

## **Equipping the Army in 2020**

In 2020, the Army is a strategically responsive, tactically agile, network-enabled, expeditionary, and mission-tailorable System-of-Systems force – lethal, survivable, and sustainable across the spectrum of conflict. Inherently Joint and interdependent by design, the Army is reliant upon the other Services to maximize its total contribution to strategic, operational, and tactical Joint Force effectiveness. The Army, as an integral component of this Joint Force, is generated through a seamless, concepts-to-solutions, Joint capabilities generation process that leverages current and emerging advanced technologies to advance relevant, time-critical capabilities to the Joint warfighter.

Transformed, Joint acquisition processes provide essential Army capabilities across a spectrum of conflict requiring continuous engagement. Constant improvement of System-of-Systems capabilities through spiral development and [technology] insertions within and across increments of militarily-significant capability defeat adaptive threats by sustaining the Army's capabilities overmatch.

**2020 Army Capabilities** are characterized by:

- **Battlespace Awareness:**

- Sensor fusion: National, Joint, and Army sensors integrated into a unified network; this is the critical enabler for decisive Joint battle command and Joint effects – all-weather, space, air, and ground.
- Human engineering: minimizes sensory, cognitive, and physical demands on the soldier; virtual translation capabilities will provide immediate and effective communication with coalition forces and indigenous populations.
- Persistent Awareness: technologies realize “Unblinking Eye” surveillance capabilities
- Information Assurance security systems are self-establishing and “self-healing.”

- **Command & Control**

- Communications and Computers: Joint-, Interagency-, and Multi-national-interoperable between Current and Future forces; networked horizontally and vertically from national to tactical level; provide a common relevant operating picture while on the move.
- Training and leader development: Networked, embedded, live-virtual-constructive training systems; commander-centric planning and execution through adaptive expert soldiers and leaders.

- **Force Application**

- Strategic responsiveness and deployability: Relevant combat forces deployed in 96 hours; arrive “ready to fight” with capacity for continuous operations for up to 3 days at high operational intensity and up to 7 days in medium to low operational environments; multiple, austere points-of-entry-capable; vertical lift to operational distances.
- Joint-interdependent by design: expeditionary force capable of vertical envelopment from strategic, operational, and tactical distances.
- Mounted/dismounted ground and air operations: assured mobility; tactically agile; continuous 24/7 operations in all environments.
- Expansive use of unmanned air and ground autonomous and semi-autonomous systems.
- Unprecedented lethality: responsive and precise, Joint and coalition line-of-sight, beyond-line-of-sight, and non-line-of-sight fires and effects.
- Weapon systems that provide “nonlethal-through-lethal” options.
- Forces tailorable for complex urban operations

- **Protection**

- Holistic survivability: networked system-of-systems approach; integrates light weight materials, Active Protection Systems (Chemical/Kinetic Energy), and signature management.
- On-the-move obstacle/mine detection and neutralization.
- Force protection through integrated Joint situational awareness and response.

- **Focused Logistics – The Future Logistics Environment**

- Performance-based Logistics
- End-to-End Distribution incorporating advanced distribution platforms – manned and unmanned.
- Just-in-time logistics empowered by embedded diagnostics and prognostics employing in-transit visibility and reach back
- Enhanced reliability
- Embedded water purification/generation
- Multi-role weapons, common platforms, and automated self-loading material handling capability reduce logistics footprint

## **2020 Army Capabilities Generation.**

In 2020, synchronized, top-down, Joint capabilities-based requirements generation coupled with flexible, responsive evolutionary acquisition strategies reduce cycle time from concept development through material fielding. Tailored application of spiral and incremental development processes provide advanced capabilities to the warfighter while the technology is relevant. Harnessing the

synergy of networked, distributed systems, the Army develops and fields materiel solutions using a system-of-systems approach that provides for “graceful degradation” as well as distributed survivability and lethality capabilities to the Joint Force.

A critical aspect of the capabilities generation process is the synergy achieved through active, real-time collaboration between combat developers, technology developers, materiel [acquisition] developers, and testers. Evolutionary acquisition, using spiral and incremental development processes, provides the flexibility to exploit new technologies more rapidly. Technologies are developed, demonstrated in relevant environments, and then inserted into future and/or current systems based upon urgency of need. In summary, 2020 Army Capabilities Generation Process characteristics are:

- **Joint Capabilities-based Requirements Generation and Capabilities Development** rapidly identifies high payoff Joint warfighting capabilities and solutions, efficiently and effectively, through collaborative, top-down, Service and Joint analyses coupled with an integrated, responsive Joint Materiel Acquisition System. Joint Capabilities Generation key features....
  - ✓ **The Joint Science and Technology Laboratory** merges Service science and technology laboratories to form a single Joint Laboratory focused on development of Joint warfighting core technologies. As an integral partner in the Joint Laboratory, the Army pursues research and development efforts designed to maintain and improve essential land warfare-unique core competencies within the Joint Force.
  - ✓ **Continuous, Collaborative, Distributed Development Environment** integrates the user, materiel developer, and tester into a single, seamless capabilities development environment empowered by a network of combat and technology development laboratories employing immersive simulation from concept through technology development to rapidly respond to the warfighter’s requirements for continuous, responsive improvements in capabilities.
- **Joint Materiel Acquisition System** key features....
  - ✓ **Evolutionary Acquisition** strategies plan for future capability improvements at acquisition program inception through a tailorable approach that rapidly fields initial militarily-significant capability in five years or less while programming to achieve objective capabilities over time.
  - ✓ **Spiral Development & Insertion** [process] rapidly matures technologies to speed fielding of advanced technologies to the Current Force (e.g., Rapid Fielding Initiative) while simultaneously developing advanced warfighting concepts and developing leap-ahead technologies for the Future Force.

- Uses available advanced technology products from the commercial sector, defense industry, and Joint/coalition partners wherever feasible
- Focuses Land Warfare-unique advanced technology research and development within the Army and leverage opportunities from the DoD-wide technical base

This process is both responsive to the urgency of the warfighter’s immediate need and the requirement for continuous improvements in Current-to-Future Force capabilities over time.

✓ **System-of-Systems Development** leverages the integrated nature of sub-systems and systems throughout the development process to harness the synergy of interrelated capabilities for the greatest potential Warfighting impact. System-of-systems design and development induce programmatic flexibility and afford opportunities for innovative business practices. The optimization of System-of-Systems capabilities while allowing for sub optimization of individual systems designs-in “Graceful Degradation.”

- **Interdependent Partnerships between the Army, Joint Community, and Industry**, once resisted, have now streamlined government oversight by promoting efficient and collaborative working relationships throughout the materiel acquisition enterprise. These partnerships exploit the unique competencies of Joint/Service combat developers, government acquisition managers, and industry materiel developers through pervasive use of the Lead System Integrator (LSI) approach to manage complex system-of-systems development programs within tailored acquisition strategies. As a result, a large core of government program management personnel is no longer maintained.

*In summary, in 2020, the Army, equipped with relevant, mission-critical, state-of-the-art technologies, continuously maintains its capabilities overmatch against adaptive threats through a capabilities generation process that efficiently fuses requirements-to-solutions development to rapidly deliver critical technologies to the System-of-Systems-equipped Joint warfighter.*