercial systems
- Covers the **threat technology** and adversary tactics over 2018-2030 period
- It considers **Peer State** and **Non-State Actors** in **two operational scenarios**
- Focuses on **land systems** and **UAVs** in support of EW ground forces
- It will be used to support
  - the development of the NBWF Ed. 2
  - the specification and verification of performance of EPM waveforms in VHF-UHF

NATO Waveform Policy

- Defines NATO approach to the **introduction, management, and dissemination** of NATO waveform specifications and reference software

- **Advisory** to NATO Nations and **mandatory** for NATO staff and organizations

- Does not mandate changes to existing NATO standard already implemented by Nations

- **Approved** by the North Atlantic Council, NATO's highest political committee [C-M(2015)0041]

- Transmitted in May 2018 to WInnF for consideration by SDS Committee

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Waveform Policy Major Points

- Waveform **standards** shall be **free of charge** to NATO and NATO Nations and be **freely redistributable** within them
- Specifications shall be **supported by reference software** in due course to facilitate development and interoperability testing for target software
- **Base waveform** software may be used as a **basis for development**, as long as it is unbiased and has fair IPR
- **Target software** need **not be free of charge** or IPR
- Software should be based on **open software standards** when possible, using **SCA and associated SDR standards** to facilitate sharing
- Goal to develop **NATO repository** of specifications and software

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NATO Waveform Framework

- The Waveform Strategy has a companion document, "Framework for Sharing Common Waveforms", AC/322-D(2015)0005, NATO UNCLASSIFIED

- The Framework "defines…pertinent terms used, characterizes the SDR environment and then describes a framework for sharing of common waveforms based on a proposed waveform lifecycle process."

- NATO has **approved** the release of the document to the WInnF

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Waveform Repository

- Goal to provide properly controlled access for all stakeholders to waveform artifacts

- No repository has been created yet

    NCI Agency is developing options for the NHQC3S

- NATO welcomes inputs on concepts for repository design, content and usage

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NHQC3S' Views on the Way-ahead with WInnF

- NATO's main goal is achieving WF interoperability
  - Needs **WF standards** and **interoperable implementations**
  - Understands that industrial uptake is essential → interest in engaging with WInnF and collective efforts from nations and industry
- NATO wants to explore collaboration possibilities with WInnF
  - E.g. developing a reference implementation of an SDR version of a NATO WF
  - E.g. describing the potential design for a possible WF repository
  - Following up with WInnF

Way Ahead

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