

Early Infantry Brigade Combat Team (E-IBCT) Capabilities IBCT Increment 1

INVESTMENT COMPONENT

Modernization

Recapitalization

Maintenance

MISSION

Fields fully integrated and tested Capability Packages composed of vehicles, network elements, equipment, and supporting infrastructure to modernize BCTs to achieve unprecedented Joint combat capability in conjunction with the Army Force Generation (ARFORGEN) process.

Increment 1 Early Infantry Brigade Combat Team (E-IBCT) Capabilities

Capability Packages are a key element of the Army's BCT Modernization strategy and they provide the Army a regular process to strengthen our units with the latest materiel and nonmateriel solutions to meet the evolving challenges of the operating environment. This allows the Army to get the capabilities in highest demand to the Soldiers that need them, when they need them most. Accelerating

proven solutions, these packages will upgrade our units every few years. These bundles of capabilities include doctrine, organization and training in conjunction with materiel to fill the highest priority shortfalls and mitigate risk for Soldiers. The incremental deliveries will build upon one another as the Army continually adapts and modernizes.

Increment 1 forms the backbone of the first Capability Package, which also contains Advanced Precision Mortar, Nett Warrior (NW) and Human Terrain Teams. The current modernization strategy will deliver Increment 1 capability to nine IBCTs starting in 2011. Remaining BCTs will receive incremental releases of upgraded capabilities. ARFORGEN will determine if and when Increment 1 BCTs will be upgraded to a post-Increment 1 configuration based upon warfighting requirements.

Increment 1 provides enhanced warfighter capabilities in two primary areas. First, it provides enhanced situation awareness, force protection,

and lethality through the use of unattended and attended sensors and munitions. Second, it provides a communications network backbone for Battalion Command Networks.

The E-IBCT package will consist of the following systems: Urban and Tactical Unattended Ground Sensors (U/T UGS), Class 1 (Block 0) Unmanned Aerial Vehicle (UAV), and Small Unmanned Ground Vehicle (SUGV) Block 1. The E-IBCT systems will be fully integrated and networked through a Network Integration Kit (NIK) enabling data sharing and the command and control (C2) of systems. All systems are currently under evaluation and testing by the Soldiers of the Army Evaluation Task Force.

The Increment 1 Tactical Network

The Army will continue development and fielding of an incremental ground tactical network capability. This network is a layered system of interconnected computers and software, radios and sensors within the BCT. The network is essential to enable Unified Battle Command and

will be delivered to the Army's IBCTs in increasing capability increments. The first increment is currently finishing software development and demonstration (SDD) and operational testing and will be delivered to IBCTs in the form of NIKs.

The Network Integration Kit (NIK)



The NIK is an integrated suite of equipment, currently integrated on Mine Resistant Ambush Protected (MRAP) Vehicle and HMMWV platforms, that provides the network connectivity and battle command software to integrate and fuse sensor data into the common operational picture (COP) displayed on the Force XXI Battle Command Brigade and Below (FBCB2). The NIK consists of an

ACQUISITION PHASE

Technology Development

Engineering & Manufacturing Development

Production & Deployment

Operations & Support

integrated computer system (ICS) that hosts the Battle Command software and the Systems of Systems Common Operating Environment (SOSCOE) software, along with a Joint Tactical Radio System Ground Mobile Radios (JTRS GMR) to provide the interface to the sensors and unmanned systems, as well as voice and data communications with other vehicles and Soldiers.

Soldiers will be able to communicate with the battalion Tactical Operation Center (TOC), by sending reports on enemy sighting, activity and location utilizing the NIK via the network, allowing for near real-time tactical decisions.

Common Controller (CC)

The Common Controller (CC) serves as a single common networked controller that connects Soldiers with many different IBCT unmanned systems, including the Class 1 Unmanned Aircraft System (UAS), the Armed Robotic Vehicle–Assault–Light (ARV-A-L), the Small Unmanned Ground Vehicle (SUGV) and Urban Unattended Ground Sensors (U-UGS). The CC reduces the logistics footprint on the battlefield and empowers the Soldier with enhanced Intelligence, Surveillance and Reconnaissance (ISR) capability.

The Common Controller will communicate via the network in Spiral 2/3/4, simplifying training, and will perform selected training, logistics/maintenance, medical and other Soldier functions.



XM156 Class I Block 0 Unmanned Aerial Vehicle (UAV)

The XM156 Class I Block 0 UAV is a platoon level asset that provides the dismounted Soldier with Reconnaissance, Surveillance, and Target Acquisition (RSTA) and laser designation. Total system weight, which includes the air vehicle, a control device, and ground support equipment

is less than 51 pounds and is back-packable in two custom Modular Lightweight Load-Carrying Equipment (MOLLE)-type carriers.

The Class I UAV provides imagery data in order to recognize personnel and provide targeting information to the BCT Modernization network during day and night operations and in adverse weather conditions from as high as 1,000 feet above ground level. The Army has incorporated an expedited Class I into IBCT Increment 1 to provide additional ISR capability to the Soldier starting in 2011. The Class I UAV Increment 1 capability will consist of a 25-pound vehicle with a commercial-off-the-shelf (COTS) electro-optical (EO) sensor and a COTS infrared (IR) sensor and a gasoline-based propulsion system.

