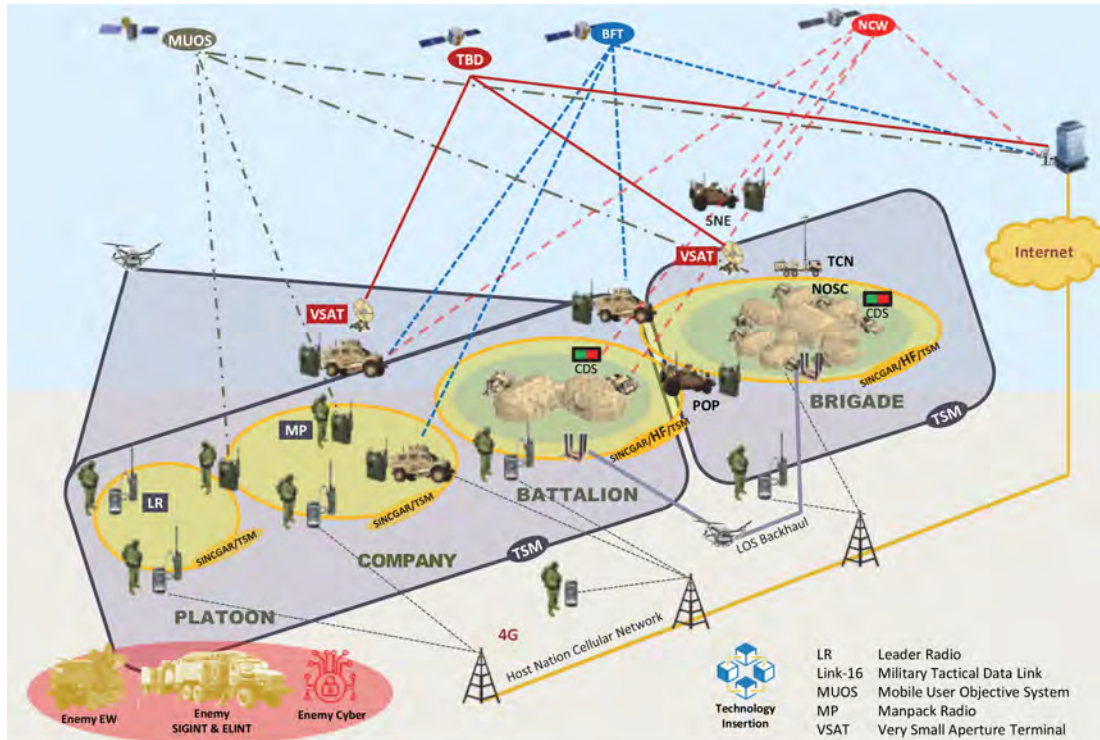


## Integrated Tactical Network (ITN)



BFT – Blue Force Tracker, CDS – Cross Domain Solution, ELINT – Electronic Intelligence, EW – Electronic Warfare, HF – High Frequency, LR – Leader Radio, MP – Manpack, MUOS – Mobile User Objective System, NCW – Net Centric Waveform, NOSC – Network Operations Security Center, LOS – Line of Sight, POP- Point of Presence, SINGARS – Single Channel Ground and Airborne Radio System, SIGINT – Signals Intelligence, SNE – Soldier Network Extension, TBD – To Be Determined, TCN – Tactical Communications Node, TSM – Tactical Scalable Mobile Ad-hoc Network, VSAT – Very Small Aperture Terminal

### Executive Summary

- The Army continues to develop and evaluate the Capability Set 21 (CS21) Integrated Tactical Network (ITN) in preparation for a rapid fielding decision for four Infantry Brigade Combat Teams (IBCTs) planned for December 2020.
- Real-world events for 1st Brigade/82nd (1/82) Airborne Division, including deployment to Kuwait, the coronavirus (COVID-19) pandemic, and deployment to the Washington, D.C. area, have delayed the completion of full brigade evaluations of the ITN in FY20.
- The December 2020 fielding decision will include evaluation of the ITN from the September 2020 Soldier Touch Point (STP). Complete results from the November 2020 technical test and the March 2021 combat training center rotation will not be included in the December 2020 fielding decision. They will inform a full fielding decision for five additional brigades in May 2021.
- The Army intends the combination of test events to serve as the Section 804 operational demonstration supporting rapid fielding and will determine operational effectiveness, suitability, and survivability for the May 2021 fielding decision.

### System

- The ITN, a component of CS21, is a suite of communications and networking hardware and software that provides voice and data communication capabilities to tactical units. The Army intends the ITN to provide an expeditionary, tactical network that is converged, resilient, and reliable in a congested and contested environment. The Army intends ITN to enable leaders to fight their formations where they choose and conduct mission command in all operational environments.
- The ITN will meet these requirements incrementally through a capability set acquisition and fielding model starting with CS21. CS21 integrates existing fielded systems, programs transitioning to production, and commercial off-the-shelf equipment through a middle tier of acquisition (MTA) rapid prototyping effort. The Army intends ITN to change and evolve as new capabilities become available for future capability sets.
- Components of CS21 include:
  - Existing Fielded Systems – Warfighter Information Network – Tactical, Joint Battle Command – Platform, Nett Warrior, Advanced Field Artillery Tactical Data

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- System, and On-the-Move and At-the-Halt Satellite Communications (SATCOM).
- Systems Entering Production – Handheld, Manpack, and Small Form Fit (HMS) Manpack, HMS Leader Radio, Command Post Computing Environment, Command Post Integrated Infrastructure, Terrestrial Transmission Line of Sight, Unified Network Operations, Precision Fires – Dismounted, Tactical Defensive Cyber Infrastructure, and Cyber Situational Understanding.
  - The CS21 ITN equipment break out by Platoon/Squad and Company/Battalion/Brigade unit level includes:
    - Platoon/Squad – Trellisware TW-950, Trellisware TW-875, Android Tactical Assault Kit (ATAK) Tablet, secure but unclassified (SBU) end-user device (EUD), and Windows Tactical Assault Kit (WinTAK) software.
    - Company/Battalion/Brigade – Tactical Cross Domain Solution (TACDS), Tactical Radio Application Extension (TRAX) software, Tactical Radio Integration Kit (TRIK), Tactical Assault Kit (TAK) server software, Variable Height Antenna (VHA), Mobile Broadband Kit (MBK), Silvus Streamcaster 4400 & 4200, Transportable Tactical Command Communications (T2C2) – Heavy, T2C2 – Light, and Scout satellite terminal.

## Mission

The ITN-equipped Brigade Combat Team (BCT) conducts Multi-Domain Operations in the Joint Operating Environment with essential mission command capabilities. The ITN operates

throughout a full range of military operations. The ITN enables leaders to fight their formations where they choose, and converges disparate transmission systems into a single network. The ITN-equipped BCT conducts mission command in all operational environments with a resilient and reliable network in congested and contested environments at the point of need. The C2S1 ITN is focused on capabilities provided to the IBCT formation.

## Major Contractors

- 4K Solutions: MBK – Midland, Georgia
- GATR: T2C2 – Huntsville, Alabama
- General Dynamics Mission Systems: TACDS – Fairfax, Virginia
- Hoverfly Technologies Company: VHA – Orlando, Florida
- KLAS Telecom: TRIK – Herndon, Virginia
- Pacstar: Baseband Terminals – Portland, Oregon
- PAR Government: WINTAK and ATAK software – Raleigh, North Carolina (U.S. Government owned software)
- Samsung: EUD (Galaxy S7) – San Jose, California
- Sierra Nevada Corporation Integrated Mission Systems: TRAX – Hagerstown, Maryland
- Silvus: Streamcaster 4400, Streamcaster 4200 – Los Angeles, California
- Tampa Microwave: Scout Terminals – Tampa, Florida
- Trellisware: TW-950, TW-875 – San Diego, California
- Verizon: Cellular plan for MBK – New York, New York

## Activity

- The Army conducted a technical test of the ITN in December 2019. The focus was to assess the ability of the SBU network to pass voice and data in a variety of environmental conditions. The program manager intended the 2-week test to serve as a risk reduction for the January 2020 STP. Problems collecting and reducing the data produced from the mission command systems made most of the network data from the tactical radios not usable.
- The Army conducted scalability tests in February and July 2020 in order to determine how many radios could join and operate on a single network. The Army collected technical data, which they used to design battalion-sized, flat networks of up to 350 nodes for units equipped with the ITN.
- In May 2020, the Army conducted a review of the ITN equipment and made critical decisions as to what the first fielded iteration of the ITN would look like.
  - The Army is fielding this equipment to the 1/82 to serve as the experimentation Brigade for fielding decisions in December 2020 and May 2021.
  - The DevOps strategy planned for FY21 includes a technical test that will assess the current configuration of equipment and stress that configuration under electronic warfare conditions.
  - Any changes, to include any new equipment, will be assessed in a Brigade-level combat training center rotation in March 2021. The Joint Readiness Training Center (JRTC) training rotation will serve as the first time that a Brigade-level ITN will be fielded and the ability to conduct ITN-enabled mission command assessed.
- Real-world events for 1/82 Airborne Division, including unexpected deployment to Kuwait, the COVID-19 pandemic, and deployment to the Washington, D.C. area, have delayed the completion of the full brigade evaluation in FY20.
- The Army Test and Evaluation Command conducted the STP in September 17 – 24, 2020, during a training exercise with the 1/82. The STP included one battalion and a slice of the brigade headquarters conducting training exercises in the field.

## Assessment

- There has not been an opportunity to evaluate the operational effectiveness, suitability, or survivability of an ITN-equipped IBCT under its current configuration, because of the delays in testing due to real-world events. The Army does not intend to conduct a formal operational test, but intends the combination of test events to serve as the Section 804 operational

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demonstration supporting rapid fielding. The Army plans to submit the ITN Test and Evaluation strategy to DOT&E for approval.

- The ITN is currently being developed under the Army's DevOps strategy. After each event, changes are made to software, configurations, and some equipment in order to improve the performance of the network. This strategy is effective for designing a system-of-systems network.
- The December 2020 fielding decision of four IBCTs will include evaluation of the ITN from the September 2020 STP. Complete results from the November 2020 technical test and from the planned March 2021 combat training center rotation will not be included in the December 2020 fielding decision. This early fielding decision, based on limited data, constitutes a risk of fielding equipment to brigades that is not effective.
- Soldier feedback from the September STP indicated that the ITN network configuration and instantiation is not intuitive as currently designed and requires a robust training program.

## Recommendations

The Army should:

1. Continue the DevOps cycle to evaluate and improve the ITN. This process should continue to have regular governmental testing that includes both soldier feedback and test instrumentation.
2. Delay fielding decisions for the ITN until the Brigade-level JRTC rotation in 2021. This delay will allow the Army to decide on the first operational fielding of the ITN based on the experiences of a full Brigade using the equipment as well as complete analysis from the technical test. This may allow for determination of operational effectiveness, suitability, and survivability.
3. Develop a robust operator and maintainer training program to support ITN fielding.
4. Submit the Test and Evaluation strategy to DOT&E for approval.

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