The air vehicle operates in open, rolling, complex, and urban terrains with a vertical take-off and landing capability. It is interoperable with select ground and air platforms and controlled by mounted or dismounted Soldiers. The Class I uses autonomous flight and navigation, but it will interact with the network and the Soldier to dynamically update routes and target information. It provides dedicated reconnaissance support and

early warning to the lowest echelons of the BCT in environments not suited to larger assets.



The Class I system provides a hover and stare capability that is not currently available in the Army UAV inventory for urban and route surveillance. The Class I system also fills known gaps that exist in force operations, such as: Protect Force in Counterinsurgency (COIN) Operations, Soldier Protection in COIN environment, Ability to Conduct Joint Urban Operations, Enhanced ISR/RSTA Capabilities, hover and stare operations.

XM1216 Small Unmanned Ground Vehicle (SUGV)

The XM1216 SUGV is a lightweight, Soldier portable UGV capable of conducting Military Operations in Urban Terrain (MOUT), tunnels, sewers, and caves. The SUGV provides an unmanned capability for those missions that are manpower

intensive or high-risk such as urban ISR missions and Chemical/Toxic Materials reconnaissance missions without exposing Soldiers directly to the hazards.

The SUGV's modular design allows multiple payloads to be integrated in a plug-and-play fashion that will minimize the Soldier's exposure to hazards. Payloads to be fielded are the manipulator arm, tether capability, chemical/radiation detection and a laser target designator. Weighing 32 pounds, the SUGV is capable of carrying up to four pounds of payload.



The SUGV Increment 1 capability will feature an enhanced SUGV chassis with an integrated COTS sensor head and radio.

AN/GSR-9/10 Tactical/Urban Unattended Ground Sensors (T/U-UGS)

The UGS program is divided into two major subgroups of sensing systems: AN/GSR-9 (V) 1 Tactical-UGS (T-UGS), which includes ISR-UGS and Radiological and Nuclear UGS; and AN/GSR-10 (V) 1 Urban-UGS (U-UGS), also known as Urban (MOUT) Advanced Sensor System (UMASS).

The UGS are used to perform mission tasks such as perimeter defense, surveillance, target acquisition and situational awareness, including radiological, nuclear, and early warning. An UGS field will include multi-mode sensors for target detection, location and classification, and an imaging capability for target identification. The sensor field also includes a gateway node to provide sensor fusion and a long-haul interoperable communications capability for transmitting target or situational awareness information to a remote operator, or the common operating picture through the JTRS Network.

The U-UGS provide network-enabled reporting system for situational awareness and force protection in an urban setting. U-UGS also enable residual protection for cleared areas of MOUT environments. They are hand-

employed by Soldiers or robotic vehicles either inside or outside buildings and structures.



U-UGS support BCT operations by monitoring urban choke points such as corridors and stairwells as well as sewers, culverts, and tunnels. U-UGS gateways provide the urban situational awareness data interfaced to JTRS networks. Soldiers involved in the recent testing of the UGS provided invaluable feedback, which was incorporated into new versions (form factors) that are now in testing.

SYSTEM INTERDEPENDENCIES

JTRS GMR; JTRS Handheld, Manpack, Small Form Fit (JTRS HMS); NW, FBCB2; Warfighter Information Network-Tactical (WIN-T) Increment 2; WIN-T Increment 1

PROGRAM STATUS

- **FY09:** Integration work has addressed 100 percent of reliability fixes as a result of 2009 limited user test (LUT). Additional capability enhancements to the network, radio systems and hardware have also been made.
- **FY10-11:** Increment 1/JTRS development and integration work continues to support 2010 and 2011 evaluation activities.
- **4QFY10-1QFY11:** The Army is in year three of a four year test/evaluation process for Increment 1. Increment 1 has successfully passed Critical Design Review, Preliminary Design Review, and the technologies have been certified as mature enough for low-rate initial production (LRIP). The final Increment 1 LUT is scheduled to take place in September 2010 leading into a Defense Acquisition Board Review to authorize additional LRIP in December 2010.

PROJECTED ACTIVITIES

- **FY11:** Fielding to 3rd Infantry Brigade Combat Team, 1st Armored Division in 2011; 3-1 AD will conduct initial operational test and evaluation in late FY11.



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FOREIGN MILITARY SALES

None

CONTRACTORS

Boeing (Chicago, IL)
Science Applications International Corp.
(SAIC) (McLean, VA)

Network Integration Kit:

Boeing (Huntington Beach, CA)
General Dynamics C4 Systems, Inc.
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Overwatch Systems (Austin, TX)

BAE Systems C4 (Wayne, NJ)

IBM (Bethesda, MD)

Raytheon Company (Ft. Wayne, IN)

XM156 Class I Unmanned Aerial Vehicle:

Honeywell (Albuquerque, NM)

AN/GSR 9 & AN/GSR 10 Unattended Ground Sensors:

Textron Defense Systems
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XM1216 Small Unmanned Ground Vehicle:

iRobot (Burlington, MA)

